

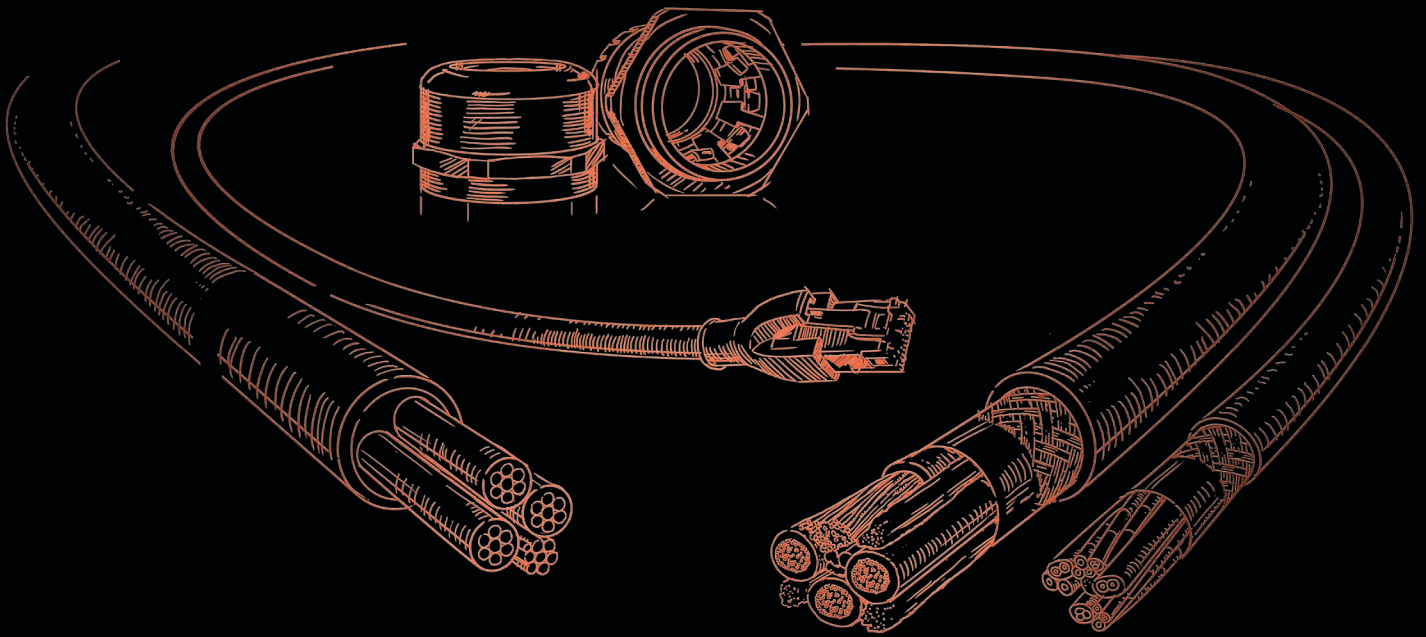
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HELUKABEL ITALY



DATA SHEET COLLECTIONS

# CABLES, WIRES & ACCESSORIES

Ed. 1.0 // IT



**(Channeling  
POWER)** 

# Icons

## Approvals / Standards



UL



CSA



HAR



VDE REG Number



SPAIN



EAC



CCC



CE



DNV-GL



IPA



DESINA

## Properties / Applications



Halogen-Free



UV Radiation



Robust



Drag Chain



Torsion



Wind-Offshore



Meter Marking



In Feet

## Explanation of the icons used in the brochure:

The icons are intended to provide a general overview of material properties and certifications. For details, please refer to the information in the data sheets.



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PURO-JZ/OZ-HF-YCP	674
MULTISPEED 500-PUR	676
MULTISPEED 500-C-PUR	678
MULTISPEED 500-PUR UL/CSA	680

MULTISPEED 500-C-PUR UL/CSA	682	<b>CAN BUS</b>	<b>748</b>
JZ-602-RC-PUR	684	CAN BUS	748
JZ-602-RC-C-PUR	686	CAN BUS UL	749
MULTIFLEX 512 PUR	688	CAN BUS UL	750
MULTIFLEX 512 C-PUR	690		
MULTIFLEX 512 PUR UL/CSA	692	<b>ENCODER   RESOLVER   SERVOMOTORI</b>	<b>751</b>
MULTIFLEX 512-C PUR UL/CSA	694	TOPFLEX 611-PUR	751
MULTIFLEX 1000-PUR UL/CSA	696	TOPFLEX 611-C-PUR	752
MULTIFLEX 1000-C-PUR UL/CSA	697	TOPSERV 110/120	753
		TOPSERV PUR	754
<b>TPE</b>	<b>698</b>	TOPSERV 600 VFD	756
MULTISPEED 500-TPE	698	TOPSERV 650 VFD	757
MULTISPEED 500-C-TPE	700	TOPSERV HYBRID	758
HELUCHAIN® MULTISPEED® 522-TPE UL/CSA	701	FEEDBACK CABLE PUR	759
HELUCHAIN® MULTISPEED® 522-C-TPE UL/CSA	703	TOPGEBER 512 PUR	760
<b>DIN 47100</b>	<b>705</b>	<b>TAMBURO AVVOLGICAVO</b>	<b>762</b>
SUPERTRONIC®-PVC	705	NSHTOU	762
SUPERTRONIC®-C-PVC	706	TROMMPUR	764
SUPERTRONIC®-310-PVC	707	FLUGZEUGHEBER-T	765
SUPERTRONIC®-310-C-PVC	708	(N)SHTOU-V	766
SUPERTRONIC®-PURo	709	(N)TSCGEWOU	767
SUPERTRONIC®-C-PURo	710	TROMMPUR-H	768
SUPER-PAAR-TRONIC-C-PUR	712		
SUPERTRONIC®-330-PURo	714	<b>SPIRALATI</b>	<b>769</b>
SUPERTRONIC®-330-C-PURo	715	PVC BLACK and WHITE	769
SUPER-PAAR-TRONIC 340-C-PUR	717	PUR BLACK	770
		PUR ORANGE	772
		PUR BLACK ELECTRONIC	774
		PUR BLACK ELECTRONIC SCREENED	776
<b>BUS   USB   SAFETY</b>	<b>718</b>		
USB BUS S 2.0 PUR	718	<b>TORSIONALI   ROBOTICA</b>	<b>778</b>
USB BUS L 2.0 PUR	719	HELUPOWER ROBOFLEX PUR UL-CSA	778
USB BUS L 3.0 PUR	720	HELUPOWER ROBOFLEX-D PUR UL-CSA	780
SAFETY BUS PUR	721	HELUPOWER ROBOFLEX HYBRID-D PUR UL-CSA	782
		HELUCONTROL ROBOFLEX PUR UL-CSA	784
<b>PROFINET</b>	<b>722</b>	HELUCONTROL ROBOFLEX-D PUR UL-CSA	786
PHLUKAT PROFINet C CAT.5e SF/UTP PVC CHAIN	722	HELUDATA ROBOFLEX-recycle PUR UL-CSA	788
HELUKAT PROFINet C CAT.5e SF/UTP PUR CHAIN	723	HELUDATA ROBOFLEX PUR UL-CSA	790
PROFINET 24V POWER	724	HELUDATA ROBOFLEX-D PUR UL-CSA	791
		HELUDATA ROBOFLEX-PAIR-D PUR UL-CSA	793
<b>PROFIBUS</b>	<b>725</b>	HELUKAT 100T CAT.5e S-UTP PUR TORSION	795
PROFIBUS L2	725	HELUKAT 100T CAT.5 SF-UTP PUR TORSION	796
PROFIBUS ET200X+ ECOFAST	726	HELUKAT 600T CAT.7 SF-FTP PUR TORSION	797
PROFIBUS SK	727	HELUKAT PROFINet R+ CAT.5e SF-UTP PUR ROBOTIC	798
		PROFIBUS L2 TORSION + FESTOON	799
<b>I-BUS</b>	<b>728</b>	HELUWIND WK 103w TORSION	800
INTER-BUS	728	HELUWIND WK 103w EMV D-TORSION	802
		HELUWIND WK 103k TORSION	804
<b>INDUSTRIAL ETHERNET</b>	<b>729</b>	HELUWIND WK 103k EMV D-TORSION	806
HELUKAT 100S CAT.5e 30 V 4C SF-UTP PUR CHAIN	729	HELUWIND WK 110-TORSION	808
HELUKAT 100S CAT.5e 30 V 4P SF-UTP PUR CHAIN	730	HELUWIND WK 137-TORSION FT4	809
HELUKAT 200S CAT.5 4C SF-UTP PUR CHAIN	731		
HELUKAT 200S CAT.5 4P SF-UTP PUR CHAIN	732	<b>PIATTI   FESTONI</b>	<b>811</b>
HELUKAT 100S CAT.5e 1000 V SF-UTP PUR CHAIN	733	PVC-FLAT	811
HELUKAT 100IND CAT.5e SF-UTP FRNC FLEX	734	PVC-FLAT-CY	812
HELUKAT 100IND CAT.5 SF-UTP PUR ROBUSTFLEX	735	NEO-FLAT (N)GFLGOU	813
HELUKAT 250S CAT.6 CMG SF-UTP PVC CHAIN	736	NEO-FLAT-C (MCHOU)	814
HELUKAT 250S CAT.6 CMX SF/UTP PUR CHAIN	737	BUS CABLE PROFIBUS L2 FESTOON	815
HELUKAT 500S CAT.6A SF/FTP PVC CHAIN	738	HELUKAT PROFINet B CAT.5e SF-UTP PVC FESTOON	816
HELUKAT 500S CAT.6A SF/FTP PUR CHAIN	739		
HELUKAT 500S CAT.6A SF-FTP SLIM PUR CHAIN	740		
HELUKAT 600S CAT.7 SF-FTP PUR CHAIN	741		
		<b>ACCESSORI</b>	<b>819</b>
<b>DEVICENET</b>	<b>742</b>	<b>PRESSACAVI PLASTICA</b>	<b>820</b>
DEVICENET THICK + THIN	742	HELUTOP HT	820
		HELUTOP HT-BS	822
<b>ASI-BUS</b>	<b>743</b>	HHELUTOP SP	823
A-BUS PUR UL/CSA	743	HELUTOP HT-K	824
A-BUS ROUND PUR CHAIN	744	HSK	826
		HSK-L	830
<b>BUS</b>	<b>745</b>	HSK-B	833
HMCB500S PVC	745	HSK-WI	835
HMCB800 PUR	746		
FIREWIRE	747		

KMK-PA-MB	837	HELUcond PA6-S	933
KMK-PA-OB	839	HELUcond PA6	934
<b>PRESSACAVI METALLICI</b>	<b>841</b>	HELUcond PA6-UL	935
HELUTOP HT-MS	841	HELUcond PA12	936
HELUTOP HT-MS	843	HELUcond PP	937
HELUTOP HT-MS-L	845	HELUquick straight	938
HELUTOP HT-MS-L	847	HELUquick elbow 90°	939
UNI-DICHT-MS	849	HSSV-SP	940
UNI-DICHT-MFD-MS	851	HSSV elbow 45° plastic	942
UNI-DICHT-VK-MS	854	HSSV elbow 90° plastic	943
UNI-DICHT-ASI-MS	856	HSSV-SM	945
KVA-MS	857	HSSV elbow 45° metal	946
KVA-MFD-MS	859	HSSV elbow 90° metal	947
KVA-VK-MS	862	HSSV-SPF	948
KVA-XXL-MS	863	HSSV elbow 90° metal	949
KVA-XXL-VK-MS	864	HSSV-ZE	950
VMK-SD	865	HSSV combination	951
SD-XXL	867	HSSV IP68 straight	952
STS	868	HSSV IP68 elbow 90°	953
STV	870	HSSV-O	954
STR	872	HSSV-OS	955
STS-F	874	SH, SHV	956
VM-KM	875	SD, VS, HT	958
		USH	959
		JUMBO PA6	960
<b>PRESSACAVI METALLICI EMC</b>	<b>877</b>	JUMBO PA12	961
HELUTOP MS-E	877	JUMBO PA12	962
HELUTOP MS-EP	878	JUMBO-FP	963
HELUTOP MS-EP4	879	JUMBO-WFP	964
HELUTOP HSK-MS-E	880	JUMBO-FP	965
HSK-MZ-E	882	HELUcond CO-PP	966
HSK-MS-E-D	884	JUMBO-FP	967
KVA-XXL-MS-E	886	COS	968
KM-EMV	887	IA-KE	969
		<b>GUAINE RINFORZATE</b>	<b>970</b>
<b>PRESSACAVI ROBUST</b>	<b>888</b>	PT-S	970
HELUTOP HT-E	888	S-PU	971
HSK-PVDF	890	SWM-M	972
HSK-MS-PVDF	892	SPR-AS	973
HSK-INOX	894	SPR-PVC-AS	974
UNI-DICHT-VK-PVDF	896	SPR-EDU-AS	976
UNI-DICHT-VK-SS	897	SWS-UI	977
KM-INOX	898	USK	978
		LK-I	980
<b>PRESSACAVI ZONA PERICOLOSA</b>	<b>899</b>	MTG-US	982
HELUTOP HT-PA-EX	899	MTG-LI	984
HELUTOP HT-PA-EX-Plus	900	LT-E-UI straight	986
HELUTOP HT-PA-EX-Plus Silicone	902	LT-E-UI elbow 90°	988
HSK-EX-Active	904	E EK	990
HELUTOP HT-MS-EX-d	906	EEM	991
HELUTOP HT-MS-EX-d 1 EMV	908		
HELUTOP HT-MS-EX-d / e4	909	<b>GUAINE ANACONDA</b>	<b>992</b>
HSK-MS-EX	911	Anaconda Sealtite EF	992
HSK-MS-EX-E	913	Anaconda Sealtite OR	993
Adapter PA-ATEX	915	Anaconda Sealtite HTDL	994
EW PA-ATEX	917	Anaconda Sealtite HC	995
RE PA-ATEX	918	Anaconda Sealtite HCX	996
VSK-EX	920	Anaconda Sealtite ZHLS	997
		Anaconda Sealtite HFX	998
<b>PRESSACAVI MONTAGGI IN CONDIZIONI SPECIALI</b>	<b>922</b>	Anaconda Sealtite CNP	999
HELUTOP EASY	922	Anaconda Sealtite NMFG-Clean	1000
HELUFAST	923	CV Compact straight	1001
HELUTOP HT-Clean-EMV	925	CV Compact elbow 90°	1002
PA-OF	926	LT straight	1003
HSSV-KF	927	LT elbow 45°	1005
		LT elbow 90°	1007
<b>PRESSACAVI CONDIZIONI SPECIALI DI PRESSIONE</b>	<b>928</b>	LT-CNP	1009
HELUTOP HT-AIR-PA	928	LT-CNP-E	1010
HELUTOP HT-AIR-MS	929	LT-FG-Clean	1011
PBE-K	930	EES	1012
		<b>GUAINE CORRUGATE</b>	<b>1013</b>
HELUcond PE	931	HELUcond PA6-L	1013
HELUcond PA6-L	932		1014
		<b>GUAINE CABLAGGIO</b>	
		GFS-CU	1013
		GFS-S	1014

HGP	1015
HTP-PT	1016
HTP-WT	1017
HTP-AT	1018
HTP-CR	1019
PVC-IB	1020
PVC-IC	1021
T-SI	1022

#### **GUAINE CABLAGGIO TERMORESTRINGENTI**

SCH 2:1	<b>1023</b>
HSB-Boxes 2:1	1023
CMP 2:1	1024
SPSP 2:1	1025
SPRO - 2:1	1027
SPRO - 3:1	1028
HFS 2:1	1029
P-SK 3:1	1030
SK-M 3:1 with inside adhesive	1031
SK-D 3:1	1032
SVRO 2:1	1033
	1034

#### **FASCETTE E SISTEMI DI FISSAGGIO**

PSW-KW (SPIRALE)	<b>1035</b>
TY-RAP-T	1035
TY-MX UV RESISTANT	1036
TYH	1038
TYZ UV RESISTANT	1039
TY-RAP-SCT	1040
TY-RAP with label	1041
CT-T	1042
T-SK/SKU	1043
T-WS	1044
CT-DW	1046
CTSS-E STAINLESS STEEL AISI 316	1047
KLL / KLLQ	1048
CTM-BS	1049
CTM-TC	1050
TC-MB	1051
TC-SB	1052
TC-WS	1053
TC-AB	1054
	1055

#### **TERMINALI PREISOLATI**

ADI	<b>1056</b>
ADI-B	1056
ADI-K	1058
ESD-ADI	1059
DUO	1060
ESD-DUO	1061
ADU	1063
Shield Kon RSK	1064
ST-ET	1065
ST-PS / FS	1066
ST-RP	1067
ST-C	1069
ST-PR / FP	1070
RA / RC	1071
BHA / BHB / BHC eye type	1073
	1074

#### **TERMINALI NON ISOLATI**

B-ET	<b>1075</b>
B-FT	1075
B-PF	1077
HELU-S-RK-CU	1078
HELU-S-RK-CU-UL	1079
HELU-S-RK-45-CU-UL	1080
HELU-S-RK-90-CU-UL	1080
HELU-S-RK-S-CU-UL	1082
HELU-S-RK-F-CU	1084
HELU-S-PK-CU	1086
HELU-S-PK-CU-DIN	1088
HELU-S-PK-AL-DIN	1090
HELU-S-PK-AL/CU	1092
KAC-U AL/CU-bi-metallic washer	1094
	1096
	1098

HELU-S-RK-N for high temperature applications	1099
HELU-S-SV-CU	1100
HELU-S-PV-CU-DIN	1101
HELU-S-PV-AL-DIN	1102
HELU-S-PV-AL/CU	1103

#### **GESTIONE BOBINE E CAVI**

TROMBOI 500	<b>1105</b>
TROMBOI 800 / TROMBOI 1400	1105
TROMBOI 7-10 / TROMBOI 9-14	1106
TROMBOI 2003	1107
TROMCAR 1000 / TROMCAR 1250	1108
TROMTRAK 1250	1109
MESSBOI	1110
CGS-T	1111
MESSBOI	1112
CGS	1113
	1114

#### **IMBALLI**

##### **IMBALLI**


**1117**

**1118**









# Unipolari di cablaggio

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## Technical data

- PVC single cores to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31 and IEC 60227-3
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -30°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 2000 V
- **Insulation resistance**  
min. 10 MOhm x km
- **Minimum bending radius**  
fixed installation 4x core Ø
- **Radiation resistance**  
up to  $80 \times 10^6$  cJ/kg (up to 80 Mrad)

## Cable structure

- Bare Cu-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI1 to DIN VDE 0207-363-3 / DIN EN 50363-3 and IEC 60227-3
- Core identification see table below

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- The following colours are recommended: black, white, blue, grey, brown, red, orange, turquoise, violet and pink. Exceptions are the colours green and yellow; these are only permitted if the safety regulations allows. Green is permitted for the identification of luminous decorative chains. All 2-coloured combinations of the abovesingle colours are allowed

## Application

These single cores are determined for the installation to the inside of apparatus as well as for the protective laying to the lightings, in dry rooms, in production facilities, switch and distributor boards, in tubes, under and surface mounting of plasters.

☑= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

## H05V-K

Cross-sec. mm <sup>2</sup> app. RAL	Outer Ø min. - max. mm	Cu factor per km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.	U-BU
			9005	-	5015	8003	3000	9003	7001	4005	1021	3015	6018	-	5010	2003	-	-	5002



### Coil in cardboard (100m)

#### Packing

#### H05V-K coil

Part no.	29081	29082	29083	29084	29085	29086	29087	29088	29089	29090	29091	29092	29093	29094	29095	29096	26386
0,5	2,1 - 2,5	4,8															
0,75	2,2 - 2,7	7,2															
1	2,4 - 2,8	9,6															



### Spool (with various capacity)

#### Packing

#### H05V-K spool

Part no.	26590	26591	26592	26593	26594	26595	26596	26597	26598	26599	26600	26601	26602	26603	26604	26605	26389
0,5	2,1 - 2,5	4,8															
0,75	2,2 - 2,7	7,2															
1	2,4 - 2,8	9,6															

Continuation ▶

# H05V-K PVC-Single Cores, fine wire stranded



## H05V-K

Cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	BK	GN-YE	BU	BN	RD	WH	GY	VT	YE	PK	GN	TRANS	D-BU	OG	o.col.	2-col.	U-BU
app. RAL			9005	-	5015	8003	3000	9003	7001	4005	1021	3015	6018	-	5010	2003	-	-	-



## Packing

### Barrel (with various capacity)

H05V-K barrel																			
Part no.			26640	26641	26642	26643	26644	26645	26646	26647	26648	26649	26650	26651	26652	26653	26654	26655	26392
0,5	2,1 - 2,5	4,8																	
Part no.			26656	26657	26658	26659	26660	26661	26662	26663	26664	26665	26666	26667	26668	26669	26670	26671	26393
0,75	2,2 - 2,7	7,2																	
Part no.			26672	26673	26674	26675	26676	26677	26678	26679	26680	26681	26682	26683	26684	26685	26686	26687	26394
1	2,4 - 2,8	9,6																	

Dimensions and specifications may be changed without prior notice. (RK01)

# H07V-K / 07V-K

PVC single core, finely stranded



## TECHNICAL DATA

PVC single core, H07V-K acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31, IEC 60227-3; 07V-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31, IEC 60227-3

<b>Temperature range</b>	flexible +5°C to +70°C fixed -30°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 450/750 V
<b>Test voltage</b>	2500 V
<b>Minimum bending radius</b>	fixed < 8 mm: 4x Outer-ø 8-12 mm: 5x Outer-ø > 12 mm: 6x Outer-ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Installation in electrical conduits, on or under plaster or similar enclosed systems. Suitable for protected and fixed installation in lighting systems or switching and control devices up to and including 1000 V AC voltage or up to 750 V DC voltage against earth. Not suitable for direct laying in cable ladders and cable trays, except as a potential equalization cable.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- Approved core colours: black, green-yellow, blue, brown, red, white, grey, violet, orange, pink

### H07V-K Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)	orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
1.5	16	2.8 - 3.4	14.4	<b>29129</b>	<b>29130</b>	<b>29131</b>	<b>29132</b>	<b>29133</b>	<b>29134</b>	<b>29135</b>	<b>29136</b>	<b>29142</b>
2.5	14	3.4 - 4.1	24.0	<b>29145</b>	<b>29146</b>	<b>29147</b>	<b>29148</b>	<b>29149</b>	<b>29150</b>	<b>29151</b>	<b>29152</b>	<b>29158</b>
4	12	3.9 - 4.8	38.0	<b>29161</b>	<b>29162</b>	<b>29163</b>	<b>29164</b>	<b>29165</b>	<b>29166</b>	<b>29167</b>	<b>29168</b>	<b>29174</b>
6	10	4.4 - 5.3	58.0	<b>29177</b>	<b>29178</b>	<b>29179</b>	<b>29180</b>	<b>29181</b>	<b>29182</b>	<b>29183</b>	<b>29184</b>	<b>29190</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)	ultram.blue (RAL 5002)
				Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>29141</b>	<b>29138</b>	<b>26395</b>
2.5	14	3.4 - 4.1	24.0	<b>29157</b>	<b>29154</b>	<b>26396</b>
4	12	3.9 - 4.8	38.0	<b>29173</b>	<b>29170</b>	<b>26397</b>
6	10	4.4 - 5.3	58.0	<b>29189</b>	<b>29186</b>	<b>26398</b>

# H07V-K / 07V-K

PVC single core, finely stranded



## 07V-K Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km							
				yellow (RAL 1021) Part no.	green (RAL 6018) Part no.	transparent Part no.	blue-white Part no.	brown-white Part no.	dark blue-white Part no.	red-white Part no.
1.5	16	2.8 - 3.4	14.4	29137	29139	29140	29378	29383	29397	29373
2.5	14	3.4 - 4.1	24.0	29153	29155	29156	29379	29384	29398	29374
4	12	3.9 - 4.8	38.0	29169	29171	29172	29386	29387	29399	29385
6	10	4.4 - 5.3	58.0	29185	29187	29188	29389	29390	29527	29388
10	8	5.7 - 6.8	96.0	-	-	-	29392	29393	29528	29391

## H07V-K Coil (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km									
				black (RAL 9005) Part no.	green-yellow Part no.	blue (RAL 5015) Part no.	brown (RAL 8003) Part no.	red (RAL 3000) Part no.	white (RAL 9003) Part no.	grey (RAL 7001) Part no.	violet (RAL 4005) Part no.	orange (RAL 2003) Part no.
1.5	16	2.8 - 3.4	14.4	26060	26061	26062	26063	26064	26065	26066	26067	26109
2.5	14	3.4 - 4.1	24.0	26112	26113	26114	26115	26116	26117	26118	26119	29890
4	12	3.9 - 4.8	38.0	29893	29894	29895	29896	29897	29898	29899	29905	29911
6	10	4.4 - 5.3	58.0	29914	29915	29916	29917	29918	29919	29921	29922	29928
10	8	5.7 - 6.8	96.0	29193	29194	29195	29196	29197	29198	29199	29200	29206
16	6	6.7 - 8.1	154.0	29209	29210	29211	29212	29213	29214	29215	29216	29222
25	4	8.4 - 10.2	240.0	29225	29226	29227	29228	29229	29230	29231	29232	29238
35	2	9.7 - 11.7	336.0	29241	29242	29243	29244	29245	29246	29247	29248	29254
50	1	11.5 - 13.9	480.0	29257	29258	29259	29260	29261	29262	29263	29264	29270
70	2/0	13.2 - 16.0	672.0	29273	29274	29275	29276	29277	29278	29279	29280	29286
95	3/0	15.1 - 18.2	912.0	29289	29290	29291	29292	29293	29294	29295	29296	29302
120	4/0	16.7 - 20.2	1152.0	29418	29419	29420	29421	29422	29423	29424	29425	29431
150	300 kcmil	18.6 - 22.5	1440.0	29434	29435	29436	29437	29438	29439	29440	29441	29447
185	350 kcmil	20.6 - 24.9	1776.0	29494	29495	29496	29497	29498	29499	29590	29591	29597
240	500 kcmil	23.5 - 28.4	2304.0	29813	29814	29815	29816	29817	29818	29819	29840	29846

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km			
				dark blue (RAL 5010) Part no.	pink (RAL 3015) Part no.	ultram. blue (RAL 5002) Part no.
1.5	16	2.8 - 3.4	14.4	26108	26069	26821
2.5	14	3.4 - 4.1	24.0	29859	29856	26822
4	12	3.9 - 4.8	38.0	29910	29907	26823
6	10	4.4 - 5.3	58.0	29927	29924	26824
10	8	5.7 - 6.8	96.0	29205	29202	-
16	6	6.7 - 8.1	154.0	29221	29218	-
25	4	8.4 - 10.2	240.0	29237	29234	-
35	2	9.7 - 11.7	336.0	29253	29250	-
50	1	11.5 - 13.9	480.0	29269	29266	-
70	2/0	13.2 - 16.0	672.0	29285	29282	-
95	3/0	15.1 - 18.2	912.0	29301	29298	-
120	4/0	16.7 - 20.2	1152.0	29430	29427	-
150	300 kcmil	18.6 - 22.5	1440.0	29446	29443	-
185	350 kcmil	20.6 - 24.9	1776.0	29596	29593	-
240	500 kcmil	23.5 - 28.4	2304.0	29845	29842	-

## 07V-K Coil (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km									
				yellow (RAL 1021) Part no.	green (RAL 6018) Part no.	transparent Part no.	blue-red Part no.	brown-green Part no.	brown-black Part no.	yellow-red Part no.	yellow-white Part no.	grey-black Part no.
1.5	16	2.8 - 3.4	14.4	26068	26092	26099	11019808	11020486	11021051	11020494	11019080	11019081

# H07V-K / 07V-K

PVC single core, finely stranded



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	yellow (RAL 1021)	green (RAL 6018)	transparent	blue-red	brown-green	brown-black	yellow-red	yellow-white	grey-black
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
2.5	14	3.4 - 4.1	24.0	<b>29855</b>	<b>29857</b>	<b>29858</b>	<b>11020535</b>	-	<b>11020181</b>	-	<b>11019088</b>	<b>11019804</b>
4	12	3.9 - 4.8	38.0	<b>29906</b>	<b>29908</b>	<b>29909</b>	<b>11019583</b>	-	-	-	-	<b>11020104</b>
6	10	4.4 - 5.3	58.0	<b>29923</b>	<b>29925</b>	<b>29926</b>	-	-	-	-	-	-
10	8	5.7 - 6.8	96.0	<b>29201</b>	<b>29203</b>	<b>29204</b>	-	-	-	-	-	-
16	6	6.7 - 8.1	154.0	<b>29217</b>	<b>29219</b>	<b>29220</b>	-	-	-	-	-	-
25	4	8.4 - 10.2	240.0	<b>29233</b>	<b>29235</b>	<b>29236</b>	-	-	-	-	-	-
35	2	9.7 - 11.7	336.0	<b>29249</b>	<b>29251</b>	<b>29252</b>	-	-	-	-	-	-
50	1	11.5 - 13.9	480.0	<b>29265</b>	<b>29267</b>	<b>29268</b>	-	-	-	-	-	-
70	2/0	13.2 - 16.0	672.0	<b>29281</b>	<b>29283</b>	<b>29284</b>	-	-	-	-	-	-
95	3/0	15.1 - 18.2	912.0	<b>29297</b>	<b>29299</b>	<b>29300</b>	-	-	-	-	-	-
120	4/0	16.7 - 20.2	1152.0	<b>29426</b>	<b>29428</b>	<b>29429</b>	-	-	-	-	-	-
150	300 kcmil	18.6 - 22.5	1440.0	<b>29442</b>	<b>29444</b>	<b>29445</b>	-	-	-	-	-	-
185	350 kcmil	20.6 - 24.9	1776.0	<b>29592</b>	<b>29594</b>	<b>29595</b>	-	-	-	-	-	-
240	500 kcmil	23.5 - 28.4	2304.0	<b>29841</b>	<b>29843</b>	<b>29844</b>	-	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	grey-white	green-brown	green-white	pink-white	red-blue	red-yellow	red-black	black-green	black-red
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>11019082</b>	<b>11020487</b>	<b>11020250</b>	<b>11020281</b>	<b>11020563</b>	<b>11020493</b>	<b>11019084</b>	<b>11019085</b>	-
2.5	14	3.4 - 4.1	24.0	<b>11019584</b>	-	<b>11020252</b>	-	<b>11020534</b>	-	<b>11019090</b>	-	<b>11019091</b>
4	12	3.9 - 4.8	38.0	-	-	-	<b>11020162</b>	<b>11020538</b>	-	<b>11020256</b>	-	<b>11019094</b>
6	10	4.4 - 5.3	58.0	<b>11020240</b>	-	-	-	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black-white	orange-white	violet-black	violet-white	white-blue	white-brown	white-grey	white-green	white-red
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>11019930</b>	<b>11019083</b>	-	<b>11019086</b>	<b>11020515</b>	<b>11020491</b>	<b>11019586</b>	<b>11020490</b>	<b>11020488</b>
2.5	14	3.4 - 4.1	24.0	<b>11019894</b>	<b>11019089</b>	<b>11020475</b>	<b>11019092</b>	-	-	<b>11019587</b>	-	-
4	12	3.9 - 4.8	38.0	<b>11020517</b>	<b>11020735</b>	-	<b>11020424</b>	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	white-black
				Part no.
1.5	16	2.8 - 3.4	14.4	<b>11019087</b>
2.5	14	3.4 - 4.1	24.0	<b>11019093</b>

## H07V-K Barrel

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)	orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>26755</b>	<b>26756</b>	<b>26757</b>	<b>26758</b>	<b>26759</b>	<b>26760</b>	<b>26761</b>	<b>26762</b>	<b>26768</b>
2.5	14	3.4 - 4.1	24.0	<b>26771</b>	<b>26772</b>	<b>26773</b>	<b>26774</b>	<b>26775</b>	<b>26776</b>	<b>26777</b>	<b>26778</b>	<b>26784</b>
4	12	3.9 - 4.8	38.0	<b>26787</b>	<b>26788</b>	<b>26789</b>	<b>26790</b>	<b>26791</b>	<b>26792</b>	<b>26793</b>	<b>26794</b>	<b>26800</b>
6	10	4.4 - 5.3	58.0	<b>26803</b>	<b>26804</b>	<b>26805</b>	<b>26806</b>	<b>26807</b>	<b>26808</b>	<b>26809</b>	<b>26810</b>	<b>26816</b>



# H07V-K / 07V-K

PVC single core, finely stranded



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)	ultram.blue (RAL 5002)
				Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>26767</b>	<b>26764</b>	<b>26403</b>
2.5	14	3.4 - 4.1	24.0	<b>26783</b>	<b>26780</b>	<b>26404</b>
4	12	3.9 - 4.8	38.0	<b>26799</b>	<b>26796</b>	<b>26819</b>
6	10	4.4 - 5.3	58.0	<b>26815</b>	<b>26812</b>	<b>26820</b>

## 07V-K Barrel

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	yellow (RAL 1021)	green (RAL 6018)	transparent	blue-white	brown-white	dark blue-white	red-white
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>26763</b>	<b>26765</b>	<b>26766</b>	<b>28961</b>	<b>28962</b>	<b>28963</b>	<b>28960</b>
2.5	14	3.4 - 4.1	24.0	<b>26779</b>	<b>26781</b>	<b>26782</b>	<b>28965</b>	<b>28966</b>	<b>28967</b>	<b>28964</b>
4	12	3.9 - 4.8	38.0	<b>26795</b>	<b>26797</b>	<b>26798</b>	<b>28969</b>	<b>28970</b>	<b>28971</b>	<b>28968</b>
6	10	4.4 - 5.3	58.0	<b>26811</b>	<b>26813</b>	<b>26814</b>	<b>28973</b>	<b>28974</b>	<b>28975</b>	<b>28972</b>
10	8	5.7 - 6.8	96.0	-	-	-	<b>28977</b>	<b>28978</b>	<b>28979</b>	<b>28976</b>

## H07V-K Spool

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)	orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>26690</b>	<b>26691</b>	<b>26692</b>	<b>26693</b>	<b>26694</b>	<b>26695</b>	<b>26696</b>	<b>26697</b>	<b>26703</b>
2.5	14	3.4 - 4.1	24.0	<b>26706</b>	<b>26707</b>	<b>26708</b>	<b>26709</b>	<b>26710</b>	<b>26711</b>	<b>26712</b>	<b>26713</b>	<b>26719</b>
4	12	3.9 - 4.8	38.0	<b>26722</b>	<b>26723</b>	<b>26724</b>	<b>26725</b>	<b>26726</b>	<b>26727</b>	<b>26728</b>	<b>26729</b>	<b>26735</b>
6	10	4.4 - 5.3	58.0	<b>26738</b>	<b>26739</b>	<b>26740</b>	<b>26741</b>	<b>26742</b>	<b>26743</b>	<b>26744</b>	<b>26745</b>	<b>26751</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)	ultram.blue (RAL 5002)
				Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>26702</b>	<b>26699</b>	<b>26399</b>
2.5	14	3.4 - 4.1	24.0	<b>26718</b>	<b>26715</b>	<b>26400</b>
4	12	3.9 - 4.8	38.0	<b>26734</b>	<b>26731</b>	<b>26401</b>
6	10	4.4 - 5.3	58.0	<b>26750</b>	<b>26747</b>	<b>26402</b>

## 07V-K Spool

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	yellow (RAL 1021)	green (RAL 6018)	transparent	blue-red	blue-white	brown-green	brown-black	brown-white	dark blue-white
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	2.8 - 3.4	14.4	<b>26698</b>	<b>26700</b>	<b>26701</b>	<b>11020565</b>	<b>29758</b>	<b>11020495</b>	<b>11021052</b>	<b>29759</b>	<b>29760</b>
2.5	14	3.4 - 4.1	24.0	<b>26714</b>	<b>26716</b>	<b>26717</b>	<b>11020537</b>	<b>29762</b>	-	<b>11020182</b>	<b>29763</b>	<b>29764</b>
4	12	3.9 - 4.8	38.0	<b>26730</b>	<b>26732</b>	<b>26733</b>	<b>11020540</b>	<b>29766</b>	-	-	<b>29767</b>	<b>29768</b>
6	10	4.4 - 5.3	58.0	<b>26746</b>	<b>26748</b>	<b>26749</b>	-	<b>29770</b>	-	-	<b>29771</b>	<b>29772</b>
10	8	5.7 - 6.8	96.0	-	-	-	-	<b>29774</b>	-	-	<b>29775</b>	<b>29776</b>

# H07V-K / 07V-K

PVC single core, finely stranded



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km									
				yellow-red Part no.	grey-black Part no.	grey-white Part no.	green-brown Part no.	green-white Part no.	pink-white Part no.	red-blue Part no.	red-yellow Part no.	red-black Part no.
1.5	16	2.8 - 3.4	14.4	<b>11020502</b>	-	-	<b>11020496</b>	<b>11020251</b>	<b>11020282</b>	<b>11020564</b>	<b>11020501</b>	<b>11020947</b>
2.5	14	3.4 - 4.1	24.0	-	-	<b>11020239</b>	-	<b>11020253</b>	-	<b>11020536</b>	-	-
4	12	3.9 - 4.8	38.0	-	<b>11020105</b>	-	-	-	<b>11020163</b>	<b>11020539</b>	-	<b>11020257</b>
6	10	4.4 - 5.3	58.0	-	-	<b>11020241</b>	-	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km									
				red-white Part no.	black-white Part no.	orange-white Part no.	violet-black Part no.	violet-white Part no.	white-blue Part no.	white-brown Part no.	white-green Part no.	white-red Part no.
1.5	16	2.8 - 3.4	14.4	<b>29757</b>	<b>11019931</b>	-	-	<b>11020768</b>	<b>11020516</b>	<b>11020500</b>	<b>11020499</b>	<b>11020497</b>
2.5	14	3.4 - 4.1	24.0	<b>29761</b>	-	<b>11019079</b>	<b>11020476</b>	-	-	-	-	-
4	12	3.9 - 4.8	38.0	<b>29765</b>	<b>11020518</b>	<b>11020736</b>	-	<b>11020425</b>	-	-	-	-
6	10	4.4 - 5.3	58.0	<b>29769</b>	-	-	-	-	-	-	-	-
10	8	5.7 - 6.8	96.0	<b>29773</b>	-	-	-	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	
				white-black Part no.
1.5	16	2.8 - 3.4	14.4	<b>11020503</b>

## H07V-K Drum

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km									
				black (RAL 9005) Part no.	green-yellow Part no.	blue (RAL 5015) Part no.	brown (RAL 8003) Part no.	red (RAL 3000) Part no.	white (RAL 9003) Part no.	grey (RAL 7001) Part no.	violet (RAL 4005) Part no.	orange (RAL 2003) Part no.
4	12	3.9 - 4.8	38.0	<b>29560</b>	<b>29561</b>	<b>29562</b>	<b>29563</b>	<b>29564</b>	<b>29565</b>	<b>29566</b>	<b>29567</b>	<b>29573</b>
6	10	4.4 - 5.3	58.0	<b>29574</b>	<b>29575</b>	<b>29576</b>	<b>29577</b>	<b>29578</b>	<b>29579</b>	<b>29580</b>	<b>29581</b>	<b>29587</b>
10	8	5.7 - 6.8	96.0	<b>26825</b>	<b>26826</b>	<b>26827</b>	<b>26828</b>	<b>26829</b>	<b>26830</b>	<b>26831</b>	<b>26832</b>	<b>26838</b>
16	6	6.7 - 8.1	154.0	<b>26841</b>	<b>26842</b>	<b>26843</b>	<b>26844</b>	<b>26845</b>	<b>26846</b>	<b>26847</b>	<b>26848</b>	<b>26854</b>
25	4	8.4 - 10.2	240.0	<b>26857</b>	<b>26858</b>	<b>26859</b>	<b>26860</b>	<b>26861</b>	<b>26862</b>	<b>26863</b>	<b>26864</b>	<b>26870</b>
35	2	9.7 - 11.7	336.0	<b>26873</b>	<b>26874</b>	<b>26875</b>	<b>26876</b>	<b>26877</b>	<b>26878</b>	<b>26879</b>	<b>26880</b>	<b>26886</b>
50	1	11.5 - 13.9	480.0	<b>26889</b>	<b>26890</b>	<b>26891</b>	<b>26892</b>	<b>26893</b>	<b>26894</b>	<b>26895</b>	<b>26896</b>	<b>26902</b>
70	2/0	13.2 - 16.0	672.0	<b>26905</b>	<b>26906</b>	<b>26907</b>	<b>26908</b>	<b>26909</b>	<b>26910</b>	<b>26911</b>	<b>26912</b>	<b>26918</b>
95	3/0	15.1 - 18.2	912.0	<b>26921</b>	<b>26922</b>	<b>26923</b>	<b>26924</b>	<b>26925</b>	<b>26926</b>	<b>26927</b>	<b>26928</b>	<b>26934</b>
120	4/0	16.7 - 20.2	1152.0	<b>29305</b>	<b>29306</b>	<b>29307</b>	<b>29308</b>	<b>29309</b>	<b>29310</b>	<b>29311</b>	<b>29312</b>	<b>29318</b>
150	300 kcmil	18.6 - 22.5	1440.0	<b>29321</b>	<b>29322</b>	<b>29323</b>	<b>29324</b>	<b>29325</b>	<b>29326</b>	<b>29327</b>	<b>29328</b>	<b>29334</b>
185	350 kcmil	20.6 - 24.9	1776.0	<b>29337</b>	<b>29338</b>	<b>29339</b>	<b>29340</b>	<b>29341</b>	<b>29342</b>	<b>29343</b>	<b>29344</b>	<b>29350</b>
240	500 kcmil	23.5 - 28.4	2304.0	<b>29353</b>	<b>29354</b>	<b>29355</b>	<b>29356</b>	<b>29357</b>	<b>29358</b>	<b>29359</b>	<b>29360</b>	<b>29366</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km		
				dark blue (RAL 5010) Part no.	pink (RAL 3015) Part no.
4	12	3.9 - 4.8	38.0	<b>29572</b>	<b>29569</b>
6	10	4.4 - 5.3	58.0	<b>29586</b>	<b>29583</b>
10	8	5.7 - 6.8	96.0	<b>26837</b>	<b>26834</b>
16	6	6.7 - 8.1	154.0	<b>26853</b>	<b>26850</b>
25	4	8.4 - 10.2	240.0	<b>26869</b>	<b>26866</b>
35	2	9.7 - 11.7	336.0	<b>26885</b>	<b>26882</b>
50	1	11.5 - 13.9	480.0	<b>26901</b>	<b>26898</b>
70	2/0	13.2 - 16.0	672.0	<b>26917</b>	<b>26914</b>
95	3/0	15.1 - 18.2	912.0	<b>26933</b>	<b>26930</b>
120	4/0	16.7 - 20.2	1152.0	<b>29317</b>	<b>29314</b>
150	300 kcmil	18.6 - 22.5	1440.0	<b>29333</b>	<b>29330</b>



# H07V-K / 07V-K

PVC single core, finely stranded



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)
				Part no.	Part no.
185	350 kcmil	20.6 - 24.9	1776.0	<b>29349</b>	<b>29346</b>
240	500 kcmil	23.5 - 28.4	2304.0	<b>29365</b>	<b>29362</b>

## 07V-K Drum

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)	yellow (RAL 1021)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
4	12	3.9 - 4.8	38.0	-	-	-	-	-	-	-	-	<b>29568</b>
6	10	4.4 - 5.3	58.0	-	-	-	-	-	-	-	-	<b>29582</b>
10	8	5.7 - 6.8	96.0	-	-	-	-	-	-	-	-	<b>26833</b>
16	6	6.7 - 8.1	154.0	-	-	-	-	-	-	-	-	<b>26849</b>
25	4	8.4 - 10.2	240.0	-	-	-	-	-	-	-	-	<b>26865</b>
35	2	9.7 - 11.7	336.0	-	-	-	-	-	-	-	-	<b>26881</b>
50	1	11.5 - 13.9	480.0	-	-	-	-	-	-	-	-	<b>26897</b>
70	2/0	13.2 - 16.0	672.0	-	-	-	-	-	-	-	-	<b>26913</b>
95	3/0	15.1 - 18.2	912.0	-	-	-	-	-	-	-	-	<b>26929</b>
120	4/0	16.7 - 20.2	1152.0	-	-	-	-	-	-	-	-	<b>29313</b>
150	300 kcmil	18.6 - 22.5	1440.0	-	-	-	-	-	-	-	-	<b>29329</b>
185	350 kcmil	20.6 - 24.9	1776.0	-	-	-	-	-	-	-	-	<b>29345</b>
240	500 kcmil	23.5 - 28.4	2304.0	-	-	-	-	-	-	-	-	<b>29361</b>
300	600 kcmil	26.0 - 30.5	2880.0	<b>28878</b>	<b>28879</b>	<b>28880</b>	<b>28881</b>	<b>28882</b>	<b>28883</b>	<b>28884</b>	<b>28885</b>	<b>28886</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	orange (RAL 2003)	green (RAL 6018)	dark blue (RAL 5010)	pink (RAL 3015)	transparent	blue-white
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
4	12	3.9 - 4.8	38.0	-	<b>29570</b>	-	-	<b>29571</b>	-
6	10	4.4 - 5.3	58.0	-	<b>29584</b>	-	-	<b>29585</b>	-
10	8	5.7 - 6.8	96.0	-	<b>26835</b>	-	-	<b>26836</b>	<b>11020489</b>
16	6	6.7 - 8.1	154.0	-	<b>26851</b>	-	-	<b>26852</b>	-
25	4	8.4 - 10.2	240.0	-	<b>26867</b>	-	-	<b>26868</b>	-
35	2	9.7 - 11.7	336.0	-	<b>26883</b>	-	-	<b>26884</b>	-
50	1	11.5 - 13.9	480.0	-	<b>26899</b>	-	-	<b>26900</b>	-
70	2/0	13.2 - 16.0	672.0	-	<b>26915</b>	-	-	<b>26916</b>	-
95	3/0	15.1 - 18.2	912.0	-	<b>26931</b>	-	-	<b>26932</b>	-
120	4/0	16.7 - 20.2	1152.0	-	<b>29315</b>	-	-	<b>29316</b>	-
150	300 kcmil	18.6 - 22.5	1440.0	-	<b>29331</b>	-	-	<b>29332</b>	-
185	350 kcmil	20.6 - 24.9	1776.0	-	<b>29347</b>	-	-	<b>29348</b>	-
240	500 kcmil	23.5 - 28.4	2304.0	-	<b>29363</b>	-	-	<b>29364</b>	-
300	600 kcmil	26.0 - 30.5	2880.0	<b>28890</b>	<b>28888</b>	<b>28889</b>	<b>28887</b>	-	-

# H07V-R

PVC single core, stranded



## TECHNICAL DATA

PVC single core acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

Temperature range	flexible +5°C to +70°C fixed -30°C to +80°C
Nominal voltage	AC U <sub>0</sub> /U 450/750 V
Test voltage	2500 V
Minimum bending radius	<8 mm: 4x Outer-ø 8-12 mm: 5x Outer-ø >12 mm: 6x Outer-ø

## CABLE STRUCTURE

- Copper conductor bare, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Installation in electrical conduits, on or under plaster or similar enclosed systems. Suitable for protected and fixed installation in lighting systems or switching and control devices up to and including 1000 V AC voltage or up to 750 V DC voltage against earth. Not suitable for direct laying in cable ladders and cable trays, except as a potential equalization cable.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Ring (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	purple (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
16	6	6.4 - 7.8	154.0	<b>28825</b>	<b>28826</b>	<b>28827</b>	<b>28828</b>	<b>28829</b>	<b>28830</b>	<b>28831</b>	<b>28832</b>
25	4	8.1 - 9.7	240.0	<b>28833</b>	<b>28834</b>	<b>28835</b>	<b>28836</b>	<b>28837</b>	-	-	-
35	2	9.0 - 10.9	336.0	<b>28838</b>	<b>28839</b>	<b>28840</b>	<b>28841</b>	<b>28842</b>	-	-	-
50	1	10.6 - 12.8	480.0	<b>28843</b>	<b>28844</b>	<b>28845</b>	<b>28846</b>	<b>28847</b>	-	-	-
70	2/0	12.1 - 14.6	672.0	<b>28848</b>	<b>28849</b>	<b>28850</b>	<b>28851</b>	<b>28852</b>	-	-	-
95	3/0	14.1 - 17.1	912.0	<b>28853</b>	<b>28854</b>	<b>28855</b>	<b>28856</b>	<b>28857</b>	-	-	-
120	4/0	15.6 - 18.8	1152.0	<b>28858</b>	<b>28859</b>	<b>28860</b>	<b>28861</b>	<b>28862</b>	-	-	-
150	300 kcmil	17.3 - 20.9	1440.0	<b>28863</b>	<b>28864</b>	<b>28865</b>	<b>28866</b>	<b>28867</b>	-	-	-
185	350 kcmil	19.3 - 23.3	1776.0	<b>28868</b>	<b>28869</b>	<b>28870</b>	<b>28871</b>	<b>28872</b>	-	-	-
240	500 kcmil	22.0 - 26.6	2304.0	<b>28873</b>	<b>28874</b>	<b>28875</b>	<b>28876</b>	<b>28877</b>	-	-	-

### Drum (with varying capacity)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	purple (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
16	6	6.4 - 7.8	154.0	<b>28185</b>	<b>28186</b>	<b>28187</b>	<b>28188</b>	<b>28189</b>	<b>28190</b>	<b>28191</b>	<b>28192</b>
25	4	8.1 - 9.7	240.0	<b>28193</b>	<b>28194</b>	<b>28195</b>	<b>28196</b>	<b>28197</b>	-	-	-
35	2	9.0 - 10.9	336.0	<b>28198</b>	<b>28199</b>	<b>28200</b>	<b>28201</b>	<b>28202</b>	-	-	-
50	1	10.6 - 12.8	480.0	<b>28203</b>	<b>28204</b>	<b>28205</b>	<b>28206</b>	<b>28207</b>	-	-	-
70	2/0	12.1 - 14.6	672.0	<b>28208</b>	<b>28209</b>	<b>28210</b>	<b>28211</b>	<b>28212</b>	-	-	-
95	3/0	14.1 - 17.1	912.0	<b>28213</b>	<b>28214</b>	<b>28215</b>	<b>28216</b>	<b>28217</b>	-	-	-
120	4/0	15.6 - 18.8	1152.0	<b>28218</b>	<b>28219</b>	<b>28220</b>	<b>28221</b>	<b>28222</b>	-	-	-

# H07V-R

## PVC single core, stranded



### Drum (with varying capacity)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	purple (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
150	300 kcmil	17.3 - 20.9	1440.0	<b>28223</b>	<b>28224</b>	<b>28225</b>	<b>28226</b>	<b>28227</b>	-	-	-
185	350 kcmil	19.3 - 23.3	1776.0	<b>28228</b>	<b>28229</b>	<b>28230</b>	<b>28231</b>	<b>28232</b>	-	-	-
240	500 kcmil	22.0 - 26.6	2304.0	<b>28233</b>	<b>28234</b>	<b>28235</b>	<b>28236</b>	<b>28237</b>	-	-	-

# H05V-U

PVC single core, solid



## TECHNICAL DATA

PVC single core acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible +5°C to +70°C fixed -30°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage</b>	2000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

For installation in electrical conduits, on and under plaster, but only for signal and control circuits. Suitable for protected and fixed installation in appliances and luminaires.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Ring in a box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	purple (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.5	20	1.9 - 2.3	4.8	<b>28761</b>	<b>28762</b>	<b>28763</b>	<b>28764</b>	<b>28765</b>	<b>28766</b>	<b>28767</b>	<b>28768</b>
0.75	19	2.1 - 2.5	7.2	<b>28769</b>	<b>28770</b>	<b>28771</b>	<b>28772</b>	<b>28773</b>	<b>28774</b>	<b>28775</b>	<b>28776</b>
1	18	2.2 - 2.7	9.6	<b>28777</b>	<b>28778</b>	<b>28779</b>	<b>28780</b>	<b>28781</b>	<b>28782</b>	<b>28783</b>	<b>28784</b>

### Coil (with varying capacity)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	purple (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.5	20	1.9 - 2.3	4.8	<b>26937</b>	<b>26938</b>	<b>26939</b>	<b>26940</b>	<b>26941</b>	<b>26942</b>	<b>26943</b>	<b>26944</b>
0.75	19	2.1 - 2.5	7.2	<b>26945</b>	<b>26946</b>	<b>26947</b>	<b>26948</b>	<b>26949</b>	<b>26950</b>	<b>26951</b>	<b>26952</b>
1	18	2.2 - 2.7	9.6	<b>26953</b>	<b>26954</b>	<b>26955</b>	<b>26956</b>	<b>26957</b>	<b>26958</b>	<b>26959</b>	<b>26960</b>

# H07V-U

PVC single core, solid



## TECHNICAL DATA

PVC single core acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible +5°C to +70°C fixed -30°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 450/750 V
<b>Test voltage</b>	2500 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
HAR  
EAC

## APPLICATION

Installation in electrical conduits, on or under plaster or similar enclosed systems. Suitable for protected and fixed installation in lighting systems or switching and control devices up to and including 1000 V AC voltage or up to 750 V DC voltage against earth. Not suitable for direct laying in cable ladders and cable trays, except as a potential equalization cable.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
1.5	16	2.6 - 3.2	14.4	<b>28785</b>	<b>28786</b>	<b>28787</b>	<b>28788</b>	<b>28789</b>	<b>28790</b>	<b>28791</b>	<b>28792</b>
2.5	14	3.2 - 3.9	24.0	<b>28793</b>	<b>28794</b>	<b>28795</b>	<b>28796</b>	<b>28797</b>	<b>28798</b>	<b>28799</b>	<b>28800</b>
4	12	3.6 - 4.4	38.0	<b>28801</b>	<b>28802</b>	<b>28803</b>	<b>28804</b>	<b>28805</b>	<b>28806</b>	<b>28807</b>	<b>28808</b>
6	10	4.1 - 5.0	58.0	<b>28809</b>	<b>28810</b>	<b>28811</b>	<b>28812</b>	<b>28813</b>	<b>28814</b>	<b>28815</b>	<b>28816</b>

### Coil (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
1.5	16	2.6 - 3.2	14.4	<b>28980</b>	<b>28983</b>	<b>28929</b>	<b>28981</b>	<b>28982</b>	<b>29853</b>	<b>29854</b>	<b>29930</b>
2.5	14	3.2 - 3.9	24.0	<b>29849</b>	<b>29852</b>	<b>28984</b>	<b>29850</b>	<b>29851</b>	<b>29931</b>	<b>29932</b>	<b>29934</b>
4	12	3.6 - 4.4	38.0	<b>29935</b>	<b>29936</b>	<b>29937</b>	<b>29938</b>	<b>29939</b>	<b>29940</b>	<b>29941</b>	<b>29969</b>
6	10	4.1 - 5.0	58.0	<b>29878</b>	<b>29879</b>	<b>29880</b>	<b>29881</b>	<b>29882</b>	<b>29883</b>	<b>29884</b>	<b>29885</b>
10	8	5.3 - 6.4	96.0	<b>28817</b>	<b>28818</b>	<b>28819</b>	<b>28820</b>	<b>28821</b>	<b>28822</b>	<b>28823</b>	<b>28824</b>

# H07V-U

PVC single core, solid



## Drum

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9003)	grey (RAL 7001)	violet (RAL 4005)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
1.5	16	2.6 - 3.2	14.4	<b>28145</b>	<b>28146</b>	<b>28147</b>	<b>28148</b>	<b>28149</b>	<b>28150</b>	<b>28151</b>	<b>28152</b>
2.5	14	3.2 - 3.9	24.0	<b>28153</b>	<b>28154</b>	<b>28155</b>	<b>28156</b>	<b>28157</b>	<b>28158</b>	<b>28159</b>	<b>28160</b>
4	12	3.6 - 4.4	38.0	<b>28161</b>	<b>28162</b>	<b>28163</b>	<b>28164</b>	<b>28165</b>	<b>28166</b>	<b>28167</b>	<b>28168</b>
6	10	4.1 - 5.0	58.0	<b>28169</b>	<b>28170</b>	<b>28171</b>	<b>28172</b>	<b>28173</b>	<b>28174</b>	<b>28175</b>	<b>28176</b>
10	8	5.3 - 6.4	96.0	<b>28177</b>	<b>28178</b>	<b>28179</b>	<b>28180</b>	<b>28181</b>	<b>28182</b>	<b>28183</b>	<b>28184</b>

# H05Z-K

halogen-free single core, finely stranded, bare wire



## TECHNICAL DATA

Single core acc. to DIN VDE 0285-525-3-41 / DIN EN 50525-3-41

Temperature range flexible -5°C to +90°C  
fixed -40°C to +90°C

Permissible operating temperature of the conductor +90°C

Nominal voltage AC U<sub>0</sub>/U 300/500 V

Test voltage 2000 V

Minimum bending radius fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Foil wrapping around conductor permissible
- Core insulation: cross-linked polyolefin acc. to DIN VDE 0207-363-5 / DIN EN 50363-5 (compound type EI5)
- Core identification: see table

## PROPERTIES

- resistant to: ozone
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0285-525-1 / DIN EN 50525-1 appendix B
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

For applications that require a low development of smoke and corrosive gases in case of fire. Used for internal wiring of devices and for connecting luminaires. For installation in electrical pipes on and under plaster; but only for signal and control circuits.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## H05Z-K

Cross-sec. mm <sup>2</sup>	Outer-Ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.5	2.1 - 2.6	20	4.8	9.0	52872	52873	52874	52875	52876	52877	52878	52879
0.75	2.2 - 2.8	19	7.2	12.4	52881	52882	52883	52884	52885	52886	52887	52888
1	2.4 - 2.9	18	9.6	15.0	52890	52891	52892	52893	52894	52895	52896	52897

Cross-sec. mm <sup>2</sup>	Outer-Ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	yellow	orange	green	dark blue	pink	ultramarine blue	blue-white	brown-white
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.5	2.1 - 2.6	20	4.8	9.0	52880	52946	52645	52945	52162	53071	51393	51394
0.75	2.2 - 2.8	19	7.2	12.4	52889	52948	52646	52947	52163	53072	51397	51398
1	2.4 - 2.9	18	9.6	15.0	52898	52950	52647	52949	52164	53073	51401	51402

# H05Z-K

halogen-free single core, finely stranded, bare wire



Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	dark blue-white	red-white
					Part no.	Part no.
0.5	2.1 - 2.6	20	4.8	9.0	<b>51395</b>	<b>51392</b>
0.75	2.2 - 2.8	19	7.2	12.4	<b>51399</b>	<b>51396</b>
1	2.4 - 2.9	18	9.6	15.0	<b>51403</b>	<b>51400</b>

## H05Z-K Barrel

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	2.1 - 2.6	20	4.8	9.0	<b>52809</b>	<b>52810</b>	<b>52811</b>	<b>52812</b>	<b>52813</b>	<b>52814</b>	<b>52815</b>	<b>52816</b>
0.75	2.2 - 2.8	19	7.2	12.4	<b>52821</b>	<b>52822</b>	<b>52823</b>	<b>52824</b>	<b>52825</b>	<b>52826</b>	<b>52827</b>	<b>52828</b>
1	2.4 - 2.9	18	9.6	15.0	<b>52833</b>	<b>52834</b>	<b>52835</b>	<b>52836</b>	<b>52837</b>	<b>52838</b>	<b>52839</b>	<b>52840</b>

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	yellow	orange	green	dark blue	dark blue-white
					Part no.	Part no.	Part no.	Part no.	Part no.
0.5	2.1 - 2.6	20	4.8	9.0	<b>52155</b>	<b>52819</b>	<b>52657</b>	<b>52817</b>	<b>11008907</b>
0.75	2.2 - 2.8	19	7.2	12.4	<b>52156</b>	<b>52831</b>	<b>52658</b>	<b>52829</b>	<b>11008908</b>
1	2.4 - 2.9	18	9.6	15.0	<b>52157</b>	<b>52843</b>	<b>52659</b>	<b>52841</b>	<b>11008909</b>



# H07Z-K / 07Z-K

halogen-free single core, finely stranded, bare wire



## TECHNICAL DATA

Single core, H07Z-K acc. to DIN VDE 0285-525-3-41 / DIN EN 50525-3-41; 07Z-K in alignment with DIN VDE 0285-525-3-41 / DIN EN 50525-3-41

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 450/750 V
<b>Test voltage</b>	2500 V
<b>Minimum bending radius</b>	fixed <8 mm: 4x Outer-ø 8-12 mm: 5x Outer-ø >12 mm: 6x Outer-ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Foil wrapping around conductor permissible
- Core insulation: cross-linked polyolefin acc. to DIN VDE 0207-363-5 / DIN EN 50363-5 (compound type E15)
- Core identification: see table

## PROPERTIES

- resistant to: ozone
- halogen-free

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0285-525-1 / DIN EN 50525-1 appendix B
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

For applications that require a low development of smoke and corrosive gases in case of fire. Installation in pipes on and under plaster or in similar enclosed systems. Suitable for protected, permanent laying in lighting installations or switch and control devices up to 1000V AC or 750V DC against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- Approved core colours: black, green-yellow, blue, brown, red, white, grey, violet, orange, pink

## H07Z-K

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
1.5	2.8 - 3.5	16	14.4	24.0	51768	51769	51770	51771	51772	51773	51774	51775
2.5	3.4 - 4.3	14	24.0	35.0	51777	51778	51779	51780	51781	51782	51783	51784
4	3.9 - 4.9	12	38.0	51.0	51786	51787	51788	51789	51790	51791	51792	51793
6	4.4 - 5.5	10	58.0	71.0	51795	51796	51797	51798	51799	51800	51801	51802
10	5.7 - 7.1	8	96.0	118.0	51804	51805	51806	51807	51808	51809	51810	51811
16	6.7 - 8.4	6	154.0	180.0	51813	51814	51815	51816	51817	51818	51819	51820
25	8.4 - 10.6	4	240.0	278.0	51822	51823	51824	51825	51826	51827	51828	51829
35	9.7 - 12.1	2	336.0	375.0	51831	51832	51833	51834	51835	51836	51837	51838
50	11.5 - 14.4	1	480.0	560.0	51840	51841	51842	51843	51844	51845	51846	51847
70	13.2 - 16.6	2/0	672.0	780.0	51849	51850	51851	51852	51853	51854	51855	51856
95	15.1 - 18.8	3/0	912.0	952.0	51858	51859	51860	51861	51862	51863	51864	51865
120	16.7 - 20.9	4/0	1152.0	1200.0	51867	51868	51869	51870	51871	51872	51873	51874
150	18.6 - 23.3	300 kcmil	1440.0	1505.0	51876	51877	51878	51879	51880	51881	51882	51883
185	20.6 - 25.8	350 kcmil	1776.0	1845.0	51885	51886	51887	51888	51889	51890	51891	51892
240	23.5 - 29.4	500 kcmil	2304.0	2400.0	51894	51895	51896	51897	51898	51899	51900	51901

# H07Z-K / 07Z-K

halogen-free single core, finely stranded, bare wire



Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	orange	dark blue	pink	ultramarine blue
					Part no.	Part no.	Part no.	Part no.
1.5	2.8 - 3.5	16	14.4	24.0	52952	52951	52165	53074
2.5	3.4 - 4.3	14	24.0	35.0	52954	52953	52166	53075
4	3.9 - 4.9	12	38.0	51.0	52956	52955	52167	53076
6	4.4 - 5.5	10	58.0	71.0	52958	52957	52168	53077
10	5.7 - 7.1	8	96.0	118.0	52960	52959	52169	53078
16	6.7 - 8.4	6	154.0	180.0	52962	52961	52170	53079
25	8.4 - 10.6	4	240.0	278.0	52964	52963	52171	53080
35	9.7 - 12.1	2	336.0	375.0	52966	52965	52172	53081
50	11.5 - 14.4	1	480.0	560.0	52968	52967	52173	53082
70	13.2 - 16.6	2/0	672.0	780.0	52970	52969	-	53083
95	15.1 - 18.8	3/0	912.0	952.0	52972	52971	-	53084
120	16.7 - 20.9	4/0	1152.0	1200.0	52974	52973	-	53085
150	18.6 - 23.3	300 kcmil	1440.0	1505.0	52976	52975	-	53086
185	20.6 - 25.8	350 kcmil	1776.0	1845.0	52978	52977	-	53087
240	23.5 - 29.4	500 kcmil	2304.0	2400.0	52980	52979	-	53088

## 07Z-K

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	yellow	green	blue-white	brown-white	dark blue-white	red-white
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	2.8 - 3.5	16	14.4	24.0	51776	52648	51405	51406	51407	51404
2.5	3.4 - 4.3	14	24.0	35.0	51785	52649	51409	51410	51411	51408
4	3.9 - 4.9	12	38.0	51.0	51794	52650	51413	51414	51415	51412
6	4.4 - 5.5	10	58.0	71.0	51803	52651	51417	51418	50899	51416
10	5.7 - 7.1	8	96.0	118.0	51812	52652	-	-	-	-
16	6.7 - 8.4	6	154.0	180.0	51821	52653	-	-	-	-
25	8.4 - 10.6	4	240.0	278.0	51830	52654	-	-	-	-
35	9.7 - 12.1	2	336.0	375.0	51839	52655	-	-	-	-
50	11.5 - 14.4	1	480.0	560.0	51848	52656	-	-	-	-
70	13.2 - 16.6	2/0	672.0	780.0	51857	-	-	-	-	-
95	15.1 - 18.8	3/0	912.0	952.0	51866	-	-	-	-	-
120	16.7 - 20.9	4/0	1152.0	1200.0	51875	-	-	-	-	-
150	18.6 - 23.3	300 kcmil	1440.0	1505.0	51884	-	-	-	-	-
185	20.6 - 25.8	350 kcmil	1776.0	1845.0	51893	-	-	-	-	-
240	23.5 - 29.4	500 kcmil	2304.0	2400.0	51902	-	-	-	-	-

## H07Z-K Barrel

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	2.8 - 3.5	16	14.4	24.0	52845	52846	52847	52848	52849	52850	52851	52852
2.5	3.4 - 4.3	14	24.0	35.0	52857	52858	52859	52860	52861	52862	52863	52864
4	3.9 - 4.9	12	38.0	51.0	52135	52136	52137	52138	52139	52140	52141	52142
6	4.4 - 5.5	10	58.0	71.0	52145	52146	52147	52148	52149	52150	52151	52152

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	orange	dark blue
					Part no.	Part no.
1.5	2.8 - 3.5	16	14.4	24.0	52855	52853
2.5	3.4 - 4.3	14	24.0	35.0	52867	52865
4	3.9 - 4.9	12	38.0	51.0	52144	52143
6	4.4 - 5.5	10	58.0	71.0	52154	52153

# H07Z-K / 07Z-K

halogen-free single core, finely stranded, bare wire



## 07Z-K Barrel

Cross-sec. mm <sup>2</sup>	Outer-ø min - max mm	AWG, approx.	Cu factor per km	Weight kg/km, approx.	yellow	green	dark blue-white
					Part no.	Part no.	Part no.
1.5	2.8 - 3.5	16	14.4	24.0	<b>52158</b>	<b>52660</b>	<b>11008910</b>
2.5	3.4 - 4.3	14	24.0	35.0	<b>52159</b>	<b>52661</b>	<b>11008911</b>
4	3.9 - 4.9	12	38.0	51.0	<b>52160</b>	<b>52662</b>	<b>11008912</b>
6	4.4 - 5.5	10	58.0	71.0	<b>52161</b>	<b>52663</b>	<b>11008913</b>

# H01N2-D

Arc welding cable, 100 V, extra finely stranded wire with regular flexibility



HELUKABEL® H01N2-D 1x50 <HAR> CE

## TECHNICAL DATA

Arc welding cable acc. to DIN VDE 0285-525-2-81 / DIN EN 50525-2-81

Temperature range	flexible -20°C to +85°C fixed -35°C to +85°C
Permissible operating temperature of the conductor	+85°C
Nominal voltage	AC U <sub>0</sub> /U 100/100 V
Test voltage	1000 V
Minimum bending radius	flexible 12x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure: see table
- Separation layer over the conductor
- Cladding: cross-linked elastomer (rubber compound EM5) acc. to DIN VDE 0207-363-2-2 / DIN EN 50363-2-2
- Colour: black

## PROPERTIES

- resistant to: oil, ozone, oxygen, petrol, welding light, inert gas

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
HAR  
EAC

## APPLICATION

The cable is intended for connections between the welding energy source and the electrode holder and the workpiece. Suitable for use in dry and damp rooms; temporary use outdoors. For use in automotive and shipbuilding industry, in transport, conveyor and assembly line systems, machine tools and automatic welding machines.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Wire structure	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
31001	1 x 10	approx. 320 x 0.2	8	7.7 - 9.7	96.0	135.0
31002	1 x 16	approx. 512 x 0.2	6	8.8 - 11.0	154.0	205.0
31003	1 x 25	approx. 800 x 0.2	4	10.1 - 12.7	240.0	302.0
31004	1 x 35	approx. 1120 x 0.2	2	11.4 - 14.2	336.0	420.0
31005	1 x 50	approx. 1600 x 0.2	1	13.2 - 16.5	480.0	586.0
31006	1 x 70	approx. 2240 x 0.2	2/0	15.3 - 19.2	672.0	798.0
31007	1 x 95	approx. 3024 x 0.2	3/0	17.1 - 21.4	912.0	1015.0
31008	1 x 120	approx. 614 x 0.5	4/0	19.2 - 24.0	1152.0	1310.0
31030	1 x 150	approx. 765 x 0.5	300 kcmil	21.2 - 26.4	1440.0	1620.0
31031	1 x 185	approx. 944 x 0.5	350 kcmil	23.1 - 28.9	1776.0	1916.0
31009	1 x 240	approx. 1225 x 0.5	500 kcmil	25.8 - 32.1	2304.0	2540.0

# H01N2-E



Arc welding cable, 100 V, extra finely stranded wire with high flexibility



HELUKABEL® H01N2-E 1x50 <HAR> CE

## TECHNICAL DATA

Arc welding cable acc. to DIN VDE 0285-525-2-81 / DIN EN 50525-2-81

Temperature range	flexible -20°C to +85°C fixed -35°C to +85°C
Permissible operating temperature of the conductor	+85°C
Nominal voltage	AC U <sub>0</sub> /U 100/100 V
Test voltage	1000 V
Minimum bending radius	flexible 10x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure: see table
- Separation layer over the conductor
- Cladding: cross-linked elastomer (rubber compound EM5) acc. to DIN VDE 0207-363-2-2 / DIN EN 50363-2-2
- Colour: black

## PROPERTIES

- resistant to: oil, ozone, oxygen, petrol, welding light, inert gas

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
HAR  
EAC

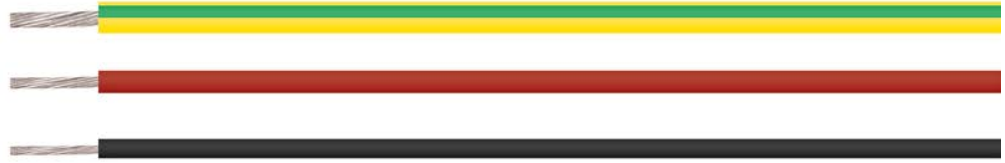
## APPLICATION

The cable is intended for connections between the welding energy source and the electrode holder and the workpiece. Suitable for use in dry and damp rooms; temporary use outdoors. For use in automotive and shipbuilding industry, in transport, conveyor and assembly line systems, machine tools and automatic welding machines.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Wire structure	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
31032	1 x 10	approx. 566 x 0.15	8	6.2 - 7.8	96.0	119.0
31033	1 x 16	approx. 903 x 0.15	6	7.3 - 9.1	154.0	181.0
31034	1 x 25	approx. 1407 x 0.15	4	8.6 - 10.8	240.0	270.0
31035	1 x 35	approx. 1974 x 0.15	2	9.8 - 12.3	336.0	363.0
31036	1 x 50	approx. 2830 x 0.15	1	11.9 - 14.8	480.0	528.0
31037	1 x 70	approx. 3952 x 0.15	2/0	13.6 - 17.0	672.0	716.0
31038	1 x 95	approx. 5370 x 0.15	3/0	15.6 - 19.5	912.0	1012.0
31039	1 x 120	approx. 3819 x 0.2	4/0	17.2 - 21.6	1152.0	1248.0
31019	1 x 150	approx. 4788 x 0.2	300 kcmil	18.8 - 23.5	1440.0	1520.0
31020	1 x 185	approx. 5852 x 0.2	350 kcmil	20.4 - 25.5	1776.0	1840.0



## TECHNICAL DATA

Silicone single core in alignment with DIN VDE 0250-1, DIN VDE 0250-502

**Temperature range** flexible -25°C to +180°C  
fixed -60°C to +180°C

**Permissible operating temperature of the conductor**  
+180°C

**Nominal voltage** AC U<sub>0</sub>/U 300/500 V

**Test voltage** 2000 V

**Breakdown voltage** 5000 V

**Minimum bending radius** flexible 15x Outer-Ø  
fixed 6x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, 0.5 - 185 mm<sup>2</sup>: acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:  
0.25 mm<sup>2</sup>: approx. 8 x 0.2 mm
- Core insulation: Silicone
- Core identification: see table

## ■ PROPERTIES

- resistant to: ozone, oxygen, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater
- halogen-free
- high flash point

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

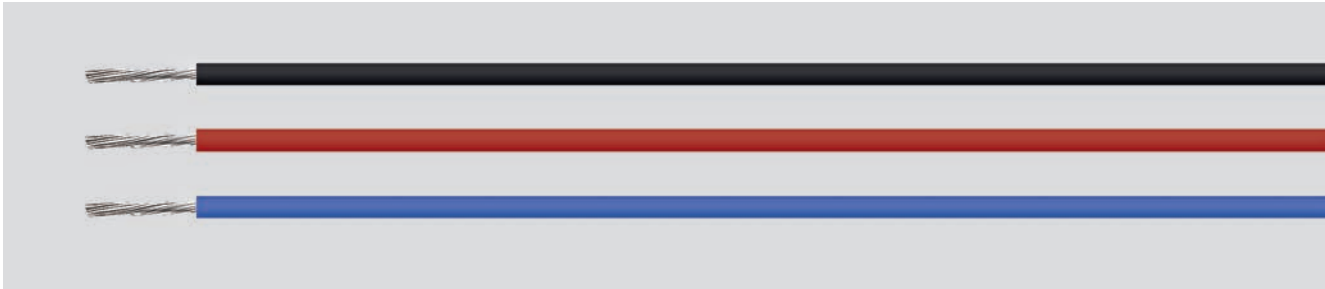
Temperature resistant silicone single core for use in iron, steel and rolling mills, foundries, cement, glass and ceramic factories as well as in aircraft construction and ship building.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.25	24	1.6	2.4	5.5	<b>23201</b>	<b>23213</b>	<b>23203</b>	<b>23204</b>	<b>23202</b>	<b>23205</b>	<b>23206</b>	<b>23207</b>
0.5	20	2.1	4.8	8.6	<b>23301</b>	<b>23313</b>	<b>23303</b>	<b>23304</b>	<b>23302</b>	<b>23305</b>	<b>23306</b>	<b>23307</b>
0.75	19	2.4	7.2	11.8	<b>23401</b>	<b>23413</b>	<b>23403</b>	<b>23404</b>	<b>23402</b>	<b>23405</b>	<b>23406</b>	<b>23407</b>
1	18	2.5	9.6	13.5	<b>23501</b>	<b>23513</b>	<b>23503</b>	<b>23504</b>	<b>23502</b>	<b>23505</b>	<b>23506</b>	<b>23507</b>
1.5	16	2.8	14.4	18.5	<b>23601</b>	<b>23613</b>	<b>23603</b>	<b>23604</b>	<b>23602</b>	<b>23605</b>	<b>23606</b>	<b>23607</b>
2.5	14	3.4	24.0	30.0	<b>23701</b>	<b>23713</b>	<b>23703</b>	<b>23704</b>	<b>23702</b>	<b>23705</b>	<b>23706</b>	<b>23707</b>
4	12	4.2	38.0	47.3	<b>23801</b>	<b>23813</b>	<b>23803</b>	<b>23804</b>	<b>23802</b>	<b>23805</b>	<b>23806</b>	<b>23807</b>
6	10	5.0	58.0	71.1	<b>23901</b>	<b>23913</b>	<b>23903</b>	<b>23904</b>	<b>23902</b>	<b>23905</b>	<b>23906</b>	<b>23907</b>
10	8	6.6	96.0	119.4	<b>24601</b>	<b>24613</b>	<b>24603</b>	<b>24604</b>	<b>24602</b>	<b>24605</b>	<b>24606</b>	<b>24607</b>
16	6	7.4	154.0	187.7	<b>24701</b>	<b>24713</b>	<b>24703</b>	<b>24704</b>	<b>24702</b>	<b>24705</b>	<b>24706</b>	<b>24707</b>
25	4	9.2	240.0	289.6	<b>24801</b>	<b>24813</b>	<b>24803</b>	<b>24804</b>	<b>24802</b>	<b>24805</b>	<b>24806</b>	<b>24807</b>
35	2	10.3	336.0	398.0	<b>23953</b>	<b>451113</b>	<b>451103</b>	<b>451104</b>	<b>451102</b>	<b>451105</b>	<b>451106</b>	<b>451107</b>
50	1	12.0	480.0	560.0	<b>23954</b>	<b>451213</b>	<b>451203</b>	<b>451204</b>	<b>451202</b>	<b>451205</b>	<b>451206</b>	<b>451207</b>
70	2/0	13.8	672.0	766.0	<b>23955</b>	<b>451313</b>	<b>451303</b>	<b>451304</b>	<b>451302</b>	<b>451305</b>	<b>451306</b>	<b>451307</b>
95	3/0	16.2	912.0	1032.0	<b>23956</b>	<b>451413</b>	<b>451403</b>	<b>451404</b>	<b>451402</b>	<b>451405</b>	<b>451406</b>	<b>451407</b>
120	4/0	17.6	1152.0	1285.0	<b>23957</b>	<b>451513</b>	<b>451503</b>	<b>451504</b>	<b>451502</b>	<b>451505</b>	<b>451506</b>	<b>451507</b>
150	300 kcmil	19.6	1440.0	1564.0	<b>23958</b>	<b>451613</b>	<b>451603</b>	<b>451604</b>	<b>451602</b>	<b>451605</b>	<b>451606</b>	<b>451607</b>
185	350 kcmil	22.4	1776.0	1859.0	<b>23959</b>	<b>451713</b>	<b>451703</b>	<b>451704</b>	<b>451702</b>	<b>451705</b>	<b>451706</b>	<b>451707</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	orange	green	pink	beige	yellow	transparent
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.25	24	1.6	2.4	5.5	<b>23209</b>	<b>23200</b>	<b>23211</b>	<b>23212</b>	<b>23208</b>	<b>23210</b>
0.5	20	2.1	4.8	8.6	<b>23309</b>	<b>23300</b>	<b>23311</b>	<b>23312</b>	<b>23308</b>	<b>23310</b>
0.75	19	2.4	7.2	11.8	<b>23409</b>	<b>23400</b>	<b>23411</b>	<b>23412</b>	<b>23408</b>	<b>23410</b>
1	18	2.5	9.6	13.5	<b>23509</b>	<b>23500</b>	<b>23511</b>	<b>23512</b>	<b>23508</b>	<b>23510</b>
1.5	16	2.8	14.4	18.5	<b>23609</b>	<b>23600</b>	<b>23611</b>	<b>23612</b>	<b>23608</b>	<b>23610</b>
2.5	14	3.4	24.0	30.0	<b>23709</b>	<b>23700</b>	<b>23711</b>	<b>23712</b>	<b>23708</b>	<b>23710</b>
4	12	4.2	38.0	47.3	<b>23809</b>	<b>23800</b>	<b>23811</b>	<b>23812</b>	<b>23808</b>	<b>23810</b>
6	10	5.0	58.0	71.1	<b>23909</b>	<b>23900</b>	<b>23911</b>	<b>23912</b>	<b>23908</b>	<b>23910</b>
10	8	6.6	96.0	119.4	<b>24609</b>	<b>24600</b>	<b>24611</b>	<b>24612</b>	<b>24608</b>	<b>24610</b>
16	6	7.4	154.0	187.7	<b>24709</b>	<b>24700</b>	<b>24711</b>	<b>24712</b>	<b>24708</b>	<b>24710</b>
25	4	9.2	240.0	289.6	<b>24809</b>	<b>24800</b>	<b>24811</b>	<b>24812</b>	<b>24808</b>	<b>24810</b>
35	2	10.3	336.0	398.0	<b>451109</b>	<b>451100</b>	<b>451111</b>	<b>451112</b>	<b>451108</b>	<b>451110</b>
50	1	12.0	480.0	560.0	<b>451209</b>	<b>451200</b>	<b>451211</b>	<b>451212</b>	<b>451208</b>	<b>451210</b>
70	2/0	13.8	672.0	766.0	<b>451309</b>	<b>451300</b>	<b>451311</b>	<b>451312</b>	<b>451308</b>	<b>451310</b>
95	3/0	16.2	912.0	1032.0	<b>451409</b>	<b>451400</b>	<b>451411</b>	<b>451412</b>	<b>451408</b>	<b>451410</b>
120	4/0	17.6	1152.0	1285.0	<b>451509</b>	<b>451500</b>	<b>451511</b>	<b>451512</b>	<b>451508</b>	<b>451510</b>
150	300 kcmil	19.6	1440.0	1564.0	<b>451609</b>	<b>451600</b>	<b>451611</b>	<b>451612</b>	<b>451608</b>	<b>451610</b>
185	350 kcmil	22.4	1776.0	1859.0	<b>451709</b>	<b>451700</b>	<b>451711</b>	<b>451712</b>	<b>451708</b>	<b>451710</b>



### Technical data

- Silicone single core with higher heat-resistance range adapted to DIN VDE 0250-1 and -502
- **Temperature range**  
flexing -25°C to +180°C  
fixed installation -60°C to +180°C
- Permissible conductor **operating temperature** +180°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Breakdown voltage**  
min. 5000 V
- **Minimum bending radius**  
flexing 12,5x outer Ø  
fixed installation 5x outer Ø

### Cable structure

- Tinned copper conductor, extra fine wire, from 0,5 mm<sup>2</sup> acc. to DIN VDE 0295 cl.6 / IEC 60228 cl.6 (single wire Ø 0,07 mm)
- Conductor construction:  
0,25 mm<sup>2</sup> = app. 65x0,07 mm
- Core insulation of silicone

### Tests

- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### Properties

- **Resistant to**  
high molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, lake water, oxygen, ozone
- High flash points
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicone are reduced by the enclosed air at temperatures exceeding 90°C.

### Application

Special single cores for use in high, resp. low temperature areas. They are used mainly in the steel producing industries, in aviation industries as well as in ship building, cement, glas and ceramic factories.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

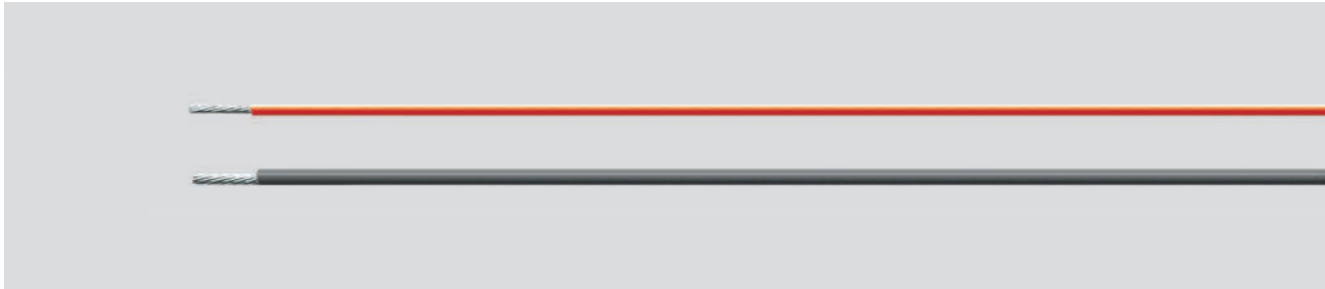
Cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG	BEIGE	TRANS	2-col.
Part no. 0,25	1,8	2,4	6,0	45101	45103	45104	45102	45105	45106	45107	45108	45111	45100	45109	45112	45110	45113
Part no. 0,5	2,2	4,8	10,0	45201	45203	45204	45202	45205	45206	45207	45208	45211	45200	45209	45212	45210	45213
Part no. 0,75	2,5	7,2	13,0	45301	45303	45304	45302	45305	45306	45307	45308	45311	45300	45309	45312	45310	45313
Part no. 1	2,6	9,6	15,0	45401	45403	45404	45402	45405	45406	45407	45408	45411	45400	45409	45412	45410	45413
Part no. 1,5	2,9	14,4	19,0	45501	45503	45504	45502	45505	45506	45507	45508	45511	45500	45509	45512	45510	45513
Part no. 2,5	3,5	24,0	32,0	45601	45603	45604	45602	45605	45606	45607	45608	45611	45600	45609	45612	45610	45613
Part no. 4	4,4	38,0	50,0	45701	45703	45704	45702	45705	45706	45707	45708	45711	45700	45709	45712	45710	45713
Part no. 6	5,2	58,0	73,0	45801	45803	45804	45802	45805	45806	45807	45808	45811	45800	45809	45812	45810	45813
Part no. 10	6,8	96,0	125,0	45901	45903	45904	45902	45905	45906	45907	45908	45911	45900	45909	45912	45910	45913

Dimensions and specifications may be changed without prior notice. (RK01)



# HELUFLO<sup>®</sup>-FEP-6Y

Single core, 600 V



## Technical data

- FEP single core (Fluorethylenpropylene)
- **Temperature range**  
fixed installation  
tinned copper -100°C to +180°C  
silver pl. copper -100°C to +200°C
- **Nominal voltage**  
600 V
- **Test voltage** (Spark test)  
2500 V
- **Minimum bending radius**  
flexing 10x Outer-Ø  
fixed installation 4x Outer-Ø

## Cable structure

- Copper wire tinned, silver plated
- Make-up fine wire, from 0,5 mm<sup>2</sup> acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of FEP-HELUFLO<sup>®</sup>

## Note

- Please add the appropriate item number when ordering using the following indicator:  
1 = black  
2 = red  
3 = blue  
4 = brown  
5 = white  
6 = transparent  
7 = 2-colour  
8 = other colours
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Properties

- Not flammable
- Resistant to micro-cultures
- Do not permit any fungus-formation
- Absolute ozone resistant
- Absolute weather resistant
- Water absorption <0,01%
- Minimal water vapour permeability (approx. 0,18 mg/cm<sup>2</sup> in 24 hours)
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to  
DIN VDE 0482-332-1-2 /  
DIN EN 60332-1-2 / IEC 60332-1-2

## Application

HELUFLO<sup>®</sup> single cores are predominantly used for installing in control cabinets subjected to high thermal effects as well as in brickworks, heaters, kitchen fitments and measuring appliances as well as in the chemical industry. These single cores are non-flammable and resistant to acids, alkalis, solvents, oil and petrol.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

### Copper wire, tinned

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
2551x	1 x 0,14	1,0	1,4	2,6	26
2552x	1 x 0,25	1,1	2,4	4,1	24
2553x	1 x 0,5	1,4	4,8	8,0	20
2554x	1 x 0,75	1,5	7,2	9,7	18
2555x	1 x 1	1,8	9,6	12,7	17
2556x	1 x 1,5	2,2	14,4	17,9	16
2557x	1 x 2,5	2,6	24,0	26,4	14
2558x	1 x 4	3,2	38,0	43,1	12
2559x	1 x 6	3,9	58,0	65,9	10
2560x	1 x 10	5,1	96,0	115,0	8
2561x	1 x 16	6,7	154,0	175,0	6

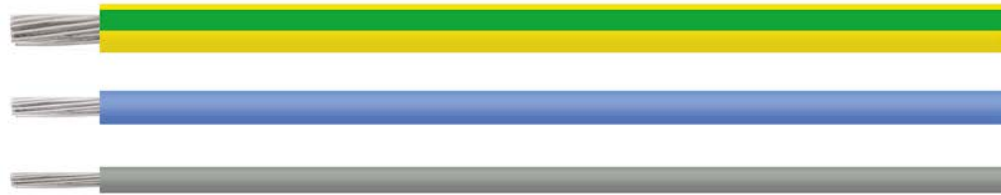
### Copper wire, silver plated

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Silv. weight kg / km	Weight app. kg / km	AWG-No.
2026x	1 x 0,14	1,0	1,35	0,09	2,6	26
2027x	1 x 0,25	1,1	2,4	0,13	4,1	24
2028x	1 x 0,5	1,4	4,8	0,17	8,0	20
2029x	1 x 0,75	1,5	7,2	0,20	9,7	18
2030x	1 x 1	1,8	9,6	0,26	12,7	17
2031x	1 x 1,5	2,2	14,4	0,35	17,9	16
2032x	1 x 2,5	2,6	24,0	0,70	26,4	14
2033x	1 x 4	3,2	38,0	1,20	43,1	12
2034x	1 x 6	3,9	58,0	1,70	65,9	10
2035x	1 x 10	5,1	96,0	2,80	115,0	8
2036x	1 x 16	6,7	154,0	4,80	175,0	6

Dimensions and specifications may be changed without prior notice. (RK01)

# HELUTHERM® 145

temperature-resistant, cross-linked, improved behaviour in case of fire



## TECHNICAL DATA

### Single core

<b>Temperature range</b>	flexible -35°C to +120°C fixed -55°C to +145°C
<b>Nominal voltage</b>	0.25 - 1 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 1.5 - 240 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V 1.5 - 240 mm <sup>2</sup> : fixed and protected installation AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage</b>	3500 V
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: see table

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant
- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- no fire propagation

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- protection against fire acc. to DIN EN 45545-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C
- Certifications:  
0.5 - 240 mm<sup>2</sup>: DNV GL

## ■ APPLICATION

Temperature resistant single core for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in industrial equipment as well as plant and machinery construction; suitable for laying in tubes on and under plaster, in closed installation ducts, as well as for traffic systems and outdoor applications. Not suitable for direct laying in cable ladders and cable trays, except as a potential equalization cable.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	purple (RAL 4005)
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.25	24	1.6	2.4	4.0	50999	50998	51070	51071	51072	51073	51074	51075
0.34	22	1.7	3.2	5.0	51167	51166	51168	51169	51170	51171	51172	51173
0.5	20	1.9	4.8	7.0	51281	51280	51282	51283	51284	51285	51286	51287
0.75	19	2.2	7.2	11.0	51295	51294	51296	51297	51298	51299	51300	51301
1	18	2.5	9.6	14.0	51309	51308	51310	51311	51312	51313	51314	51315
1.5	16	2.9	14.4	20.0	51323	51322	51324	51325	51326	51327	51328	51329
2.5	14	3.5	24.0	30.0	51337	51336	51338	51339	51340	51341	51342	51343
4	12	4.3	38.0	47.0	51351	51350	51352	51353	51354	51355	51356	51357
6	10	5.0	58.0	72.0	51365	51364	51366	51367	51368	51369	51370	51371
10	8	6.3	96.0	120.0	51379	51378	51380	51381	51382	51383	51384	51385
16	6	7.3	154.0	182.0	51420	51419	51421	51422	51423	51424	51425	51426
25	4	9.6	240.0	272.0	51434	51433	51435	51436	51437	51438	51439	51440
35	2	10.8	336.0	371.0	51448	51447	51449	51450	51451	51452	51453	51454
50	1	12.6	480.0	530.0	51462	51461	51463	51464	51465	51466	51467	51468
70	2/0	14.6	672.0	730.0	51476	51475	51477	51478	51479	51480	51481	51482
95	3/0	16.5	912.0	964.0	51490	51489	51491	51492	51493	51494	51495	51496
120	4/0	18.0	1152.0	1235.0	51504	51503	51505	51506	51507	51508	51509	51510

# HELUTHERM® 145

temperature-resistant, cross-linked, improved behaviour in case of fire



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	purple (RAL 4005)
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
150	300 kcmil	20.0	1440.0	1523.0	<b>51518</b>	<b>51517</b>	<b>51519</b>	<b>51520</b>	<b>51521</b>	<b>51522</b>	<b>51523</b>	<b>51524</b>
185	350 kcmil	22.2	1776.0	1850.0	<b>51532</b>	<b>51531</b>	<b>51533</b>	<b>51534</b>	<b>51535</b>	<b>51536</b>	<b>51537</b>	<b>51538</b>
240	500 kcmil	24.5	2304.0	2432.0	<b>51546</b>	<b>51545</b>	<b>51547</b>	<b>51548</b>	<b>51549</b>	<b>51550</b>	<b>51551</b>	<b>51552</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	yellow (RAL 1021)	orange (RAL 2003)	green (RAL 6018)	dark blue (RAL 5010)	beige (RAL 1001)
					Part no.	Part no.	Part no.	Part no.	Part no.
0.25	24	1.6	2.4	4.0	<b>51076</b>	<b>51077</b>	<b>51078</b>	<b>51079</b>	<b>51164</b>
0.34	22	1.7	3.2	5.0	<b>51174</b>	<b>51175</b>	<b>51176</b>	<b>51177</b>	<b>51178</b>
0.5	20	1.9	4.8	7.0	<b>51288</b>	<b>51289</b>	<b>51290</b>	<b>51291</b>	<b>51292</b>
0.75	19	2.2	7.2	11.0	<b>51302</b>	<b>51303</b>	<b>51304</b>	<b>51305</b>	<b>51306</b>
1	18	2.5	9.6	14.0	<b>51316</b>	<b>51317</b>	<b>51318</b>	<b>51319</b>	<b>51320</b>
1.5	16	2.9	14.4	20.0	<b>51330</b>	<b>51331</b>	<b>51332</b>	<b>51333</b>	<b>51334</b>
2.5	14	3.5	24.0	30.0	<b>51344</b>	<b>51345</b>	<b>51346</b>	<b>51347</b>	<b>51348</b>
4	12	4.3	38.0	47.0	<b>51358</b>	<b>51359</b>	<b>51360</b>	<b>51361</b>	<b>51362</b>
6	10	5.0	58.0	72.0	<b>51372</b>	<b>51373</b>	<b>51374</b>	<b>51375</b>	<b>51376</b>
10	8	6.3	96.0	120.0	<b>51386</b>	<b>51387</b>	<b>51388</b>	<b>51389</b>	<b>51390</b>
16	6	7.3	154.0	182.0	<b>51427</b>	<b>51428</b>	<b>51429</b>	<b>51430</b>	<b>51431</b>
25	4	9.6	240.0	272.0	<b>51441</b>	<b>51442</b>	<b>51443</b>	<b>51444</b>	<b>51445</b>
35	2	10.8	336.0	371.0	<b>51455</b>	<b>51456</b>	<b>51457</b>	<b>51458</b>	<b>51459</b>
50	1	12.6	480.0	530.0	<b>51469</b>	<b>51470</b>	<b>51471</b>	<b>51472</b>	<b>51473</b>
70	2/0	14.6	672.0	730.0	<b>51483</b>	<b>51484</b>	<b>51485</b>	<b>51486</b>	<b>51487</b>
95	3/0	16.5	912.0	964.0	<b>51497</b>	<b>51498</b>	<b>51499</b>	<b>51500</b>	<b>51501</b>
120	4/0	18.0	1152.0	1235.0	<b>51511</b>	<b>51512</b>	<b>51513</b>	<b>51514</b>	<b>51515</b>
150	300 kcmil	20.0	1440.0	1523.0	<b>51525</b>	<b>51526</b>	<b>51527</b>	<b>51528</b>	<b>51529</b>
185	350 kcmil	22.2	1776.0	1850.0	<b>51539</b>	<b>51540</b>	<b>51541</b>	<b>51542</b>	<b>51543</b>
240	500 kcmil	24.5	2304.0	2432.0	<b>51553</b>	<b>51554</b>	<b>51555</b>	<b>51556</b>	<b>51557</b>



## Technical data

- Spezial-silicon single core with higher heat-resistance range adapted to DIN VDE 0250 Teil 1 and part 502
- **Temperature range** -60°C to +180°C (for short time +220°C)
- **Temperature limit at the conductor** in operation +180°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 5000 V
- **Minimum bending radius** 15x core  $\varnothing$  (SiD only for permanent installation)
- **Radiation resistance** up to  $20 \times 10^6$  cJ/kg (up to 20 Mrad)

## Cable structure

### Type SiF/GL

- Tinned copper-conductor, from 0,5 mm<sup>2</sup> to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction: 0,25 mm<sup>2</sup> = 14x0,15 mm
- Core insulation of silicone
- Glass-fibre braiding

### Type SiD

- Tinned copper-conductor, single-wire
- Core insulation of silicone

### Type SiD/GL

- Tinned copper-conductor, single-wire
- Core insulation of silicone
- Glass-fibre braiding

## Properties

### Resistant to

- high molecular oils, fats from vegetables and animals, alcohols, plasticizers and clophenes, diluted acids, lyes and salt dissolution, oxidation substances, tropical influences and weather, lake water, oxygen
- High flash points
- For laying as a fixed installation only in open or ventilated pipe systems as well as in ducts. Otherwise the mechanical properties of the silicon are reduced by the enclosed air at temperatures exceeding 90°C.

### Tests

- Corrosiveness of combustion gases (Halogen-free) acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Behaviour in fire no flame propagation acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- Please complete the part number for these cables by adding the suffix for the colour required as per the list:  
00 = green, 01 = black, 02 = red, 03 = blue, 04 = brown, 05 = white, 06 = grey, 07 = violet, 08 = yellow, 09 = orange, 10 = transparent, 11 = pink, 12 = beige, 13 = 2-colour
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Special single cores for use in high, resp. low temperature areas. They are used mainly in the steel producing industries, in aviation industries as well as in ship building, cement, glass and ceramic factories. As this single cores are halogen-free, especially suited for use in power stations.

CE The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### SiF/GL

Part no.	Cross-section mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
47001	0,25	2,4	2,4	7,7	24
47002	0,5	2,5	4,8	12,4	20
47003	0,75	2,8	7,2	16,2	18
47004	1	2,9	9,6	18,2	17
47005	1,5	3,2	14,4	23,4	16
47006	2,5	3,8	24,0	35,2	14
47007	4	4,6	38,0	53,5	12
47008	6	5,4	58,0	77,4	10
47009	10	7,6	96,0	129,2	8
47010	16	8,4	154,0	198,4	6
47011	25	10,2	240,0	303,0	4
47012	35	11,3	336,0	413,2	2
47013	50	13,4	480,0	577,8	1

### SiD

Part no.	Cross-section mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
461xx	0,2	1,7	1,9	4,2	-
462xx	0,28	1,8	2,7	5,1	-
463xx	0,5	2,0	4,8	7,5	20
464xx	0,75	2,1	7,2	10,2	18
465xx	1	2,3	9,6	12,6	17
466xx	1,5	2,5	14,4	18,1	16
467xx	2,5	3,2	24,0	28,7	14
468xx	4	3,9	38,0	45,2	12
469xx	6	4,4	58,0	64,3	10

### SiD/GL

Part no.	Cross-section mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
47014	0,5	2,4	4,8	10,0	20
47015	0,75	2,6	7,2	15,0	18
47016	1	2,7	9,6	19,0	17
47017	1,5	3,0	14,4	28,0	16
47018	2,5	3,6	24,0	40,0	14
47019	4	4,3	36,0	55,0	12
47020	6	5,0	58,0	80,0	10

Dimensions and specifications may be changed without prior notice. (RK01)

# HELUTHERM® 400



Single core, nickel conductor, stranded, for high temperature applications



## TECHNICAL DATA

Single core

Temperature range	fixed -60°C to +400°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage (spark test)	2000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Ni conductor, stranded
- Core insulation: glass silk braid with heat-resistant impregnation
- Core identification by coloured helix, see table

## PROPERTIES

- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1

## APPLICATION

Single core with a wide temperature range; especially suited for use in the aviation and aerospace industry, in power stations, in engine design as well as in chemical, steel and metallurgical plants. For critical applications, for example involving mechanical stress, we recommend to contact us.

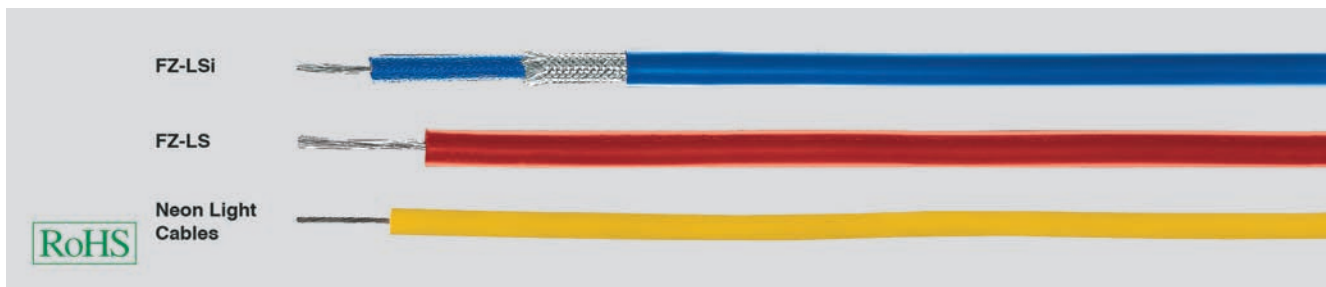
## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- At temperatures above 200°C during the first commissioning, the impregnating varnish may degrade and leave only pure glass fibers remaining as insulation. This can be observed as evaporation.

Cross-sec. mm <sup>2</sup>	Outer-Ø min - max mm	AWG, approx.	Ni-weight kg/km	black	green-yellow	blue	brown	red	white	grey	violet	yellow
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.5	2.1 - 2.6	20	4.8	50901	50900	50902	50903	50904	50905	50906	50907	50908
0.75	2.2 - 2.9	19	7.2	50915	50914	50916	50917	50918	50919	50920	50921	50922
1	2.5 - 3.0	18	9.6	50929	50928	50930	50931	50932	50933	50934	50935	50936
1.5	2.6 - 3.4	16	14.4	50943	50942	50944	50945	50946	50947	50948	50949	50950
2.5	3.3 - 4.3	14	24.0	50957	50956	50958	50959	50960	50961	50962	50963	50964
4	4.2 - 4.8	12	38.0	50971	50970	50972	50973	50974	50975	50976	50977	50978
6	5.0 - 6.3	10	58.0	50985	50984	50986	50987	50988	50989	50990	50991	50992
10	5.6 - 6.8	8	96.0	50890	50209	50891	50892	50893	50894	50895	50896	50897
16	7.8 - 8.4	6	154.0	51564	51563	51565	51566	51567	51568	51569	51570	51571
25	9.6 - 10.4	4	240.0	51578	51577	51579	51580	51581	51582	51583	51584	51585

Cross-sec. mm <sup>2</sup>	Outer-Ø min - max mm	AWG, approx.	Ni-weight kg/km	orange	pink	beige
				Part no.	Part no.	Part no.
0.5	2.1 - 2.6	20	4.8	50909	50911	50912
0.75	2.2 - 2.9	19	7.2	50923	50925	50926
1	2.5 - 3.0	18	9.6	50937	50939	50940
1.5	2.6 - 3.4	16	14.4	50951	50953	50954
2.5	3.3 - 4.3	14	24.0	50965	50967	50968
4	4.2 - 4.8	12	38.0	50979	50981	50982
6	5.0 - 6.3	10	58.0	50993	50995	50996
10	5.6 - 6.8	8	96.0	50898	51560	51561
16	7.8 - 8.4	6	154.0	51572	51574	51575
25	9.6 - 10.4	4	240.0	51586	51588	51589

# FZ-LSi / FZ-LS / Neon Light Cables



## Technical data

### FZ-LSi, blue

- **Test voltage** 20 kV
- **Breakdown voltage** min. 30 kV
- **Ignition voltage** (kV eff.)  
0,5 mm<sup>2</sup> = 6 kV  
1,0 mm<sup>2</sup> = 8 kV  
1,5 mm<sup>2</sup> = 10 kV

### FZ-LS, red

- **Test voltage**  
for 5 mm Ø = 15 kV  
for 7 mm Ø = 20 kV
- **Breakdown voltage**  
for 5 mm Ø = min. 25 kV  
for 7 mm Ø = min. 35 kV

### Neon-light-Cable, yellow

- **Nominal voltage**  
3,5 kV, 4,0 kV or 7,5 kV
- **Test voltage** 10 kV
- **Specific volume resistivity**  
min. 10<sup>12</sup> Ohm x cm
- **Minimum bending radius**  
7,5x cable Ø
- **Radiation resistance**  
up to 20x10<sup>5</sup> cJ/kg (up to 20 Mrad)

## Cable structure

### FZ-LSi, blue

- Tinned copper-conductor
- Conductor construction see table below
- Core insulation of silicone compound type 2G11 to DIN VDE 0207 part 20
- Glass-fibre braiding
- Outer sheath of silicone compound type 2GM1 to DIN VDE 0207 part 21
- Sheath colour blue

### FZ-LS, red

- Tinned copper-conductor, 19x0,25 mm Ø
  - Core insulation of silicone compound type 2G11 to DIN VDE 0207 part 20
  - Sheath colour redbrown
- ### Neon-light-cable, yellow
- in adapted to DIN VDE 0250 part 1+5
  - Tinned copper-conductor, 30x0,25 mm
  - Core insulation of silicone compound type 2G11 to DIN VDE 0207 part 20
  - Sheath colour yellow

## Properties

### Neon-light-cable, yellow

- Halogen-free  
acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Behaviour in fire no flame propagation  
acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- No formation of corrosive gases
- Low smoke density
- Very good weather resistance

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

### FZ-LSi, blue

This ignition cable is suitable for use at high and extremely alternating ambient temperatures up to +180°C. Applications include engine manufacturing, valve manufacturing and heating technology. As protection against mechanical damages a glass fibre braiding and a silicone sheath covers the core insulation.

### FZ-LS, red

This ignition cable is suitable for use at high and extremely alternating ambient temperatures up to +180°C. Applications include the lamp and lighting industry and cooling and airconditioning technology.

### Neon-light-cable, yellow

This cable is primarily suitable for use at high and extremely alternating ambient temperatures such as in the lamp and lighting industry. Protected installation is required.

## FZ-LSi ignition cable

Part no.	Core colour	Cross-sec. mm <sup>2</sup>	Cond. make-up (nom. val.) n x wire Ø	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
23110	BU	0,5	7 x 0,3	5,0	4,8	36,0	20
23106	BU	1	19 x 0,25	7,5	9,5	65,0	17
23107	BU	1,5	28 x 0,26	8,5	14,4	88,0	16

## FZ-LS high-voltage ignition cable 15 and 20kV

Part no.	Core colour	Cross-sec. mm <sup>2</sup>	Cond. make-up (nom. val.) n x wire Ø	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
23109	red-brown	1	19 x 0,25	5,0	9,6	34,0	17
23108	red-brown	1	19 x 0,25	7,0	9,6	60,0	17

## neon light cables (neon cable) 3,5kV, 4,0kV and 7,5kV

Part no.	Core colour	Cross-sec. mm <sup>2</sup>	Cond. make-up (nom. val.) n x wire Ø	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
23147	YE	1,5	30 x 0,25	4,4	14,4	32,0	16
23148	YE	1,5	30 x 0,25	6,6	14,4	59,0	16
23149	YE	1,5	30 x 0,25	7,6	14,4	75,0	16

Dimensions and specifications may be changed without prior notice. (RK01)

# HELUPOWER® THERMFLEX® 145-Single



conductor stranded with optimal lay lengths, reinforced insulation, temperature-resistant, improved behaviour in case of fire



HELUPOWER® THERMFLEX® 145-SINGLE CE

## TECHNICAL DATA

### Single core

**Temperature range** flexible -40°C to +120°C  
fixed -55°C to +145°C

**Short circuit temperature at the conductor**  
+250°C

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 700 V  
three-phase alternating current (AC) conductor/conductor 1200 V  
direct current (DC) conductor/earth 900 V  
direct current (DC) conductor/conductor 1800 V

**Test voltage** 4000 V

**Minimum bending radius** flexible 12.5x Outer-Ø  
fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: black
- x = without protective conductor

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, no release of corrosive and toxic gases, low smoke development

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

## ■ APPLICATION

This cable is used as a generator connection cable in wind power plants and wherever a high current carrying capacity is required and a reduced outer diameter is beneficial due to limited installation space. Other areas of application: connection cable of thermal class B (130°C) for motors, transformers, relays, coils, magnets; power unit connections in the automotive industry; halogen-free wiring of switch and control cabinets; connecting cable for heating devices; supply cable for high-performance luminaires in industrial areas, sports facilities and traffic infrastructure; wiring of charging stations and pantographs within e-Mobility applications.

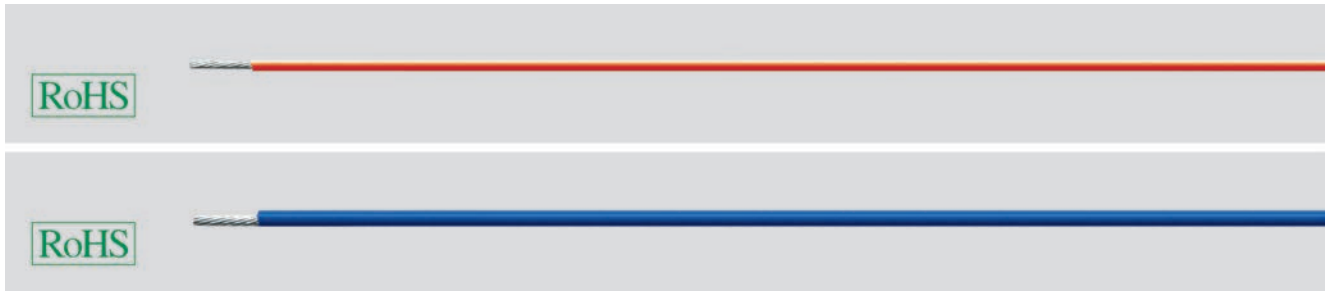
## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
75486	1 x 6	10	5.4	58.0	79.0
75487	1 x 10	8	6.8	96.0	156.0
75488	1 x 16	6	8.5	154.0	218.0
75489	1 x 25	4	10.3	240.0	331.0
75490	1 x 35	2	11.8	336.0	448.0
75491	1 x 50	1	13.9	480.0	632.0
75492	1 x 70	2/0	16.0	672.0	820.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
75493	1 x 95	3/0	17.3	912.0	1076.0
75494	1 x 120	4/0	20.0	1152.0	1392.0
75495	1 x 150	250 kcmil	22.1	1440.0	1788.0
71437	1 x 185	350 kcmil	24.8	1776.0	2106.3
75496	1 x 240	400 kcmil	27.7	2304.0	2749.0
706557	1 x 300	500 kcmil	30.0	2880.0	3910.0
706558	1 x 400	750 kcmil	38.7	3840.0	4870.0

# HELUFロン®-PTFE-5Y fluorinated polymeric materials, single core, 600 V or 1000 V



## Technical data

- Fluorinated polymeric insulation PTFE (Polytetrafluorethylene)
- Design to DIN VDE 0881 an IEC 60673
- **Temperature range**  
-190°C to +260°C  
(up to +300°C for short time)
- **Nominal voltage**  
type E = 600 V  
type EE = 1000 V
- **Test voltage**  
type E = 3,4 kV  
type EE = 5 kV
- **Insulation resistance**  
min. 1 GOhm x km
- **Minimum bending radius**  
10x core Ø
- **Radiation resistance**  
up to 1x10<sup>5</sup> cJ/kg (up to 0,1 Mrad)
- **Conductor temperature range**  
bare copper +130°C  
tinned copper +180°C  
silver pl. copper +200°C  
nickel pl. copper +260°C

## Cable structure

- Stranded copper wire, silver
- Core insulation PTFE-HELUFロン® to DIN VDE 207 part 6
- PTFE as per MIL-W 16878

## Properties

- Higher insulation resistance
- Low dielectric loss
- Not flammable
- Resistant to micro-cultures
- Do not permit any fungus-formation
- Absolute ozone resistant
- Absolute weather resistant
- Water absorption <0,01%
- Minimal water vapour permeability (approx. 0,18 mgr/cm<sup>2</sup> in 24 hours)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- Please complete the above part-no. for the colour required using the following table:  
1 = black, 2 = red, 3 = blue,  
4 = brown, 5 = white, 6 = transparent,  
7 = 2-colour, 8 = other colour
- Conductor bare, tinned or nickel plated on request

## Application

HELUFロン® single cores are predominantly used for installing in control cabinets subjected to high thermal effects as well as in brickworks, heaters, kitchen fitments and measuring appliances as well as in the chemical industry. These single cores are non-flammable and resistant to acids, alkalis, solvents, oil and petrol.

CE The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### 600 V

Part no.	AWG-No.	No. cond.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Silv. weight kg / km	Weight app. kg / km
2511x	32	7	0,03	0,70	0,4	0,03	0,4
2512x	30	7	0,06	0,81	0,6	0,04	0,59
2513x	28	7	0,09	0,89	0,9	0,06	0,93
2514x	26	7	0,14	0,99	1,4	0,07	1,47
2515x	26	19	0,14	0,99	1,4	0,09	1,58
2516x	24	7	0,21	1,12	2,3	0,07	2,31
2517x	24	19	0,24	1,12	2,3	0,13	2,52
2518x	22	7	0,35	1,27	3,5	0,10	3,68
2519x	22	19	0,38	1,27	3,5	0,17	3,99
2520x	20	7	0,57	1,47	5,6	0,12	6,0
2521x	20	19	0,57	1,47	6,1	0,18	6,4
2522x	18	7	0,90	1,74	9,6	0,22	9,45
2523x	18	19	0,95	1,74	9,6	0,27	10,2
2524x	16	19	1,23	2,04	13,5	0,29	12,9
2525x	14	19	1,94	2,40	18,0	0,38	20,3

### 1000 V

Part no.	AWG-No.	No. cond.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Silv. weight kg / km	Weight app. kg / km
2531x	32	7	0,03	1,00	0,4	0,03	0,42
2532x	30	7	0,06	1,07	0,6	0,04	0,65
2533x	28	7	0,09	1,14	0,9	0,06	1,0
2534x	26	7	0,14	1,24	1,4	0,07	1,56
2535x	26	19	0,14	1,24	1,4	0,09	1,68
2536x	24	7	0,21	1,37	2,3	0,07	2,4
2537x	24	19	0,24	1,37	2,3	0,13	2,65
2538x	22	7	0,35	1,52	3,5	0,10	3,85
2539x	22	19	0,38	1,50	3,5	0,17	4,2
2540x	20	7	0,57	1,72	5,6	0,12	6,3
2541x	20	19	0,57	1,72	6,1	0,18	6,9
2542x	18	7	0,90	2,00	9,6	0,22	10,65
2543x	18	19	0,95	2,00	9,6	0,27	13,65
2544x	16	19	1,23	2,26	13,5	0,29	21,38
2545x	14	19	1,94	2,76	18,0	0,38	33,95

Dimensions and specifications may be changed without prior notice. (RK01)



# HELUKABEL® SINGLE CORE UL Style 1007



PVC single core, finely stranded, tinned wire, 300 V, 80°C



## TECHNICAL DATA

PVC single core acc. to UL-Std. 758 (AWM) Style 1007, CSA-Std. C22.2 No. 210 - AWM I A/B

<b>Temperature range</b>	flexible -5°C to +80°C fixed -30°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 300 V
<b>Test voltage (spark test)</b>	26 - 20 AWG: 4000 V 18 - 16 AWG: 5000 V
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Core insulation: PVC
- Core identification: see table

## ■ PROPERTIES

- largely resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to UL VW-1, CSA FT1

## ■ APPLICATION

For internal wiring of switch cabinets, electrical and electronic devices.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
26	0.13	1.4	1.6	3.2	63501	63513	63502	63503	63504	63505	63506	63507
24	0.21	1.5	2.3	4.3	62001	62013	62002	62003	62004	62005	62006	62007
22	0.33	1.6	3.4	6.0	62101	62113	62102	62103	62104	62105	62106	62107
20	0.52	1.8	5.3	8.5	62201	62213	62202	62203	62204	62205	62206	62207
18	0.82	2.1	8.2	12.5	62301	62313	62302	62303	62304	62305	62306	62307
16	1.32	2.7	13.0	18.5	62401	62413	62402	62403	62404	62405	62406	62407

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	yellow	orange	green	pink	beige	transparent
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
26	0.13	1.4	1.6	3.2	63508	63509	63500	63511	63512	63510
24	0.21	1.5	2.3	4.3	62008	62009	62000	62011	62012	62010
22	0.33	1.6	3.4	6.0	62108	62109	62100	62111	62112	62110
20	0.52	1.8	5.3	8.5	62208	62209	62200	62211	62212	62210
18	0.82	2.1	8.2	12.5	62308	62309	62300	62311	62312	62310
16	1.32	2.7	13.0	18.5	62408	62409	62400	62411	62412	62410

# HELUKABEL® SINGLE CORE UL Style 1569

PVC single core, tinned wire, 300 V, 105°C



## TECHNICAL DATA

PVC single core acc. to UL-Std. 758 (AWM) Style 1569, CSA-Std. C22.2 No. 210 - AWM I A/B

<b>Temperature range</b>	flexible -5°C to +105°C fixed -30°C to +105°C CSA (AWM) to +90°C
<b>Nominal voltage</b>	UL (AWM) AC 300 V
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PVC
- Core identification: see table

## ■ PROPERTIES

- largely resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to UL VW-1, CSA FT1

## ■ APPLICATION

For internal wiring of switch cabinets, electrical and electronic devices.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
26	0.13	1.4	1.6	3.2	66001	66013	66002	66003	66004	66005	66006	66007
24	0.21	1.5	2.3	4.3	66101	66113	66102	66103	66104	66105	66106	66107
22	0.33	1.6	3.4	6.0	66201	66213	66202	66203	66204	66205	66206	66207
20	0.52	1.8	5.3	8.5	66301	66313	66302	66303	66304	66305	66306	66307
18	0.82	2.1	8.2	12.5	66401	66413	66402	66403	66404	66405	66406	66407
16	1.32	2.4	13.0	18.5	66501	66513	66502	66503	66504	66505	66506	66507
14	2.08	2.9	20.0	29.0	66601	66613	66602	66603	66604	66605	66606	66607
12	3.31	3.6	33.0	40.0	66701	66713	66702	66703	66704	66705	66706	66707
10	5.26	4.3	51.6	61.0	66801	66813	66802	66803	66804	66805	66806	66807

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	orange	green	pink	beige	yellow	transparent
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
26	0.13	1.4	1.6	3.2	66009	66000	66011	66012	66008	66010
24	0.21	1.5	2.3	4.3	66109	66100	66111	66112	66108	66110
22	0.33	1.6	3.4	6.0	66209	66200	66211	66212	66208	66210
20	0.52	1.8	5.3	8.5	66309	66300	66311	66312	66308	66310
18	0.82	2.1	8.2	12.5	66409	66400	66411	66412	66408	66410
16	1.32	2.4	13.0	18.5	66509	66500	66511	66512	66508	66510
14	2.08	2.9	20.0	29.0	66609	66600	66611	66612	66608	66610
12	3.31	3.6	33.0	40.0	66709	66700	66711	66712	66708	66710
10	5.26	4.3	51.6	61.0	66809	66800	66811	66812	66808	66810

# HELUKABEL® SINGLE CORE UL Style 1015



PVC single core, tinned wire, 600 V, 105°C



## TECHNICAL DATA

PVC single core acc. to UL-Std. 758 (AWM) Style 1015, CSA-Std. C22.2 No. 210 - AWM I A/B, 24 AWG - 4/0 AWG; CSA-Std. C22.2 No. 127 - TEW, 22 AWG - 500 kcmil; UL-Std. 1063 (MTW)

<b>Temperature range</b>	flexible -5°C to +105°C fixed -40°C to +105°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V UL (MTW) AC 600 V CSA (TEW) AC 600 V
<b>Test voltage (spark test)</b>	see table
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PVC
- Core identification: see table

## PROPERTIES

- largely resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to UL VW-1, CSA FT1

## APPLICATION

For internal wiring of switch cabinets, electrical and electronic devices.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Spark test, kV	black	green-yellow	blue	brown	red	white	grey
						Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
24	0.23	2.2	2.2	8.0	4	60101	60113	60102	60103	60104	60105	60106
22	0.36	2.4	3.4	10.0	7.5	60201	60213	60202	60203	60204	60205	60206
20	0.56	2.6	5.4	12.0	7.5	60301	60313	60302	60303	60304	60305	60306
18	0.81	2.9	7.8	16.0	7.5	60401	60413	60402	60403	60404	60405	60406
16	1.32	3.2	12.7	22.0	7.5	60501	60513	60502	60503	60504	60505	60506
14	2.08	3.5	20.0	31.0	7.5	60601	60613	60602	60603	60604	60605	60606
12	3.30	4.2	31.7	45.0	7.5	60701	60713	60702	60703	60704	60705	60706
10	5.27	4.8	50.6	65.0	7.5	60801	60813	60802	60803	60804	60805	60806
8	8.51	6.5	81.7	110.0	10	60901	60913	60902	60903	60904	60905	60906
6	13.50	8.2	129.6	175.0	10	61001	61013	61002	61003	61004	61005	61006
4	21.40	9.9	205.4	260.0	10	61101	61113	61102	61103	61104	61105	61106
3	26.92	10.7	258.4	340.0	10	61201	61213	61202	61203	61204	61205	61206
2	34.10	11.5	327.4	380.0	10	61301	61313	61302	61303	61304	61305	61306
1	43.07	13.3	413.5	500.0	12.5	61401	61413	61402	61403	61404	61405	61406
1/0	54.55	14.2	523.7	630.0	12.5	61501	61513	61502	61503	61504	61505	61506
2/0	68.91	15.8	661.5	781.0	12.5	61601	61613	61602	61603	61604	61605	61606
3/0	85.73	17.5	823.0	935.0	12.5	61701	61713	61702	61703	61704	61705	61706
4/0	105.21	19.2	1010.0	1141.0	12.5	61801	61813	61802	61803	61804	61805	61806
250 kcmil	132.48	21.7	1271.8	1449.0	15	62501	-	-	-	-	-	-
300 kcmil	155.86	22.7	1496.3	1668.0	15	62601	-	-	-	-	-	-
350 kcmil	181.30	26.3	1740.5	1893.0	15	62701	-	-	-	-	-	-
400 kcmil	209.20	27.2	2008.3	2213.0	15	62801	-	-	-	-	-	-
500 kcmil	257.00	28.3	2467.2	2618.0	15	62901	-	-	-	-	-	-

# HELUKABEL® SINGLE CORE UL Style 1015



PVC single core, tinned wire, 600 V, 105°C

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Spark test, kV	Color						
						violet Part no.	yellow Part no.	orange Part no.	green Part no.	dark blue Part no.	pink Part no.	beige Part no.
24	0.23	2.2	2.2	8.0	4	60107	60108	60109	60100	60115	60111	60112
22	0.36	2.4	3.4	10.0	7.5	60207	60208	60209	60200	60215	60211	60212
20	0.56	2.6	5.4	12.0	7.5	60307	60308	60309	60300	60315	60311	60312
18	0.81	2.9	7.8	16.0	7.5	60407	60408	60409	60400	60415	60411	60412
16	1.32	3.2	12.7	22.0	7.5	60507	60508	60509	60500	60515	60511	60512
14	2.08	3.5	20.0	31.0	7.5	60607	60608	60609	60600	60615	60611	60612
12	3.30	4.2	31.7	45.0	7.5	60707	60708	60709	60700	60715	60711	60712
10	5.27	4.8	50.6	65.0	7.5	60807	60808	60809	60800	60815	60811	60812
8	8.51	6.5	81.7	110.0	10	60907	60908	60909	60900	60915	60911	60912
6	13.50	8.2	129.6	175.0	10	61007	61008	61009	61000	61015	61011	61012
4	21.40	9.9	205.4	260.0	10	61107	61108	61109	61100	61115	61111	61112
3	26.92	10.7	258.4	340.0	10	61207	61208	61209	61200	61215	61211	61212
2	34.10	11.5	327.4	380.0	10	61307	61308	61309	61300	61315	61311	61312
1	43.07	13.3	413.5	500.0	12.5	61407	61408	61409	61400	61415	61411	61412
1/0	54.55	14.2	523.7	630.0	12.5	61507	61508	61509	61500	61515	61511	61512
2/0	68.91	15.8	661.5	781.0	12.5	61607	61608	61609	61600	61615	61611	61612
3/0	85.73	17.5	823.0	935.0	12.5	61707	61708	61709	61700	61715	61711	61712
4/0	105.21	19.2	1010.0	1141.0	12.5	61807	61808	61809	61800	61815	61811	61812

AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Spark test, kV	Color		
						transparent Part no.	blue-white Part no.	white-blue Part no.
24	0.23	2.2	2.2	8.0	4	60110	60114	60127
22	0.36	2.4	3.4	10.0	7.5	60210	60214	60227
20	0.56	2.6	5.4	12.0	7.5	60310	60314	60327
18	0.81	2.9	7.8	16.0	7.5	60410	60414	60427
16	1.32	3.2	12.7	22.0	7.5	60510	60514	60527
14	2.08	3.5	20.0	31.0	7.5	60610	60614	60627
12	3.30	4.2	31.7	45.0	7.5	60710	60714	60727
10	5.27	4.8	50.6	65.0	7.5	60810	60814	60827
8	8.51	6.5	81.7	110.0	10	60910	60914	60927
6	13.50	8.2	129.6	175.0	10	61010	61014	-
4	21.40	9.9	205.4	260.0	10	61110	61114	-
3	26.92	10.7	258.4	340.0	10	61210	61214	-
2	34.10	11.5	327.4	380.0	10	61310	61314	-
1	43.07	13.3	413.5	500.0	12.5	61410	61414	-
1/0	54.55	14.2	523.7	630.0	12.5	61510	61514	-
2/0	68.91	15.8	661.5	781.0	12.5	61610	61614	-
3/0	85.73	17.5	823.0	935.0	12.5	61710	61714	-
4/0	105.21	19.2	1010.0	1141.0	12.5	61810	61814	-

# HELUTHERM® SINGLE CORE UL STYLE 3512



Silicone single core, finely stranded, tinned wire, temperature-resistant



## TECHNICAL DATA

Single core acc. to UL-Std. 758 (AWM) Style 3512, CSA-Std. C22.2 No. 210 - AWM I A/B

<b>Temperature range</b>	flexible -40°C to +200°C fixed -40°C to +180°C UL (AWM) -40°C to +200°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 600 V
<b>Test voltage</b>	3000 V
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 8x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to ASTM-B 33
- Core insulation: silicone
- Core identification: see table

## PROPERTIES

- resistant to: ozone, oxygen, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, seawater
- halogen-free

- high flash point

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1, CSA FT2

## APPLICATION

Temperature resistant silicone single core for the internal wiring of enclosed appliances; for use in iron, steel and rolling mills, foundries, cement, glass and ceramic factories as well as in aircraft construction and ship building.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Nominal cross-section	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.5	20	2.4 - 2.8	4.8	11.1	11023478	11023496	11023507	11023525	11023543	11023561	11023579	11023597
0.75	19	2.5 - 2.9	7.2	14.0	11023479	11023497	11023508	11023526	11023544	11023562	11023580	11023598
1	18	2.7 - 3.1	9.6	16.2	11023480	11023498	11023509	11023527	11023545	11023563	11023581	11023599
1.5	16	3.1 - 3.5	14.4	21.6	11023481	11023499	11023510	11023528	11023546	11023564	11023582	11023600
2.5	14	3.5 - 3.9	24.0	32.6	11023482	11023500	11023511	11023529	11023547	11023565	11023583	11023601
4	12	4.0 - 4.4	38.4	49.7	11023483	11023501	11023512	11023530	11023548	11023566	11023584	11023602
6	10	5.5 - 5.9	57.6	79.4	11023484	11023502	11023513	11023531	11023549	11023567	11023585	11023603
10	8	7.1 - 7.7	96.0	133.0	11023485	11023503	11023514	11023532	11023550	11023568	11023586	11023604
16	6	8.8 - 9.4	153.6	207.2	11023486	11023504	11023515	11023533	11023551	11023569	11023587	11023605
25	4	10.3 - 11.1	240.0	308.8	11023487	11023505	11023516	11023534	11023552	11023570	11023588	11023606
35	2	11.5 - 12.3	336.0	413.2	11023488	11023506	11023517	11023535	11023553	11023571	11023589	11023607
50	1	14.4 - 15.2	480.0	616.1	11023489	-	11023518	11023536	11023554	11023572	11023590	11023608
70	2/0	16.2 - 17.0	672.0	826.9	11023490	-	11023519	11023537	11023555	11023573	11023591	11023609
95	3/0	18.3 - 19.3	912.0	1116.6	11023491	-	11023520	11023538	11023556	11023574	11023592	11023610
120	4/0	20.6 - 21.8	1152.0	1402.1	11023492	-	11023521	11023539	11023557	11023575	11023593	11023611
150	300 kcmil	22.8 - 24.0	1440.0	1740.6	11023493	-	11023522	11023540	11023558	11023576	11023594	11023612
185	350 kcmil	25.0 - 26.2	1776.0	2132.7	11023494	-	11023523	11023541	11023559	11023577	11023595	11023613
240	500 kcmil	27.7 - 28.9	2304.0	2699.2	11023495	-	11023524	11023542	11023560	11023578	11023596	11023614

# HELUTHERM® SINGLE CORE UL STYLE 3512



Silicone single core, finely stranded, tinned wire, temperature-resistant

Nominal cross-section	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.	yellow	orange	green	pink	beige
					Part no.	Part no.	Part no.	Part no.	Part no.
0.75	19	2.5 - 2.9	7.2	14.0	<b>11023670</b>	<b>11023616</b>	<b>11023688</b>	<b>11023634</b>	<b>11023652</b>
1	18	2.7 - 3.1	9.6	16.2	<b>11023671</b>	<b>11023617</b>	<b>11023689</b>	<b>11023635</b>	<b>11023653</b>
1.5	16	3.1 - 3.5	14.4	21.6	<b>11023672</b>	<b>11023618</b>	<b>11023690</b>	<b>11023636</b>	<b>11023654</b>
2.5	14	3.5 - 3.9	24.0	32.6	<b>11023673</b>	<b>11023619</b>	<b>11023691</b>	<b>11023637</b>	<b>11023655</b>
4	12	4.0 - 4.4	38.4	49.7	<b>11023674</b>	<b>11023620</b>	<b>11023692</b>	<b>11023638</b>	<b>11023656</b>
6	10	5.5 - 5.9	57.6	79.4	<b>11023675</b>	<b>11023621</b>	<b>11023693</b>	<b>11023639</b>	<b>11023657</b>
10	8	7.1 - 7.7	96.0	133.0	<b>11023676</b>	<b>11023622</b>	<b>11023694</b>	<b>11023640</b>	<b>11023658</b>
16	6	8.8 - 9.4	153.6	207.2	<b>11023677</b>	<b>11023623</b>	<b>11023695</b>	<b>11023641</b>	<b>11023659</b>
25	4	10.3 - 11.1	240.0	308.8	<b>11023678</b>	<b>11023624</b>	<b>11023696</b>	<b>11023642</b>	<b>11023660</b>
35	2	11.5 - 12.3	336.0	413.2	<b>11023679</b>	<b>11023625</b>	<b>11023697</b>	<b>11023643</b>	<b>11023661</b>
50	1	14.4 - 15.2	480.0	616.1	<b>11023680</b>	<b>11023626</b>	<b>11023698</b>	<b>11023644</b>	<b>11023662</b>
70	2/0	16.2 - 17.0	672.0	826.9	<b>11023681</b>	<b>11023627</b>	<b>11023699</b>	<b>11023645</b>	<b>11023663</b>
95	3/0	18.3 - 19.3	912.0	1116.6	<b>11023682</b>	<b>11023628</b>	<b>11023700</b>	<b>11023646</b>	<b>11023664</b>
120	4/0	20.6 - 21.8	1152.0	1402.1	<b>11023683</b>	<b>11023629</b>	<b>11023701</b>	<b>11023647</b>	<b>11023665</b>
150	300 kcmil	22.8 - 24.0	1440.0	1740.6	<b>11023684</b>	<b>11023630</b>	<b>11023702</b>	<b>11023648</b>	<b>11023666</b>
185	350 kcmil	25.0 - 26.2	1776.0	2132.7	<b>11023685</b>	<b>11023631</b>	<b>11023703</b>	<b>11023649</b>	<b>11023667</b>
240	500 kcmil	27.7 - 28.9	2304.0	2699.2	<b>11023686</b>	<b>11023632</b>	<b>11023704</b>	<b>11023650</b>	<b>11023668</b>

# HELUKABEL® SINGLE CORE UL Style 3135

Silicone single core, tinned wire, 600 V, 200°C



## TECHNICAL DATA

Silicone single core acc. to UL-Std. 758 (AWM) Style 3135

Temperature range	fixed -60°C to +200°C
Nominal voltage	UL (AWM) AC 600 V
Test voltage	2000 V
Breakdown voltage	5000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: silicone
- Core identification: see table

## PROPERTIES

- resistant to: ozone, oxygen, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater
- halogen-free

- high flash point

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to CSA FT2

## APPLICATION

UL/CSA approved, temperature resistant silicone single core for the internal wiring of switch cabinets, electrical and electronic devices; for use in iron, steel and rolling mills, foundries, and cement, glass and ceramic factories.

## NOTES

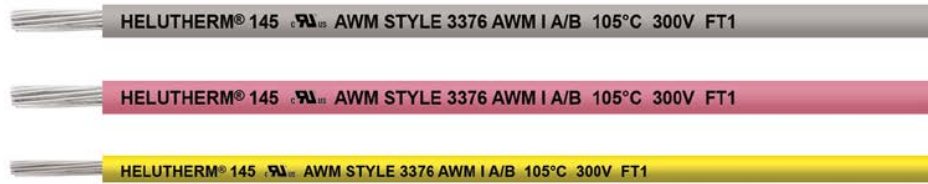
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

AWG-No.	Conductor structure	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey	violet
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
24	1 x 0.5	2.1	1.9	6.3	<b>47021</b>	<b>11008351</b>	<b>47022</b>	<b>47023</b>	<b>47024</b>	<b>47025</b>	<b>47026</b>	<b>47027</b>
22	3 x 0.4	2.4	3.6	9.2	<b>47028</b>	<b>11008352</b>	<b>47029</b>	<b>47030</b>	<b>47031</b>	<b>47032</b>	<b>47033</b>	<b>47034</b>
20	5 x 0.4	2.6	6.0	12.3	<b>47035</b>	<b>11008353</b>	<b>47036</b>	<b>47037</b>	<b>47038</b>	<b>47039</b>	<b>47040</b>	<b>47041</b>
18	7 x 0.4	2.9	8.6	15.5	<b>47042</b>	<b>11008354</b>	<b>47043</b>	<b>47044</b>	<b>47045</b>	<b>47046</b>	<b>47047</b>	<b>47048</b>
16	11 x 0.4	3.3	13.3	21.0	<b>47049</b>	<b>11008355</b>	<b>47050</b>	<b>47051</b>	<b>47052</b>	<b>47053</b>	<b>47054</b>	<b>47055</b>
14	17 x 0.4	3.6	20.5	29.7	<b>47056</b>	<b>11008356</b>	<b>47057</b>	<b>47058</b>	<b>47059</b>	<b>47060</b>	<b>47061</b>	<b>47062</b>
12	27 x 0.4	4.1	32.6	43.2	<b>47063</b>	<b>11008357</b>	<b>47064</b>	<b>47065</b>	<b>47066</b>	<b>47067</b>	<b>47068</b>	<b>47069</b>

AWG-No.	Conductor structure	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	green
					Part no.
24	1 x 0.5	2.1	1.9	6.3	<b>47076</b>
22	3 x 0.4	2.4	3.6	9.2	<b>47071</b>
20	5 x 0.4	2.6	6.0	12.3	<b>47072</b>
18	7 x 0.4	2.9	8.6	15.5	<b>47073</b>
16	11 x 0.4	3.3	13.3	21.0	<b>47074</b>
14	17 x 0.4	3.6	20.5	29.7	<b>47075</b>
12	27 x 0.4	4.1	32.6	43.2	<b>47070</b>

# HELUTHERM® 145 UL/CSA 300V

temperature-resistant, crosslinked, 300 V, AWG sizes



## TECHNICAL DATA

Single core acc. to CSA-Std. C22.2 No. 210 - AWM I A/B, 24 AWG - 16 AWG: UL-Std. 758 (AWM) Style 3376, 14 AWG - 10 AWG: UL-Std. 758 (AWM) Style 3578

<b>Temperature range</b>	flexible -35°C to +120°C fixed -55°C to +145°C UL (AWM) flexible -35°C to +105°C UL (AWM) fixed -55°C to +105°C
<b>Nominal voltage</b>	UL (AWM) AC 300 V
<b>Test voltage</b>	2000 V
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Core insulation: cross-linked polyolefin
- Core identification: see table

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- no fire propagation

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to CSA FT1
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

## APPLICATION

Temperature resistant single core for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in industrial equipment as well as plant and machinery construction; suitable for laying in tubes, on and under plaster as well as closed installation ducts.

AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	No. of wires	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	violet (RAL 4005)
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
24	1.5	2.3	4.0	19	61817	61816	61818	61819	61820	61821	61822	61823
22	1.6	3.2	6.0	19	61831	61830	61832	61833	61834	61835	61836	61837
20	1.9	5.0	9.0	19	61845	61844	61846	61847	61848	61849	61850	61851
18	2.1	7.9	12.0	19	61859	61858	61860	61861	61862	61863	61864	61865
16	2.4	12.6	16.0	19	61873	61872	61874	61875	61876	61877	61878	61879
14	3.5	20.7	27.0	19	61887	61886	61888	61889	61890	61891	61892	61893
12	4.2	33.0	36.0	65	61901	61900	61902	61903	61904	61905	61906	61907
10	4.8	51.6	58.0	105	61915	61914	61916	61917	61918	61919	61920	61921

AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	No. of wires	yellow (RAL 1021)	orange (RAL 2003)	green (RAL 6018)	pink (RAL 3015)	beige (RAL 1001)
					Part no.	Part no.	Part no.	Part no.	Part no.
24	1.5	2.3	4.0	19	61824	61825	61826	59339	61828
22	1.6	3.2	6.0	19	61838	61839	61840	61841	61842
20	1.9	5.0	9.0	19	61852	61853	61854	61855	61856
18	2.1	7.9	12.0	19	61866	61867	61868	61869	61870
16	2.4	12.6	16.0	19	61880	61881	61882	61883	61884



# HELUTHERM® 145 UL/CSA 600V

temperature-resistant, crosslinked



## TECHNICAL DATA

Single core acc. to UL-Std. 758 (AWM) Style 3578, CSA-Std. C22.2 No. 210 - AWM I A/B

<b>Temperature range</b>	flexible -35°C to +120°C fixed -55°C to +145°C UL (AWM) flexible -35°C to +105°C UL (AWM) fixed -55°C to +105°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V
<b>Test voltage</b>	3000 V
<b>Minimum bending radius</b>	flexible 12.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: see table

## PROPERTIES

- resistant to: UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

- no fire propagation

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to CSA FT1
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C
- certifications and approvals:  
0.5 - 50 mm<sup>2</sup>: DNV GL

## APPLICATION

Temperature resistant single core for the internal wiring of lighting fixtures, heaters, electrical machinery, switching systems and distributors in industrial equipment as well as plant and machinery construction; suitable for laying in tubes, on and under plaster as well as closed installation ducts. Not suitable for direct laying in cable ladders and cable trays.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	violet (RAL 4005)
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.25	24	2.3	2.4	7.0	59473	59472	59474	59475	59476	59477	59478	59479
0.5	20	2.6	4.8	11.0	59487	59486	59488	59489	59490	59491	59492	59493
0.75	19	2.8	7.2	14.0	59501	59500	59502	59503	59504	59505	59506	59507
1	18	2.9	9.6	17.0	59515	59514	59516	59517	59518	59519	59520	59521
1.5	16	3.1	14.4	22.0	59529	59528	59530	59531	59532	59533	59534	59535
2.5	14	3.6	24.0	33.0	59543	59542	59544	59545	59546	59547	59548	59549
4	12	4.3	38.4	53.0	59557	59556	59558	59559	59560	59561	59562	59563
6	10	5.0	57.6	78.0	59571	59570	59572	59573	59574	59575	59576	59577
10	8	6.4	96.0	136.0	59585	59584	59586	59587	59588	59589	59590	59591
16	6	7.5	154.0	203.0	59599	59598	59600	59601	59602	59603	59604	59605
25	4	9.6	240.0	300.0	59613	59612	59614	59615	59616	59617	59618	59619
35	2	10.8	336.0	405.0	59627	59626	59628	59629	59630	59631	59632	59633
50	1	12.6	480.0	580.0	59641	59640	59642	59643	59644	59645	59646	59647

# HELUTHERM® 145 UL/CSA 600V



temperature-resistant, crosslinked

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	yellow	orange	green	pink	beige
					(RAL 1021) Part no.	(RAL 2003) Part no.	(RAL 6018) Part no.	(RAL 3015) Part no.	(RAL 1001) Part no.
0.25	24	2.3	2.4	7.0	<b>59480</b>	<b>59481</b>	<b>59482</b>	<b>59483</b>	<b>59484</b>
0.5	20	2.6	4.8	11.0	<b>59494</b>	<b>59495</b>	<b>59496</b>	<b>59497</b>	<b>59498</b>
0.75	19	2.8	7.2	14.0	<b>59508</b>	<b>59509</b>	<b>59510</b>	<b>59511</b>	<b>59512</b>
1	18	2.9	9.6	17.0	<b>59522</b>	<b>59523</b>	<b>59524</b>	<b>59525</b>	<b>59526</b>
1.5	16	3.1	14.4	22.0	<b>59536</b>	<b>59537</b>	<b>59538</b>	<b>59539</b>	<b>59540</b>
2.5	14	3.6	24.0	33.0	<b>59550</b>	<b>59551</b>	<b>59552</b>	<b>59553</b>	<b>59554</b>
4	12	4.3	38.4	53.0	<b>59564</b>	<b>59565</b>	<b>59566</b>	<b>59567</b>	<b>59568</b>
6	10	5.0	57.6	78.0	<b>59578</b>	<b>59579</b>	<b>59580</b>	<b>59581</b>	<b>59582</b>
10	8	6.4	96.0	136.0	<b>59592</b>	<b>59593</b>	<b>59594</b>	<b>59595</b>	<b>59596</b>
16	6	7.5	154.0	203.0	<b>59606</b>	<b>59607</b>	<b>59608</b>	<b>59609</b>	<b>59610</b>
25	4	9.6	240.0	300.0	<b>59620</b>	<b>59621</b>	<b>59622</b>	<b>59623</b>	<b>59624</b>
35	2	10.8	336.0	405.0	<b>59634</b>	<b>59635</b>	<b>59636</b>	<b>59637</b>	<b>59638</b>
50	1	12.6	480.0	580.0	<b>59648</b>	<b>59649</b>	<b>59650</b>	<b>59651</b>	<b>59652</b>

# FIVENORM H05V2-K / 05V2-K

PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA

TEW



## TECHNICAL DATA

PVC single core acc. to UL-Std. 758 (AWM) Style 10269, UL-Std. 1063 (MTW), CSA-Std. C22.2 No. 127 - TEW, CSA-Std. C22.2 No. 210 - AWM I A/B, FIVENORM H05V2-K acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31; FIVENORM 05V2-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible +5°C to +90°C fixed -40°C to +90°C UL (AWM) -40°C to +105°C UL (MTW) -40°C to +90°C CSA (TEW) -40°C to +105°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 1000 V UL (AWM) DC 1250 V UL (MTW) AC 600 V CSA (TEW) AC 600 V
<b>Test voltage</b>	2000 V
<b>Test voltage (spark test)</b>	0.5 mm <sup>2</sup> : 5000 V 0.75 - 1 mm <sup>2</sup> : 6000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T13)

- Core identification: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

Five norms approved connecting jumper wire primarily designed for exportes, used in machine tools. The approbation of HAR, UL-AWM, UL-MTW, CSA-AWM, CSA-Equipment-wire make possible an economical storekeeping and simplification of parts list.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- Approved core colours: black, green-yellow, blue, brown, red, white, grey, violet, yellow, green, orange, pink, turquoise, two-colour coding in any combination of the above mentioned colours

## FIVENORM H05V2-K

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	violet (RAL 4005)	yellow (RAL 1021)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	64075	64076	64077	64078	64079	64080	64081	64082	64083
0.75	20	2.65	7.2	64091	64092	64093	64094	64095	64096	64097	64098	64099
1	18	2.8	9.6	64107	64108	64109	64110	64111	64112	64113	64114	64115

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	orange (RAL 2003)	green (RAL 6018)	dark blue (RAL 5010)	pink (RAL 3015)	blue-orange	blue-white	dark blue-orange	dark blue-white	yellow-brown
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	64088	64085	64087	64084	69830	63402	63332	63404	65386
0.75	20	2.65	7.2	64104	64101	64103	64100	69839	63407	63333	63409	65387
1	18	2.8	9.6	64120	64117	64119	64116	69848	63412	63334	63414	65388

# FIVENORM H05V2-K / 05V2-K



PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA

TEW

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	69829	69834	63352	69835	63482	69625	69828	69831	69832
0.75	20	2.65	7.2	69838	69843	63353	69844	63483	69626	69837	69840	69841
1	18	2.8	9.6	69847	69852	63354	69853	63484	69627	69846	69849	69850

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km						
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	69833	63372	63405	63403	69827	63406
0.75	20	2.65	7.2	69842	63373	63410	63408	69836	63411
1	18	2.8	9.6	69851	63374	63415	63413	69845	63416

## FIVENORM 05V2-K

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	
				Part no.
0.5	22	2.5	4.8	64086
0.75	20	2.65	7.2	64102
1	18	2.8	9.6	64118

## FIVENORM H05V2-K Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	11019300	11019301	11019302	11019303	11019304	11019305	11019306	11019307	11019308
0.75	20	2.65	7.2	11019335	11019336	11019337	11019338	11019339	11019340	11019341	11019342	11019343
1	18	2.8	9.6	11019370	11019371	11019372	11019373	11019374	11019375	11019376	11019377	11019378

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	11019312	11019310	11019311	11019309	11019313	11019329	11019315	11019321	11019317
0.75	20	2.65	7.2	11019347	11019345	11019346	11019344	11019348	11019364	11019350	11019356	11019352
1	18	2.8	9.6	11019382	11019380	11019381	11019379	11019383	11019399	11019385	11019391	11019387

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	11019324	11019328	11019333	11019322	11019334	11019320	11019325	11019327	11019330
0.75	20	2.65	7.2	11019359	11019363	11019368	11019357	11019369	11019355	11019360	11019362	11019365
1	18	2.8	9.6	11019394	11019398	11019403	11019392	11019404	11019390	11019395	11019397	11019400

# FIVENORM H05V2-K / 05V2-K



PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA

TEW

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km							
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	<b>11019331</b>	<b>11019332</b>	<b>11019323</b>	<b>11019318</b>	<b>11019316</b>	<b>11019326</b>	<b>11019319</b>
0.75	20	2.65	7.2	<b>11019366</b>	<b>11019367</b>	<b>11019358</b>	<b>11019353</b>	<b>11019351</b>	<b>11019361</b>	<b>11019354</b>
1	18	2.8	9.6	<b>11019401</b>	<b>11019402</b>	<b>11019393</b>	<b>11019388</b>	<b>11019386</b>	<b>11019396</b>	<b>11019389</b>

## FIVENORM 05V2-K Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	
				Part no.
0.5	22	2.5	4.8	<b>11019314</b>
0.75	20	2.65	7.2	<b>11019349</b>
1	18	2.8	9.6	<b>11019384</b>

## FIVENORM H05V2-K Barrel

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	<b>65402</b>	<b>65403</b>	<b>65404</b>	<b>65405</b>	<b>65406</b>	<b>65407</b>	<b>65408</b>	<b>65409</b>	<b>65413</b>
0.75	20	2.65	7.2	<b>65415</b>	<b>65416</b>	<b>65417</b>	<b>65418</b>	<b>65419</b>	<b>65420</b>	<b>65421</b>	<b>65422</b>	<b>65426</b>
1	18	2.8	9.6	<b>65428</b>	<b>65429</b>	<b>65430</b>	<b>65431</b>	<b>65432</b>	<b>65433</b>	<b>65434</b>	<b>65435</b>	<b>65439</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	<b>65411</b>	<b>65412</b>	<b>65414</b>	<b>65410</b>	<b>65479</b>	<b>65485</b>	<b>65481</b>	<b>65488</b>	<b>65486</b>
0.75	20	2.65	7.2	<b>65424</b>	<b>65425</b>	<b>65427</b>	<b>65423</b>	<b>65490</b>	<b>65496</b>	<b>65492</b>	<b>65502</b>	<b>65497</b>
1	18	2.8	9.6	<b>65437</b>	<b>65438</b>	<b>65440</b>	<b>65436</b>	<b>65504</b>	<b>65510</b>	<b>65506</b>	<b>65514</b>	<b>65511</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km					
				Part no.	Part no.	Part no.	Part no.	Part no.
0.5	22	2.5	4.8	<b>65484</b>	<b>65487</b>	<b>65482</b>	<b>65480</b>	<b>65483</b>
0.75	20	2.65	7.2	<b>65495</b>	<b>65498</b>	<b>65493</b>	<b>65491</b>	<b>65494</b>
1	18	2.8	9.6	<b>65509</b>	<b>65512</b>	<b>65507</b>	<b>65505</b>	<b>65508</b>

# FIVENORM H07V2-K / 07V2-K / H07V-K / 07V-K

PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA TEW



## TECHNICAL DATA

PVC single core acc. to UL-Std. 758 (AWM) Style 10269, UL-Std. 1063 (MTW), CSA-Std. C22.2 No. 210 - AWM I A/B, 1.5 – 120 mm<sup>2</sup>: CSA-Std. C22.2 No. 127 - TEW

<b>Temperature range</b>	flexible +5°C to +90°C fixed -40°C to +90°C UL (AWM) -40°C to +105°C UL (MTW) -40°C to +90°C CSA (TEW) -40°C to +105°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 450/750 V UL (AWM) AC 1000 V UL (AWM) DC 1250 V UL (MTW) AC 600 V CSA (TEW) AC 600 V
<b>Test voltage</b>	2500 V
<b>Test voltage (spark test)</b>	6000 V
<b>Minimum bending radius</b>	fixed <8 mm: 4x Outer-ø 8-12 mm: 5x Outer-ø >12 mm: 6x Outer-ø

• Core identification: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

Five norms approved connecting jumper wire primarily designed for exportes, used in machine tools. The approbation of HAR, UL-AWM, UL-MTW, CSA-AWM, CSA-Equipment-wire make possible an economical storekeeping and simplification of parts list.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- Approved core colours: black, green-yellow, blue, brown, red, white, grey, violet, orange, pink, turquoise

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T13)

## FIVENORM H07V2-K acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	violet (RAL 4005)	orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	64123	64124	64125	64126	64127	64128	64129	64130	64136
2.5	14	3.6	24.0	64139	64140	64141	64142	64143	64144	64145	64146	64152
4	12	4.1	38.0	64155	64156	64157	64158	64159	64160	64161	64162	64168
6	10	4.8	58.0	64171	64172	64173	64174	64175	64176	64177	64178	64184
10	8	6.6	96.0	64187	64188	64189	64190	64191	64192	64193	64194	64200
16	6	8.1	154.0	64203	64204	64205	64206	64207	64208	64209	64210	64216
25	4	9.8	240.0	64219	64220	64221	64222	64223	64224	64225	64226	64232
35	2	10.9	336.0	64235	64236	64237	64238	64239	64240	64241	64242	64248

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)
				Part no.	Part no.
1.5	16	3.05	14.4	64135	64132
2.5	14	3.6	24.0	64151	64148
4	12	4.1	38.0	64167	64164
6	10	4.8	58.0	64183	64180

# FIVENORM H07V2-K / 07V2-K / H07V-K / 07V-K

PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA TEW



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)
				Part no.	Part no.
10	8	6.6	96.0	<b>64199</b>	<b>64196</b>
16	6	8.1	154.0	<b>64215</b>	<b>64212</b>
25	4	9.8	240.0	<b>64231</b>	<b>64228</b>
35	2	10.9	336.0	<b>64247</b>	<b>64244</b>

## FIVENORM H07V-K acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31 (+90°C)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	violet (RAL 4005)	orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
50	1	13.6	480.0	<b>64251</b>	<b>64252</b>	<b>64253</b>	<b>64254</b>	<b>64255</b>	<b>64256</b>	<b>64257</b>	<b>64258</b>	<b>64264</b>
70	2/0	15.6	672.0	<b>64267</b>	<b>64268</b>	<b>64269</b>	<b>64270</b>	<b>64271</b>	<b>64272</b>	<b>64273</b>	<b>64274</b>	<b>64280</b>
95	3/0	17.1	912.0	<b>64283</b>	<b>64284</b>	<b>64285</b>	<b>64286</b>	<b>64287</b>	<b>64288</b>	<b>64289</b>	<b>64290</b>	<b>64296</b>
120	4/0	19.0	1152.0	<b>64299</b>	<b>64300</b>	<b>64301</b>	<b>64302</b>	<b>64303</b>	<b>64304</b>	<b>64305</b>	<b>64306</b>	<b>64312</b>
150	250 kcmil	22.5	1440.0	<b>64315</b>	<b>64316</b>	<b>64317</b>	<b>64318</b>	<b>64319</b>	<b>64320</b>	<b>64321</b>	<b>64322</b>	<b>64328</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)
				Part no.	Part no.
50	1	13.6	480.0	<b>64263</b>	<b>64260</b>
70	2/0	15.6	672.0	<b>64279</b>	<b>64276</b>
95	3/0	17.1	912.0	<b>64295</b>	<b>64292</b>
120	4/0	19.0	1152.0	<b>64311</b>	<b>64308</b>
150	250 kcmil	22.5	1440.0	<b>64327</b>	<b>64324</b>

## FIVENORM 07V2-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	yellow (RAL 1021)	green (RAL 6018)	transparent	blue-orange	blue-white	dark blue- orange	dark blue- white	yellow-brown	yellow-blue
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>64131</b>	<b>64133</b>	<b>64134</b>	<b>69857</b>	<b>63417</b>	<b>63335</b>	<b>63419</b>	<b>65389</b>	<b>69856</b>
2.5	14	3.6	24.0	<b>64147</b>	<b>64149</b>	<b>64150</b>	<b>69866</b>	<b>63422</b>	<b>63336</b>	<b>63424</b>	<b>65390</b>	<b>69865</b>
4	12	4.1	38.0	<b>64163</b>	<b>64165</b>	<b>64166</b>	<b>69875</b>	<b>63427</b>	<b>63337</b>	<b>63429</b>	<b>65391</b>	<b>69874</b>
6	10	4.8	58.0	<b>64179</b>	<b>64181</b>	<b>64182</b>	<b>69884</b>	<b>63432</b>	<b>63338</b>	<b>63434</b>	<b>65392</b>	<b>69883</b>
10	8	6.6	96.0	<b>64195</b>	<b>64197</b>	<b>64198</b>	<b>69893</b>	<b>63437</b>	<b>63339</b>	<b>63439</b>	<b>65393</b>	<b>69892</b>
16	6	8.1	154.0	<b>64211</b>	<b>64213</b>	<b>64214</b>	<b>69902</b>	<b>63442</b>	<b>63340</b>	<b>63444</b>	<b>65394</b>	<b>69901</b>
25	4	9.8	240.0	<b>64227</b>	<b>64229</b>	<b>64230</b>	-	<b>63447</b>	<b>63342</b>	<b>63449</b>	<b>65395</b>	-
35	2	10.9	336.0	<b>64243</b>	<b>64245</b>	<b>64246</b>	-	<b>63452</b>	<b>63343</b>	<b>63454</b>	<b>65396</b>	-

# FIVENORM H07V2-K / 07V2-K / H07V-K / 07V-K



PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA TEW

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				yellow-red Part no.	red-white Part no.	black-yellow Part no.	black-orange Part no.	orange-blue Part no.	orange-dark blue Part no.	orange-red Part no.	orange-black Part no.	orange-white Part no.
1.5	16	3.05	14.4	<b>69861</b>	<b>63355</b>	<b>69862</b>	<b>63485</b>	<b>69628</b>	<b>69855</b>	<b>69858</b>	<b>69859</b>	<b>69860</b>
2.5	14	3.6	24.0	<b>69870</b>	<b>63356</b>	<b>69871</b>	<b>63486</b>	<b>69629</b>	<b>69864</b>	<b>69867</b>	<b>69868</b>	<b>69869</b>
4	12	4.1	38.0	<b>69879</b>	<b>63357</b>	<b>69880</b>	<b>63487</b>	<b>69630</b>	<b>69873</b>	<b>69876</b>	<b>69877</b>	<b>69878</b>
6	10	4.8	58.0	<b>69888</b>	<b>63358</b>	<b>69889</b>	<b>63488</b>	<b>69655</b>	<b>69882</b>	<b>69885</b>	<b>69886</b>	<b>69887</b>
10	8	6.6	96.0	<b>69897</b>	<b>63359</b>	<b>69898</b>	<b>63489</b>	<b>69656</b>	<b>69891</b>	<b>69894</b>	<b>69895</b>	<b>69896</b>
16	6	8.1	154.0	<b>69906</b>	<b>63360</b>	<b>69907</b>	<b>63490</b>	<b>69657</b>	<b>69900</b>	<b>69903</b>	<b>69904</b>	<b>69905</b>
25	4	9.8	240.0	-	<b>63362</b>	-	<b>63491</b>	-	-	-	-	-
35	2	10.9	336.0	-	<b>63363</b>	-	<b>63492</b>	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km					
				white-dark blue Part no.	white-orange Part no.	white-blue Part no.	white-yellow Part no.	white-red Part no.
1.5	16	3.05	14.4	<b>63375</b>	<b>63420</b>	<b>63418</b>	<b>69854</b>	<b>63421</b>
2.5	14	3.6	24.0	<b>63376</b>	<b>63425</b>	<b>63423</b>	<b>69863</b>	<b>63426</b>
4	12	4.1	38.0	<b>63377</b>	<b>63430</b>	<b>63428</b>	<b>69872</b>	<b>63431</b>
6	10	4.8	58.0	<b>63378</b>	<b>63435</b>	<b>63433</b>	<b>69881</b>	<b>63436</b>
10	8	6.6	96.0	<b>63379</b>	<b>63440</b>	<b>63438</b>	<b>69890</b>	<b>63441</b>
16	6	8.1	154.0	<b>63380</b>	<b>63445</b>	<b>63443</b>	<b>69899</b>	<b>63446</b>
25	4	9.8	240.0	<b>63382</b>	<b>63450</b>	<b>63448</b>	-	<b>63451</b>
35	2	10.9	336.0	<b>63383</b>	<b>63455</b>	<b>63453</b>	-	<b>63456</b>

## FIVENORM 07V-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31 (+90°C)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km									
				yellow (RAL 1021) Part no.	green (RAL 6018) Part no.	transparent Part no.	blue-white Part no.	dark blue- orange Part no.	dark blue- white Part no.	yellow-brown Part no.	red-white Part no.	black-orange Part no.
50	1	13.6	480.0	<b>64259</b>	<b>64261</b>	<b>64262</b>	<b>63457</b>	<b>63344</b>	<b>63459</b>	<b>65397</b>	<b>63364</b>	<b>63493</b>
70	2/0	15.6	672.0	<b>64275</b>	<b>64277</b>	<b>64278</b>	<b>63462</b>	<b>63345</b>	<b>63464</b>	<b>65398</b>	<b>63365</b>	<b>63494</b>
95	3/0	17.1	912.0	<b>64291</b>	<b>64293</b>	<b>64294</b>	<b>63467</b>	<b>63346</b>	<b>63469</b>	<b>65499</b>	<b>63366</b>	<b>63495</b>
120	4/0	19.0	1152.0	<b>64307</b>	<b>64309</b>	<b>64310</b>	<b>63472</b>	<b>63347</b>	<b>63474</b>	<b>65400</b>	<b>63367</b>	<b>63496</b>
150	250 kcmil	22.5	1440.0	<b>64323</b>	<b>64325</b>	<b>64326</b>	<b>63477</b>	<b>63348</b>	<b>63479</b>	<b>65401</b>	<b>63368</b>	<b>63497</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km				
				white-dark blue Part no.	white-orange Part no.	white-blue Part no.	white-red Part no.
50	1	13.6	480.0	<b>63384</b>	<b>63460</b>	<b>63458</b>	<b>63461</b>
70	2/0	15.6	672.0	<b>63385</b>	<b>63465</b>	<b>63463</b>	<b>63466</b>
95	3/0	17.1	912.0	<b>63386</b>	<b>63470</b>	<b>63468</b>	<b>63471</b>
120	4/0	19.0	1152.0	<b>63387</b>	<b>63475</b>	<b>63473</b>	<b>63476</b>
150	250 kcmil	22.5	1440.0	<b>63388</b>	<b>63480</b>	<b>63478</b>	<b>63481</b>



# FIVENORM H07V2-K / 07V2-K / H07V-K / 07V-K

PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA TEW



## FIVENORM H07V2-K acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31. Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7001)	violet (RAL 4005)	orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
1.5	16	3.05	14.4	<b>11019405</b>	<b>11019406</b>	<b>11019407</b>	<b>11019408</b>	<b>11019409</b>	<b>11019410</b>	<b>11019411</b>	<b>11019412</b>	<b>11019417</b>
2.5	14	3.6	24.0	<b>11019440</b>	<b>11019441</b>	<b>11019442</b>	<b>11019443</b>	<b>11019444</b>	<b>11019445</b>	<b>11019446</b>	<b>11019447</b>	<b>11019452</b>
4	12	4.1	38.0	<b>11019475</b>	<b>11019476</b>	<b>11019477</b>	<b>11019478</b>	<b>11019479</b>	<b>11019480</b>	<b>11019481</b>	<b>11019482</b>	<b>11019487</b>
6	10	4.8	58.0	<b>11019510</b>	<b>11019511</b>	<b>11019512</b>	<b>11019513</b>	<b>11019514</b>	<b>11019515</b>	<b>11019516</b>	<b>11019517</b>	<b>11019522</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	dark blue (RAL 5010)	pink (RAL 3015)	turquoise (RAL 5018)
				Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>11019416</b>	<b>11019414</b>	<b>11019418</b>
2.5	14	3.6	24.0	<b>11019451</b>	<b>11019449</b>	<b>11019453</b>
4	12	4.1	38.0	<b>11019486</b>	<b>11019484</b>	<b>11019488</b>
6	10	4.8	58.0	<b>11019521</b>	<b>11019519</b>	<b>11019523</b>

## FIVENORM 07V2-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31. Coil in cardboard box (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	yellow (RAL 1021)	green (RAL 6018)	transparent	blue-orange	blue-white	dark blue-orange	dark blue-white	yellow-brown	yellow-blue
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>11019413</b>	<b>11019415</b>	<b>11019419</b>	<b>11019434</b>	<b>11019420</b>	<b>11019426</b>	<b>11019422</b>	<b>11019429</b>	<b>11019433</b>
2.5	14	3.6	24.0	<b>11019448</b>	<b>11019450</b>	<b>11019454</b>	<b>11019469</b>	<b>11019455</b>	<b>11019461</b>	<b>11019457</b>	<b>11019464</b>	<b>11019468</b>
4	12	4.1	38.0	<b>11019483</b>	<b>11019485</b>	<b>11019489</b>	<b>11019504</b>	<b>11019490</b>	<b>11019496</b>	<b>11019492</b>	<b>11019499</b>	<b>11019503</b>
6	10	4.8	58.0	<b>11019518</b>	<b>11019520</b>	<b>11019524</b>	<b>11019539</b>	<b>11019525</b>	<b>11019531</b>	<b>11019527</b>	<b>11019534</b>	<b>11019538</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	yellow-red	red-white	black-yellow	black-orange	orange-blue	orange-dark blue	orange-red	orange-black	orange-white
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>11019438</b>	<b>11019427</b>	<b>11019439</b>	<b>11019425</b>	<b>11019430</b>	<b>11019432</b>	<b>11019435</b>	<b>11019436</b>	<b>11019437</b>
2.5	14	3.6	24.0	<b>11019473</b>	<b>11019462</b>	<b>11019474</b>	<b>11019460</b>	<b>11019465</b>	<b>11019467</b>	<b>11019470</b>	<b>11019471</b>	<b>11019472</b>
4	12	4.1	38.0	<b>11019508</b>	<b>11019497</b>	<b>11019509</b>	<b>11019495</b>	<b>11019500</b>	<b>11019502</b>	<b>11019505</b>	<b>11019506</b>	<b>11019507</b>
6	10	4.8	58.0	<b>11019543</b>	<b>11019532</b>	<b>11019544</b>	<b>11019530</b>	<b>11019535</b>	<b>11019537</b>	<b>11019540</b>	<b>11019541</b>	<b>11019542</b>






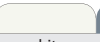



Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	white-dark blue	white-orange	white-blue	white-yellow	white-red
				Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>11019428</b>	<b>11019423</b>	<b>11019421</b>	<b>11019431</b>	<b>11019424</b>
2.5	14	3.6	24.0	<b>11019463</b>	<b>11019458</b>	<b>11019456</b>	<b>11019466</b>	<b>11019459</b>
4	12	4.1	38.0	<b>11019498</b>	<b>11019493</b>	<b>11019491</b>	<b>11019501</b>	<b>11019494</b>
6	10	4.8	58.0	<b>11019533</b>	<b>11019528</b>	<b>11019526</b>	<b>11019536</b>	<b>11019529</b>



# FIVENORM H07V2-K / 07V2-K / H07V-K / 07V-K












PVC single core, finely stranded, HAR - UL AWM - UL MTW - CSA AWM - CSA TEW




## FIVENORM H07V2-K acc. to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31. Barrel

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	 black (RAL 9005)	 green-yellow	 blue (RAL 5015)	 brown (RAL 8003)	 red (RAL 3000)	 white (RAL 9010)	 grey (RAL 7001)	 violet (RAL 4005)	 orange (RAL 2003)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>65441</b>	<b>65442</b>	<b>65443</b>	<b>65444</b>	<b>65445</b>	<b>65446</b>	<b>65447</b>	<b>65448</b>	<b>65450</b>
2.5	14	3.6	24.0	<b>65454</b>	<b>65455</b>	<b>65456</b>	<b>65457</b>	<b>65458</b>	<b>65459</b>	<b>65460</b>	<b>65461</b>	<b>65463</b>
4	12	4.1	38.0	<b>65467</b>	<b>65468</b>	<b>65469</b>	<b>65470</b>	<b>65471</b>	<b>65472</b>	<b>65473</b>	<b>65474</b>	<b>65476</b>
6	10	4.8	58.0	<b>65550</b>	<b>65551</b>	<b>65552</b>	<b>65553</b>	<b>65554</b>	<b>65555</b>	<b>65556</b>	<b>65557</b>	<b>65562</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	 dark blue (RAL 5010)	 pink (RAL 3015)
				Part no.	Part no.
1.5	16	3.05	14.4	<b>65453</b>	<b>65449</b>
2.5	14	3.6	24.0	<b>65466</b>	<b>65462</b>
4	12	4.1	38.0	<b>65549</b>	<b>65475</b>
6	10	4.8	58.0	<b>65561</b>	<b>65559</b>

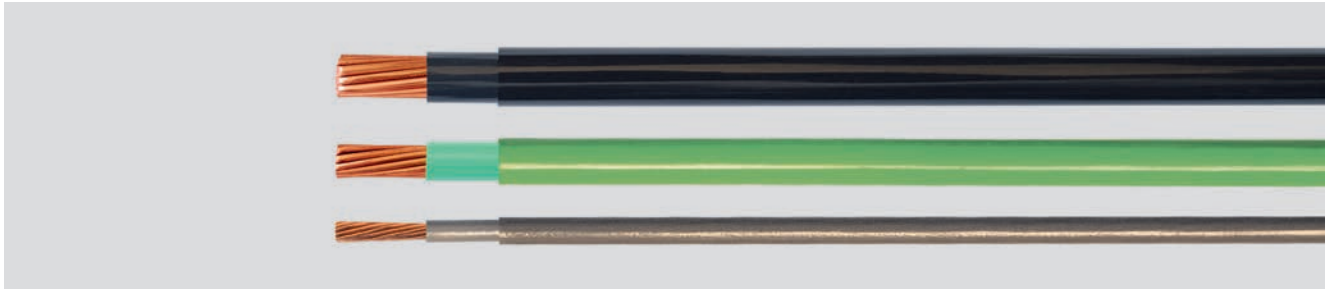
## FIVENORM 07V2-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31. Barrel

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	 yellow (RAL 1021)	 green (RAL 6018)	 blue-white	 dark blue-orange	 dark blue-white	 yellow-brown	 red-white	 black-orange	 white-dark blue
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>65452</b>	<b>65451</b>	<b>65516</b>	<b>65522</b>	<b>65518</b>	<b>65525</b>	<b>65523</b>	<b>65521</b>	<b>65524</b>
2.5	14	3.6	24.0	<b>65465</b>	<b>65464</b>	<b>65527</b>	<b>65533</b>	<b>65529</b>	<b>65536</b>	<b>65534</b>	<b>65532</b>	<b>65535</b>
4	12	4.1	38.0	<b>65478</b>	<b>65477</b>	<b>65538</b>	<b>65544</b>	<b>65540</b>	<b>65547</b>	<b>65545</b>	<b>65543</b>	<b>65546</b>
6	10	4.8	58.0	<b>65558</b>	<b>65560</b>	-	-	-	-	-	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	 white-orange	 white-blue	 white-red
				Part no.	Part no.	Part no.
1.5	16	3.05	14.4	<b>65519</b>	<b>65517</b>	<b>65520</b>
2.5	14	3.6	24.0	<b>65530</b>	<b>65528</b>	<b>65531</b>
4	12	4.1	38.0	<b>65541</b>	<b>65539</b>	<b>65542</b>

# THHN / THWN

90°C, 600 V, UL listed, PVC + nylon single core



## Technical data

- PVC + Nylon insulated single cores to UL Std.83 and UL Std.1063 (MTW)
- **Temperature range**  
**THHN** dry environments: 90°C  
**THWN** wet environments: 75°C
- **Nominal voltage**  
600 V
- **Minimum bending radius**  
8x core Ø

## Cable structure

- Bare copper conductor, with AWG dimensions
- Core insulation of PVC and Nylon-sheath
- Core identification coloured

## Properties

### Resistant against

- Oils
- Gasoline
- Water
- Acids
- Ozone
- Lyes
- Sunlight
- Abrasion

## Note

- 1 kcmil = 1000 circ mils = 0,5067 mm<sup>2</sup>.
- Please add the appropriate item number when ordering using the following indicator:  
0 = green  
1 = black  
2 = blue  
3 = brown  
4 = red  
5 = white  
6 = grey  
7 = yellow  
8 = orange  
9 = pink

## Application

For the installation of machine tools and the relative control.

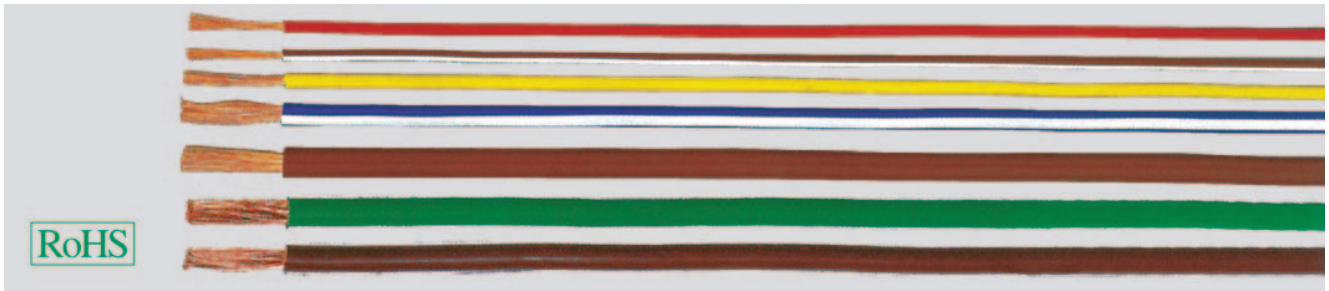
**THWN** = Thermoplastic PVC-insulated building wire, Heat resistant 75°C, for Wet and dry locations, flame retardant.

**THHN** = Thermoplastic PVC-insulated building wire, Nylon sheath, 90°C, 600 V, for dry and damp locations.

Part no.	Cross-section mm <sup>2</sup>	AWG-No.	Cond. make-up n x wire Ø	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
6320x	2,08	14	19 x 0,38	3,0	20,7	25,0
6321x	3,32	12	19 x 0,48	3,4	33,0	37,0
6322x	5,26	10	19 x 0,6	4,3	51,6	60,0
6323x	8,35	8	19 x 0,75	5,5	80,6	95,0
6324x	13,39	6	19 x 0,96	6,6	125,0	143,0
6325x	21,14	4	19 x 1,19	8,4	201,0	229,0
6326x	26,65	3	19 x 1,336	9,1	253,0	282,0
6327x	33,61	2	19 x 1,5	10,0	317,0	349,0
6328x	42,38	1	19 x 1,686	11,4	399,0	449,0
6329x	53,47	1/0	19 x 1,89	12,4	500,0	557,0
6330x	67,4	2/0	19 x 2,126	13,7	631,0	691,0
6331x	84,97	3/0	19 x 2,387	15,0	792,0	861,0
6332x	107,17	4/0	19 x 2,68	16,5	996,0	1069,0
63331	127	250 kcmil	37 x 2,088	17,6	1178,0	1277,0
63341	152	300 kcmil	37 x 2,286	19,0	1410,0	1515,0
63351	178	350 kcmil	37 x 2,47	20,2	1645,0	1753,0
63361	203	400 kcmil	37 x 2,7	21,4	1902,0	1998,0
63371	254	500 kcmil	37 x 2,95	23,5	2345,0	2466,0
63381	304	600 kcmil	61 x 2,52	26,0	2920,0	3000,0
63391	380	750 kcmil	61 x 2,82	28,6	3658,0	3713,0
63401	507	1000 kcmil	61 x 3,25	32,4	4858,0	4870,0

Dimensions and specifications may be changed without prior notice. (RN06)

# Vehicle Cable FLY one colour / two colour (old type FLK), according to DIN ISO 6722



## Technical data

- Special PVC core insulation
- **Temperature stability** (3000 h) -25°C to +90°C
- **Nominal voltage** up to 24 V
- **Test voltage** 1 kV (effective value)
- **Breakdown voltage** 5 kV (effective value)
- **Specific volume resistance** min. 10<sup>9</sup> Ohm x mm

## Cable structure

- Bare copper conductor, soft annealed electrolytic copper E-Cu58 F21 according to DIN 40500 part 4 (the mechanical requirements valid for unprocessing single wires)
- Copper conductor fine wire stranded as per DIN ISO 6722 part 3
- PVC core insulation
- For three-colour combinations we produce only on request

## Properties

- Oil and fuel resistant as per DIN ISO 6722 part 2

## Note

- **Minimum quantities**  
Per cross-section and colour combination:  
2-colour  
0,5 to 2,5 mm<sup>2</sup> = 3 km  
4,0 to 25 mm<sup>2</sup> = 1 km  
3-colour  
0,5 to 2,5 mm<sup>2</sup> = 5 km  
4,0 to 25 mm<sup>2</sup> = 3 km  
Remaining cross-sections on request.

## Application

PVC insulated single core cables are used for vehicle constructions.

### one colour

Cross-sec. mm <sup>2</sup>	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG
Part no. 0,5	2,0 - 2,3	4,8	9,0	29800	40217	40243	40282	40204	40321	40269	40308	40295	40256	40230
Part no. 0,75	2,2 - 2,5	7,2	12,0	29801	40218	40244	40283	40205	40322	40270	40309	40296	40257	40231
Part no. 1	2,4 - 2,7	9,6	15,0	29802	40219	40245	40284	40206	40323	40271	40310	40297	40258	40232
Part no. 1,5	2,7 - 3,0	14,4	20,0	29803	40220	40246	40285	40207	40324	40272	40311	40298	40259	40233
Part no. 2,5	3,3 - 3,6	24,0	32,0	29804	40221	40247	40286	40208	40325	40273	40312	40299	40260	40234
Part no. 4	4,0 - 4,4	38,4	48,0	29805	40222	40248	40287	40209	40326	40274	40313	40300	40261	40235
Part no. 6	4,6 - 5,0	57,6	68,0	29806	40223	40249	40288	40210	40327	40275	40314	40301	40262	40236
Part no. 10	6,0 - 6,5	96,0	117,0	29807	40224	40250	40289	40211	40328	40276	40315	40302	40263	40237
Part no. 16	7,0 - 8,3	154,0	189,0	29808	40225	40251	40290	40212	40329	40277	40316	40303	40264	40238
Part no. 25	9,4 - 10,4	240,0	288,0	29809	40226	40252	40291	40213	40330	40278	40317	40304	40265	40239
Part no. 35	10,8 - 11,6	336,0	382,0	29810	40227	40253	40292	40214	40331	40279	40318	40305	40266	40240
Part no. 50	12,5 - 13,5	480,0	540,0	29811	40228	40254	40293	40215	40332	40280	40319	40306	40267	40241
Part no. 70	14,5 - 15,5	672,0	744,0	29812	40229	40255	40294	40216	40333	40281	40320	40307	40268	40242

Dimensions and specifications may be changed without prior notice. (RK01)

# Vehicle Cable FLY one colour / two colour (old type FLK), according to DIN ISO 6722

## two colour

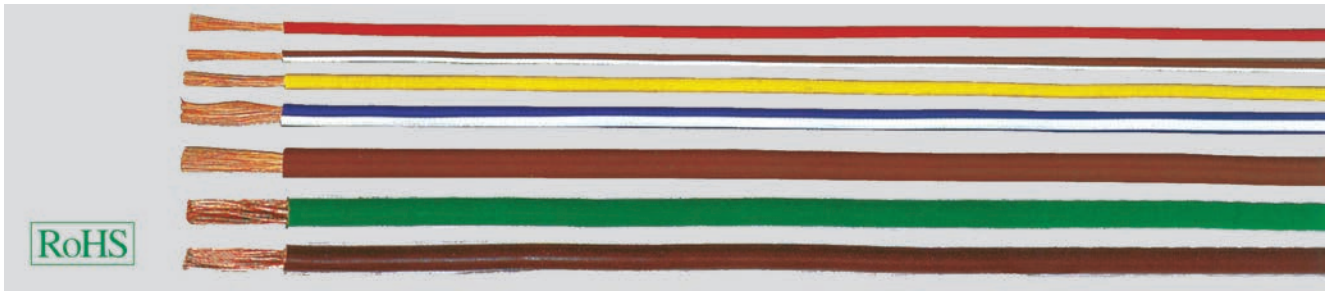
Cross-sec. mm <sup>2</sup>	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km	WH/GY	WH/RD	WH/BN	WH/BU	WH/BK	YE/GY	YE/RD	YE/BN	YE/BU	YE/BK
Part no. 0,5	2,0 - 2,3	4,8	9,0	40334	40347	40360	40373	40386	40399	40412	40425	40438	40451
Part no. 0,75	2,2 - 2,5	7,2	12,0	40335	40348	40361	40374	40387	40400	40413	40426	40439	40452
Part no. 1	2,4 - 2,7	9,6	15,0	40336	40349	40362	40375	40388	40401	40414	40427	40440	40453
Part no. 1,5	2,7 - 3,0	14,4	20,0	40337	40350	40363	40376	40389	40402	40415	40428	40441	40454
Part no. 2,5	3,3 - 3,6	24,0	32,0	40338	40351	40364	40377	40390	40403	40416	40429	40442	40455
Part no. 4	4,0 - 4,4	38,4	48,0	40339	40352	40365	40378	40391	40404	40417	40430	40443	40456
Part no. 6	4,6 - 5,0	57,6	68,0	40340	40353	40366	40379	40392	40405	40418	40431	40444	40457
Part no. 10	6,0 - 6,5	96,0	117,0	40341	40354	40367	40380	40393	40406	40419	40432	40445	40458
Part no. 16	7,0 - 8,3	154,0	189,0	40342	40355	40368	40381	40394	40407	40420	40433	40446	40459
Part no. 25	9,4 - 10,4	240,0	288,0	40343	40356	40369	40382	40395	40408	40421	40434	40447	40460
Part no. 35	10,8 - 11,6	336,0	382,0	40344	40357	40370	40383	40396	40409	40422	40435	40448	40461
Part no. 50	12,5 - 13,5	480,0	540,0	40345	40358	40371	40384	40397	40410	40423	40436	40449	40462
Part no. 70	14,5 - 15,5	672,0	744,0	40346	40359	40372	40385	40398	40411	40424	40437	40450	40463

## two colour

Cross-sec. mm <sup>2</sup>	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km	GY/GN	GY/RD	GY/BN	GY/BK	GN/WH	GN/GY	GN/BN	GN/BU	GN/BK
Part no. 0,5	2,0 - 2,3	4,8	9,0	40464	40477	40490	40802	40503	40516	40529	40542	40555
Part no. 0,75	2,2 - 2,5	7,2	12,0	40465	40478	40491	40803	40504	40517	40530	40543	40556
Part no. 1	2,4 - 2,7	9,6	15,0	40466	40479	40492	40804	40505	40518	40531	40544	40557
Part no. 1,5	2,7 - 3,0	14,4	20,0	40467	40480	40493	40805	40506	40519	40532	40545	40558
Part no. 2,5	3,3 - 3,6	24,0	32,0	40468	40481	40494	40806	40507	40520	40533	40546	40559
Part no. 4	4,0 - 4,4	38,4	48,0	40469	40482	40495	40807	40508	40521	40534	40547	40560
Part no. 6	4,6 - 5,0	57,6	68,0	40470	40483	40496	40808	40509	40522	40535	40548	40561
Part no. 10	6,0 - 6,5	96,0	117,0	40471	40484	40497	40809	40510	40523	40536	40549	40562
Part no. 16	7,0 - 8,3	154,0	189,0	40472	40485	40498	40810	40511	40524	40537	40550	40563
Part no. 25	9,4 - 10,4	240,0	288,0	40473	40486	40499	40811	40512	40525	40538	40551	40564
Part no. 35	10,8 - 11,6	336,0	382,0	40474	40487	40500	40812	40513	40526	40539	40552	40565
Part no. 50	12,5 - 13,5	480,0	540,0	40475	40488	40501	40813	40514	40527	40540	40553	40566
Part no. 70	14,5 - 15,5	672,0	744,0	40476	40489	40502	40814	40515	40528	40541	40554	40567

Dimensions and specifications may be changed without prior notice.

# Vehicle Cable FLRY FLRY-Type A (FLK-R) / -Type B (FLK-D)



## Technical data

- Special PVC core insulation
- **Temperature stability** (3000 h) -40°C to +105°C
- **Nominal voltage** up to 24 V
- **Test voltage**  
1 kV (effective value)
- **Breakdown voltage**  
5 kV (effective value)
- **Specific volume resistance**  
min.  $10^9$  Ohm · mm
- **Type A** = Conductor make-up symmetrical (1+6+12), number of single wires are odd number; a single wire laying at the centre of the cross-section.

## Cable structure

- Bare copper conductor, soft annealed electrolytic copper E-Cu58 F21 according to DIN 40500 part 4 (the mechanical requirements valid for unprocessing single wires)
- Stranded copper conductor bare, conductor make-up as per DIN 72551  
**Type A:** Conductor make-up symmetrical  
**Type B:** Conductor make-up unsymmetrical
- Core insulation of special PVC

## Properties

- Oil and fuel resistant as per DIN ISO 6722 part 2
- **Special characteristics**  
Place and weight saving by using the reduced insulation wall thickness.
- **Requirements and tests**  
As per DIN 72551 part 5

## Note

- **Indication for order**  
Please mention the core colour and colour combination **clearly** to your order, because a re-acceptance of false ordered articles is impossible.
- **Minimum quantities**  
Per cross-section and colour combination:  
2-colour  
0,5 to 2,5 mm<sup>2</sup> = 3 km  
4,0 to 25 mm<sup>2</sup> = 1 km  
3-colour  
0,5 to 2,5 mm<sup>2</sup> = 5 km  
4,0 to 25 mm<sup>2</sup> = 3 km  
Remaining cross-sections on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

PVC insulated single core cables are used for vehicle constructions.

### FLRY - Type A (FLK-R)

Cross-sec. mm <sup>2</sup>	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG
Part no. 0,35	1,2 - 1,3	3,4	4,5	28484	28486	28488	28491	28485	28494	28490	28493	28492	28489	28487
Part no. 0,5	1,4 - 1,6	4,8	6,6	28495	28497	28499	28502	28496	28505	28501	28504	28503	28500	28498

### FLRY - Type B (FLK-D)

Cross-sec. mm <sup>2</sup>	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km	BK	BU	BN	RD	WH	GY	VT	YE	PK	GN	OG
Part no. 0,75	1,7 - 1,9	7,2	9,0	28506	28508	28510	28513	28507	28516	28512	28515	28514	28511	28509
Part no. 1	1,9 - 2,1	9,6	11,0	28517	28519	28521	28524	28518	28527	28523	28526	28525	28522	28520
Part no. 1,5	2,2 - 2,4	14,4	16,0	28528	28530	28532	28535	28529	28538	28534	28537	28536	28533	28531
Part no. 2,5	2,7 - 3,0	24,0	26,0	28539	28541	28543	28546	28540	28549	28545	28548	28547	28544	28542
Part no. 4	3,4 - 3,7	38,0	42,0	28550	28552	28554	28557	28551	28560	28556	28559	28558	28555	28553
Part no. 6	4,0 - 4,3	58,0	61,0	28561	28563	28565	28568	28562	28571	28567	28570	28569	28566	28564

### Further types of Vehicle Cables on request

FLYW	FLSY	FL6G	FLYZ	FLYDY	FL4G11Y
FLX	FLYY	FL4G	FLYYF	FLRYDY	FL4GYW
FLYK	FLYTL	FL7Y	FZLY	FLRYBDY	
FLRY		FL6Y			

Dimensions and specifications may be changed without prior notice. (RK01)



## TECHNICAL DATA

PVC single core in alignment with DIN VDE 0250, DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -15°C to +80°C
<b>Nominal voltage</b>	0.5 - 1 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 1.5 - 70 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V
<b>Peak operating voltage</b>	0.1 - 0.25 mm <sup>2</sup> : 300 V (not for high power current installation purposes)
<b>Test voltage</b>	0.1 - 0.25 mm <sup>2</sup> : 2000 V 0.5 - 1 mm <sup>2</sup> : 2500 V 1.5 - 70 mm <sup>2</sup> : 3000 V
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed 4x Outer-Ø

• Core identification: see table

## PROPERTIES

• the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

• flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Highly flexible single core for connections in switch cabinet construction, measurement set-ups in laboratories, engineering and technical trainings as well as other applications that require increased bending properties.

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Core insulation: PVC

## NOTES

• the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Cross-sec. mm <sup>2</sup>	AWG, approx.	Wire structure	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	black	green-yellow	blue	brown	red	white	grey
						Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.1	-	51 x 0.05	1.0	1.2	2.1	15101	15113	15103	15104	15102	15105	15106
0.14	26	72 x 0.05	1.0	1.4	2.6	15201	15213	15203	15204	15202	15205	15206
0.25	24	65 x 0.07	1.3	2.5	4.2	15301	15313	15303	15304	15302	15305	15306
0.5	20	132 x 0.07	2.0	5.5	8.0	15401	15413	15403	15404	15402	15405	15406
0.75	18	195 x 0.07	2.2	8.0	12.0	15501	15513	15503	15504	15502	15505	15506
1	17	260 x 0.07	2.5	10.8	18.0	15601	15613	15603	15604	15602	15605	15606
1.5	16	192 x 0.1	3.5	15.0	22.0	15701	15713	15703	15704	15702	15705	15706
2.5	14	320 x 0.1	3.8	25.0	37.0	15801	15813	15803	15804	15802	15805	15806
4	12	512 x 0.1	4.9	40.0	50.0	15901	15913	15903	15904	15902	15905	15906
6	10	768 x 0.1	6.0	60.0	71.0	15093	15135	15115	15116	15114	-	-
10	8	1280 x 0.1	7.3	100.0	130.0	15094	15136	15118	15119	15117	-	-
16	6	2048 x 0.1	8.8	160.0	187.0	15095	15137	15121	15122	15120	-	-
25	4	3234 x 0.1	9.9	240.0	294.0	15096	15138	15124	15125	15123	-	-
35	2	4508 x 0.1	11.7	336.0	380.0	15097	15139	15127	15128	15126	-	-
50	1	6468 x 0.1	14.7	480.0	521.0	15098	15140	15130	15131	15129	-	-
70	2/0	8967 x 0.1	15.5	672.0	740.0	15099	15141	15133	15134	15132	-	-

Cross-sec. mm <sup>2</sup>	AWG, approx.	Wire structure	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	violet	yellow	orange	green	dark blue	pink	beige
						Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.1	-	51 x 0.05	1.0	1.2	2.1	15107	15108	15109	15100	151015	15111	15112
0.14	26	72 x 0.05	1.0	1.4	2.6	15207	15208	15209	15200	152015	15211	15212
0.25	24	65 x 0.07	1.3	2.5	4.2	15307	15308	15309	15300	153015	15311	15312
0.5	20	132 x 0.07	2.0	5.5	8.0	15407	15408	15409	15400	154015	15411	15412
0.75	18	195 x 0.07	2.2	8.0	12.0	15507	15508	15509	15500	155015	15511	15512

## PVC single core, extra finely stranded, highly flexible

Cross-sec. mm <sup>2</sup>	AWG, approx.	Wire structure	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	violet	yellow	orange	green	dark blue	pink	beige
						Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1	17	260 x 0.07	2.5	10.8	18.0	<b>15607</b>	<b>15608</b>	<b>15609</b>	<b>15600</b>	<b>156015</b>	<b>15611</b>	<b>15612</b>
1.5	16	192 x 0.1	3.5	15.0	22.0	<b>15707</b>	<b>15708</b>	<b>15709</b>	<b>15700</b>	<b>157015</b>	<b>15711</b>	<b>15712</b>
2.5	14	320 x 0.1	3.8	25.0	37.0	<b>15807</b>	<b>15808</b>	<b>15809</b>	<b>15800</b>	<b>158015</b>	<b>15811</b>	<b>15812</b>
4	12	512 x 0.1	4.9	40.0	50.0	<b>15907</b>	<b>15908</b>	<b>15909</b>	<b>15900</b>	<b>159015</b>	<b>15911</b>	<b>15912</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Wire structure	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	transparent
						Part no.
0.1	-	51 x 0.05	1.0	1.2	2.1	<b>15110</b>
0.14	26	72 x 0.05	1.0	1.4	2.6	<b>15210</b>
0.25	24	65 x 0.07	1.3	2.5	4.2	<b>15310</b>
0.5	20	132 x 0.07	2.0	5.5	8.0	<b>15410</b>
0.75	18	195 x 0.07	2.2	8.0	12.0	<b>15510</b>
1	17	260 x 0.07	2.5	10.8	18.0	<b>15610</b>
1.5	16	192 x 0.1	3.5	15.0	22.0	<b>15710</b>
2.5	14	320 x 0.1	3.8	25.0	37.0	<b>15810</b>
4	12	512 x 0.1	4.9	40.0	50.0	<b>15910</b>



PVC single core, finely stranded, tinned



TECHNICAL DATA	
<b>PVC single core in alignment with DIN VDE 0812</b>	
<b>Temperature range</b>	flexible -5°C to +70°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 500 V 0.25 - 1.5 mm <sup>2</sup> : 900 V (not for high power current installation purposes)
<b>Test voltage</b>	0.14 mm <sup>2</sup> : 1200 V 0.25 - 1.5 mm <sup>2</sup> : 2500 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

- CABLE STRUCTURE**
- Copper wire tinned, 0.5 - 1.5 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
  - Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm  
0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm
  - Core insulation: PVC acc. to DIN VDE 0812
  - Core identification: see table

- PROPERTIES**
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

- TESTS**
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - certifications and approvals:  
EAC

- APPLICATION**
- PVC insulated, flexible hook-up wire for the wiring of low-voltage systems, telecommunication devices and electronic modules within devices, racks and switchboards; not permitted for heavy current installations outside of appliances.

- NOTES**
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Spool (100m)

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7000)	violet (RAL 4005)	yellow (RAL 1021)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
0.14	26	1.1	1.4	<b>26405</b>	<b>26406</b>	<b>26407</b>	<b>26408</b>	<b>26409</b>	<b>26410</b>	<b>26411</b>	<b>26412</b>	<b>26413</b>
0.25	24	1.3	2.4	<b>26421</b>	<b>26422</b>	<b>26423</b>	<b>26424</b>	<b>26425</b>	<b>26426</b>	<b>26427</b>	<b>26428</b>	<b>26429</b>
0.5	20	1.8	4.8	<b>26437</b>	<b>26438</b>	<b>26439</b>	<b>26440</b>	<b>26441</b>	<b>26442</b>	<b>26443</b>	<b>26444</b>	<b>26445</b>
0.75	19	2.0	7.2	<b>26453</b>	<b>26454</b>	<b>26455</b>	<b>26456</b>	<b>26457</b>	<b>26458</b>	<b>26459</b>	<b>26460</b>	<b>26461</b>
1	18	2.4	9.6	<b>26469</b>	<b>26470</b>	<b>26471</b>	<b>26472</b>	<b>26473</b>	<b>26474</b>	<b>26475</b>	<b>26476</b>	<b>26477</b>
1.5	16	2.6	14.4	<b>26485</b>	<b>26486</b>	<b>26487</b>	<b>26488</b>	<b>26489</b>	<b>26490</b>	<b>26491</b>	<b>26492</b>	<b>26493</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	orange (RAL 2003)	green (RAL 6018)	dark blue (RAL 5010)	pink (RAL 3015)	transparent
				Part no.	Part no.	Part no.	Part no.	Part no.
0.14	26	1.1	1.4	<b>26418</b>	<b>26415</b>	<b>26417</b>	<b>26414</b>	<b>26416</b>
0.25	24	1.3	2.4	<b>26434</b>	<b>26431</b>	<b>26433</b>	<b>26430</b>	<b>26432</b>
0.5	20	1.8	4.8	<b>26450</b>	<b>26447</b>	<b>26449</b>	<b>26446</b>	<b>26448</b>
0.75	19	2.0	7.2	<b>26466</b>	<b>26463</b>	<b>26465</b>	<b>26462</b>	<b>26464</b>
1	18	2.4	9.6	<b>26482</b>	<b>26479</b>	<b>26481</b>	<b>26478</b>	<b>26480</b>
1.5	16	2.6	14.4	<b>26498</b>	<b>26495</b>	<b>26497</b>	<b>26494</b>	<b>26496</b>

## PVC single core, finely stranded, tinned

### Barrel

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	black (RAL 9005)	green-yellow	blue (RAL 5015)	brown (RAL 8003)	red (RAL 3000)	white (RAL 9010)	grey (RAL 7000)	violet (RAL 4005)	yellow (RAL 1021)
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
0.25	24	1.3	2.4	<b>26505</b>	<b>26506</b>	<b>26507</b>	<b>26508</b>	<b>26509</b>	<b>26510</b>	<b>26511</b>	<b>26512</b>	<b>26513</b>
0.5	20	1.8	4.8	<b>26521</b>	<b>26522</b>	<b>26523</b>	<b>26524</b>	<b>26525</b>	<b>26526</b>	<b>26527</b>	<b>26528</b>	<b>26529</b>
0.75	19	2.0	7.2	<b>26537</b>	<b>26538</b>	<b>26539</b>	<b>26540</b>	<b>26541</b>	<b>26542</b>	<b>26543</b>	<b>26544</b>	<b>26545</b>
1	18	2.4	9.6	<b>26553</b>	<b>26554</b>	<b>26555</b>	<b>26556</b>	<b>26557</b>	<b>26558</b>	<b>26559</b>	<b>26560</b>	<b>26561</b>
1.5	16	2.6	14.4	<b>26569</b>	<b>26570</b>	<b>26571</b>	<b>26572</b>	<b>26573</b>	<b>26574</b>	<b>26575</b>	<b>26576</b>	<b>26577</b>

Cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	orange (RAL 2003)	green (RAL 6018)	dark blue (RAL 5010)	pink (RAL 3015)	transparent
				Part no.	Part no.	Part no.	Part no.	Part no.
0.25	24	1.3	2.4	<b>26518</b>	<b>26515</b>	<b>26517</b>	<b>26514</b>	<b>26516</b>
0.5	20	1.8	4.8	<b>26534</b>	<b>26531</b>	<b>26533</b>	<b>26530</b>	<b>26532</b>
0.75	19	2.0	7.2	<b>26550</b>	<b>26547</b>	<b>26549</b>	<b>26546</b>	<b>26548</b>
1	18	2.4	9.6	<b>26566</b>	<b>26563</b>	<b>26565</b>	<b>26562</b>	<b>26564</b>
1.5	16	2.6	14.4	<b>26582</b>	<b>26579</b>	<b>26581</b>	<b>26578</b>	<b>26580</b>

# YV-Equipment Wires / YR-Bell Sheathed Cables

according to VDE 0812



## Technical data

### YV-Equipment Wires

- Equipment wires with PVC core insulation to DIN VDE 0812
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -30°C to +70°C
- **Electrical characteristics**  
Operating voltage (peak voltage) to DIN VDE 0812

### YR-Bell Sheathed Cables

- adapted to DIN VDE 0812
- **Minimum bending radius**  
15x cable Ø

## Cable structure

### YV-Equipment Wires

- Tinned copper-conductor, solid 0,3 to 1,8 mm Ø
- Core insulation of PVC compound type Y13 to DIN VDE 0207 part 4
- Mono or twin colour wires, twin colour wires have a base colour with the second colour superimposed in ring form
- Core identification to DIN 47002

### YR-Bell Sheathed Cables

- Bare copper conductor, solid 0,8 mm
- Cores stranded in layer
- Core identification see Technical Informations
- Outer sheath of PVC
- Sheath colour white

## Properties

### YV-Equipment Wires

#### Tests

- PVC self-extinguishing and flame retardant acc. to IEC 60332-2 (equivalent DIN VDE 0472 part 804 test method A)

#### Installation notes

- The equipment wires are to be so uncoiled from drums or coils so that no kinks or twisting torsional stress can be occurred. Those are allowed to install as self-supporting shaped wires independently ensuring the free-movements so as to gain a compensating bending. These are used without any mechanical stress, pull, pressure, abrasion and notch. Several equipment wires are used together in form of a bunch. The insulating coverings are not be cut through the binding materials. The binding materials must be nonconductive and not allowed to swell or shrink in humidity. During the soldering process without jointing clamp, the soldering period is to be shortened so that the insulating covering should not be shrunk or injured.

## Application

**YV-Equipment Wires** Single core cables for use in small apparatus, switching and intercom system and for data transmission. These cables are not allowed for the installation of heavy current operation. Equipment wire are used for wiring to the switchboards, amplifiers and dial intercommunicating systems, measuring instruments, telephone exchange, clock centrals and data processing apparatus etc. These wires are not permitted to apply outside of equipment for high power ratings.

**YR-Bell Sheathed Cables** For different applications up to max. 100 V operating voltage, for fixed installation above and beneath plaster.

☑ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### YV-Equipment Wires

Part no.	No. cores x cond. Ø / core Ø mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
28900	1 x 0,3 / 0,7	0,7	0,7	1,2	-
28901	2 x 0,3 / 0,7	1,4	1,4	2,4	-
28902	3 x 0,3 / 0,7	1,6	2,1	3,6	-
28903	1 x 0,4 / 0,8	0,8	1,3	1,8	-
28904	2 x 0,4 / 0,8	1,6	2,5	3,6	-
28905	3 x 0,4 / 0,8	1,8	3,8	5,4	-
28906	1 x 0,5 / 0,9	0,9	2,0	2,5	-
28907	2 x 0,5 / 0,9	1,8	3,9	5,0	-
28908	3 x 0,5 / 0,9	2,0	5,9	7,5	-
28909	4 x 0,5 / 0,9	2,2	7,9	10,0	-
28910	1 x 0,8 / 1,4	1,4	5,0	6,0	-
28911	2 x 0,8 / 1,4	2,8	10,0	12,0	-
28912	3 x 0,8 / 1,4	3,0	15,0	18,0	-
28913	4 x 0,8 / 1,4	3,4	20,0	24,0	-
28914	1 x 1 / 1,8	1,8	7,9	10,0	-
28915	2 x 1 / 1,8	3,6	16,0	20,0	-
28916	3 x 1 / 1,8	4,0	24,0	30,0	-
28917	1 x 1,4 / 2,2	2,2	15,0	17,0	-
28918	1 x 1,8 / 2,8	2,8	25,0	27,5	-

### YR-Bell Sheathed Cables

Part no.	No. cores x cond. Ø / core Ø mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
28919	2 x 0,8 / 1,4	4,0	9,6	27,0	-
28920	3 x 0,8 / 1,4	4,4	14,4	33,0	-
28921	4 x 0,8 / 1,4	4,9	19,2	41,0	-
28922	5 x 0,8 / 1,4	5,3	24,0	48,0	-
28923	6 x 0,8 / 1,4	5,8	28,8	56,0	-
28924	8 x 0,8 / 1,4	6,5	38,0	70,0	-
28925	10 x 0,8 / 1,4	7,6	48,0	84,0	-
28926	12 x 0,8 / 1,4	7,7	58,0	98,0	-
28927	16 x 0,8 / 1,4	8,6	77,0	124,0	-
28928	24 x 0,8 / 1,4	10,5	115,0	188,0	-

Dimensions and specifications may be changed without prior notice. (R001)

# NSGAFÖU 1,8/3 kV



short-circuit and earth-fault proof up to 1000 V, oil resistant, for increased mechanical stress



## TECHNICAL DATA

Rubber sheathed single core cable acc. to DIN VDE 0250-602

**Temperature range** flexible -25°C to +80°C  
fixed -40°C to +80°C

**Permissible operating temperature of the conductor**  
+90°C

**Nominal voltage** AC U<sub>0</sub>/U 1800/3000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 2100 V  
three-phase alternating current (AC) conductor/conductor 3600 V  
direct current (DC) conductor/earth 2700 V  
direct current (DC) conductor/conductor 5400 V

**Test voltage** 6000 V

**Minimum bending radius** flexible 10x Outer-Ø  
fixed 6x Outer-Ø

- x = without protective conductor
- Outer cladding: rubber (polychloropren) acc. to DIN VDE 0207-21 (compound type 5GM3)
- Colour: see table

## PROPERTIES

- resistant to: oil

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

For use in rail vehicles and buses, as well as in dry rooms. The cable is short-circuit and earth-fault proof in switchgear and distribution boards up to 1000 V. Normative permissible laying types are: in pipes, closed installation ducts, for connecting moving parts, device wiring and bundled. Not for use on cable ladders and cable trays.

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber (EPR) acc. to DIN VDE 0207-20 (compound type 3G13)

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Colour: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
38501	1 x 1.5	16	5.1 - 7.0	14.4	65.0
38502	1 x 2.5	14	5.6 - 7.5	24.0	80.0
38503	1 x 4	12	6.2 - 9.0	38.0	95.0
38504	1 x 6	10	6.7 - 9.5	58.0	110.0
38505	1 x 10	8	8.1 - 11.0	96.0	165.0
38506	1 x 16	6	9.1 - 13.0	154.0	235.0
38507	1 x 25	4	11.1 - 15.0	240.0	360.0
38508	1 x 35	2	12.3 - 16.5	336.0	460.0
38509	1 x 50	1	13.8 - 18.0	480.0	620.0
38510	1 x 70	2/0	15.5 - 20.5	672.0	820.0
38511	1 x 95	3/0	17.7 - 24.0	912.0	1070.0
38513	1 x 120	4/0	19.2 - 26.0	1152.0	1330.0
38514	1 x 150	300 kcmil	21.1 - 28.0	1440.0	1620.0
38512	1 x 185	350 kcmil	23.1 - 31.0	1776.0	1960.0
38515	1 x 240	500 kcmil	26.0 - 34.5	2304.0	2570.0
38516	1 x 300	600 kcmil	28.4 - 38.0	2880.0	3180.0

### Colour: orange

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
17001252	1 x 1.5	16	5.1 - 7.0	14.4	65.0
710665	1 x 2.5	14	5.6 - 7.5	24.0	80.0
710666	1 x 4	12	6.2 - 9.0	38.0	95.0
710223	1 x 6	10	6.7 - 9.5	58.0	110.0
17000914	1 x 10	8	8.1 - 11.0	96.0	165.0
17000915	1 x 16	6	9.1 - 13.0	154.0	235.0
17000916	1 x 25	4	11.1 - 15.0	240.0	360.0
17000917	1 x 35	2	12.3 - 16.5	336.0	460.0
17000918	1 x 50	1	13.8 - 18.0	480.0	620.0
17000919	1 x 70	2/0	15.5 - 20.5	672.0	820.0
17000920	1 x 95	3/0	17.7 - 24.0	912.0	1070.0
17000921	1 x 120	4/0	19.2 - 26.0	1152.0	1330.0
17000922	1 x 150	300 kcmil	21.1 - 28.0	1440.0	1620.0
17000923	1 x 185	350 kcmil	23.1 - 31.0	1776.0	1960.0
17000924	1 x 240	500 kcmil	26.0 - 34.5	2304.0	2570.0
17001253	1 x 300	600 kcmil	28.4 - 38.0	2880.0	3180.0

# NSHXAFÖ 1,8/3 kV



short-circuit and earth-fault proof up to 1000 V, oil resistant, for increased mechanical stress



## TECHNICAL DATA

Rubber sheathed single core cable acc. to E DIN VDE 0250-606

**Temperature range** flexible -25°C to +70°C  
fixed -40°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Nominal voltage** AC U<sub>0</sub>/U 1800/3000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 2100 V  
three-phase alternating current (AC) conductor/conductor 3600 V  
direct current (DC) conductor/earth 2700 V  
direct current (DC) conductor/conductor 5400 V

**Test voltage** 6000 V

**Minimum bending radius** flexible 10x Outer-Ø  
fixed 6x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber (EPR) acc. to DIN VDE 0207-20 (compound type 3G13)
- x = without protective conductor
- Outer cladding: halogen-free polymer acc. to DIN VDE 0207-24 (compound type HM3)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø max. mm	Cu factor per km	Weight kg/km, approx.
38517	1 x 1.5	16	7.0	14.4	62.0
38518	1 x 2.5	14	7.5	24.0	76.0
38519	1 x 4	12	9.0	38.0	95.0
38520	1 x 6	10	9.5	58.0	140.0
38521	1 x 10	8	11.0	96.0	190.0
38522	1 x 16	6	13.0	154.0	270.0
38523	1 x 25	4	15.0	240.0	410.0
38524	1 x 35	2	16.5	336.0	490.0

- Colour: black

## PROPERTIES

- resistant to: oil
- halogen-free

## TESTS

- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

For use in rail vehicles and buses, as well as in dry rooms. The cable is short-circuit and earth-fault proof in switchgear and distribution boards up to 1000 V. Normative permissible laying types are: in pipes, closed installation ducts, for connecting moving parts, device wiring and bundled. Not for use on cable ladders and cable trays.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø max. mm	Cu factor per km	Weight kg/km, approx.
38525	1 x 50	1	18.0	480.0	650.0
38526	1 x 70	2/0	20.5	672.0	900.0
38527	1 x 95	3/0	24.0	912.0	1200.0
38528	1 x 120	4/0	26.0	1152.0	1450.0
38529	1 x 150	300 kcmil	28.0	1440.0	1800.0
38530	1 x 185	350 kcmil	31.0	1776.0	2200.0
38531	1 x 240	500 kcmil	34.5	2304.0	2650.0
38532	1 x 300	600 kcmil	38.0	2880.0	3250.0



## Technical data

### ESUY (H00 V-D)

- Earthing cable of braid wires over core strands in adapted to DIN VDE 0283 part 3 and EN 61138

### ESY

- Earthing cable in adapted to DIN VDE 0283 part 3 and EN 61138

### ESUY (H00 V-D) and ESY

- **Conductor resistance** at 20°C according DIN VDE 0283 part 3
- **Temperature range** -5°C to +70°C
- **Test voltage** 2000 V
- **Spark test** (during winding)
  - 16 mm<sup>2</sup> to 35 mm<sup>2</sup> = 5000 V
  - 50 mm<sup>2</sup> to 70 mm<sup>2</sup> = 6000 V
  - 95 mm<sup>2</sup> to 240 mm<sup>2</sup> = 8000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimal bending radius** 12x outer Ø

## Cable structure

### ESUY (H00V-D)

- Bare copper-conductor, extra fine-wire, high flexible
- Braiding of bare copper wires over the stranded copper conductor
- Outer sheath of PVC compound type TM2 according DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour transparent (glass clear)

### ESY

- Bare Cu-conductor, fine-wire
- Copper conductors of stranded wires
- Outer sheath of PVC compound type TM2 according DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour transparent (glass clear)

## Properties

- For these cable types no nominal voltages are mentioned, as these are: only used for earthing performances
- For further requirements see European Norm EN 61230 and DIN VDE 0683 part 100: "Live working - Portable equipment for earthing and earthing"

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

### ESUY (H00V-D)

These high flexible earth conductors are used for earthing of portable equipment and short-circuiting. These cables specially perform a protective function in repair live working of high voltage power supply company as EVU, in railway systems, failing current equipment, alternating current systems and in networks of transmission and distribution. Because of that these are designated as safety cables.

### ESY

These earthing cables offer special characteristics with low weights, high flexibility to a wide temperature range and the behavior in high temperature. The protective sheath over conductor assures the essential function for protection against the mechanical and chemical stresses.

### ESUY (H00V-D), high flexible

Part no.	Cross-section mm <sup>2</sup>	Cond. make-up n x wire Ø	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28930	16	4200 x 0,07	8,3	194,0	230,0	6
28931	25	3192 x 0,1	9,5	280,0	335,0	4
28932	35	4480 x 0,1	11,2	415,0	475,0	2
28933	50	6383 x 0,1	13,2	585,0	670,0	1
28934	70	8918 x 0,1	15,6	820,0	905,0	2/0
28935	95	12100 x 0,1	17,4	1090,0	1220,0	3/0
28936	120	15300 x 0,1	19,8	1360,0	1505,0	4/0
28937	150	19152 x 0,1	23,4	1650,0	1940,0	300 kcmil
28938	185	23580 x 0,1	26,6	2150,0	2390,0	350 kcmil
28939	240	30600 x 0,1	30,2	2750,0	3090,0	500 kcmil

### ESY, flexible

Part no.	Cross-section mm <sup>2</sup>	Cond. make-up n x wire Ø	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28940	16	525 x 0,2	8,4	155,0	185,0	6
28941	25	798 x 0,2	9,8	240,0	270,0	4
28942	35	1120 x 0,2	11,4	336,0	390,0	2
28943	50	1617 x 0,2	13,8	480,0	575,0	1
28944	70	2254 x 0,2	16,4	672,0	810,0	2/0
28945	95	3087 x 0,2	18,2	912,0	1080,0	3/0
28946	120	3822 x 0,2	20,1	1152,0	1320,0	4/0
28947	150	4802 x 0,2	23,0	1440,0	1680,0	300 kcmil

Dimensions and specifications may be changed without prior notice. (RK01)

# Stranded Copper Conductor

tinned, soft annealed



## Cable structure

Copper conductor, tinned, acc. to DIN VDE 0295 class 2, multistranded  
and  
Copper conductor, tinned, acc. to DIN VDE 0295 class 5, finely stranded.

## Minimum bending radius

fixed installation 6x outer Ø

## Application

Stranded copper conductor for earthing machines and plant equipment. Tin coating protects against corrosion.  
For use in BBN ring-conductor system for equipotential bonding in the automotive industry and others.

**CBN** = common bonding network

The stranded construction improves the mechanical properties:  
flexible, consistent diameter and compact structure.

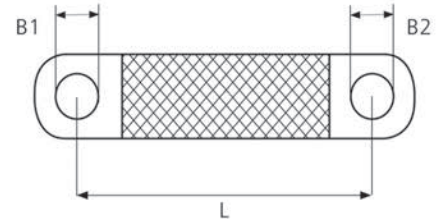
### Conductor construction class 2, multistranded

Part no.	Crosssection mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11008930	6	3,1	58	58	-
11008931	10	4,0	96	96	-
11008932	16	5,1	154	154	-
11008933	25	6,3	240	240	-
11008934	35	7,5	336	336	-
11008935	50	9,0	480	480	-
11008936	70	10,8	672	672	-
11008937	95	12,8	912	912	-
11008938	120	14,1	1152	1152	-
11008939	150	15,8	1440	1440	-
11008940	185	17,5	1776	1776	-
11008941	240	20,1	2304	2304	-

### Conductor construction class 5, finely stranded

Part no.	Crosssection mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11008942	6	3,15	58	58	-
11008940	10	4,0	96	96	-
11008941	16	5,1	154	154	-
11008943	25	6,6	240	240	-
11008944	35	7,7	336	336	-
11008945	50	9,4	480	480	-
11008946	70	11,5	672	672	-
11008947	95	13,0	912	912	-
11008948	120	14,5	1152	1152	-
11008949	150	17,5	1440	1440	-
11008950	185	19,5	1776	1776	-
11008951	240	21,5	2304	2304	-

Dimensions and specifications may be changed without prior notice.



## TECHNICAL DATA

### Cu Earthing Strap

Temperature range	-20°C to +125°C
individual strand size	0.2 mm

## ■ STRUCTURE

- Material: copper tinned

## ■ PROPERTIES

- rounded contacts
- contact areas made of seamless, pressed ferrules

## ■ APPLICATION

- automobile industry
- robots
- Control cabinet construction
- for EMC applications (interference elimination)

## ■ NOTES

- other lengths and inner diameters available on request
- Legend:  
Dimensions  
B1 - Stud hole  
B2 - Stud hole  
L - Length

Part no.	Type	Cross-sec. mm <sup>2</sup>	Length mm	Boring mm	Packaging unit (in pc.)
11008412	HELU-MB-CUv-6-150-4.5/6.5-R	6	150.0	4.5 / 6.5	50
11018291	HELU-MB-CUv-6-150-6.5/6.5-R	6	150.0	6.5 / 6.5	50
11008415	HELU-MB-CUv-6-300-6.5/6.5R	6	300.0	6.5 / 6.5	50
11008411	HELU-MB-CUv-6-500-6.5/6.5-R	6	500.0	6.5 / 6.5	50
11008413	HELU-MB-CUv-6-200-8.5/8.5-R	6	200.0	8.5 / 8.5	50
11008421	HELU-MB-CUv-10-200-6.5/6.5-R	10	200.0	6.5 / 6.5	50
11017752	HELU-MB-CUv-10-200-6.5/8.5-R	10	200.0	6.5 / 8.5	50
11008423	HELU-MB-CUv-10-300-6.5/6.5-R	10	300.0	6.5 / 6.5	50
11017753	HELU-MB-CUv-10-300-6.5/8.5-R	10	300.0	6.5 / 8.5	50
11008422	HELU-MB-CUv-10-200-8.5/8.5-R	10	200.0	8.5 / 8.5	50
11008424	HELU-MB-CUv-10-300-8.5/8.5-R	10	300.0	8.5 / 8.5	50
11008425	HELU-MB-CUv-10-400-8.5/8.5-R	10	400.0	8.5 / 8.5	50
11017610	HELU-MB-CUv-10-500-8.5/8.5-R	10	500.0	8.5 / 8.5	50
11021421	HELU-MB-CUv-16-150-6.5/6.5-R	16	150.0	6.5 / 6.5	50
11008443	HELU-MB-CUv-16-200-6.5/6.5-R	16	200.0	6.5 / 6.5	50
11008445	HELU-MB-CUv-16-200-6.5/8.5-R	16	200.0	6.5 / 8.5	50





Part no.	Type	Cross-sec. mm <sup>2</sup>	Length mm	Boring mm	Packaging unit (in pc.)
11008446	HELU-MB-CUv-16-250-6.5/8.5-R	16	250.0	6.5 / 8.5	50
11008444	HELU-MB-CUv-16-300-6.5/6.5-R	16	300.0	6.5 / 6.5	50
11008447	HELU-MB-CUv-16-300-6.5/8.5-R	16	300.0	6.5 / 8.5	50
11008442	HELU-MB-CUv-16-100-8.5/8.5-R	16	100.0	8.5 / 8.5	50
11008450	HELU-MB-CUv-16-1200-8.5/8.5-R	16	1200.0	8.5 / 8.5	50
11017281	HELU-MB-CUv-16-150-8.5/8.5-R	16	150.0	8.5 / 8.5	50
11008378	HELU-MB-CUv-16-200-8.5/8.5-R	16	200.0	8.5 / 8.5	50
11017273	HELU-MB-CUv-16-300-8.5/10.5-R	16	300.0	8.5 / 10.5	50
11008379	HELU-MB-CUv-16-300-8.5/8.5-R	16	300.0	8.5 / 8.5	50
11017756	HELU-MB-CUv-16-400-8.5/6.5-R	16	400.0	8.5 / 6.5	50
11008441	HELU-MB-CUv-16-400-8.5/8.5-R	16	400.0	8.5 / 8.5	50
11017286	HELU-MB-CUv-16-450-8.5/10.5-R	16	450.0	8.5 / 10.5	50
11008448	HELU-MB-CUv-16-500-8.5/8.5-R	16	500.0	8.5 / 8.5	50
11008449	HELU-MB-CUv-16-600-8.5/8.5-R	16	600.0	8.5 / 8.5	50
11008461	HELU-MB-CUv-25-200-8.5/8.5-R	25	200.0	8.5 / 8.5	50
11008462	HELU-MB-CUv-25-300-8.5/8.5-R	25	300.0	8.5 / 8.5	50
11017762	HELU-MB-CUv-25-500-8.5/8.5-R	25	500.0	8.5 / 8.5	50
11009170	HELU-MB-CUv-35-500-8.5/8.5-R	35	500.0	8.5 / 8.5	50
11009219	HELU-MB-CUv-50-300-10.5/10.5-R	50	300.0	10.5 / 10.5	50





# Unipolari di installazione

Armonizzati	76
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Sicurezza	106
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Media tensione	124
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# H07RN-F / 07RN-F

oil resistant, weather-resistant



## TECHNICAL DATA

Rubber connection cable, H07RN-F acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21; 07RN-F in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

**Temperature range** flexible -25°C to +60°C  
fixed -30°C to +60°C

**Permissible operating temperature of the conductor** +60°C

**Nominal voltage** AC U<sub>0</sub>/U 450/750 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 476 V  
three-phase alternating current (AC) conductor/conductor 825 V  
direct current (DC) conductor/earth 619 V  
direct current (DC) conductor/conductor 1238 V

**Test voltage core/core** 2500 V

**Tensile stress** during installation and operation, 15 N/mm<sup>2</sup>

**Minimum bending radius** fixed 4x Outer-Ø  
flexible, guidance via roles 7.5x Outer-Ø  
flexible, winding on drums 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-1 / DIN EN 50363-1 (compound type EI4)

- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black  
2 - 5 core(s): colour coded  
7 - 37 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-2-1 / DIN EN 50363-2-1 (compound type EM2)
- Sheath colour: black

## PROPERTIES

- resistant to: oil, weathering effects
- for outdoor use

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
H07RN-F: HAR  
EAC

## APPLICATION

Heavy duty, rubber sheathed cable for use with medium mechanical stress in dry, damp, wet rooms, in agricultural premises and outdoors. Suitable for equipment in commercial operations, e.g. heating plates, hand lamps, electric tools such as drills or circular saws. For fixed installation on plaster as well as in temporary constructions. When installed in pipes or similar enclosed systems, the use of the cable is permitted up to and including 1000 V AC voltage or up to 750 V DC voltage against earth.

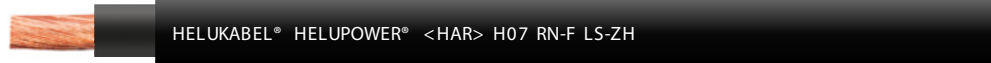
## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### H07RN-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37001	1 x 1.5	16	5.7 - 7.1	14.4	58.0
37002	1 x 2.5	14	6.3 - 7.9	24.0	71.0
37003	1 x 4	12	7.2 - 9.0	38.0	100.0
37004	1 x 6	10	7.9 - 9.8	58.0	130.0
37005	1 x 10	8	9.5 - 11.9	96.0	230.0
37006	1 x 16	6	10.8 - 13.4	154.0	290.0
37007	1 x 25	4	12.7 - 15.8	240.0	420.0
37008	1 x 35	2	14.3 - 17.9	336.0	530.0
37009	1 x 50	1	16.5 - 20.6	480.0	750.0
37010	1 x 70	2/0	18.6 - 23.3	672.0	960.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37011	1 x 95	3/0	20.8 - 26.0	912.0	1250.0
37012	1 x 120	4/0	22.8 - 28.6	1152.0	1560.0
37013	1 x 150	300 kcmil	25.2 - 31.4	1440.0	1900.0
37014	1 x 185	350 kcmil	27.6 - 34.4	1776.0	2300.0
37015	1 x 240	500 kcmil	30.6 - 38.3	2304.0	2950.0
37016	1 x 300	600 kcmil	33.5 - 41.9	2880.0	3600.0
37017	1 x 400	750 kcmil	37.4 - 46.8	3840.0	4600.0
37018	1 x 500	1000 kcmil	41.3 - 52.0	4800.0	6000.0



HELUKABEL® HELUPOWER® <HAR> H07 RN-F LS-ZH

## TECHNICAL DATA

Rubber connection cable acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

**Temperature range** flexible -40°C to +90°C  
fixed -50°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Short-circuit temperature at conductor** +250°C

**Nominal voltage** AC  $U_0/U$  450/750 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 476 V  
three-phase alternating current (AC) conductor/conductor 825 V  
direct current (DC) conductor/earth 619 V  
direct current (DC) conductor/conductor 1238 V

**Test voltage core/core** 2500 V

**Minimum bending radius** flexible 6x Outer-Ø  
fixed 4x Outer-Ø

- Sheath colour: black

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects, lubricating oils, greases
- for outdoor use
- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

Halogen-free rubber sheathed cables for use with medium mechanical stress in dry, damp, wet rooms and outdoors. Can only be used in stagnant waters (also in salt water) up to a water depth of 100 m (ADB) and a water temperature of min. +5°C. When installed in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC voltage or up to 750 V DC voltage against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special rubber
- Core identification acc. to DIN VDE 0293-308, 1 core(s): black  
2 - 5 core(s): colour coded  
7 - 12 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special rubber

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30737	1 x 1.5	16	5.7 - 6.5	14.4	51.0
30738	1 x 2.5	14	6.3 - 7.2	24.0	67.0
30739	1 x 4	12	7.2 - 8.1	38.0	92.0
30740	1 x 6	10	7.9 - 8.8	58.0	121.0
30741	1 x 10	8	9.5 - 11.5	96.0	186.0
30742	1 x 16	6	10.8 - 13.0	154.0	256.0
30743	1 x 25	4	12.7 - 15.0	240.0	368.0
30744	1 x 35	2	14.3 - 16.5	336.0	485.0
30745	1 x 50	1	16.5 - 19.5	480.0	668.0
30746	1 x 70	2/0	18.6 - 22.5	672.0	905.0
30747	1 x 95	3/0	20.8 - 25.4	912.0	1180.0
30748	1 x 120	4/0	22.8 - 27.6	1152.0	1460.0
30749	1 x 150	300 kcmil	25.2 - 30.3	1440.0	1810.0
30750	1 x 185	350 kcmil	27.6 - 33.0	1776.0	2165.0
30751	1 x 240	500 kcmil	30.6 - 36.3	2304.0	2750.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30752	1 x 300	600 kcmil	33.5 - 39.0	2880.0	3271.0
30753	1 x 400	750 kcmil	37.4 - 41.5	3840.0	4286.0
30754	1 x 500	1000 kcmil	41.3 - 46.0	4800.0	5301.0
30755	1 x 630	1250 kcmil	45.5 - 50.0	6048.0	6959.0





## Technical data

- Water resistant heavy hose pipe to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range**  
flexing -25°C  
fixed installation -40°C  
in water max. +40°C
- Permissible **operating temperature** at conductor +60°C
- **Nominal voltage**  $U_0/U$  450/750 V  
in case of protected and fixed installation  $U_0/U$  600/1000 V
- **Test voltage** 2500 V
- **Permanent tensile load**  
max. 15 N/mm<sup>2</sup>
- **Minimum bending radius**  
flexing 6x cable  $\emptyset$   
fixed installation 4x cable  $\emptyset$

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber compound type EI4 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308  
- up to 5 cores coloured  
- from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of special polychloroprene rubber
- Outer sheath black

## Properties

- **Resistant to**  
Ozone  
Weather
- The core identification of a single core sheathed, of an insulated wire is black.

## Tests

- Oil resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404
- Behaviour in fire to DIN VDE 0482-332-1-2  
DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Specifically designed for use in fresh water up to 10 m water depth and a maximum water temperature of 40°C for connection of submersible pumps and similar applications. Not suitable for underwater power transmission systems or in waterways or in areas where mechanical damage is possible which represent a potential danger.

☞ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\emptyset$ min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
37287	1 x 1,5	5,7 - 7,1	14,4	58,0	16
37288	1 x 2,5	6,3 - 7,9	24,0	71,0	14
37289	1 x 4	7,2 - 9,0	38,0	100,0	12
37290	1 x 6	7,9 - 9,8	58,0	130,0	10
37291	1 x 10	9,5 - 11,9	96,0	230,0	8
37292	1 x 16	10,8 - 13,4	154,0	290,0	6
37293	1 x 25	12,7 - 15,8	240,0	420,0	4
37294	1 x 35	14,3 - 17,9	336,0	530,0	2
37295	1 x 50	16,5 - 20,6	480,0	750,0	1
37296	1 x 70	18,6 - 23,3	672,0	960,0	2/0
37297	1 x 95	20,8 - 26,0	912,0	1250,0	3/0
37298	1 x 120	22,8 - 28,6	1152,0	1560,0	4/0
37299	1 x 150	25,2 - 31,4	1440,0	1900,0	300 kcmil
37300	1 x 185	27,6 - 34,4	1776,0	2300,0	350 kcmil
37301	1 x 240	30,6 - 38,3	2304,0	2950,0	500 kcmil
37302	1 x 300	33,5 - 41,9	2880,0	3600,0	600 kcmil
37303	1 x 400	37,4 - 46,8	3840,0	4600,0	750 kcmil
37304	1 x 500	41,3 - 52,0	4800,0	6000,0	1000 kcmil

Dimensions and specifications may be changed without prior notice. (RI01)

# H07ZZ-F

for heavy mechanical stress



HELUKABEL® <HAR> H07 ZZ-F

## TECHNICAL DATA

Control and connection cable acc. to DIN VDE 0285-525-3-21 / DIN EN 50525-3-21

Temperature range flexible -5°C to +80°C  
fixed -20°C to +80°C

Permissible operating temperature of the conductor +90°C

Nominal voltage flexible AC  $U_0/U$  450/750 V

Test voltage core/core 2500 V

Minimum bending radius flexible 8x Outer-Ø  
fixed installation 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-5 / DIN EN 50363-5 (compound type EI8)
- Core identification acc. to DIN VDE 0293-308,
  - 1 core(s): black
  - 2 - 5 core(s): colour coded
  - 6 - 36 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,
  - G = with protective conductor GN-YE, in the outer layer,
  - x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-6 / DIN EN 50363-6 (compound type EM8)
- Sheath colour: black

## ■ PROPERTIES

- resistant to: ozone
- halogen-free

## ■ TESTS

- halogen-free acc. to DIN VDE 0285-525-1 / DIN EN 50525-1 appendix B
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## ■ APPLICATION

For use in dry, damp and wet rooms in commercial and agricultural workshops for connecting equipment where cables are subject to heavy mechanical loads. When laid in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC or 750 V DC against earth.

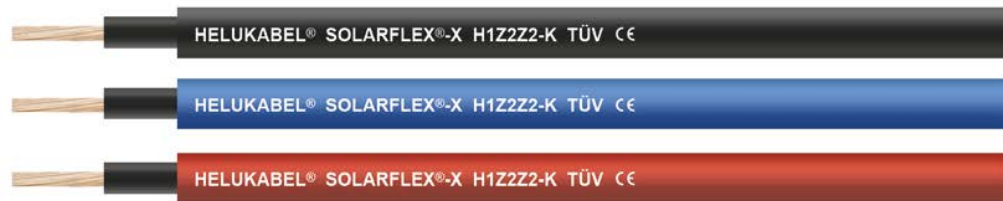
## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37176	1 x 1.5	16	5.7 - 7.1	14.4	58.0
37177	1 x 2.5	14	6.3 - 7.9	24.0	71.0
37178	1 x 4	12	7.2 - 9.0	38.0	100.0
37179	1 x 6	10	7.9 - 9.8	58.0	130.0
37180	1 x 10	8	9.5 - 11.9	96.0	230.0
37181	1 x 16	6	10.8 - 13.4	154.0	290.0
37182	1 x 25	4	12.7 - 15.8	240.0	420.0
37183	1 x 35	2	14.3 - 17.9	336.0	530.0
37184	1 x 50	1	16.5 - 20.6	480.0	750.0
37185	1 x 70	2/0	18.6 - 23.3	672.0	960.0
37186	1 x 95	3/0	20.8 - 26.0	912.0	1250.0
37187	1 x 120	4/0	22.8 - 28.6	1152.0	1560.0
37188	1 x 150	300 kcmil	25.2 - 31.4	1440.0	1900.0
37189	1 x 185	350 kcmil	27.6 - 34.4	1776.0	2300.0
37190	1 x 240	500 kcmil	30.6 - 38.3	2304.0	2950.0
37191	1 x 300	600 kcmil	33.5 - 41.9	2880.0	3600.0
37192	1 x 400	750 kcmil	37.4 - 46.8	3840.0	4600.0
37193	1 x 500	1000 kcmil	41.3 - 52.0	4800.0	6000.0

# SOLARFLEX®-X H1Z2Z2-K

1500 V DC



## TECHNICAL DATA

Cross-linked single core cable acc. to DIN VDE 0283-618 / DIN EN 50618

Temperature range fixed -40°C to +90°C

Permissible operating temperature of the conductor +120°C

Nominal voltage AC U<sub>0</sub>/U 1000/1000 V  
DC U<sub>0</sub>/U 1500/1500 V

Test voltage 6500 V

Minimum bending radius fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked compound
- x = without protective conductor
- Outer sheath: cross-linked compound
- Sheath colour: see table

## ■ PROPERTIES

- resistant to: UV radiation, ozone, weathering effects, water
- for outdoor use
- direct burial
- halogen-free

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- ozone-resistant acc. to DIN VDE 0283-618 / DIN EN 50618
- weather-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- water-resistant acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21 Appendix E
- DC Voltage resistance of the insulation acc. to DIN VDE 0283-618 / DIN EN 50618 Tab. 2
- Certifications: TÜV Rheinland

## ■ APPLICATION

SOLARFLEX®-X H1Z2Z2-K is used for wiring solar modules. Suitable for direct burial; recommendation: laying in pipes. Not suitable for permanent installation in water. The maximum permissible DC voltage of the system in which the cable is installed must not exceed 1.8 kV. The cable is suitable for use in and on devices and systems with protective insulation (protection class II).

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.	blue	red	black
					Part no.	Part no.	Part no.
1 x 2.5	14	4.8 - 5.4	24.0	45.0	<b>713544</b>	<b>713543</b>	<b>713529</b>
1 x 4	12	5.2 - 5.9	38.4	60.0	<b>713546</b>	<b>713545</b>	<b>713530</b>
1 x 6	10	5.8 - 6.4	57.6	80.0	<b>713570</b>	<b>713569</b>	<b>713531</b>
1 x 10	8	6.9 - 7.7	96.0	126.0	<b>713572</b>	<b>713571</b>	<b>713532</b>
1 x 16	6	7.7 - 8.5	153.6	170.0	<b>11022069</b>	<b>11022068</b>	<b>11022067</b>
1 x 25	4	10.0 - 10.8	240.0	270.0	<b>11022072</b>	<b>11022071</b>	<b>11022070</b>
1 x 35	2	11.5 - 12.3	336.0	365.0	<b>11022075</b>	<b>11022074</b>	<b>11022073</b>
1 x 50	1	13.2 - 14.0	480.0	508.0	<b>11022078</b>	<b>11022077</b>	<b>11022076</b>
1 x 70	2/0	15.6 - 16.6	672.0	729.0	<b>11022081</b>	<b>11022080</b>	<b>11022079</b>
1 x 95	3/0	17.4 - 18.4	912.0	923.0	<b>11022084</b>	<b>11022083</b>	<b>11022082</b>
1 x 120	4/0	19.4 - 20.4	1152.0	1178.0	<b>11022087</b>	<b>11022086</b>	<b>11022085</b>
1 x 150	300 kcmil	20.7 - 21.7	1440.0	1460.0	<b>11022090</b>	<b>11022089</b>	<b>11022088</b>
1 x 185	350 kcmil	24.0 - 25.0	1776.0	1777.0	<b>11022093</b>	<b>11022092</b>	<b>11022091</b>
1 x 240	450 kcmil	26.6 - 27.8	2304.0	2252.0	<b>11022096</b>	<b>11022095</b>	<b>11022094</b>



# HELUPOWER® SOLARFLEX®-X H1Z2Z2-K UL

EN/IEC 1500 V DC, UL 2000 V DC



## TECHNICAL DATA

Cross-linked single core cable acc. to DIN VDE 0283-618 / DIN EN 50618, IEC 62930, UL-Std. 4703 (PV Wire)

<b>Temperature range</b>	fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+120°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 1000/1000 V DC U <sub>0</sub> /U 1500/1500 V UL (PV) DC 2000 V
<b>Test voltage</b>	6500 V
<b>Minimum bending radius</b>	fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5, UL Std. 1581
- Core insulation: cross-linked compound
- x = without protective conductor
- Outer sheath: cross-linked compound
- Sheath colour: black

## ■ PROPERTIES

- resistant to: UV radiation, ozone, weathering effects, water
- for outdoor use
- direct burial
- halogen-free

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- ozone-resistant acc. to DIN VDE 0283-618 / DIN EN 50618
- weather-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- DC Voltage resistance of the insulation acc. to DIN VDE 0283-618 / DIN EN 50618 Tab. 2
- Sunlight Resistance (SUN RES) acc. to UL Std. 1581 Sec. 1200
- certifications and approvals:  
TÜV Rheinland

## ■ APPLICATION

HELUPOWER® SOLARFLEX®-X H1Z2Z2-K is used for wiring solar modules. Suitable for direct burial; recommendation: laying in pipes. Not suitable for permanent installation in water. The maximum permissible DC voltage of the system in which the cable is installed must not exceed 1.8 kV. The cable is suitable for use in and on devices and systems with protective insulation (protection class II). Approbations acc. to EN, IEC and UL allow for an economical storekeeping and simplification of parts lists.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11025147	1 x 4	12	6.3 - 6.7	38.4	66.8
11025148	1 x 6	10	6.8 - 7.2	57.6	87.3
11025149	1 x 10	8	8.3 - 8.9	96.0	140.5

# SOLARFLEX®-X H1Z2Z2-K NTS

1500 V DC , with rodent protection



## TECHNICAL DATA

Cross-linked single core cable in alignment with DIN VDE 0283-618 / DIN EN 50618

Temperature range fixed -40°C to +90°C

Permissible operating temperature of the conductor +120°C

Nominal voltage AC U<sub>0</sub>/U 1000/1000 V  
DC U<sub>0</sub>/U 1500/1500 V

Test voltage 6500 V

Minimum bending radius fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked compound
- x = without protective conductor
- Outer sheath: cross-linked compound
- Sheath colour: see table
- Stainless steel braiding (V2A)

## PROPERTIES

- resistant to: UV radiation, ozone, weathering effects
- for outdoor use
- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- ozone-resistant acc. to DIN VDE 0283-618 / DIN EN 50618
- weather-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- DC Voltage resistance of the insulation acc. to DIN VDE 0283-618 / DIN EN 50618 Tab. 2

## APPLICATION

SOLARFLEX®-X H1Z2Z2-K NTS is used for wiring solar modules. The maximum permissible DC voltage of the system in which the cable is installed must not exceed 1.8 kV. The cable is suitable for use in and on devices and systems with protective insulation (protection class II). Basic version H1Z2Z2-K according to DIN EN 50618 / TÜV.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.	blue	red	black
					Part no.	Part no.	Part no.
1 x 4	12	5.9 - 6.6	38.4	85.0	<b>11022800</b>	<b>11022803</b>	<b>17000101</b>
1 x 6	10	6.5 - 7.1	57.5	112.0	<b>11022801</b>	<b>11022804</b>	<b>17000102</b>
1 x 10	8	7.6 - 8.4	96.0	158.0	<b>11022802</b>	<b>11022805</b>	<b>17000103</b>

# HELUPOWER® H07RN-F LSOH

oil-resistant, implementable up to a water depth of 100 m



HELUKABEL® HELUPOWER® <HAR> H07 RN-F LS-ZH

## TECHNICAL DATA

Rubber connection cable acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

**Temperature range** flexible -40°C to +90°C  
fixed -50°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Short-circuit temperature at conductor** +250°C

**Nominal voltage** AC  $U_0/U$  450/750 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 476 V  
three-phase alternating current (AC) conductor/conductor 825 V  
direct current (DC) conductor/earth 619 V  
direct current (DC) conductor/conductor 1238 V

**Test voltage core/core** 2500 V

**Minimum bending radius** flexible 6x Outer-Ø  
fixed 4x Outer-Ø

- Sheath colour: black

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects, lubricating oils, greases
- for outdoor use
- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

Halogen-free rubber sheathed cables for use with medium mechanical stress in dry, damp, wet rooms and outdoors. Can only be used in stagnant waters (also in salt water) up to a water depth of 100 m (AD8) and a water temperature of min. +5°C. When installed in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC voltage or up to 750 V DC voltage against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special rubber
- Core identification acc. to DIN VDE 0293-308, 1 core(s): black  
2 - 5 core(s): colour coded  
7 - 12 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special rubber

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30737	1 x 1.5	16	5.7 - 6.5	14.4	51.0
30738	1 x 2.5	14	6.3 - 7.2	24.0	67.0
30739	1 x 4	12	7.2 - 8.1	38.0	92.0
30740	1 x 6	10	7.9 - 8.8	58.0	121.0
30741	1 x 10	8	9.5 - 11.5	96.0	186.0
30742	1 x 16	6	10.8 - 13.0	154.0	256.0
30743	1 x 25	4	12.7 - 15.0	240.0	368.0
30744	1 x 35	2	14.3 - 16.5	336.0	485.0
30745	1 x 50	1	16.5 - 19.5	480.0	668.0
30746	1 x 70	2/0	18.6 - 22.5	672.0	905.0
30747	1 x 95	3/0	20.8 - 25.4	912.0	1180.0
30748	1 x 120	4/0	22.8 - 27.6	1152.0	1460.0
30749	1 x 150	300 kcmil	25.2 - 30.3	1440.0	1810.0
30750	1 x 185	350 kcmil	27.6 - 33.0	1776.0	2165.0
30751	1 x 240	500 kcmil	30.6 - 36.3	2304.0	2750.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30752	1 x 300	600 kcmil	33.5 - 39.0	2880.0	3271.0
30753	1 x 400	750 kcmil	37.4 - 41.5	3840.0	4286.0
30754	1 x 500	1000 kcmil	41.3 - 46.0	4800.0	5301.0
30755	1 x 630	1250 kcmil	45.5 - 50.0	6048.0	6959.0

# HELUPOWER® THERMFLEX® 145



conductor stranded with optimal lay lengths, temperature-resistant, improved behaviour in case of fire



## TECHNICAL DATA

### Sheathed single core cable

**Temperature range** flexible -40°C to +120°C  
fixed -55°C to +145°C

**Short circuit temperature at the conductor**  
+250°C

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 700 V  
three-phase alternating current (AC) conductor/conductor 1200 V  
direct current (DC) conductor/earth 900 V  
direct current (DC) conductor/conductor 1800 V

**Test voltage** 4000 V

**Minimum bending radius** flexible 12.5x Outer-Ø  
fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: black
- x = without protective conductor
- Outer sheath: cross-linked polyolefin
- Sheath colour: black

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, no release of corrosive and toxic gases, low smoke development

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

## ■ APPLICATION

This cable is used as a generator connection cable in wind power plants and wherever a high current carrying capacity is required and a reduced outer diameter is beneficial due to limited installation space. Other areas of application: connection cable of thermal class B (130°C) for motors, transformers, relays, coils, magnets; power unit connections in the automotive industry; halogen-free wiring of switch and control cabinets; connecting cable for heating devices; supply cable for high-performance luminaires in industrial areas, sports facilities and traffic infrastructure; wiring of charging stations and pantographs within e-Mobility applications.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001667	1 x 50	1	16.0	480.0	711.0
17001668	1 x 70	2/0	18.5	672.0	902.0
17001669	1 x 95	3/0	20.0	912.0	1028.0
17001670	1 x 120	4/0	21.0	1152.0	1515.0
17001671	1 x 150	250 kcmil	25.0	1440.0	1913.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001672	1 x 185	350 kcmil	28.5	1776.0	2243.0
17001673	1 x 240	400 kcmil	32.5	2304.0	2912.0
17001674	1 x 300	500 kcmil	35.0	2880.0	4089.0
17001675	1 x 400	750 kcmil	42.5	3840.0	5067.0

# HELUPOWER® THERMFLEX® 145-C



conductor stranded with optimal lay lengths, temperature-resistant, improved behaviour in case of fire, EMC-preferred type



## TECHNICAL DATA

### Sheathed single core cable

**Temperature range** flexible -40°C to +120°C  
fixed -55°C to +145°C

**Short circuit temperature at the conductor**  
+250°C

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 700 V  
three-phase alternating current (AC) conductor/conductor 1200 V  
direct current (DC) conductor/earth 900 V  
direct current (DC) conductor/conductor 1800 V

**Test voltage** 4000 V

**Minimum bending radius** flexible 12.5x Outer-Ø  
fixed 4x Outer-Ø

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, no release of corrosive and toxic gases, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

## APPLICATION

This cable is used as a generator connection cable in wind power plants and wherever a high current carrying capacity is required and a reduced outer diameter is beneficial due to limited installation space. Other areas of application: connection cable of thermal class B (130°C) for motors, transformers, relays, coils, magnets; power unit connections in the automotive industry; halogen-free wiring of switch and control cabinets; connecting cable for heating devices; supply cable for high-performance luminaires in industrial areas, sports facilities and traffic infrastructure; wiring of charging stations and pantographs within e-Mobility applications. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: black
- x = without protective conductor
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: cross-linked polyolefin
- Sheath colour: black

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001676	1 x 16	6	10.3	183.0	328.0
17001677	1 x 25	4	12.8	275.0	443.0
17001678	1 x 35	2	13.9	391.0	612.0
17001679	1 x 50	1	16.6	532.0	749.0
17001680	1 x 70	2/0	19.1	756.0	968.0
17001681	1 x 95	3/0	20.6	1030.0	1087.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001682	1 x 120	4/0	23.0	1289.0	1595.0
17001683	1 x 150	250 kcmil	25.6	1568.0	2033.0
17001684	1 x 185	350 kcmil	29.1	1941.0	2363.0
17001685	1 x 240	400 kcmil	33.1	2568.0	3099.0
17001686	1 x 300	500 kcmil	35.6	3147.0	4221.0

# HELUPOWER® 1100-RZ1-K LSOH GREEN

flexible, direct burial, low smoke development, flame-retardant



HELUKABEL® HELUPOWER® 1100-RZ1-K (AS) LSOH GREEN

## TECHNICAL DATA

Connection cable acc. to UNE 21123-4

<b>Temperature range</b>	flexible 0°C to +90°C fixed -15°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Short circuit temperature at the conductor</b>	+250°C (Short circuit temperature max. 5 s)
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	3500 V
<b>Minimum bending radius</b>	<25 mm: 4x Outer-ø 25-50 mm: 5x Outer-ø >50 mm: 6x Outer-ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE acc. to UNE-HD 603-1 (compound type DIX 3)
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black  
2 - 5 core(s): colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: Polyolefin acc. to UNE 21123-4 (compound type DMZ-E)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008159	1 x 10	8	8.1 - 9.4	96.0	140.0
11008167	1 x 16	6	9.1 - 10.4	153.6	195.0
11008175	1 x 25	4	10.9 - 12.0	240.0	285.0
11008183	1 x 35	2	12.3 - 13.2	336.0	380.0
11008191	1 x 50	1	13.8 - 14.9	480.0	520.0
11008199	1 x 70	2/0	15.5 - 17.1	672.0	715.0
11008207	1 x 95	3/0	17.1 - 18.7	912.0	925.0
11008215	1 x 120	4/0	19.3 - 20.7	1152.0	1160.0
11008221	1 x 150	300 kcmil	21.1 - 22.8	1440.0	1460.0
11008227	1 x 185	350 kcmil	23.0 - 24.8	1776.0	1780.0

- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation
- for outdoor use
- direct burial
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, reduced release of corrosive and toxic gases

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to UNE 211605
- CPR-class: C<sub>ca</sub> s1b d1 a1

## ■ APPLICATION

Suitable for fixed power supply installations in public and commercial buildings or in power distribution networks where a high degree of safety is required. Suitable for indoor and outdoor use, for laying in tubes and pipes and suitable for direct burial.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008233	1 x 240	500 kcmil	26.3 - 27.6	2304.0	2300.0
11008239	1 x 300	600 kcmil	29.0 - 31.0	2880.0	2910.0

# NHXMH-J / NHXMH-O

enhanced characteristics during fire conditions



## TECHNICAL DATA

Installation cable acc. to DIN VDE 0250-214

<b>Temperature range</b>	fixed -30°C to +70°C during installation +5°C to +70°C
<b>Permissible operating temperature of the conductor</b>	+70°C
<b>Short circuit temperature at the conductor</b>	+250°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, 1.5 - 10 mm<sup>2</sup>: solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1; 16 - 35 mm<sup>2</sup>: stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: XLPE
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black oder green-yellow  
2 - 5 core(s): colour coded  
7 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Core sheathing (filling compound) for multi-core cables
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-24 (compound type HM2)
- Sheath colour: grey (RAL 7035)

## PROPERTIES

- resistant to: ozone

- halogen-free
- flame-retardant
- reduced fire propagation, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-396 / DIN EN 50396

## APPLICATION

Halogen-free installation cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in industrial facilities, municipal facilities, hotels, airports, underground stations, railway stations, hospitals, department stores, banks, schools, theatres, cinemas, high-rise buildings, process control centres etc. Suitable for installation in dry, damp or wet environments; for installation above, on, in and under plaster as well as in masonry walls and in concrete, however not for direct embedding in vibration, compacted or tamped concrete. Suitable for outdoor installation as long as the cable is protected against direct sunlight.

## NOTES

- re = round, solid conductor
- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### NHXMH-O

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53300	1 x 1.5 re	16	5.0 - 8.4	15.0	49.0
53301	1 x 2.5 re	14	5.4 - 8.8	24.0	60.0
53302	1 x 4 re	12	6.0 - 9.5	39.0	80.0
53303	1 x 6 re	10	6.4 - 10.0	58.0	111.0
53304	1 x 10 re	8	7.4 - 11.3	96.0	160.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53305	1 x 16 rm	6	8.5 - 12.4	154.0	232.0

### NHXMH-J

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53192	1 G 4 re	12	6.0 - 9.5	39.0	80.0
53193	1 G 6 re	10	6.4 - 10.0	58.0	111.0
53194	1 G 10 re	8	7.4 - 11.3	96.0	160.0
53195	1 G 16 rm	6	8.5 - 12.4	154.0	232.0





### Technical data

- Rubber sheath cable acc. to DIN VDE 0250-812
- **Temperature range**  
flexing -25°C to +80°C  
fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  
 $U_0/U$  0,6/1 kV
- Max. permissible **operating voltage**  
- 3-Phase and single phase operation 700/1200 V  
- DC operation 900/1800 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
fixed installation 4x outer Ø  
flexing 5x outer Ø  
without forced operation 7,5x outer Ø

### Cable structure

- Tinned copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of rubber (EPR) compound type 3GI3 acc. to DIN VDE 0207-20
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay length
- Inner sheath of rubber compound type GM1b acc. to DIN VDE 0207-21
- Outer sheath of rubber compound type 5GM5 acc. to DIN VDE 0207-21
- Sheath colour: yellow

### Properties

- Resistant against hot penetration
- Abrasion resistant
- Notch resistant

### Resistant against

- Oils, ozone
- Fats and chemicals

### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Oil resistant to DIN EN 60811-404

### Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

### Application

Are suited as a connecting cable for very high mechanical stress in underground mining and tools for use in industries and outdoor use. They are also used for mining industry, surface mining, stone-pits, on building sites, outdoors as well as indoors. Suitable for fixed installation on plaster in dry, damp and wet areas. Not suitable for drumming and use in all types of machinery, such as robots, handling units and energy transfer units, where constant mobility is essential.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
38001	1 x 16	13,5	154,0	336,0	6
38002	1 x 25	16,5	240,0	473,0	4
38003	1 x 35	18,0	336,0	635,0	2
38004	1 x 50	20,0	480,0	866,0	1
38005	1 x 70	22,0	672,0	1145,0	2/0
38006	1 x 95	25,0	912,0	1475,0	3/0
38007	1 x 120	27,5	1152,0	1832,0	4/0
38008	1 x 150	30,0	1440,0	2000,0	300 kcmil
38009	1 x 185	34,0	1776,0	2450,0	350 kcmil
38010	1 x 240	37,0	2304,0	3190,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RI01)





## Technical data

- Special cables corresponding adapted to DIN VDE 0250/DIN VDE 0285-525-2-21 / DIN EN 50525-2-21
- **Temperature range** (max. temperature for the outer surface) -40°C to +80°C
- **Temperature limit in water:** max. +40°C, max. +60°C with limited duration of life
- **Temperature limit in air:** flexible -25°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  450/750 V
- **Operating voltage** at alternating and three-phase currents  $U_0/U$  413/825 V at direct currents  $U_0/U$  619/1238 V
- **Test voltage** 2,5 kV, 15 min
- Max. permitted **tensile stress** per mm<sup>2</sup> conductor 15 N
- **Minimum bending radius flexing** up to 8 mm cable Ø: 3x cable Ø > 8-12 mm cable Ø: 4x cable Ø > 12 mm cable Ø: 5x cable Ø
- **fixed installation** up to 12 mm cable Ø: 3x cable Ø > 12 mm cable Ø: 4x cable Ø

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation to EPR
- Core identification to DIN VDE 0293
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of special EPR
- Sheath colour blue

## Properties

- Good insulation properties when submerged in water
- Minimal weight gain under water
- The mechanical stability of the insulation materials remains constant even when submerged
- As rotor-connection cable for motors up to 1000 V with protected fixed installation in tubes.

## Note

- G = with green-yellow conductor
- x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Tauchflex-R is a special cable for use as a connecting and control cable for submersible motor pumps, underwater floodlights, floating switch and has proven its worth for constant use in drinking water, process water and service water up to an immersion depth of 300 m.

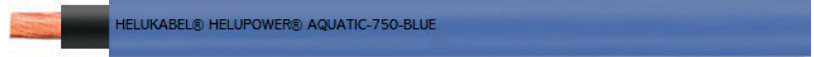
Tauchflex-R can also be installed for use in dry, damp and humid areas as well as in the open air. Not suitable for the installation in hazardous areas.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
37100	1 x 1,5	6,0	14,0	54,0	16
37101	1 x 2,5	6,7	24,0	76,0	14
37102	1 x 4	7,2	38,0	105,0	12
37103	1 x 6	7,9	58,0	135,0	10
37104	1 x 10	9,5	96,0	200,0	8
37105	1 x 16	11,5	154,0	290,0	6
37106	1 x 25	13,5	240,0	400,0	4
37107	1 x 35	15,0	336,0	560,0	2
37108	1 x 50	17,5	480,0	730,0	1
37109	1 x 70	20,0	672,0	1000,0	2/0
37110	1 x 95	22,5	912,0	1250,0	3/0
37111	1 x 120	24,0	1152,0	1650,0	4/0
37112	1 x 150	25,2	1440,0	2000,0	300 kcmil
37113	1 x 185	27,6	1776,0	2460,0	350 kcmil
37114	1 x 240	30,6	2304,0	3050,0	500 kcmil
37115	1 x 300	33,5	2880,0	3700,0	600 kcmil

# HELUPOWER® AQUATIC-750-BLUE

Drinking and salt water cable



## Technical data

- Special cable in reference to DIN VDE 0250 / DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**  
flexing -25°C to +50°C  
fixed installation -40°C to +80°C
- **Temperature in water** +60°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  
 $U_0/U$  450/750 V
- **Test voltage**  
2,5 kV
- **Minimum bending radius**  
fixed installation 5x outer  $\emptyset$

## Cable structure

- Bare copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of PVC
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
 $\leq$  5 cores: coloured
- GN-YE conductor, 3 cores and above
- Cores stranded with optimal lay length
- Outer sheath of cross-linked special compound
- Sheath colour: blue (RAL 5015)

## Properties

- Specially developed and tested for the absence of microbial growth and the emission of toxic substances.
- Resistant to chlorine up to 0,6 mg/l
- Resistant to salt water up to 6 %

## Approvals:

- DVGW: KTW BWGL
- WRAS
- DM 174
- PZH: Certificate  
B.BK.60110.0936.2022 NIZP PZH -  
PIB valid until 07.09.2025

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Useful for average mechanical stresses in continuously submerging pump lines for drinking and utility water, with a maximum immersion depth of 600 m. Useful as a connection cable in processing plants in the food and beverage industry, as well as fishponds and aquariums.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\emptyset$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11018127	1 x 1	4,1	9,6	22,0	18
11018128	1 x 1,5	4,3	14,4	27,0	16
11018129	1 x 2,5	5,4	24,0	44,0	14
11018130	1 x 4	5,8	38,0	59,0	12
11018131	1 x 6	6,8	58,0	83,0	10
11018132	1 x 10	7,8	96,0	127,0	8
11018133	1 x 16	8,7	154,0	185,0	6
11018134	1 x 25	10,3	240,0	277,0	4

Dimensions and specifications may be changed without prior notice. (R101)

Dimensions and specifications may be changed without prior notice. (R101)

# NYM-J / NYM-O / (N)YM-J

## PVC Installation cable



### TECHNICAL DATA

#### PVC Installation cable

<b>Temperature range</b>	fixed -40°C to +70°C during installation +5°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

### ■ CABLE STRUCTURE

- Copper conductor bare, 1.5 - 10 mm<sup>2</sup>: solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1; 16 - 35 mm<sup>2</sup>: stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification acc. to DIN VDE 0293-308,
  - 1 core(s): black or green-yellow
  - 2 - 5 core(s): colour coded
  - 7 - 12 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Core sheathing (filling compound) for multi-core cables

- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM1)
- Sheath colour: grey (RAL 7035)

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### ■ APPLICATION

For industrial and domestic installations; suitable for dry, damp and wet environments; for installation above, on, in and under plaster as well as in masonry walls and in concrete, however not for direct embedding in vibration, compacted or tamped concrete. Suitable for outdoor installation as long as the cable is protected against direct sunlight.

### ■ NOTES

- re = round, solid conductor
- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

#### NYM-O acc. to DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39001	1 x 1.5 re	16	5.4	14.4	40.0
39024	1 x 2.5 re	14	6.0	24.0	70.0
39002	1 x 4 re	12	6.6	38.0	80.0
39003	1 x 6 re	10	7.2	58.0	105.0
39004	1 x 10 re	8	8.4	96.0	155.0
39005	1 x 16 rm	6	9.9	154.0	230.0

#### NYM-J acc. to DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39050	1 G 1.5 re	16	5.4	14.4	40.0
39055	1 G 2.5 re	14	6.0	24.0	70.0
39051	1 G 4 re	12	6.6	38.0	80.0
39052	1 G 6 re	10	7.2	58.0	105.0
39053	1 G 10 re	8	8.4	96.0	155.0
39054	1 G 16 rm	6	9.9	154.0	230.0

#### (N)YM-J in alignment with DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39079	1 G 25 rm	4	12.0	240.0	325.0

# NHXMH-J / NHXMH-O

enhanced characteristics during fire conditions



## TECHNICAL DATA

Installation cable acc. to DIN VDE 0250-214

<b>Temperature range</b>	fixed -30°C to +70°C during installation +5°C to +70°C
<b>Permissible operating temperature of the conductor</b>	+70°C
<b>Short circuit temperature at the conductor</b>	+250°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, 1.5 - 10 mm<sup>2</sup>: solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1; 16 - 35 mm<sup>2</sup>: stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: XLPE
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black oder green-yellow  
2 - 5 core(s): colour coded  
7 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Core sheathing (filling compound) for multi-core cables
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-24 (compound type HM2)
- Sheath colour: grey (RAL 7035)

## PROPERTIES

- resistant to: ozone

- halogen-free
- flame-retardant
- reduced fire propagation, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-396 / DIN EN 50396

## APPLICATION

Halogen-free installation cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in industrial facilities, municipal facilities, hotels, airports, underground stations, railway stations, hospitals, department stores, banks, schools, theatres, cinemas, high-rise buildings, process control centres etc. Suitable for installation in dry, damp or wet environments; for installation above, on, in and under plaster as well as in masonry walls and in concrete, however not for direct embedding in vibration, compacted or tamped concrete. Suitable for outdoor installation as long as the cable is protected against direct sunlight.

## NOTES

- re = round, solid conductor  
rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### NHXMH-O

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53300	1 x 1.5 re	16	5.0 - 8.4	15.0	49.0
53301	1 x 2.5 re	14	5.4 - 8.8	24.0	60.0
53302	1 x 4 re	12	6.0 - 9.5	39.0	80.0
53303	1 x 6 re	10	6.4 - 10.0	58.0	111.0
53304	1 x 10 re	8	7.4 - 11.3	96.0	160.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53305	1 x 16 rm	6	8.5 - 12.4	154.0	232.0

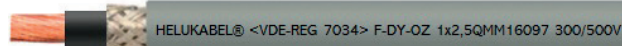
### NHXMH-J

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53192	1 G 4 re	12	6.0 - 9.5	39.0	80.0
53193	1 G 6 re	10	6.4 - 10.0	58.0	111.0
53194	1 G 10 re	8	7.4 - 11.3	96.0	160.0
53195	1 G 16 rm	6	8.5 - 12.4	154.0	232.0

# F-CY-JZ / F-CY-OZ / F-DY-OZ



EMC-preferred type



## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Test voltage core/screen</b>	2000 V
<b>Breakdown voltage</b>	8000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.5 - 2.5 mm <sup>2</sup> : approx. 150 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 0.5 - 2.5 mm <sup>2</sup> : approx. 270 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen:  
1 core(s): helically wound tinned copper wires, approx. coverage 85 %  
2 - 100 core(s): braided screen of tinned copper wires, approx. coverage 85 %
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)

- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
2 - 100 core(s): EAC  
2 - 100 core(s): VDE-Reg.-No. 7034, valid for temperature range up to +70°C

## ■ APPLICATION

For flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not outside; to be used as control and connecting cable in control and regulation technology, in the tool and machine building industry, in computer systems, as well as a signal cable in the electronic industry. A stabilizing foil separator between wire bound and braid reduces the outer diameter essentially and allows for smaller bending radius as well as lower weights. The disturbance free transmission of signals and impulses is ensured due to the high degree of screening. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order

### F-DY-OZ, helically wound tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16531	1 x 0.5	20	4.0	15.0	41.0
16557	1 x 0.75	19	4.3	19.0	44.0
16050	1 x 1	18	4.4	21.0	47.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16074	1 x 1.5	16	4.7	27.0	70.0
16097	1 x 2.5	14	5.5	39.0	50.0

# Single 600-J / Single 600-O

600 V



## TECHNICAL DATA

PVC sheathed single core cable acc. to UL-Std. 758 (AWM) Style 10107, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 600 V
<b>Test voltage</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special-PVC acc. to UL-Std. 1581
- Core identification: see table
- G = with protective conductor GN-YE, x = without protective conductor
- Outer sheath: PVC acc. to DIN VDE 0207-5 (compound type YM5), UL-Std. 1581
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation
- largely resistant to: oil, for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## ■ APPLICATION

PVC sheathed single core cable suitable for medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors. May not be laid directly in soil or water. This two-standard sheathed single core cables are preferably used in export-oriented mechanical engineering on machine tools, production lines and in plant construction.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Single 600-J, Core identification: green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10881	1 G 6	10	7.8	58.0	118.0
10883	1 G 10	8	9.0	96.0	180.0
10885	1 G 16	6	10.0	154.0	250.0
10887	1 G 25	4	11.4	240.0	370.0
10889	1 G 35	2	13.0	336.0	490.0
10891	1 G 50	1	15.6	480.0	665.0
10893	1 G 70	2/0	17.9	672.0	910.0
10895	1 G 95	3/0	19.5	912.0	1195.0
10897	1 G 120	4/0	22.3	1152.0	1545.0
10899	1 G 150	250 kcmil	25.0	1440.0	1750.0
10901	1 G 185	350 kcmil	28.6	1776.0	2320.0
10903	1 G 240	450 kcmil	31.7	2304.0	2960.0

### Single 600-O, Core identification: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10882	1 x 6	10	7.8	58.0	118.0
10884	1 x 10	8	9.0	96.0	180.0
10886	1 x 16	6	10.0	154.0	250.0
10888	1 x 25	4	11.4	240.0	370.0
10890	1 x 35	2	13.0	336.0	490.0
10892	1 x 50	1	15.6	480.0	665.0
10894	1 x 70	2/0	17.9	672.0	910.0
10896	1 x 95	3/0	19.5	912.0	1195.0
10898	1 x 120	4/0	22.3	1152.0	1545.0
10900	1 x 150	250 kcmil	25.0	1440.0	1750.0
10902	1 x 185	350 kcmil	28.6	1776.0	2320.0
10904	1 x 240	450 kcmil	31.7	2304.0	2960.0

# Single 600-CY-J / Single 600-CY-O

600 V, EMC-preferred type



## TECHNICAL DATA

PVC sheathed single core cable acc. to UL-Std. 758 (AWM) Style 10107, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 600 V
<b>Test voltage</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special-PVC acc. to UL-Std. 1581
- Core identification: see table
- G = with protective conductor GN-YE, x = without protective conductor
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-5 (compound type YM5), UL-Std. 1581
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation
- largely resistant to: oil, for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

PVC sheathed single core cable suitable for medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors. May not be laid directly in soil or water. This two-standard sheathed single core cables are preferably used in export-oriented mechanical engineering on machine tools, production lines and in plant construction. These copper screened cables are ideally suited for interference-free data signal transmission in measurement and control technology. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

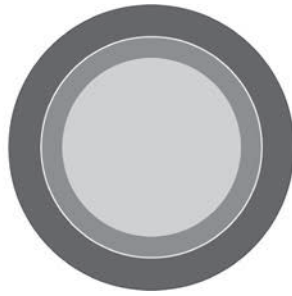
### Single 600-CY-J, Core identification: green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10910	1 G 6	10	7.8	72.0	140.0
10912	1 G 10	8	9.4	130.0	230.0
10914	1 G 16	6	10.4	190.0	300.0
10916	1 G 25	4	12.0	288.0	420.0
10918	1 G 35	2	14.4	405.0	615.0
10920	1 G 50	1	16.4	560.0	825.0
10922	1 G 70	2/0	18.5	780.0	1090.0
10924	1 G 95	3/0	20.1	1030.0	1395.0
10926	1 G 120	4/0	23.0	1285.0	1770.0
10928	1 G 150	250 kcmil	26.1	1570.0	1930.0
10930	1 G 185	350 kcmil	29.3	1940.0	2635.0
10932	1 G 240	450 kcmil	32.2	2530.0	3380.0

### Single 600-CY-O, Core identification: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10911	1 x 6	10	7.8	72.0	140.0
10913	1 x 10	8	9.4	130.0	230.0
10915	1 x 16	6	10.4	190.0	300.0
10917	1 x 25	4	12.0	288.0	420.0
10919	1 x 35	2	14.4	405.0	615.0
10921	1 x 50	1	16.4	560.0	825.0
10923	1 x 70	2/0	18.5	780.0	1090.0
10925	1 x 95	3/0	20.1	1030.0	1395.0
10927	1 x 120	4/0	23.0	1285.0	1770.0
10929	1 x 150	250 kcmil	26.1	1570.0	1930.0
10931	1 x 185	350 kcmil	29.3	1940.0	2635.0
10933	1 x 240	450 kcmil	32.2	2530.0	3380.0

# TOPFLEX® 302 / 302-UL very high flexible PVC single core double insulated 0,6/1kV



## Technical data

### TOPFLEX® 302

- Special PVC single-core cable with double insulation flexible at low temperatures
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 600/1000 V
- **A.C. test voltage**, 50 Hz  
3000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
for flexible installation  
5x cable Ø

### TOPFLEX® 302-UL

- Technical data as above, but
- with additional UL Approval Style 10107
- **Nominal voltage**  
UL 600 V

## Application

These cables are specially designed for use as connecting cables on sliding contacts for current collectors, and also for use in energy supply chains, automatic handling devices, robots, machine tools, machining and processing equipment, and nearly any area requiring flexible used and free motion. **CE** – The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

## Cable structure

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- PVC insulation flexible at low temperatures, natural colour
- PVC sheath compound TM2 flexible at low temperatures
- Sheath colour black

## Properties

- Sheath UV-resistant
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Chemical resistance see table Technical Information
- The cable is permissible for overvoltage category II

### TOPFLEX® 302 without UL-approval

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
72946	1 x 1,5	16	4,0	14,4	25,0
73924	1 x 2,5	14	4,5	24,0	42,0
72950	1 x 4	12	5,6	38,4	58,0
72945	1 x 6	10	6,1	57,6	85,0
75450	1 x 10	8	8,0	96,0	130,0
72947	1 x 16	6	9,8	153,6	190,0
75451	1 x 25	4	11,8	240,0	280,0
75452	1 x 35	2	12,9	336,0	400,0
75453	1 x 50	1	14,6	480,0	520,0
72944	1 x 70	2/0	17,5	672,0	720,0
75454	1 x 95	3/0	20,2	912,0	1050,0
75455	1 x 120	4/0	21,6	1152,0	1220,0
75456	1 x 150	300 kcmil	23,5	1440,0	1500,0
75457	1 x 185	350 kcmil	25,7	1776,0	1940,0
75458	1 x 240	500 kcmil	29,5	2304,0	2675,0

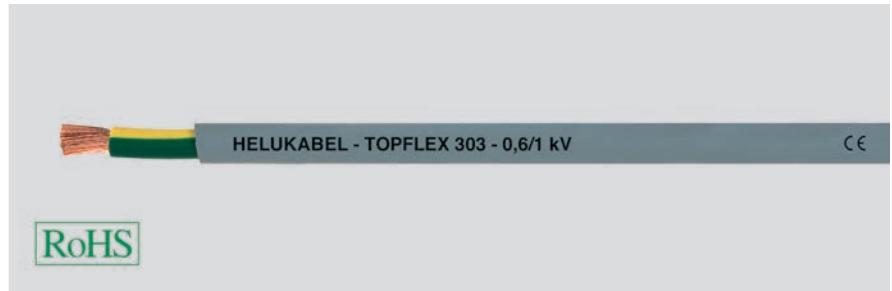
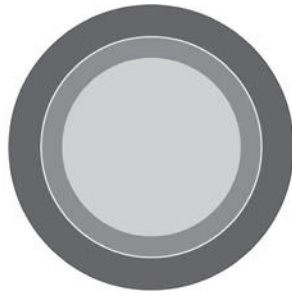
### TOPFLEX® 302 with UL-approval

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
700231	1 x 1,5	16	5,2	14,4	25,0
700232	1 x 2,5	14	6,4	24,0	42,0
700233	1 x 4	12	7,0	38,4	58,0
700234	1 x 6	10	7,5	57,6	85,0
701351	1 x 10	8	9,1	96,0	130,0
700114	1 x 16	6	10,8	153,6	190,0
701352	1 x 25	4	13,1	240,0	280,0
701353	1 x 35	2	14,1	336,0	400,0
701354	1 x 50	1	15,8	480,0	520,0
700235	1 x 70	2/0	19,0	672,0	720,0
701355	1 x 95	3/0	21,5	912,0	1050,0
701356	1 x 120	4/0	23,2	1152,0	1220,0
701357	1 x 150	300 kcmil	25,2	1440,0	1500,0
701358	1 x 185	350 kcmil	27,0	1776,0	1940,0
701359	1 x 240	500 kcmil	31,5	2304,0	2675,0

Dimensions and specifications may be changed without prior notice.



# TOPFLEX® 303 X07V-K-YÖ double insulation 0,6/1kV flexible PVC single core, oil resistant



## Technical data

- Special PVC single-core cable with double insulation and oil-resistant sheath
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage** U<sub>0</sub>/U 600/1000 V
- **A.C. test voltage**, 50 Hz  
3000 V
- **Insulation resistance**  
min. 20 MOhm/km
- **Minimum bending radius**  
flexing 12x cable Ø

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC
- Core identification BK or GN-YE
- Outer sheath of special PVC compound type TM5 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour grey

## Properties

- Largely resistant to oil, weather, and chemicals; Chemical resistance (see table Technical Information)
- Improved mechanical protection due the double insulation

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

This cable is used for conditions of increased mechanical stress. For flexible use with free movement without tensile stress or forced movements in dry, moist and wet environments, but not suitable for use outdoors. The cable may be laid in trays, troughs and channels.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### core-/sheath-color black/grey

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
75460	1 x 6	6,0	58,0	84,0	10
75461	1 x 10	9,5	96,0	143,0	8
75462	1 x 16	10,3	154,0	209,0	6
75463	1 x 25	11,1	240,0	308,0	4
75464	1 x 35	15,0	336,0	440,0	2
75465	1 x 50	17,5	480,0	572,0	1
75466	1 x 70	20,0	672,0	792,0	2/0
75467	1 x 95	22,0	912,0	1155,0	3/0
72184	1 x 120	23,5	1152,0	1267,0	4/0
72185	1 x 150	26,5	1440,0	1650,0	300 kcmil
75468	1 x 185	29,0	1776,0	2134,0	350 kcmil
74221	1 x 240	31,0	2304,0	2943,0	500 kcmil
72082	1 x 300	35,0	2880,0	3600,0	600 kcmil

### core-/sheath-color green-yellow/grey

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
75449	1 G 6	6,0	57,6	84,0	10
75469	1 G 10	9,5	96,0	143,0	8
73859	1 G 16	10,3	154,0	209,0	6
75470	1 G 25	11,1	240,0	325,0	4
75471	1 G 35	15,0	336,0	440,0	2
75472	1 G 50	17,5	480,0	572,0	1
75473	1 G 70	20,0	672,0	792,0	2/0
75474	1 G 95	22,0	912,0	1155,0	3/0
75475	1 G 120	23,5	1152,0	1267,0	4/0
75476	1 G 150	26,5	1440,0	1650,0	300 kcmil
75477	1 G 185	29,0	1776,0	2134,0	350 kcmil
75478	1 G 240	31,0	2304,0	2943,0	500 kcmil
75479	1 G 300	35,0	2280,0	3600,0	600 kcmil

Dimensions and specifications may be changed without prior notice.

# Single 602-RC-J / Single 602-RC-O

## 600 V



### TECHNICAL DATA

PVC sheathed single core cable acc. to UL-Std. 758 (AWM) Style 10107, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 600 V
<b>Test voltage</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 3x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PVC acc. to UL-Std. 1581
- Core identification: see table
- G = with protective conductor GN-YE,  
x = without protective conductor
- Outer sheath: PVC acc. to DIN VDE 0207-5 (compound type YM5), UL-Std. 1581
- Sheath colour: black (RAL 9005)
- Length marking: in metres

### ■ PROPERTIES

- resistant to: UV radiation

- largely resistant to: oil
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

### ■ APPLICATION

High flexible special single core cable for drag chains are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry and moist locations as well as for outdoor use. These two-norm cables primarily designed for exportorientated machinery manufacturer for flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. RC= Robotics Cable

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

#### Single 602-RC-J, Core identification: green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69601	1 G 10	8	9.4	96.0	180.0
69603	1 G 16	6	10.5	154.0	250.0
69605	1 G 25	4	11.6	240.0	370.0
69607	1 G 35	2	14.0	336.0	490.0
69609	1 G 50	1	16.6	480.0	665.0
69611	1 G 70	2/0	18.4	672.0	910.0
69613	1 G 95	3/0	19.6	912.0	1195.0
69615	1 G 120	4/0	23.0	1152.0	1545.0
69617	1 G 150	250 kcmil	25.2	1440.0	1750.0
69619	1 G 185	350 kcmil	29.0	1776.0	2320.0
69621	1 G 240	450 kcmil	32.5	2304.0	2960.0
69623	1 G 300	550 kcmil	36.4	2880.0	3550.0

#### Single 602-RC-O, Core identification: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69602	1 x 10	8	9.4	96.0	180.0
69604	1 x 16	6	10.5	154.0	250.0
69606	1 x 25	4	11.6	240.0	370.0
69608	1 x 35	2	14.0	336.0	490.0
69610	1 x 50	1	16.6	480.0	665.0
69612	1 x 70	2/0	18.4	672.0	910.0
69614	1 x 95	3/0	19.6	912.0	1195.0
69616	1 x 120	4/0	23.0	1152.0	1545.0
69618	1 x 150	250 kcmil	25.2	1440.0	1750.0
69620	1 x 185	350 kcmil	29.0	1776.0	2320.0
69622	1 x 240	450 kcmil	32.5	2304.0	2960.0
69624	1 x 300	550 kcmil	36.4	2880.0	3550.0

# Single 602-RC-CY-J / Single 602-RC-CY-O

600 V, EMC-preferred type



## TECHNICAL DATA

PVC sheathed single core cable acc. to UL-Std. 758 (AWM) Style 10107, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 600 V
<b>Test voltage</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 3x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PVC acc. to UL-Std. 1581
- Core identification: see table
- G = with protective conductor GN-YE,  
x = without protective conductor
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-5 (compound type YM5), UL-Std. 1581
- Sheath colour: orange (RAL 2003) / acc. to. DESINA
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

High flexible special single core screened cables for drag chains are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms. These two-norm cables primarily designed for exportorientated machinery manufacturer for flexible applications in machineries, machine tools, robot technics, for movable automated machinery parts. These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibility). EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends. RC= Robotics Cable

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

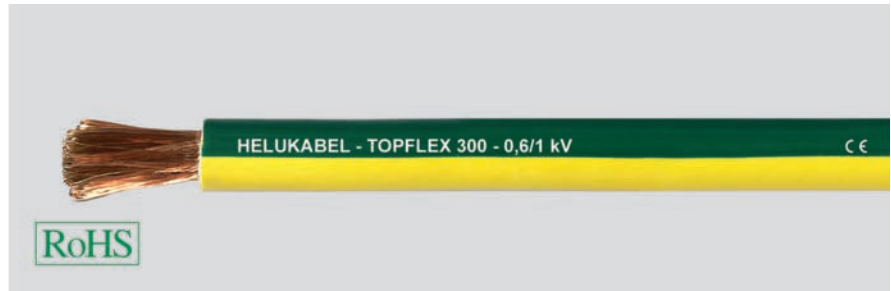
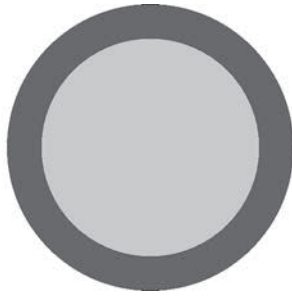
### Single 602-RC-CY-J, Core identification: green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69631	1 G 10	8	10.0	130.0	230.0
69633	1 G 16	6	11.1	190.0	300.0
69635	1 G 25	4	12.3	288.0	420.0
69637	1 G 35	2	14.7	405.0	615.0
69639	1 G 50	1	17.2	560.0	825.0
69641	1 G 70	2/0	19.0	780.0	1090.0
69643	1 G 95	3/0	21.2	1030.0	1395.0
69645	1 G 120	4/0	23.6	1285.0	1770.0
69647	1 G 150	250 kcmil	25.8	1570.0	1930.0
69649	1 G 185	350 kcmil	29.8	1940.0	2635.0
69651	1 G 240	450 kcmil	33.5	2530.0	3380.0
69653	1 G 300	550 kcmil	38.0	3140.0	4120.0

### Single 602-RC-CY-O, Core identification: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69632	1 x 10	8	10.0	130.0	230.0
69634	1 x 16	6	11.1	190.0	300.0
69636	1 x 25	4	12.3	288.0	420.0
69638	1 x 35	2	14.7	405.0	615.0
69640	1 x 50	1	17.2	560.0	825.0
69642	1 x 70	2/0	19.0	780.0	1090.0
69644	1 x 95	3/0	21.2	1030.0	1395.0
69646	1 x 120	4/0	23.6	1285.0	1770.0
69648	1 x 150	250 kcmil	25.8	1570.0	1930.0
69650	1 x 185	350 kcmil	29.8	1940.0	2635.0
69652	1 x 240	450 kcmil	33.5	2530.0	3380.0
69654	1 x 300	550 kcmil	38.0	3140.0	4120.0

# TOPFLEX® 300 high flexible PVC single core, 0,6/1kV for drag chain and free move application



## Technical data

- Special PVC single-core cable with oil-resistant insulation based on DIN VDE 0285-525-2-31 / DIN EN 50525-2-31
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 600/1000 V
- **A.C. test voltage**, 50 Hz  
3000 V
- **Insulation resistance**  
min. 20 MOhm/km
- **Minimum bending radius**  
for flexible installation  
7,5 cable Ø

## Cable structure

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- Oil-resistant special PVC insulation
- Colour see table, or as desired
- If this cable is to be double-insulated, then its external diameter and weight must be adapted.
- Caution with existing cables.

## Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Chemical resistance see table Technical Information

## Application

Thanks to their outstanding alternating bending stress characteristics, these cables are ideally suited for use in drag chains, and also for use in handling devices, robots, and nearly any area requiring flexible used and free motion. Due to its resistance to mineral oils these cables are well suited for use in mechanical engineering, tool making, and systems engineering, and in steel mills and rolling mills in particularly critical areas. Suitable for installation in dry, damp and wet environments. With the black sheath, can also be used outdoors.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### TOPFLEX® 300 black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
79623	1 x 2,5	4,2	24,0	42,0	14
79624	1 x 4	5,1	38,4	58,0	12
79625	1 x 6	6,0	57,6	85,0	10
79626	1 x 10	7,4	96,0	130,0	8
75431	1 x 16	8,8	154,0	210,0	6
75432	1 x 25	10,7	240,0	300,0	4
75433	1 x 35	12,1	336,0	420,0	2
70519	1 x 50	14,0	480,0	580,0	1
75434	1 x 70	16,3	672,0	780,0	2/0
73714	1 x 95	18,3	912,0	1010,0	3/0
75435	1 x 120	20,0	1152,0	1200,0	4/0
75436	1 x 150	23,0	1440,0	1600,0	300 kcmil
72872	1 x 185	24,8	1776,0	2030,0	350 kcmil
75437	1 x 240	28,7	2304,0	2600,0	500 kcmil

### TOPFLEX® 300 green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
79627	1 G 2,5	4,2	24,0	42,0	14
79628	1 G 4	5,1	38,4	58,0	12
79629	1 G 6	6,0	57,6	85,0	10
79630	1 G 10	7,4	96,0	130,0	8
75438	1 G 16	8,8	154,0	210,0	6
75439	1 G 25	10,7	240,0	300,0	4
75440	1 G 35	12,1	336,0	420,0	2
70536	1 G 50	14,0	480,0	580,0	1
75441	1 G 70	16,3	672,0	780,0	2/0
75442	1 G 95	18,3	912,0	1010,0	3/0
73885	1 G 120	20,0	1152,0	1200,0	4/0
75443	1 G 150	23,0	1440,0	1600,0	300 kcmil
75444	1 G 185	24,8	1776,0	2030,0	350 kcmil
75445	1 G 240	28,7	2304,0	2600,0	500 kcmil

### TOPFLEX® 300 red

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
79631	1 x 2,5	4,2	24,0	42,0	14
79632	1 x 4	5,1	38,4	58,0	12
79633	1 x 6	6,0	57,6	85,0	10
79634	1 x 10	7,4	96,0	130,0	8
78106	1 x 16	8,8	154,0	210,0	6
78107	1 x 25	10,7	240,0	300,0	4
78108	1 x 35	12,1	336,0	420,0	2
70518	1 x 50	14,0	480,0	580,0	1
78109	1 x 70	16,3	672,0	780,0	2/0
78110	1 x 95	18,3	912,0	1010,0	3/0
78111	1 x 120	20,0	1152,0	1200,0	4/0

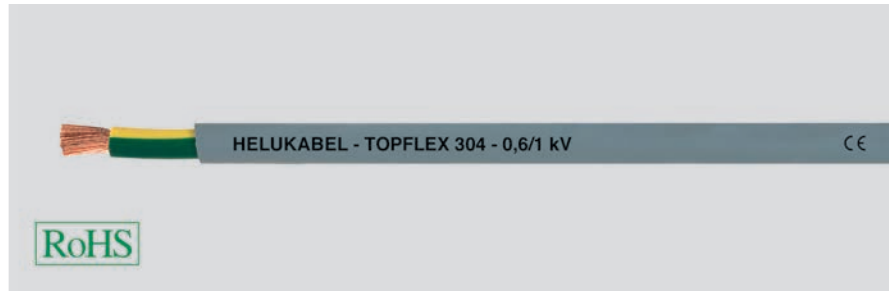
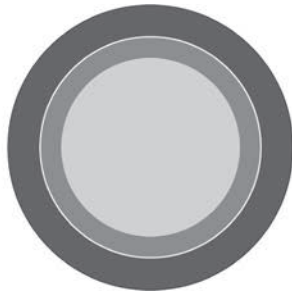
### TOPFLEX® 300 blue

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
79635	1 x 2,5	4,2	24,0	42,0	14
79636	1 x 4	5,1	38,4	58,0	12
79637	1 x 6	6,0	57,6	85,0	10
79638	1 x 10	7,4	96,0	130,0	8
78112	1 x 16	8,8	154,0	210,0	6
78113	1 x 25	10,7	240,0	300,0	4
78114	1 x 35	12,1	336,0	420,0	2
78115	1 x 50	14,0	480,0	580,0	1
78116	1 x 70	16,3	672,0	780,0	2/0
78117	1 x 95	18,3	912,0	1010,0	3/0
73884	1 x 120	20,0	1152,0	1200,0	4/0

Dimensions and specifications may be changed without prior notice.

# TOPFLEX® 304 / 304-C unscreened (double insulated)/ screened

## high flexible PVC single core 0,6/1kV for drag chain application



### Technical data

- Special PVC single-core cable
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 600/1000 V
- **A.c. test voltage**, 50 Hz  
3000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
for flexible installation  
5x cable Ø

### Cable structure

#### TOPFLEX® 304

- Bare copper, extra fine wire conductor to DIN VDE 0295 cl.6 and IEC 60228 cl.6
- PVC insulation, green-yellow
- PVC sheath compound TM2
- Sheath colour grey

#### TOPFLEX® 304-C

- Construction as above, but
- Tinned copper braid, coverage approx. 85%

### Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Chemical resistance see table Technical Information

### Application

Thanks to their outstanding alternating bending stress characteristics, these cables are ideally suited for use in drag chains, and also for use in handling devices, robots, and nearly any area requiring flexible used and free motion.

**TOPFLEX® 304-C** Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

#### TOPFLEX® 304

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
79639	1 G 2,5	14	4,5	24,0	42,0
79640	1 G 4	12	5,6	38,4	58,0
79641	1 G 6	10	6,1	57,6	85,0
71544	1 G 10	8	8,0	96,0	130,0
79642	1 G 16	6	9,8	154,0	190,0
79643	1 G 25	4	11,8	240,0	280,0
79644	1 G 35	2	12,9	336,0	400,0
79645	1 G 50	1	14,6	480,0	520,0
79646	1 G 70	2/0	17,5	672,0	720,0
79647	1 G 95	3/0	20,0	912,0	1050,0
79648	1 G 120	4/0	21,6	1152,0	1220,0
79649	1 G 150	300 kcmil	23,5	1440,0	1500,0
79650	1 G 185	350 kcmil	25,7	1776,0	1940,0
79651	1 G 240	500 kcmil	29,5	2304,0	2675,0
79652	1 G 300	600 kcmil	32,5	2880,0	3300,0

#### TOPFLEX® 304C

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
79653	1 G 2,5	14	5,9	40,0	55,0
79654	1 G 4	12	6,5	50,0	75,0
79655	1 G 6	10	8,3	88,0	125,0
79656	1 G 10	8	8,7	124,0	170,0
79657	1 G 16	6	10,3	190,0	300,0
79658	1 G 25	4	12,4	260,0	420,0
79659	1 G 35	2	13,7	405,0	620,0
79660	1 G 50	1	15,4	560,0	825,0
79661	1 G 70	2/0	17,5	780,0	1090,0
79662	1 G 95	3/0	21,0	1030,0	1395,0
79685	1 G 120	4/0	22,4	1311,0	1770,0
79663	1 G 150	300 kcmil	24,3	1527,0	1930,0
79664	1 G 185	350 kcmil	26,5	1940,0	2635,0
79665	1 G 240	500 kcmil	30,3	2530,0	3380,0
79666	1 G 300	600 kcmil	35,0	3050,0	3500,0

Dimensions and specifications may be changed without prior notice.

# PURÖ-JZ-HF / PURÖ-J-HF / PURÖ-OZ-HF

oil-resistant PVC core insulation



HELUKABEL® PURÖ-J-HF 1G6 QMM / 15653 300/500 V CE

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

Temperature range	flexible -20°C to +80°C fixed -40°C to +80°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	4000 V
Breakdown voltage	8000 V
Minimum bending radius	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: oil-resistant PVC in alignment with DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15653	1 G 6	10	6.0	58.0	81.0
15654	1 G 10	8	7.5	96.0	152.0
15655	1 G 16	6	8.5	154.0	215.0
15656	1 G 25	4	10.4	240.0	320.0

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Extremely robust drag chain cable, which is distinguished by its high abrasion resistance and notch-tensile strength properties. Due to its resistance to mineral oils, notably against coolant emulsions, it is suited for use in particularly critical locations in machine, tool and plant construction, rolling mills and steelworks. Due to its high abrasion resistance and small bending radius, it is ideally suited for use in drag chain systems.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

# MULTISPEED®-600-PUR-J / MULTI-SPEED®-600-PUR-O

for extreme mechanical stress



## TECHNICAL DATA

PUR sheathed single core cable acc. to UL-Std. 758 (AWM) Style 10553, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V 3000 V
<b>Test voltage</b>	3000 V
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification: see table
- G = with protective conductor GN-YE, x = without protective conductor
- Outer sheath: Special grade of full polyurethane in alignment with DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

This special drag chain cable permits extended use with extreme requirements, with free movement, without tensile stresses or forced movements. Suitable for installation in long traverse paths and with high speeds in dry, moist and wet environments as well as for outdoor use.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

### MULTISPEED®-600-PUR-J, Core identification: green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007722	1 G 2.5	14	5.6	24.0	53.0
11007724	1 G 4	12	6.3	38.4	73.0
25888	1 G 6	10	6.8	58.0	80.0
25889	1 G 10	8	8.2	96.0	130.0
25890	1 G 16	6	9.3	154.0	181.0
25891	1 G 25	4	11.0	240.0	274.0
25892	1 G 35	2	12.2	336.0	398.0
25893	1 G 50	1	14.5	480.0	529.0
25894	1 G 70	2/0	16.5	672.0	717.0
25895	1 G 95	3/0	18.6	912.0	1050.0
25896	1 G 120	4/0	20.6	1152.0	1240.0
25897	1 G 150	250 kcmil	23.4	1440.0	1524.0
25898	1 G 185	350 kcmil	25.6	1776.0	1932.0
25899	1 G 240	450 kcmil	28.8	2304.0	2467.0
25900	1 G 300	500 kcmil	33.9	2880.0	3140.0

### MULTISPEED®-600-PUR-O, Core identification: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007723	1 x 2.5	14	5.6	24.0	53.0
11007725	1 x 4	12	6.3	38.4	73.0
25269	1 x 6	10	6.8	58.0	80.0
25270	1 x 10	8	8.2	96.0	130.0
25271	1 x 16	6	9.3	154.0	181.0
25272	1 x 25	4	11.0	240.0	274.0
25273	1 x 35	2	12.2	336.0	398.0
25274	1 x 50	1	14.5	480.0	529.0
25275	1 x 70	2/0	16.5	672.0	717.0
25276	1 x 95	3/0	18.6	912.0	1050.0
25277	1 x 120	4/0	20.6	1152.0	1240.0
25278	1 x 150	250 kcmil	23.4	1440.0	1524.0
25279	1 x 185	350 kcmil	25.6	1776.0	1932.0
25280	1 x 240	450 kcmil	28.8	2304.0	2467.0
25281	1 x 300	550 kcmil	33.9	2880.0	3140.0



# MULTISPEED®-600-C-PUR-J / MULTI-SPEED®-600-C-PUR-O



for extreme mechanical stress, EMC-preferred type



## TECHNICAL DATA

**PUR sheathed single core cable acc. to UL-Std. 758 (AWM) Style 10553, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31**

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V
<b>Test voltage</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification: see table
- G = with protective conductor GN-YE, x = without protective conductor
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane in alignment with DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## APPLICATION

This special drag chain cable permits extended use with extreme requirements, with free movement, without tensile stresses or forced movements. Suitable for installation in long traverse paths and with high speeds in dry, moist and wet environments as well as for outdoor use. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

### MULTISPEED®-600-C-PUR-J, Core identification: green-yellow

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007726	1 G 2.5	14	6.2	39.0	65.0
11007728	1 G 4	12	6.9	58.0	88.0
25901	1 G 6	10	7.4	71.0	101.0
25902	1 G 10	8	8.8	122.0	168.0
25903	1 G 16	6	10.2	180.0	217.0
25904	1 G 25	4	11.7	282.0	342.0
25905	1 G 35	2	13.1	386.0	468.0
25906	1 G 50	1	15.4	535.0	584.0
25907	1 G 70	2/0	17.4	750.0	822.0
25908	1 G 95	3/0	19.5	1004.0	1190.0
25909	1 G 120	4/0	21.7	1260.0	1400.0
25910	1 G 150	250 kcmil	24.5	1570.0	1710.0
25911	1 G 185	350 kcmil	26.7	1911.0	2021.0
25912	1 G 240	450 kcmil	30.3	2451.0	2601.0
25913	1 G 300	550 kcmil	35.0	2997.0	3257.0

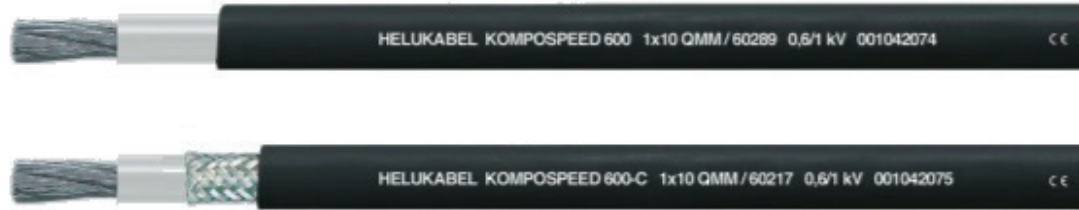
### MULTISPEED®-600-C-PUR-O, Core identification: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007727	1 x 2.5	14	6.2	39.0	65.0
11007729	1 x 4	12	6.9	58.0	88.0
25282	1 x 6	10	7.4	71.0	101.0
25283	1 x 10	8	8.8	122.0	168.0
25284	1 x 16	6	10.2	180.0	217.0
25285	1 x 25	4	11.7	282.0	342.0
25286	1 x 35	2	13.1	386.0	468.0
25287	1 x 50	1	15.4	535.0	584.0
25288	1 x 70	2/0	17.4	750.0	822.0
25289	1 x 95	3/0	19.5	1004.0	1190.0
25290	1 x 120	4/0	21.7	1260.0	1400.0
25291	1 x 150	250 kcmil	24.5	1570.0	1710.0
25292	1 x 185	350 kcmil	26.7	1911.0	2021.0
25293	1 x 240	450 kcmil	30.3	2451.0	2601.0
25294	1 x 300	550 kcmil	35.0	2997.0	3257.0



# KOMPOSPEED® 600 / 600-C 0,6/1kV, halogen-free, special

single cores for drag chains, EMC-preferred type



## Technical data

- Special drag chain single cores for high mechanical stress, adapted to DIN VDE 0285-525-2-31 / DIN EN 50525-2-31
- **Temperature range**  
flexing -30°C to +90°C  
fixed installation -40°C to +100°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  600/1000 V
- **Test voltage** 3000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
**KOMPOSPEED® 600**  
flexing installation 5x outer  $\varnothing$   
fixed installation 3x outer  $\varnothing$   
**KOMPOSPEED® 600-C**  
flexing installation 7,5x outer  $\varnothing$   
fixed installation 4x outer  $\varnothing$

## Cable structure

### KOMPOSPEED® 600

- Tinned copper, extra fine wire conductors, bunch stranded to DIN VDE 0295 cl.6, col. 4, BS 6360 cl.6 and IEC 60228 cl.6
- Core insulation of special thermoplastic polymer, natural coloured
- Outer sheath of special polyolefin
- Sheath colour black (RAL 9005)

### KOMPOSPEED® 600-C

- Structure as above up to core insulation
- Screen of tinned cu-braid, coverage approx. 85%
- Outer sheath of special polyolefin
- Sheath colour black (RAL 9005)

## Properties

- Very good oil resistant
- Halogen free
- Abrasion resistant
- **Resistant to**  
Coolants  
Microbes  
UV-radiation  
Weather  
Hydrofluoric acid  
Hydrochloric acid  
Diluted sulfuric acid
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

The special single cores are used for permanent flexible applications in machineries, machine tools, composting appliances and sewage-treatment plants, animal stalls and greenhouses and used for permanent flexible application for movable automated machinery parts and multi-shift operation as well as in open air. These cables are installed for flexible use with free movements without tensile stress or forced movements and suitable for application in drag chains. The selected tinned copper wire conductor and tinned copper wire braid permit the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide.

For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

### KOMPOSPEED® 600-C

These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibility).

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### KOMPOSPEED® 600

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
60288	1 x 6	6,5	58,0	83,0	10
60289	1 x 10	8,4	96,0	132,0	8
60290	1 x 16	9,5	154,0	188,0	6
60291	1 x 25	11,2	240,0	281,0	4
60292	1 x 35	13,0	336,0	404,0	2
60293	1 x 50	15,4	480,0	531,0	1
60294	1 x 70	17,2	672,0	729,0	2/0
60295	1 x 95	20,0	912,0	1049,0	3/0
60296	1 x 120	21,0	1152,0	1220,0	4/0
60297	1 x 150	23,8	1440,0	1510,0	300 kcmil
60298	1 x 185	26,2	1776,0	1932,0	350 kcmil

### KOMPOSPEED® 600-C

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
60216	1 x 6	7,3	71,0	101,0	10
60217	1 x 10	9,1	122,0	168,0	8
60218	1 x 16	10,1	180,0	217,0	6
60219	1 x 25	12,2	282,0	342,0	4
60220	1 x 35	14,2	386,0	468,0	2
60221	1 x 50	17,0	535,0	584,0	1
60222	1 x 70	19,2	750,0	822,0	2/0
60223	1 x 95	21,8	1004,0	1190,0	3/0
60224	1 x 120	23,8	1260,0	1400,0	4/0
60225	1 x 150	26,0	1570,0	1710,0	300 kcmil
60226	1 x 185	28,8	1911,0	2021,0	350 kcmil
62500	1 x 240	34,0	2470,0	2850,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RK01)



## Technical data

- Power and control cable acc. to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Radiation resistance** up to  $100 \times 10^6$  cJ/kg (up to 100 Mrad)
- **Caloric load values** see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2X11 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor J-type: GN-YE (½), BN, BK, GY O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, compound type HM4 to HD 604 S1
- Sheath colour: black

## Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- re = round conductor, single-wire
- rm = round conductor, multi-wire
- sm = sectional conductor, multi-wire
- J-version = with GN-YE conductor
- O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- **LSOH** = Low Smoke Zero Halogen

## Application

Halogen-free power cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonry walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no. J type	O type	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
	53558	1 x 1,5 rm	6,0	14,4	41,0	16
	53559	1 x 2,5 rm	6,5	24,0	53,0	14
53100	53248	1 x 4 re	8,0	39,0	68,0	12
53101	53249	1 x 6 re	9,0	58,0	90,0	10
53102	53250	1 x 10 re	9,0	96,0	140,0	8
53103	53251	1 x 16 re	10,0	154,0	190,0	6
53104	53252	1 x 25 rm	11,0	240,0	290,0	4
53105	53253	1 x 35 rm	12,0	336,0	390,0	2
53106	53254	1 x 50 rm	15,0	480,0	510,0	1
53107	53255	1 x 70 rm	17,0	672,0	710,0	2/0
53108	53256	1 x 95 rm	19,0	912,0	960,0	3/0
53109	53257	1 x 120 rm	21,0	1152,0	1200,0	4/0
53110	53258	1 x 150 rm	23,0	1440,0	1480,0	300 kcmil
53111	53259	1 x 185 rm	25,0	1776,0	1910,0	350 kcmil
53112	53260	1 x 240 rm	28,0	2304,0	2370,0	500 kcmil
53113	53261	1 x 300 rm	30,0	2880,0	2970,0	600 kcmil
52485	52486	1 x 400 rm	32,9	3840,0	3957,0	750 kcmil



## Technical data

- Power and control cable adapted to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius**  
single-core 15x cable  $\varnothing$   
multi-core 12x cable  $\varnothing$
- **Radiation resistance**  
up to  $100 \times 10^6$  cJ/kg (up to 100 Mrad)

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2X11 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor  
J-type: GN-YE (½), BN, BK, GY  
O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, ompound type HM4 to HD 604 S1
- Sheath colour black

## Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- rm = round conductor, multi-wire;  
se = sector-shaped conductor, single-wire;  
sm = sector-shaped conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- **LS0H** = Low Smoke Zero Halogen

## Application

Halogen-free power cables for energy with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonry walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

☞ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. J type	O type	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50073	50128	1 x 25 rm	9,9	73,0	132,0	4
50074	50129	1 x 35 rm	11,0	102,0	166,0	2
50075	50130	1 x 50 rm	12,5	145,0	211,0	1
50076	50131	1 x 70 rm	14,1	203,0	283,0	2/0
50077	50132	1 x 95 rm	16,1	276,0	376,0	3/0
50078	50133	1 x 120 rm	17,5	348,0	456,0	4/0
53562	53553	1 x 150 rm	19,6	435,0	560,0	300 kcmil
50079	50134	1 x 185 rm	21,8	537,0	697,0	350 kcmil
53561	50135	1 x 240 rm	24,0	696,0	878,0	500 kcmil
50080	53554	1 x 300 rm	26,7	870,0	1073,0	600 kcmil
50081	50136	1 x 400 rm	29,7	1160,0	1347,0	750 kcmil
50082	53555	1 x 500 rm	33,1	1450,0	1705,0	1000 kcmil

# (N)HXH-FE 180/E 30

Security cable, halogen-free, 0.6/1 kV



HELUKABEL® (N)HXH-FE 180/E 30 0,6/1kV

## Technical data

- Halogen free security cable adapted to DIN VDE 0266
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature**  
at conductor +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0.6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Overall core covering
- Outer sheath of polyolefin
- Sheath colour: orange

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## Properties

- Halogen-free
- Flame retardant
- Self-extinguished
- No flame propagation
- Low smoke density
- **FE 180: Insulation integrity**  
for 180 minutes. Tests acc. to DIN VDE 0472-814 / IEC 60331
- **E 30: Functionality** of electrical cable systems for min. 30 minutes. This fulfils the demands of technical guide lines for fire protection Test method to DIN 4102-12  
The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

## Note

- re = round conductor, single wire  
rm = round conductor, multi wire
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Wherever damage to people and material must be prevented in the event of a fire due to a high concentration of material assets. Suitable for permanent installation in dry, damp and wet rooms above, on, in and under plaster, as well as in masonry and concrete. They are also suitable for laying outdoors and in the ground when laying in pipes. Laying in the pipe is permitted if precautions have been taken to prevent water from building up in the pipe.  
**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52700	1 x 4 re	7,0	38,0	98,0	12
52701	1 x 6 re	7,5	58,0	125,0	10
52702	1 x 10 re	8,0	96,0	165,0	8
52703	1 x 16 rm	9,0	154,0	230,0	6
52704	1 x 25 rm	10,5	240,0	345,0	4
52705	1 x 35 rm	11,5	336,0	450,0	2
52706	1 x 50 rm	12,0	480,0	590,0	1

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52707	1 x 70 rm	15,0	672,0	800,0	2/0
52708	1 x 95 rm	16,5	912,0	1100,0	3/0
52709	1 x 120 rm	18,5	1152,0	1350,0	4/0
52710	1 x 150 rm	20,5	1440,0	1650,0	300 kcmil
52711	1 x 185 rm	23,0	1776,0	2000,0	350 kcmil
52712	1 x 240 rm	25,5	2304,0	2650,0	500 kcmil
52713	1 x 300 rm	31,8	2880,0	3200,0	600 kcmil

# (N)HXH-FE 180/E 90

Security cable, halogen-free, 0.6/1 kV



HELUKABEL® (N)HXH-FE 180/E 90 0,6/1kV

## Technical data

- Halogen free security cable adapted to DIN VDE 0266
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  0.6/1 kV
- **Test voltage** 4000 V
- **Minimum bending radius** single core 15x outer Ø multi core 12x outer Ø
- **Caloric load values** see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification acc. to DIN VDE 0293-308 1 core: black  $\leq 5$  cores: coloured  $\geq 6$  cores: black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Overall core covering
- Core wrapping with glass-fibre tape as flame-protection
- Outer sheath of polyolefin
- Sheath colour: orange

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## Properties

- Halogen-free
- Flame retardant
- Self-extinguished
- No flame propagation
- Low smoke density
- **FE 180: Insulation integrity** for 180 minutes. Tests acc. to DIN VDE 0472-814 / IEC 60331
- **E 90: Functionality** of electrical cable systems for min. 90 minutes. This fulfils the demands of technical guide lines for fire protection Test method acc. to DIN 4102-12 The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

## Note

- re = round conductor, single wire
- rm = round conductor, multi wire
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Wherever damage to people and material must be prevented in the event of a fire due to a high concentration of material assets. Suitable for permanent installation in dry, damp and wet rooms above, on, in and under plaster, as well as in masonry and concrete. They are also suitable for laying outdoors and in the ground when laying in pipes. Laying in the pipe is permitted if precautions have been taken to prevent water from building up in the pipe. **CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53180	1 x 16 rm	11,0	154,0	255,0	6	53186	1 x 120 rm	20,5	1152,0	1410,0	4/0
53181	1 x 25 rm	12,5	240,0	375,0	4	53187	1 x 150 rm	22,5	1440,0	1730,0	300 kcmil
53182	1 x 35 rm	13,5	336,0	475,0	2	53188	1 x 185 rm	24,5	1776,0	2140,0	350 kcmil
53183	1 x 50 rm	15,0	480,0	625,0	1	53189	1 x 240 rm	27,0	2304,0	2700,0	500 kcmil
53184	1 x 70 rm	16,5	672,0	855,0	2/0	53190	1 x 300 rm	30,0	2880,0	3420,0	600 kcmil
53185	1 x 95 rm	18,0	912,0	1140,0	3/0	53191	1 x 400 rm	33,5	3840,0	4310,0	750 kcmil

# HELUPOWER® 1000 HY-CARBO SWA FIRE RES

Steel Wire Armoured, hydrocarbon resistant & fire resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -20°C to +90°C  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 12 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- MICA tape wrapping (fire barrier)
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner sheath: PVC
- **Armour:**  
for single core cables: amagnetic aluminium wires  
for multi core cables: galvanized steel wire armour with galvanized steel conterspiral tape (if necessary) acc. to IEC 60502-1 TAB. 9
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to DIN VDE 482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C, 20 min.)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A, 40 min.)
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to UL 1581 sect. 1200

## Note

- Galvanized steel tape armouring (GSTA) upon request
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO SWA FIRE RES is an armoured power and control cable. Fire resistant, suitable for systems where it is necessary to ensure their functionality also in the case of fire. The cable construction protects against flame propagation and offers reduced emission of toxic/corrosive gase and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO SWA FIRE RES is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection. The armour provides a good mechanical protection also in heavy applications. CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, □ = 1,5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001960	1 x 1,5	12,100	24,0	24,0	5,4	10,8	13,0	161
17001961	1 x 2,5	7,410	33,0	31,0	5,9	11,3	22,0	181
17001962	1 x 4	4,610	45,0	40,0	6,4	11,8	35,0	206
17001963	1 x 6	3,080	58,0	51,0	7,0	12,4	52,0	238
17001964	1 x 10	1,830	80,0	68,0	7,9	13,3	87,0	294
17001965	1 x 16	1,150	107,0	98,0	8,9	14,3	139,0	370
17001966	1 x 25	0,727	141,0	115,0	10,6	16,0	220,0	495
17001967	1 x 35	0,524	176,0	139,0	11,8	17,2	305,0	608
17001968	1 x 50	0,387	216,0	173,0	13,3	20,0	413,0	821
17001969	1 x 70	0,268	279,0	212,0	15,3	22,0	597,0	1063
17001970	1 x 95	0,193	342,0	250,0	17,1	23,8	828,0	1347
17001971	1 x 120	0,153	400,0	289,0	18,9	26,3	1038,0	1669
17001972	1 x 150	0,124	464,0	330,0	20,9	28,3	1290,0	1993
17001973	1 x 185	0,099	533,0	371,0	23,1	30,5	1612,0	2392
17001974	1 x 240	0,075	490,0	409,0	26,0	33,6	2127,0	3024
17001975	1 x 300	0,060	0,0	463,0	28,5	36,3	2656,0	3654



### Technical data

- Power and control cable acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502 7 core and above acc. to DIN VDE 0276-627 / HD 627 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s)  
≤ 300 mm<sup>2</sup> +160°C  
> 300 mm<sup>2</sup> +140°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø
- **Caloric load values**  
see "Technical Information"

### Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Core colour for 3+½ conductor  
J-version: GN-YE (½), BN, BK, GY  
O-version: BU (½), BN, BK, GY
- Cores stranded in concentric layers
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour: black

### Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

#### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

#### Highest permissible voltage

- Direct current systems  
- Conductor/conductor 1,8 kV  
- Conductor/earth 0,9 kV
- Alternating current systems  
- Single phase systems  
both outer conductors insulated 1,4 kV  
- Single phase systems  
one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

#### Note

- re = round conductor, single wire  
rm = round conductor, multi wire  
sm = sectional conductor, multi wire
- J-version = with GN-YE conductor  
O-version = without GN-YE conductor
- In respect to 3+½ conductors  
Whereby only one conductor is allowed to contain a smaller cross section (as per DIN VDE 0276-603) and permitted to place as insulated core (green-yellow and blue as ½-conductor), stranded in layer.
- Part no. 33297, 33298, 11017729 in reference to VDE designation (N)YY-O
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

### Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not to be expected.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	J type Part no.	AWG-No.	O type Part no.	AWG-No.
1 x 4	re 8,1	38,0	115,0	32001	12	-	32089 12
1 x 6	re 8,6	58,0	135,0	32002	10	-	32090 10
1 x 10	re 10,0	96,0	179,0	32003	8	-	32091 8
1 x 16	re 11,0	154,0	245,0	32004	6	-	32092 6
1 x 25	rm 13,7	240,0	360,0	32005	4	-	32093 4
1 x 35	rm 14,5	336,0	470,0	32006	2	-	32094 2
1 x 50	rm 16,0	480,0	620,0	32007	1	-	32095 1
1 x 70	rm 17,5	672,0	810,0	32008	2/0	-	32096 2/0
1 x 95	rm 19,0	912,0	1110,0	32009	3/0	-	32097 3/0
1 x 120	rm 20,5	1152,0	1360,0	32010	4/0	-	32098 4/0
1 x 150	rm 22,5	1440,0	1670,0	32011	300 kcmil	-	32099 300 kcmil
1 x 185	rm 25,0	1776,0	2050,0	32012	350 kcmil	-	32100 350 kcmil
1 x 240	rm 28,0	2304,0	2630,0	32013	500 kcmil	-	32101 500 kcmil
1 x 300	rm 30,0	2880,0	3200,0	32014	600 kcmil	-	32102 600 kcmil
1 x 400	rm 34,0	3840,0	4150,0	32015	750 kcmil	-	32103 750 kcmil
1 x 500	rm 38,0	4800,0	5200,0	32556	1000 kcmil	-	32558 1000 kcmil
1 x 630	rm 43,0	6048,0	6650,0	32557	1250 kcmil	-	32559 1250 kcmil





## Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502  
7 cores and above to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm<sup>2</sup>
- **Minimum bending radius**  
single-core 15x cable Ø  
multi-core 12x cable Ø
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308
- Cores stranded in concentric layers
- Filling compound
- Concentric conductor in inner layer of round copper wires, outer layer with copper tape
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

### Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

### Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems 1,4 kV both outer conductors insulated
  - Single-phase systems 0,7 kV one outer conductor earthed
- Three-phase systems 1,2 kV with concentric conductor and a cross-section of 240 mm<sup>2</sup> and above 3,6 kV

### Note

- re = round conductor, single-wire
- Available with outer sheath in alternative colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

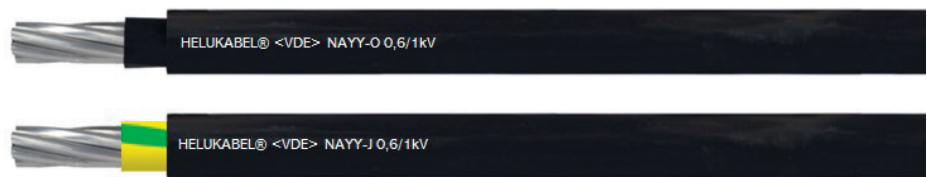
## Application

Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test datas. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, in concrete, indoors and in cable ducts. The concentric conductor (C) is allowed to use as PE-, PEN-conductor or as screen.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
32200	1 x 10 re / 10	11,0	216,0	280,0	8
32201	1 x 16 re / 16	12,0	336,0	440,0	6





## Technical data

- Power distribution cables acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible conductor **operating temperature** +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s)  
≤ 300 mm<sup>2</sup> +160°C  
> 300 mm<sup>2</sup> +140°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Aluminium conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Cores concentrically stranded
- Common core sheath
- Outer sheath of PVC compound type DMV5 acc. to HD 603 S1
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Highest permissible voltage

- Direct current systems
  - Conductor/conductor 1,8 kV
  - Conductor/earth 0,9 kV
- Alternating current systems
  - Single phase systems both outer conductors insulated 1,4 kV
  - Single phase systems one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

## Note

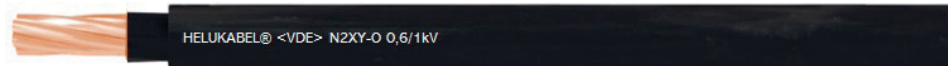
- re = round conductor, single wire  
rm = round conductor, multi wire  
se = sectional conductor, single wire  
sm = sectional conductor, multi wire
- J-version = with GN-YE conductor  
O-version = without GN-YE conductor
- Part no. 32182, 32183, 32199, 32258, 34047 in reference to VDE Designation (N)AYY
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not be expected.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.	O type Part no.	AWG-No.			
1 x 35	re	13,0	102,0	240,0	32328	2	-	32311	2	-
1 x 50	re	15,0	145,0	360,0	32329	1	-	32312	1	-
1 x 70	rm	16,5	203,0	410,0	32390	2/0	-	32313	2/0	-
1 x 95	rm	19,0	276,0	570,0	32391	3/0	-	32314	3/0	-
1 x 120	rm	20,5	348,0	691,0	32392	4/0	-	32315	4/0	-
1 x 150	rm	22,5	435,0	804,0	32393	300 kcmil	-	32321	300 kcmil	-
1 x 185	rm	25,0	537,0	979,0	32394	350 kcmil	-	32322	350 kcmil	-
1 x 240	rm	26,5	696,0	1253,0	32395	500 kcmil	-	32323	500 kcmil	-
1 x 300	rm	30,0	870,0	1395,0	32396	600 kcmil	-	32324	600 kcmil	-
1 x 400	rm	34,0	1160,0	1890,0	32397	750 kcmil	-	32325	750 kcmil	-
1 x 500	rm	38,0	1450,0	2600,0	32398	1000 kcmil	-	32326	1000 kcmil	-
1 x 630	rm	39,5	1827,0	2780,0	32399	1250 kcmil	-	32327	1250 kcmil	-



## Technical data

- Power distribution cables acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Cores concentrically stranded
- Outer sheath of PVC compound type DMV6 acc. to HD 603 S1
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Highest permissible voltage

- Direct current systems
  - Conductor/conductor 1,8 kV
  - Conductor/earth 0,9 kV
- Alternating current systems
  - Single phase systems both outer conductors insulated 1,4 kV
  - Single phase systems one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

## Note

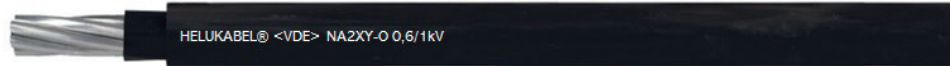
- re = round conductor, single wire
- rm = round conductor, multi wire
- sm = sectional conductor, multi wire
- J-version = with GN-YE conductor
- O-version = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Power distribution cables for use in underground, in water, outdoors, in concrete, indoors, in cable ducts, for power stations, industrial applications and switching systems, as well as in local networks if no mechanical damage is expected. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	J type Part no.	AWG-No.	O type Part no.	AWG-No.
1 x 16	re 11,5	154,0	242,0	32850	6	-	32862 6
1 x 25	rm 12,5	240,0	362,0	32851	4	-	32863 4
1 x 35	rm 13,5	336,0	470,0	32852	2	-	32864 2
1 x 50	rm 15,5	480,0	620,0	32853	1	-	32865 1
1 x 70	rm 17,0	672,0	805,0	32854	2/0	-	32866 2/0
1 x 95	rm 19,0	912,0	1108,0	32855	3/0	-	32867 3/0
1 x 120	rm 20,5	1152,0	1360,0	32856	4/0	-	32868 4/0
1 x 150	rm 23,0	1440,0	1670,0	32857	300 kcmil	-	32869 300 kcmil
1 x 185	rm 25,5	1776,0	2050,0	32858	350 kcmil	-	32870 350 kcmil
1 x 240	rm 28,5	2304,0	2635,0	32859	500 kcmil	-	32871 500 kcmil
1 x 300	rm 30,0	2880,0	3200,0	32860	600 kcmil	-	32872 600 kcmil
1 x 400	rm 34,0	3840,0	4150,0	32861	750 kcmil	-	32873 750 kcmil



## Technical data

- Power distribution cables acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible conductor **operating temperature** +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø

## Cable structure

- Aluminium conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Cores concentrically stranded
- Outer sheath of PVC compound type DMV6 acc. to HD 603 S1
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### Highest permissible voltage

- Direct current systems
  - Conductor/conductor 1,8 kV
  - Conductor/earth 0,9 kV
- Alternating current systems
  - Single phase systems both outer conductors insulated 1,4 kV
  - Single phase systems one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

### Note

- re = round conductor, single wire
- rm = round conductor, multi wire
- se = sectional conductor, single wire
- J-version = with GN-YE conductor
- O-version = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

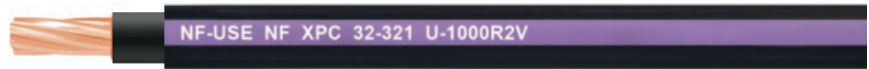
Power distribution cables for use in underground, in water, outdoors, in concrete, indoors, in cable ducts, for power stations, industrial applications and switching systems, as well as in local networks if no mechanical damage is expected. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
1 x 16	re	11,5	47,0	98,0	33113	6	-	33125	6	-
1 x 25	re	12,5	73,0	150,0	33114	4	-	33126	4	-
1 x 35	re	13,5	102,0	241,0	33115	2	-	33127	2	-
1 x 50	rm	15,5	145,0	357,0	33116	1	-	33128	1	-
1 x 70	rm	17,0	203,0	409,0	33117	2/0	-	33129	2/0	-
1 x 95	rm	19,0	276,0	570,0	33118	3/0	-	33130	3/0	-
1 x 120	rm	20,5	348,0	590,0	33119	4/0	-	33131	4/0	-
1 x 150	rm	23,0	435,0	804,0	33120	300 kcmil	-	33132	300 kcmil	-
1 x 185	rm	25,5	537,0	978,0	33121	350 kcmil	-	33133	350 kcmil	-
1 x 240	rm	28,5	696,0	1253,0	33122	500 kcmil	-	33134	500 kcmil	-
1 x 300	rm	30,0	870,0	1394,0	33123	600 kcmil	-	33135	600 kcmil	-
1 x 400	rm	34,0	1160,0	1890,0	33124	750 kcmil	-	33136	750 kcmil	-

# U1000 R2V

rigid industrial power cable, low voltage 0,6/1 kV



## Technical data

- XLPE/PVC power cable acc. to NF XPC 32-321 / IEC60502-1 / NF EN 60332-1-2 Cat. C2 / NF C 15-100
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -25°C to +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000V
- **Minimum bending radius**  
fixed 6 x cable Ø

## Cable structure

- Bare copper conductor to DIN VDE 0295, BS 6360, IEC 60228  
cross section ≤ 4mm<sup>2</sup> : class 1  
cross section > 4mm<sup>2</sup> : class 2
- Core insulation XLPE
- Core colours  
single core : BK  
two cores : BL/BR  
three cores : BL/BR/BK (1,5 & 2,5 qmm)  
- BL/BR/GR or BL/BR & GN/YE (4 qmm)  
five cores : BL/BR/BL/GR & GN/YE
- Cores stranded in concentric layers
- PVC sheath / black colour
- With meter marking
- From 2 to 5 cores with coloured stripe qmm:  
1,5 PK/2,5 YE/4 VT/6 BL/10 BR/16 GR

## Properties

- UV resistant
- Good resistance against chemical agents
- Permissible short circuit temperature (max. 5 seconds) +250°C

## Tests

- Flame retardant according to  
DIN 0482-332-1-2 /  
DIN EN 60332-1-2 /  
IEC 60332-1-2

## Note

- G = with GN/YE conductor  
x = without GN/YE conductor

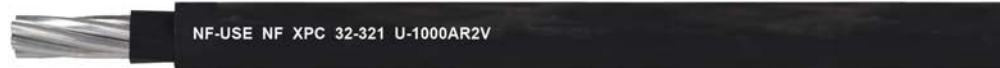
## Application

Power distribution cables for connections in industrial facilities, for inside and outside use in buildings or high risers. Well suited for high and low operating temperatures. Good resistance to solar radiation (U.V.) and atmospheric chemical agents. Suitable for exposed installation on walls or metal structures, in underground ducts or pipes with good mechanical protection. Submersion in water for more than two months is not recommended. When mechanically protected the cables can also be installed in explosion prone areas - in this case the permitted current load has to be reduced by 15%. **CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Standard length in metres
19000700	1 x 16	10,5	154,0	206	-
19000701	1 x 25	12,5	240,0	315	-
19000702	1 x 35	13,5	336,0	400	-
19000703	1 x 50	15,0	480,0	530	-
19000704	1 x 70	17,0	672,0	725	-
19000705	1 x 95	19,0	912,0	985	-
19000706	1 x 120	21,0	1152,0	1260	-
19000707	1 x 150	23,0	1440,0	1520	-
19000708	1 x 185	25,5	1776,0	1940	-
19000709	1 x 240	28,5	2304,0	2310	-
19000710	1 x 300	31,0	2880,0	3200	-

# U1000 AR2V

rigid industrial power cable, aluminium conductor, low voltage 0,6/1kV



## Technical data

- XLPE/PVC power cable acc. to NFXP C32-321 / IEC60502-1 / NF EN 60332-1-2 Cat. C2 / NF C 15-100
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -25°C to +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
fixed 8 x cable Ø

## Cable structure

- Aluminium rigid compact conductor class 2
- XLPE crosslinked polyethylene insulation
- Core colours  
single core : BK  
two cores : BL/BR  
three cores: BL/BR/BK (1,5 & 2,5 qmm)  
- BL/BR/GR or BL/BR & GN/YE (4 qmm)  
five cores : BL/BR/BL/GR & GN/YE
- Sheath PVC
- Sheath colour black
- With meter marking

## Properties

- UV resistant
- Good resistance against chemical agents
- Permissible short circuit temperature (max. 5 seconds) +250°C

## Tests

- Flame retardant according to  
DIN 0482-332-1-2 /  
DIN EN 60332-1-2 /  
IEC 60332-1-2

## Note

- G = with GN-YE earth Conductor  
x = without GN-YE conductor

## Application

Power distribution cables for connections in industrial facilities, for inside and outside use in buildings or high risers. Well suited for high and low operating temperatures. Good resistance to solar radiation (U.V.) and atmospheric chemical agents. Suitable for exposed installation on walls or metal structures, in underground ducts or pipes with good mechanical protection. Submersion in water for more than two months is not recommended. When mechanically protected the cables can also be installed in explosion prone areas - in this case the permitted current load has to be reduced by 15%.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km
19002046	1 x 25	12,5	72,5	151
19002000	1 x 35	13,5	101,5	188
19002001	1 x 50	15,0	145,0	233
19002002	1 x 70	17,0	189,0	312
19002003	1 x 95	19,0	257,0	412
19002004	1 x 120	21,0	324,0	510
19002005	1 x 150	23,0	405,0	625
19002006	1 x 185	25,5	500,0	744
19002007	1 x 240	28,5	648,0	955
19002008	1 x 300	31,0	810,0	1189

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1000 RV-K

direct burial, XLPE core insulation / 90°C



HELUKABEL® HELUPOWER® 1000 RV-K 0,6/1 kV CE

## TECHNICAL DATA

PVC connection cable acc. to UNE 21123-2; articles with 3+1/2 conductors: in alignment with UNE 21123-2

Temperature range	fixed -15°C to +90°C
Permissible operating temperature of the conductor	+90°C
Short circuit temperature at the conductor	+250°C (Short circuit temperature max. 5 s)
Nominal voltage	AC U <sub>0</sub> /U 600/1000 V
Max. permissible operating voltage	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
Test voltage core/core	3500 V
Minimum bending radius	<25 mm: 4x Outer- $\phi$ 25-50 mm: 5x Outer- $\phi$ >50 mm: 6x Outer- $\phi$

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE acc. to UNE-HD 603-1 (compound type DIX 3)
- Core identification: see table
- G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to UNE HD 603-1 (compound type DMV 18)

- Sheath colour: black
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation
- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN VDE 0276-605 / HD 605 S2

## ■ APPLICATION

Suitable for use in dry, moist and wet rooms as well as outdoors. Also suitable for direct burial, laying in tubes and underground installation areas. Typical application areas range from general production machinery, to machine tool applications, conveyor belt systems, air-conditioning units, steel plants installations and factory automation. Ideal as power or control cable especially if increased temperature and/or voltage is required. UV resistant due to its special PVC outer sheath compound and therefore also ideal as power connection cable for outdoor devices and machinery. Alternatively also for use as power connection cable in the stage and lighting industry or renewable energy sector.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Core identification acc. to DIN VDE 0293-308, black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer- $\phi$ min - max mm	Cu factor per km	Weight kg/km, approx.
11003798	1 x 1.5	16	4.6 - 5.5	14.4	50.0
11003822	1 x 2.5	14	5.1 - 6.0	24.0	65.0
11003846	1 x 4	12	5.7 - 6.5	38.4	80.0
11003854	1 x 6	10	6.2 - 7.1	57.6	105.0
11003862	1 x 10	8	7.2 - 8.0	96.0	155.0
11003870	1 x 16	6	8.1 - 8.9	153.6	220.0
11003878	1 x 25	4	10.0 - 10.6	240.0	320.0
11003886	1 x 35	2	11.1 - 11.8	336.0	420.0
11003894	1 x 50	1	12.9 - 13.7	480.0	560.0
11003902	1 x 70	2/0	14.3 - 15.7	672.0	785.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer- $\phi$ min - max mm	Cu factor per km	Weight kg/km, approx.
11003910	1 x 95	3/0	16.2 - 17.3	912.0	1050.0
11003918	1 x 120	4/0	18.1 - 19.2	1152.0	1305.0
11003924	1 x 150	300 kcmil	19.9 - 21.4	1440.0	1610.0
11003930	1 x 185	350 kcmil	22.3 - 23.4	1776.0	1985.0
11003936	1 x 240	500 kcmil	25.2 - 26.8	2304.0	2610.0
11003942	1 x 300	600 kcmil	27.6 - 30.4	2880.0	3225.0
11003948	1 x 400	750 kcmil	32.0 - 34.0	3840.0	3500.0
11003949	1 x 500	1000 kcmil	38.4 - 40.0	4800.0	5060.0
11003950	1 x 630	1250 kcmil	43.6 - 45.2	6048.0	6760.0

# HELUPOWER® 1100-RZ1-K LSOH GREEN

flexible, direct burial, low smoke development, flame-retardant



## TECHNICAL DATA

Connection cable acc. to UNE 21123-4

<b>Temperature range</b>	flexible 0°C to +90°C fixed -15°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Short circuit temperature at the conductor</b>	+250°C (Short circuit temperature max. 5 s)
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	3500 V
<b>Minimum bending radius</b>	<25 mm: 4x Outer-ø 25-50 mm: 5x Outer-ø >50 mm: 6x Outer-ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE acc. to UNE-HD 603-1 (compound type DIX 3)
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black  
2 - 5 core(s): colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: Polyolefin acc. to UNE 21123-4 (compound type DMZ-E)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008159	1 x 10	8	8.1 - 9.4	96.0	140.0
11008167	1 x 16	6	9.1 - 10.4	153.6	195.0
11008175	1 x 25	4	10.9 - 12.0	240.0	285.0
11008183	1 x 35	2	12.3 - 13.2	336.0	380.0
11008191	1 x 50	1	13.8 - 14.9	480.0	520.0
11008199	1 x 70	2/0	15.5 - 17.1	672.0	715.0
11008207	1 x 95	3/0	17.1 - 18.7	912.0	925.0
11008215	1 x 120	4/0	19.3 - 20.7	1152.0	1160.0
11008221	1 x 150	300 kcmil	21.1 - 22.8	1440.0	1460.0
11008227	1 x 185	350 kcmil	23.0 - 24.8	1776.0	1780.0

- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation
- for outdoor use
- direct burial
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, reduced release of corrosive and toxic gases

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to UNE 211605
- CPR-class: C<sub>ca</sub> s1b d1 a1

## ■ APPLICATION

Suitable for fixed power supply installations in public and commercial buildings or in power distribution networks where a high degree of safety is required. Suitable for indoor and outdoor use, for laying in tubes and pipes and suitable for direct burial.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008233	1 x 240	500 kcmil	26.3 - 27.6	2304.0	2300.0
11008239	1 x 300	600 kcmil	29.0 - 31.0	2880.0	2910.0

# HELUPOWER® 1000 HY-CARBO SWA FIRE RES

Steel Wire Armoured, hydrocarbon resistant & fire resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -20°C to +90°C  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 12 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- MICA tape wrapping (fire barrier)
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner sheath: PVC
- Armour:  
for single core cables: amagnetic aluminium wires  
for multi core cables: galvanized steel wire armour with galvanized steel conterspiral tape (if necessary) acc. to IEC 60502-1 TAB. 9
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to  
DIN VDE 482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24  
(Cat. C, 20 min.)
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22  
(Cat. A, 40 min.)
- Low amount of halogen acid gas acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to  
UL 1581 sect. 1200

## Note

- Galvanized steel tape armouring (GSTA) upon request
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO SWA FIRE RES is an armoured power and control cable. Fire resistant, suitable for systems where it is necessary to ensure their functionality also in the case of fire. The cable construction protects against flame propagation and offers reduced emission of toxic/corrosive gase and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO SWA FIRE RES is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection. The armour provides a good mechanical protection also in heavy applications.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No.cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, 1,5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001960	1 x 1,5	12,100	24,0	24,0	5,4	10,8	13,0	161
17001961	1 x 2,5	7,410	33,0	31,0	5,9	11,3	22,0	181
17001962	1 x 4	4,610	45,0	40,0	6,4	11,8	35,0	206
17001963	1 x 6	3,080	58,0	51,0	7,0	12,4	52,0	238
17001964	1 x 10	1,830	80,0	68,0	7,9	13,3	87,0	294
17001965	1 x 16	1,150	107,0	98,0	8,9	14,3	139,0	370
17001966	1 x 25	0,727	141,0	115,0	10,6	16,0	220,0	495
17001967	1 x 35	0,524	176,0	139,0	11,8	17,2	305,0	608
17001968	1 x 50	0,387	216,0	173,0	13,3	20,0	413,0	821

Continuation ►



# HELUPOWER® 1000 HY-CARBO SWA FIRE RES

Steel Wire Armoured, hydrocarbon resistant & fire resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, 1,5 K <sup>2</sup> m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001969	1 x 70	0,268	279,0	212,0	15,3	22,0	597,0	1063
17001970	1 x 95	0,193	342,0	250,0	17,1	23,8	828,0	1347
17001971	1 x 120	0,153	400,0	289,0	18,9	26,3	1038,0	1669
17001972	1 x 150	0,124	464,0	330,0	20,9	28,3	1290,0	1993
17001973	1 x 185	0,099	533,0	371,0	23,1	30,5	1612,0	2392
17001974	1 x 240	0,075	490,0	409,0	26,0	33,6	2127,0	3024
17001975	1 x 300	0,060	0,0	463,0	28,5	36,3	2656,0	3654
17001976	1 x 400	0,047	0,0	0,0	32,3	41,3	3402,0	4713

# HELUPOWER® 1100 HMH BLACK

halogen-free, XLPE core insulation / 90°C, flame-retardant / cat. A, direct burial



HELUPOWER® 1100 HMH BLACK

## TECHNICAL DATA

Power-control cable base on IEC 60502-1

Temperature range	fixed -30°C to +90°C
Nominal voltage	U <sub>0</sub> /U 0,6/1 kV
Test voltage	3,5 kV
Minimum bending radius	fixed 8x Ø cable

## ■ CABLE STRUCTURE

- Annealed copper wires, stranded class 2 or finely stranded class 5 (see table) acc. to DIN VDE0295 / IEC 60228
- Core insulation: XLPE
- Core identification acc. to HD 308
  - ≤ 5 core – color cores
  - ≥ 6 core – black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer,
- X = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Sheath: halogen free compound
- Color sheath: black (RAL 9005)

## ■ WŁAŚCIWOŚCI

- resistant to: UV radiation, weathering effects
- direct burial
- for indoor and outdoor use
- halogen free

## ■ TEST

- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- UV-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2

## ■ APPLICATION

Used as a power and control cable for indoor and outdoor installations requiring halogen-free, flame-retardant and UV resistance. The cable can be laid in cable ducts or directly in the ground. Direct laying in the ground may take place provided that the installation will be made in accordance with good installation practice – the cable should be laid on a special cable ballast ensuring a continuous drainage of water from the installation place. The cable buried in the ground mustn't be permanently exposed to water

## ■ NOTES

- We also offer cable glands PEPPERS UL-C
- Armored cables with similar parameters  
HELUPOWER® 1100 HMH SWA BLACK

### Stranded wire class 2 acc. to IEC 60228

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx
18190849	1 x 70	15,2	672,0	812,0
18190821	1 x 150	20,2	1440,0	1661,0
18190822	1 x 185	22,2	1776,0	2032,0
18052142	1 x 240	25,3	2304,0	2618,0

# HELUPOWER® 1100 HMH SWA BLACK



halogen-free, XLPE core insulation / 90°C, flame-retardant / cat. A,  
steel wire armoured /SWA, direct burial



HELUPOWER® 1100 HMH SWA BLACK

## TECHNICAL DATA

Power-control cable base on IEC 60502-1

Temperature range	fixed -30°C to +90°C
Nominal voltage	U <sub>0</sub> /U 0,6/1 kV
Test voltage	3,5 kV
Minimum bending radius	fixed 8x Ø cable

## ■ CABLE STRUCTURE

- Annealed copper wires, stranded class 2 or finely stranded class 5 (see table) acc. to DIN VDE0295 / IEC 60228
- Core insulation: XLPE
- Core identification acc. to HD 308
  - ≤ 5 core – color cores
  - ≥ 6 core – black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer, X = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Separator: PET foil
- Inner sheath: halogen free compound
- Color inner sheath: black (RAL 9005)
- Armour: galvanized steel wire
- Sheath: halogen free compound
- Color sheath: black (RAL 9005)

## ■ PROPERTIES

- resistant to: UV radiation, weathering effects
- direct burial
- for indoor and outdoor use
- halogen free

## ■ TEST

- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- UV-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2

## ■ APPLICATION

Used as a power and control cable for indoor and outdoor installations requiring halogen-free, flame-retardant, UV resistance and protection against damage. The cable can be laid in cable ducts or directly in the ground. Direct laying in the ground may take place provided that the installation will be made in accordance with good installation practice – the cable should be laid on a special cable ballast ensuring a continuous drainage of water from the installation place. The cable buried in the ground mustn't be permanently exposed to water

## ■ NOTES

- We also offer cable glands PEPPERS UL-C
- Unarmored cables with similar parameters HELUPOWER® 1100 HMH BLACK

### Stranded wire class 2 acc. to IEC 60228

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Diameter under armour approx. mm	Cufactor per km	Weight kg/km, approx
18191020	1 x 35	16,3	10,8	336,0	804,0
18191021	1 x 70	20,1	14,4	672,0	1284,0
18052148	1 x 95	22,0	15,7	912,0	1684,0
18052149	1 x 120	24,4	17,8	1152,0	2051,0
18052150	1 x 150	25,9	19,1	1440,0	2416,0
18052182	1 G 150	25,9	19,1	1440,0	2416,0
18052151	1 x 185	27,9	21,1	1776,0	2859,0
18052183	1 G 185	27,9	21,1	1776,0	2859,0
18052152	1 x 240	31,0	24,0	2304,0	3550,0
18052184	1 G 240	31,0	24,0	2304,0	3550,0



### TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

Temperature range	during installation -5°C
Permissible operating temperature of the conductor	+90°C
Short circuit temperature at the conductor	+250°C (Short circuit temperature max. 5 s)
Nominal voltage	see table
Operating voltage	see table
Test voltage	see table
Minimum bending radius	15x Outer-Ø

### ■ CABLE STRUCTURE

- Copper conductor bare, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Wrapping
- Outer sheath: PVC acc. to HD 620 S2 (compound type DMV6)
- Sheath colour: red

### ■ PROPERTIES

- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### ■ APPLICATION

Suitable for installation mostly for power supply stations, indoors, in cable ducts, outdoors with protected laying, underground and in water as well as for installation on cable trays for industries, switchboards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

### ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.
- Part no. 32405, 32407, 32409, 32419, 32421, 32423: approved exclusively for direct burial

### 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
32400	1 x 35 rm / 16	2	12	21	23.0 - 28.0	518.0	905.0
32401	1 x 50 rm / 16	1	12	21	24.0 - 29.0	662.0	1080.0
32402	1 x 70 rm / 16	2/0	12	21	26.0 - 31.0	854.0	1310.0
32403	1 x 95 rm / 16	3/0	12	21	26.0 - 32.0	1094.0	1580.0
32404	1 x 120 rm / 16	4/0	12	21	28.0 - 34.0	1334.0	1860.0
32405	1 x 150 rm / 16	300 kcmil	12	21	29.0 - 35.0	1622.0	2040.0
32406	1 x 150 rm / 25	300 kcmil	12	21	29.0 - 35.0	1723.0	2210.0
32407	1 x 185 rm / 16	350 kcmil	12	21	31.0 - 37.0	1958.0	2450.0
32408	1 x 185 rm / 25	350 kcmil	12	21	31.0 - 37.0	2059.0	2580.0
32409	1 x 240 rm / 16	500 kcmil	12	21	33.0 - 39.0	2486.0	3000.0
32410	1 x 240 rm / 25	500 kcmil	12	21	33.0 - 39.0	2587.0	3130.0
32411	1 x 300 rm / 25	600 kcmil	12	21	36.0 - 41.0	3163.0	3780.0
32412	1 x 400 rm / 35	750 kcmil	12	21	40.0 - 45.0	4234.0	4670.0
32413	1 x 500 rm / 35	1000 kcmil	12	21	43.0 - 48.0	5194.0	5750.0
33099	1 x 630 rm / 35	1250 kcmil	12	21	44.0 - 49.0	6442.0	7180.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
32414	1 x 35 rm / 16	2	24	42	27.0 - 32.0	518.0	1110.0
32415	1 x 50 rm / 16	1	24	42	28.0 - 33.0	662.0	1250.0
32416	1 x 70 rm / 16	2/0	24	42	30.0 - 35.0	854.0	1510.0
32417	1 x 95 rm / 16	3/0	24	42	31.0 - 36.0	1094.0	1780.0
32418	1 x 120 rm / 16	4/0	24	42	32.0 - 38.0	1334.0	2070.0
32419	1 x 150 rm / 16	300 kcmil	24	42	33.0 - 39.0	1622.0	2310.0
32420	1 x 150 rm / 25	300 kcmil	24	42	33.0 - 39.0	1723.0	2420.0
32421	1 x 185 rm / 16	350 kcmil	24	42	35.0 - 41.0	1958.0	2650.0
32422	1 x 185 rm / 25	350 kcmil	24	42	35.0 - 41.0	2059.0	2810.0
32423	1 x 240 rm / 16	500 kcmil	24	42	38.0 - 44.0	2486.0	3260.0
32424	1 x 240 rm / 25	500 kcmil	24	42	38.0 - 44.0	2587.0	3360.0
32425	1 x 300 rm / 25	600 kcmil	24	42	40.0 - 46.0	3163.0	4020.0
32426	1 x 400 rm / 35	750 kcmil	24	42	43.0 - 49.0	4234.0	4930.0
32427	1 x 500 rm / 35	1000 kcmil	24	42	46.0 - 52.0	5194.0	6050.0
33096	1 x 630 rm / 35	1250 kcmil	24	42	47.0 - 53.0	6442.0	7510.0

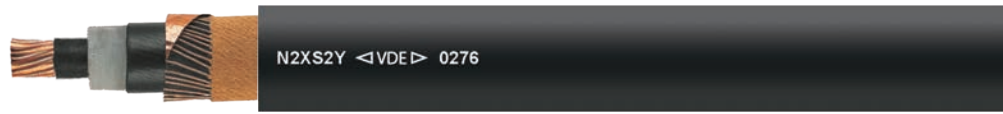
### 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
32428	1 x 50 rm / 16	1	36	63	32.0 - 38.0	662.0	1480.0
32429	1 x 70 rm / 16	2/0	36	63	34.0 - 40.0	854.0	1730.0
32430	1 x 95 rm / 16	3/0	36	63	35.0 - 41.0	1094.0	2060.0
32431	1 x 120 rm / 16	4/0	36	63	37.0 - 43.0	1334.0	2330.0
32432	1 x 150 rm / 25	300 kcmil	36	63	38.0 - 44.0	1723.0	2720.0
32433	1 x 185 rm / 25	350 kcmil	36	63	40.0 - 46.0	2059.0	3100.0
32434	1 x 240 rm / 25	500 kcmil	36	63	42.0 - 48.0	2587.0	3730.0
32435	1 x 300 rm / 25	600 kcmil	36	63	45.0 - 51.0	3163.0	4000.0
32436	1 x 400 rm / 35	750 kcmil	36	63	48.0 - 54.0	4234.0	5330.0
32437	1 x 500 rm / 35	1000 kcmil	36	63	51.0 - 57.0	5194.0	6480.0
33098	1 x 630 rm / 35	1250 kcmil	36	63	52.0 - 59.0	6442.0	7970.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# N2XS2Y

6/10 kV, 12/20 kV, 18/30 kV, Copper conductor, XLPE insulated, PE sheath



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

**Temperature range** during installation -20°C  
**Permissible operating temperature of the conductor** +90°C

**Short circuit temperature at the conductor** +250°C (Short circuit temperature max. 5 s)

**Nominal voltage** see table

**Operating voltage** see table

**Test voltage** see table

**Minimum bending radius** 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Wrapping
- Outer sheath: PE acc. to HD 620 S2 (compound type DMP2)
- Sheath colour: black

## ■ PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ APPLICATION

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

## ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- the PE outer sheath is not flame retardant acc. to DIN EN 60332-1-2
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.
- Part no. 32485, 32487, 32489, 32499, 32501, 32503: approved exclusively for direct burial

## 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
32480	1 x 35 rm / 16	2	12	21	23.0 - 28.0	518.0	910.0
32481	1 x 50 rm / 16	1	12	21	24.0 - 29.0	662.0	990.0
32482	1 x 70 rm / 16	2/0	12	21	26.0 - 31.0	854.0	1205.0
32483	1 x 95 rm / 16	3/0	12	21	26.0 - 32.0	1098.0	1520.0
32484	1 x 120 rm / 16	4/0	12	21	28.0 - 34.0	1334.0	1760.0
32485	1 x 150 rm / 16	300 kcmil	12	21	29.0 - 35.0	1622.0	2020.0
32486	1 x 150 rm / 25	300 kcmil	12	21	29.0 - 35.0	1725.0	2130.0
32487	1 x 185 rm / 16	350 kcmil	12	21	31.0 - 37.0	1958.0	2360.0
32488	1 x 185 rm / 25	350 kcmil	12	21	31.0 - 37.0	2059.0	2470.0
32489	1 x 240 rm / 16	500 kcmil	12	21	33.0 - 39.0	2486.0	2960.0
32490	1 x 240 rm / 25	500 kcmil	12	21	33.0 - 39.0	2587.0	3020.0
32491	1 x 300 rm / 25	600 kcmil	12	21	36.0 - 41.0	3163.0	3630.0
32492	1 x 400 rm / 35	750 kcmil	12	21	40.0 - 45.0	4234.0	4560.0
32493	1 x 500 rm / 35	1000 kcmil	12	21	43.0 - 48.0	5194.0	5580.0

# N2XS2Y

6/10 kV, 12/20 kV, 18/30 kV, Copper conductor, XLPE insulated, PE sheath



## 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
32494	1 x 35 rm / 16	2	24	42	27.0 - 32.0	518.0	960.0
32495	1 x 50 rm / 16	1	24	42	28.0 - 33.0	662.0	1160.0
32496	1 x 70 rm / 16	2/0	24	42	30.0 - 35.0	854.0	1410.0
32497	1 x 95 rm / 16	3/0	24	42	31.0 - 36.0	1094.0	1670.0
32498	1 x 120 rm / 16	4/0	24	42	33.0 - 38.0	1334.0	1960.0
32499	1 x 150 rm / 16	300 kcmil	24	42	34.0 - 39.0	1622.0	2220.0
32500	1 x 150 rm / 25	300 kcmil	24	42	34.0 - 39.0	1723.0	2310.0
32501	1 x 185 rm / 16	350 kcmil	24	42	36.0 - 41.0	1958.0	2620.0
32502	1 x 185 rm / 25	350 kcmil	24	42	36.0 - 41.0	2059.0	2670.0
32503	1 x 240 rm / 16	500 kcmil	24	42	39.0 - 44.0	2486.0	3160.0
32504	1 x 240 rm / 25	500 kcmil	24	42	39.0 - 44.0	2587.0	3270.0
32505	1 x 300 rm / 25	600 kcmil	24	42	41.0 - 46.0	3163.0	3880.0
32506	1 x 400 rm / 35	750 kcmil	24	42	44.0 - 49.0	4234.0	4820.0
32507	1 x 500 rm / 35	1000 kcmil	24	42	47.0 - 52.0	5194.0	5860.0
11018772	1 x 800 rm / 35	1500 kcmil	24	42	55.0 - 60.0	8074.0	9000.0

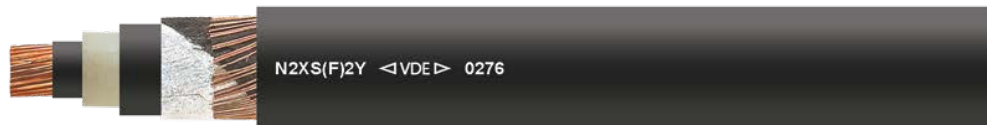
## 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
32508	1 x 50 rm / 16	1	36	63	32.0 - 38.0	662.0	1410.0
32509	1 x 70 rm / 16	2/0	36	63	34.0 - 40.0	854.0	1660.0
32510	1 x 95 rm / 16	3/0	36	63	35.0 - 41.0	1094.0	1970.0
32511	1 x 120 rm / 16	4/0	36	63	37.0 - 43.0	1334.0	2220.0
32512	1 x 150 rm / 25	300 kcmil	36	63	38.0 - 44.0	1723.0	2650.0
32513	1 x 185 rm / 25	350 kcmil	36	63	40.0 - 46.0	2059.0	2980.0
32514	1 x 240 rm / 25	500 kcmil	36	63	42.0 - 48.0	2587.0	3570.0
32515	1 x 300 rm / 25	600 kcmil	36	63	45.0 - 51.0	3163.0	4220.0
32516	1 x 400 rm / 35	750 kcmil	36	63	48.0 - 54.0	4234.0	5170.0
32517	1 x 500 rm / 35	1000 kcmil	36	63	51.0 - 57.0	5194.0	6260.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# N2XS(F)2Y

6/10 kV, 12/20 kV, 18/30 kV, Copper conductor, XLPE insulated, PE sheath, longitudinally water-proof



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

Temperature range during installation -20°C

Permissible operating temperature of the conductor +90°C

Short circuit temperature at the conductor +250°C (Short circuit temperature max. 5 s)

Nominal voltage see table

Operating voltage see table

Test voltage see table

Minimum bending radius 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Longitudinally waterproof, conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Longitudinally waterproof wrapping
- Outer sheath: PE acc. to HD 620 S2 (compound type DMP2)
- Sheath colour: black

## ■ PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ APPLICATION

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

## ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- the PE outer sheath is not flame retardant acc. to DIN EN 60332-1-2
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.

### 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
32560	1 x 35 rm / 16	2	12	21	26.0	518.0	1050.0
32561	1 x 50 rm / 16	1	12	21	28.0	662.0	1150.0
32562	1 x 70 rm / 16	2/0	12	21	30.0	854.0	1460.0
32563	1 x 95 rm / 16	3/0	12	21	31.0	1094.0	1700.0
32564	1 x 120 rm / 16	4/0	12	21	32.0	1334.0	2030.0
32565	1 x 150 rm / 25	300 kcmil	12	21	34.0	1723.0	2350.0
32566	1 x 185 rm / 25	350 kcmil	12	21	36.0	2059.0	2700.0
32567	1 x 240 rm / 25	500 kcmil	12	21	38.0	2587.0	3300.0
32568	1 x 300 rm / 25	600 kcmil	12	21	40.0	3163.0	3900.0
32569	1 x 400 rm / 35	750 kcmil	12	21	44.0	4234.0	4850.0
32570	1 x 500 rm / 35	1000 kcmil	12	21	47.0	5194.0	6000.0
79954	1 x 630 rm / 35	1250 kcmil	12	21	49.0	6442.0	7020.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
32571	1 x 35 rm / 16	2	24	42	31.0	518.0	1210.0
32572	1 x 50 rm / 16	1	24	42	33.0	662.0	1400.0
32573	1 x 70 rm / 16	2/0	24	42	34.0	854.0	1550.0



# N2XS(F)2Y



6/10 kV, 12/20 kV, 18/30 kV, Copper conductor, XLPE insulated, PE sheath, longitudinally water-proof

## 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
32574	1 x 95 rm / 16	3/0	24	42	36.0	1094.0	1800.0
32575	1 x 120 rm / 16	4/0	24	42	37.0	1334.0	2150.0
32576	1 x 150 rm / 25	300 kcmil	24	42	39.0	1723.0	2400.0
32577	1 x 185 rm / 25	350 kcmil	24	42	41.0	2059.0	2850.0
32578	1 x 240 rm / 25	500 kcmil	24	42	43.0	2587.0	3250.0
32579	1 x 300 rm / 25	600 kcmil	24	42	45.0	3163.0	3850.0
32580	1 x 400 rm / 35	750 kcmil	24	42	48.0	4234.0	4900.0
32581	1 x 500 rm / 35	1000 kcmil	24	42	52.0	5194.0	6100.0
33092	1 x 630 rm / 35	1250 kcmil	24	42	54.0	6442.0	7340.0

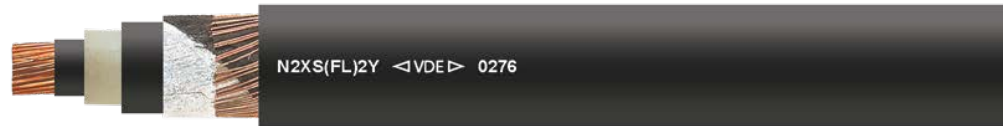
## 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
32582	1 x 50 rm / 16	1	36	63	37.0	662.0	1700.0
32583	1 x 70 rm / 16	2/0	36	63	38.0	854.0	1950.0
32584	1 x 95 rm / 16	3/0	36	63	40.0	1094.0	2300.0
32585	1 x 120 rm / 16	4/0	36	63	42.0	1334.0	2600.0
32586	1 x 150 rm / 25	300 kcmil	36	63	43.0	1723.0	3000.0
32587	1 x 185 rm / 25	350 kcmil	36	63	45.0	2059.0	3350.0
32588	1 x 240 rm / 25	500 kcmil	36	63	47.0	2587.0	4100.0
32589	1 x 300 rm / 25	600 kcmil	36	63	50.0	3163.0	4800.0
32590	1 x 400 rm / 35	750 kcmil	36	63	53.0	4234.0	5750.0
32591	1 x 500 rm / 35	1000 kcmil	36	63	56.0	5194.0	6700.0
708487	1 x 630 rm / 35	1250 kcmil	36	63	59.0	6442.0	7760.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# N2XS(FL)2Y

6/10 kV, 12/20 kV, 18/30 kV, Copper conductor, XLPE insulated, PE sheath, longitudinally and laterally waterproof



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

Temperature range during installation -20°C

Permissible operating temperature of the conductor +90°C

Short circuit temperature at the conductor +250°C (Short circuit temperature max. 5 s)

Nominal voltage see table

Operating voltage see table

Test voltage see table

Minimum bending radius 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Longitudinally waterproof, conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Longitudinally waterproof wrapping
- Aluminium wrapping, firmly welded to the outer sheath
- Outer sheath: PE acc. to HD 620 S2 (compound type DMP2)
- Sheath colour: black

## ■ PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ APPLICATION

Installation primarily for power utility grids and in cable ducts, outdoors, underground and in water, and also on pallets for manufacturing plants, switchgear and power stations. The resistant Al/PE-laminated sheathing acts as a cross water barrier. It inhibits the diffusion of water. In case of sheathing damage, water impact is contained at the flaw. The cable can be severely mechanically stressed during installation and operation. The internal conductive layer between conductor and VPE insulation and the adherent external conductive layer on the VPE insulation guarantees a design with high operational safety and no partial discharge.

## ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- the PE outer sheath is not flame retardant acc. to DIN EN 60332-1-2
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.

### 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
33054	1 x 35 rm / 16	2	12	21	28.0	518.0	860.0
33055	1 x 50 rm / 16	1	12	21	30.0	662.0	1000.0
33056	1 x 70 rm / 16	2/0	12	21	32.0	854.0	1350.0
33057	1 x 95 rm / 16	3/0	12	21	33.0	1094.0	1680.0
33058	1 x 120 rm / 16	4/0	12	21	34.0	1334.0	2070.0
33059	1 x 150 rm / 25	300 kcmil	12	21	36.0	1723.0	2350.0
33060	1 x 185 rm / 25	350 kcmil	12	21	38.0	2059.0	2710.0
33061	1 x 240 rm / 25	500 kcmil	12	21	40.0	2587.0	3260.0
38049	1 x 300 rm / 25	600 kcmil	12	21	42.0	3163.0	3850.0
38050	1 x 400 rm / 35	750 kcmil	12	21	46.0	4234.0	4740.0
38051	1 x 500 rm / 35	1000 kcmil	12	21	49.0	5194.0	5800.0
38052	1 x 630 rm / 35	1250 kcmil	12	21	51.0	6442.0	7120.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
38053	1 x 35 rm / 16	2	24	42	33.0	518.0	1020.0
33066	1 x 50 rm / 16	1	24	42	35.0	662.0	1170.0

# N2XS(FL)2Y



6/10 kV, 12/20 kV, 18/30 kV, Copper conductor, XLPE insulated, PE sheath, longitudinally and laterally waterproof

## 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
33067	1 x 70 rm / 16	2/0	24	42	36.0	854.0	1470.0
33083	1 x 95 rm / 16	3/0	24	42	38.0	1094.0	1860.0
33069	1 x 120 rm / 16	4/0	24	42	39.0	1334.0	2260.0
33070	1 x 150 rm / 25	300 kcmil	24	42	41.0	1723.0	2550.0
33071	1 x 185 rm / 25	350 kcmil	24	42	43.0	2059.0	2920.0
33072	1 x 240 rm / 25	500 kcmil	24	42	45.0	2587.0	3490.0
33073	1 x 300 rm / 25	600 kcmil	24	42	47.0	3163.0	4090.0
33074	1 x 400 rm / 35	750 kcmil	24	42	50.0	4234.0	5010.0
33075	1 x 500 rm / 35	1000 kcmil	24	42	54.0	5194.0	6090.0
38054	1 x 630 rm / 35	1250 kcmil	24	42	55.0	6442.0	7440.0

## 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
34312	1 x 50 rm / 16	1	36	63	36.0	662.0	1400.0
38055	1 x 70 rm / 16	2/0	36	63	40.0	854.0	1710.0
38056	1 x 95 rm / 16	3/0	36	63	42.0	1094.0	2110.0
38057	1 x 120 rm / 16	4/0	36	63	44.0	1334.0	2520.0
38058	1 x 150 rm / 25	300 kcmil	36	63	45.0	1723.0	2830.0
34313	1 x 185 rm / 25	350 kcmil	36	63	47.0	2059.0	3210.0
38059	1 x 240 rm / 25	500 kcmil	36	63	49.0	2587.0	3790.0
34314	1 x 300 rm / 25	600 kcmil	36	63	52.0	3163.0	4430.0
34315	1 x 400 rm / 35	750 kcmil	36	63	55.0	4234.0	5390.0
38060	1 x 500 rm / 35	1000 kcmil	36	63	58.0	5194.0	6500.0
38061	1 x 630 rm / 35	1250 kcmil	36	63	60.0	6442.0	7870.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

Temperature range during installation -5°C

Permissible operating temperature of the conductor +90°C

Short circuit temperature at the conductor +250°C (Short circuit temperature max. 5 s)

Nominal voltage see table

Operating voltage see table

Test voltage see table

Minimum bending radius 15x Outer-Ø

## ■ CABLE STRUCTURE

- Al conductor, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Wrapping
- Outer sheath: PVC acc. to HD 620 S2 (compound type DMV6)
- Sheath colour: red

## ■ PROPERTIES

- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Suitable for installation mostly for power supply stations, in indoors and in cable ducts, outdoor with protected laying, underground and in water as well as for installation on cable trays for industries, switchboards and power stations. Due to the good laying characteristic, this can also be laid easily in difficult line guideways. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

## ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.
- Part no. 32444, 32446, 32448, 32457, 32459, 32461, 32470, 32472, 32474: approved exclusively for direct burial

### 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32440	1 x 50 rm / 16	1	12	21	24.0 - 29.0	182.0	145.0	780.0
32441	1 x 70 rm / 16	2/0	12	21	26.0 - 31.0	182.0	203.0	875.0
32442	1 x 95 rm / 16	3/0	12	21	26.0 - 32.0	182.0	276.0	990.0
32443	1 x 120 rm / 16	4/0	12	21	28.0 - 34.0	182.0	348.0	1110.0
32444	1 x 150 rm / 16	300 kcmil	12	21	29.0 - 35.0	182.0	435.0	1240.0
32445	1 x 150 rm / 25	300 kcmil	12	21	29.0 - 35.0	283.0	435.0	1310.0
32446	1 x 185 rm / 16	350 kcmil	12	21	31.0 - 37.0	182.0	537.0	1405.0
32447	1 x 185 rm / 25	350 kcmil	12	21	31.0 - 37.0	283.0	537.0	1460.0
32448	1 x 240 rm / 16	500 kcmil	12	21	33.0 - 39.0	182.0	696.0	1615.0
32449	1 x 240 rm / 25	500 kcmil	12	21	33.0 - 39.0	283.0	696.0	1660.0
32450	1 x 300 rm / 25	600 kcmil	12	21	36.0 - 41.0	283.0	870.0	1910.0
32451	1 x 400 rm / 35	750 kcmil	12	21	40.0 - 45.0	394.0	1160.0	2315.0
32452	1 x 500 rm / 35	1000 kcmil	12	21	43.0 - 48.0	394.0	1450.0	2750.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32453	1 x 50 rm / 16	1	24	42	28.0 - 33.0	182.0	145.0	950.0
32454	1 x 70 rm / 16	2/0	24	42	30.0 - 35.0	182.0	203.0	1110.0
32455	1 x 95 rm / 16	3/0	24	42	31.0 - 36.0	182.0	276.0	1220.0
32456	1 x 120 rm / 16	4/0	24	42	32.0 - 38.0	182.0	348.0	1310.0
32457	1 x 150 rm / 16	300 kcmil	24	42	33.0 - 39.0	182.0	435.0	1460.0
32458	1 x 150 rm / 25	300 kcmil	24	42	33.0 - 39.0	283.0	435.0	1520.0
32459	1 x 185 rm / 16	350 kcmil	24	42	35.0 - 41.0	182.0	537.0	1660.0
32460	1 x 185 rm / 25	350 kcmil	24	42	35.0 - 41.0	283.0	537.0	1720.0
32461	1 x 240 rm / 16	500 kcmil	24	42	38.0 - 44.0	182.0	696.0	1860.0
32462	1 x 240 rm / 25	500 kcmil	24	42	38.0 - 44.0	283.0	696.0	1910.0
32463	1 x 300 rm / 25	600 kcmil	24	42	40.0 - 46.0	283.0	870.0	2220.0
32464	1 x 400 rm / 35	750 kcmil	24	42	43.0 - 49.0	394.0	1160.0	2620.0
32465	1 x 500 rm / 35	1000 kcmil	24	42	46.0 - 52.0	394.0	1450.0	3030.0

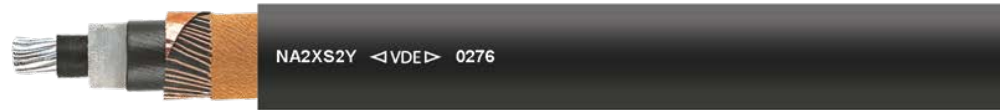
### 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32466	1 x 50 rm / 16	1	36	63	32.0 - 38.0	182.0	145.0	1260.0
32467	1 x 70 rm / 16	2/0	36	63	34.0 - 40.0	182.0	203.0	1360.0
32468	1 x 95 rm / 16	3/0	36	63	35.0 - 41.0	182.0	276.0	1510.0
32469	1 x 120 rm / 16	4/0	36	63	37.0 - 43.0	182.0	348.0	1610.0
32470	1 x 150 rm / 16	300 kcmil	36	63	38.0 - 44.0	182.0	435.0	1760.0
32471	1 x 150 rm / 25	300 kcmil	36	63	38.0 - 44.0	283.0	435.0	1810.0
32472	1 x 185 rm / 16	350 kcmil	36	63	40.0 - 46.0	182.0	537.0	1960.0
32473	1 x 185 rm / 25	350 kcmil	36	63	40.0 - 46.0	283.0	537.0	2020.0
32474	1 x 240 rm / 16	500 kcmil	36	63	42.0 - 48.0	182.0	696.0	2210.0
32475	1 x 240 rm / 25	500 kcmil	36	63	42.0 - 48.0	283.0	696.0	2260.0
32476	1 x 300 rm / 25	600 kcmil	36	63	45.0 - 51.0	283.0	870.0	2560.0
32477	1 x 400 rm / 35	750 kcmil	36	63	48.0 - 54.0	394.0	1160.0	2960.0
32478	1 x 500 rm / 35	1000 kcmil	36	63	51.0 - 57.0	394.0	1450.0	3460.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# NA2XS2Y

6/10 kV, 12/20 kV, 18/30 kV, Al conductor, XLPE insulated, PE sheath



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

Temperature range during installation -20°C

Permissible operating temperature of the conductor +90°C

Short circuit temperature at the conductor +250°C (Short circuit temperature max. 5 s)

Nominal voltage see table

Operating voltage see table

Test voltage see table

Minimum bending radius 15x Outer-Ø

## CABLE STRUCTURE

- Al conductor, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Wrapping
- Outer sheath: PE acc. to HD 620 S2 (compound type DMP2)
- Sheath colour: black

## PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## APPLICATION

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

## NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- the PE outer sheath is not flame retardant acc. to DIN EN 60332-1-2
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.
- Part no. 32524, 32526, 32528, 32537, 32539, 32541: approved exclusively for direct burial

## 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32520	1 x 50 rm / 16	1	12	21	24.0 - 29.0	182.0	145.0	710.0
32521	1 x 70 rm / 16	2/0	12	21	26.0 - 31.0	182.0	203.0	790.0
32522	1 x 95 rm / 16	3/0	12	21	26.0 - 32.0	182.0	276.0	920.0
32523	1 x 120 rm / 16	4/0	12	21	28.0 - 34.0	182.0	348.0	990.0
32524	1 x 150 rm / 16	300 kcmil	12	21	29.0 - 35.0	182.0	435.0	1110.0
32525	1 x 150 rm / 25	300 kcmil	12	21	29.0 - 35.0	283.0	435.0	1220.0
32526	1 x 185 rm / 16	350 kcmil	12	21	31.0 - 37.0	182.0	537.0	1260.0
32527	1 x 185 rm / 25	350 kcmil	12	21	31.0 - 37.0	283.0	537.0	1370.0
32528	1 x 240 rm / 16	500 kcmil	12	21	33.0 - 39.0	182.0	696.0	1480.0
32529	1 x 240 rm / 25	500 kcmil	12	21	33.0 - 39.0	283.0	696.0	1530.0
32530	1 x 300 rm / 25	600 kcmil	12	21	36.0 - 41.0	283.0	870.0	1820.0
32531	1 x 400 rm / 35	750 kcmil	12	21	40.0 - 45.0	394.0	1160.0	2220.0
32532	1 x 500 rm / 35	1000 kcmil	12	21	43.0 - 48.0	394.0	1450.0	2570.0

# NA2XS2Y



6/10 kV, 12/20 kV, 18/30 kV, Al conductor, XLPE insulated, PE sheath

## 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32533	1 x 50 rm / 16	1	24	42	28.0 - 33.0	182.0	145.0	890.0
32534	1 x 70 rm / 16	2/0	24	42	30.0 - 35.0	182.0	203.0	970.0
32535	1 x 95 rm / 16	3/0	24	42	31.0 - 36.0	182.0	276.0	1120.0
32536	1 x 120 rm / 16	4/0	24	42	32.0 - 38.0	182.0	348.0	1210.0
32537	1 x 150 rm / 16	300 kcmil	24	42	33.0 - 39.0	182.0	435.0	1370.0
32538	1 x 150 rm / 25	300 kcmil	24	42	33.0 - 39.0	283.0	435.0	1420.0
32539	1 x 185 rm / 16	350 kcmil	24	42	35.0 - 41.0	182.0	537.0	1530.0
32540	1 x 185 rm / 25	350 kcmil	24	42	35.0 - 41.0	283.0	537.0	1570.0
32541	1 x 240 rm / 16	500 kcmil	24	42	38.0 - 44.0	182.0	696.0	1720.0
32542	1 x 240 rm / 25	500 kcmil	24	42	38.0 - 44.0	283.0	696.0	1830.0
32543	1 x 300 rm / 25	600 kcmil	24	42	40.0 - 46.0	283.0	870.0	2070.0
32544	1 x 400 rm / 35	750 kcmil	24	42	43.0 - 49.0	394.0	1160.0	2460.0
32545	1 x 500 rm / 35	1000 kcmil	24	42	46.0 - 52.0	394.0	1450.0	2890.0
33078	1 x 630 rm / 35	1250 kcmil	24	42	47.0 - 53.0	394.0	1827.0	3370.0

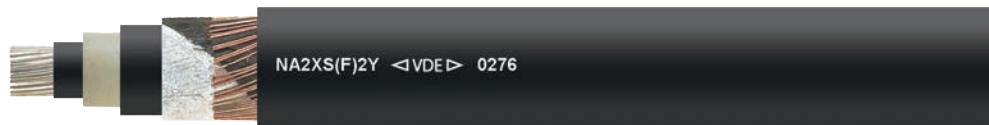
## 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-ø min - max mm	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32546	1 x 50 rm / 16	1	36	63	32.0 - 38.0	182.0	145.0	1120.0
32547	1 x 70 rm / 16	2/0	36	63	34.0 - 40.0	182.0	203.0	1270.0
32548	1 x 95 rm / 16	3/0	36	63	35.0 - 41.0	182.0	276.0	1380.0
32549	1 x 120 rm / 16	4/0	36	63	37.0 - 43.0	182.0	348.0	1530.0
32550	1 x 150 rm / 25	300 kcmil	36	63	38.0 - 44.0	283.0	435.0	1720.0
32551	1 x 185 rm / 25	350 kcmil	36	63	40.0 - 46.0	283.0	537.0	1860.0
32552	1 x 240 rm / 25	500 kcmil	36	63	42.0 - 48.0	283.0	696.0	2110.0
32553	1 x 300 rm / 25	600 kcmil	36	63	45.0 - 51.0	283.0	870.0	2370.0
32554	1 x 400 rm / 35	750 kcmil	36	63	48.0 - 54.0	394.0	1160.0	2820.0
32555	1 x 500 rm / 35	1000 kcmil	36	63	51.0 - 57.0	394.0	1450.0	3280.0
32999	1 x 630 rm / 35	1250 kcmil	36	63	52.0 - 59.0	394.0	1827.0	3770.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# NA2XS(F)2Y

6/10 kV, 12/20 kV, 18/30 kV, Al conductor, XLPE insulated, PE sheath, longitudinally waterproof



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

**Temperature range** during installation -20°C

**Permissible operating temperature of the conductor** +90°C

**Short circuit temperature at the conductor** +250°C (Short circuit temperature max. 5 s)

**Nominal voltage** see table

**Operating voltage** see table

**Test voltage** see table

**Minimum bending radius** 15x Outer-Ø

## CABLE STRUCTURE

- Al conductor, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Longitudinally waterproof, conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Longitudinally waterproof wrapping
- Outer sheath: PE acc. to HD 620 S2 (compound type DMP2)
- Sheath colour: black

## PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## APPLICATION

Suitable for indoor installation and in cable ducts, outdoors, underground and in water as well as for installation on cable trays for industries, switch-boards and power stations. The PE-outer sheath is resistant to high mechanical stress for laying the cables. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

## NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- the PE outer sheath is not flame retardant acc. to DIN EN 60332-1-2
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.
- Part no. 33172: approved exclusively for direct burial

### 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32600	1 x 35 rm / 16	2	12	21	26.0	182.0	102.0	780.0
32601	1 x 50 rm / 16	1	12	21	28.0	182.0	145.0	850.0
32602	1 x 70 rm / 16	2/0	12	21	30.0	182.0	203.0	980.0
32603	1 x 95 rm / 16	3/0	12	21	31.0	182.0	276.0	1080.0
32604	1 x 120 rm / 16	4/0	12	21	32.0	182.0	348.0	1150.0
32605	1 x 150 rm / 25	300 kcmil	12	21	34.0	283.0	435.0	1280.0
32606	1 x 185 rm / 25	350 kcmil	12	21	36.0	283.0	537.0	1420.0
32607	1 x 240 rm / 25	500 kcmil	12	21	38.0	283.0	696.0	1630.0
32608	1 x 300 rm / 25	600 kcmil	12	21	40.0	283.0	870.0	1950.0
32609	1 x 400 rm / 35	750 kcmil	12	21	44.0	394.0	1160.0	2350.0
32610	1 x 500 rm / 35	1000 kcmil	12	21	47.0	394.0	1450.0	2780.0
11018101	1 x 800 rm / 35	1500 kcmil	12	21	51.7	394.0	2320.0	3422.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32611	1 x 50 rm / 16	1	24	42	33.0	182.0	145.0	920.0
32612	1 x 70 rm / 16	2/0	24	42	34.0	182.0	203.0	1030.0
32613	1 x 95 rm / 16	3/0	24	42	36.0	182.0	276.0	1140.0



# NA2XS(F)2Y



6/10 kV, 12/20 kV, 18/30 kV, Al conductor, XLPE insulated, PE sheath, longitudinally waterproof

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32614	1 x 120 rm / 16	4/0	24	42	37.0	182.0	348.0	1250.0
32615	1 x 150 rm / 25	300 kcmil	24	42	39.0	283.0	435.0	1320.0
32616	1 x 185 rm / 25	350 kcmil	24	42	41.0	283.0	537.0	1570.0
33172	1 x 240 rm / 16	500 kcmil	24	42	42.0	182.0	696.0	1679.0
32617	1 x 240 rm / 25	500 kcmil	24	42	43.0	283.0	696.0	1780.0
32618	1 x 300 rm / 25	600 kcmil	24	42	45.0	283.0	870.0	2100.0
32619	1 x 400 rm / 35	750 kcmil	24	42	48.0	394.0	1160.0	2480.0
32620	1 x 500 rm / 35	1000 kcmil	24	42	50.0	394.0	1450.0	2900.0
33090	1 x 630 rm / 35	1250 kcmil	24	42	52.0	394.0	1827.0	3380.0
33091	1 x 800 rm / 35	1500 kcmil	24	42	57.0	394.0	2320.0	4400.0
33097	1 x 1000 rm / 35	2000 kcmil	24	42	62.0	394.0	2900.0	4780.0

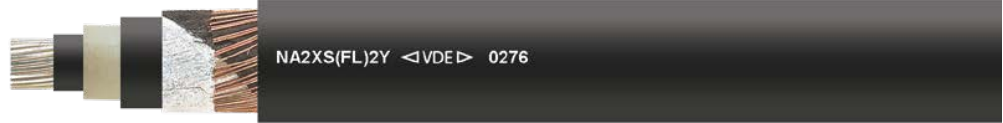
## 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
32621	1 x 50 rm / 16	1	36	63	37.0	182.0	145.0	1250.0
32622	1 x 70 rm / 16	2/0	36	63	38.0	182.0	203.0	1500.0
32623	1 x 95 rm / 16	3/0	36	63	40.0	182.0	276.0	1700.0
32624	1 x 120 rm / 16	4/0	36	63	42.0	182.0	348.0	1800.0
32625	1 x 150 rm / 25	300 kcmil	36	63	43.0	283.0	435.0	2050.0
32626	1 x 185 rm / 25	350 kcmil	36	63	45.0	283.0	537.0	2150.0
32627	1 x 240 rm / 25	500 kcmil	36	63	47.0	283.0	696.0	2400.0
32628	1 x 300 rm / 25	600 kcmil	36	63	50.0	283.0	870.0	2700.0
32629	1 x 400 rm / 35	750 kcmil	36	63	53.0	394.0	1160.0	3200.0
32630	1 x 500 rm / 35	1000 kcmil	36	63	56.0	394.0	1450.0	3555.0
31219	1 x 630 rm / 35	1250 kcmil	36	63	58.0	394.0	1827.0	3790.0
33162	1 x 800 rm / 35	1500 kcmil	36	63	62.0	394.0	2320.0	4480.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# NA2XS(FL)2Y

6/10 kV, 12/20 kV, 18/30 kV, Al conductor, XLPE insulated, PE sheath, longitudinally and laterally waterproof



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-620, HD 620 S2, IEC 60502

**Temperature range** during installation -20°C  
**Permissible operating temperature of the conductor** +90°C

**Short circuit temperature at the conductor** +250°C (Short circuit temperature max. 5 s)

**Nominal voltage** see table

**Operating voltage** see table

**Test voltage** see table

**Minimum bending radius** 15x Outer-Ø

## ■ CABLE STRUCTURE

- Al conductor, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Longitudinally waterproof, conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Longitudinally waterproof wrapping
- Aluminium wrapping, firmly welded to the outer sheath
- Outer sheath: PE acc. to HD 620 S2 (compound type DMP2)
- Sheath colour: black

## ■ PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ APPLICATION

Installation primarily for power utility grids and in cable ducts, outdoors, underground and in water, and also on pallets for manufacturing plants, switchgear and power stations. The resistant Al/PE-laminated sheathing acts as a cross water barrier. It inhibits the diffusion of water. In case of sheathing damage, water impact is contained at the flaw. The cable can be severely mechanically stressed during installation and operation. The internal conductive layer between conductor and VPE insulation and the adherent external conductive layer on the VPE insulation guarantees a design with high operational safety and no partial discharge.

## ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- the PE outer sheath is not flame retardant acc. to DIN EN 60332-1-2
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.

### 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
38062	1 x 50 rm / 16	1	12	21	30.0	182.0	145.0	710.0
38063	1 x 70 rm / 16	2/0	12	21	32.0	182.0	203.0	890.0
38064	1 x 95 rm / 16	3/0	12	21	33.0	182.0	276.0	1100.0
38065	1 x 120 rm / 16	4/0	12	21	34.0	182.0	348.0	1330.0
38066	1 x 150 rm / 25	300 kcmil	12	21	36.0	283.0	435.0	1450.0
38067	1 x 185 rm / 25	350 kcmil	12	21	38.0	283.0	537.0	1580.0
38068	1 x 240 rm / 25	500 kcmil	12	21	40.0	283.0	696.0	1780.0
38069	1 x 300 rm / 25	600 kcmil	12	21	42.0	283.0	870.0	1990.0
38070	1 x 400 rm / 35	750 kcmil	12	21	46.0	394.0	1160.0	2320.0
38071	1 x 500 rm / 35	1000 kcmil	12	21	49.0	394.0	1450.0	2690.0
38072	1 x 630 rm / 35	1250 kcmil	12	21	51.0	394.0	1827.0	3160.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
38073	1 x 50 rm / 16	1	24	42	35.0	182.0	145.0	870.0
38074	1 x 70 rm / 16	2/0	24	42	36.0	182.0	203.0	1060.0
38075	1 x 95 rm / 16	3/0	24	42	38.0	182.0	276.0	1280.0

# NA2XS(FL)2Y



6/10 kV, 12/20 kV, 18/30 kV, Al conductor, XLPE insulated, PE sheath, longitudinally and laterally waterproof

## 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
38076	1 x 120 rm / 16	4/0	24	42	39.0	182.0	348.0	1520.0
33089	1 x 150 rm / 25	300 kcmil	24	42	41.0	283.0	435.0	1650.0
38077	1 x 185 rm / 25	350 kcmil	24	42	43.0	283.0	537.0	1800.0
38078	1 x 240 rm / 25	500 kcmil	24	42	45.0	283.0	696.0	2000.0
38079	1 x 300 rm / 25	600 kcmil	24	42	47.0	283.0	870.0	2230.0
38080	1 x 400 rm / 35	750 kcmil	24	42	50.0	394.0	1160.0	2580.0
38081	1 x 500 rm / 35	1000 kcmil	24	42	54.0	394.0	1450.0	2980.0
38082	1 x 630 rm / 35	1250 kcmil	24	42	55.0	394.0	1827.0	3480.0

## 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer Ø mm, approx.	Cu factor per km	Al-weight kg/km	Weight kg/km, approx.
33084	1 x 50 rm / 16	1	36	63	39.0	182.0	145.0	1100.0
33085	1 x 70 rm / 16	2/0	36	63	40.0	182.0	203.0	1300.0
38083	1 x 95 rm / 16	3/0	36	63	42.0	182.0	276.0	1530.0
38084	1 x 120 rm / 16	4/0	36	63	44.0	182.0	348.0	1780.0
38085	1 x 150 rm / 25	300 kcmil	36	63	45.0	283.0	435.0	1920.0
38086	1 x 185 rm / 25	350 kcmil	36	63	47.0	283.0	537.0	2080.0
38087	1 x 240 rm / 25	500 kcmil	36	63	49.0	283.0	696.0	2300.0
38088	1 x 300 rm / 25	600 kcmil	36	63	52.0	283.0	870.0	2550.0
38089	1 x 400 rm / 35	750 kcmil	36	63	55.0	394.0	1160.0	2960.0
38090	1 x 500 rm / 35	1000 kcmil	36	63	60.0	394.0	1450.0	3380.0
38091	1 x 630 rm / 35	1250 kcmil	36	63	60.0	394.0	1827.0	3900.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor



## TECHNICAL DATA

Medium voltage cable acc. to DIN VDE 0276-622, HD 622 S1

<b>Temperature range</b>	flexible -5°C to +70°C fixed -5°C to +70°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Short circuit temperature at the conductor</b>	+250°C (Short circuit temperature max. 5 s)
<b>Nominal voltage</b>	see table
<b>Operating voltage</b>	see table
<b>Test voltage</b>	see table
<b>Minimum bending radius</b>	15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Inner conductive layer
- Core insulation: XLPE acc. to HD 620 S2 (compound type DIX8)
- Outer conductive layer
- Conductive wrapping
- Screen: braiding of copper wires with one or two counter helix conductors
- Wrapping
- Outer sheath: halogen-free polymer
- Sheath colour: black

## ■ PROPERTIES

- halogen-free

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## ■ APPLICATION

Suitable for indoor installation and in cable ducts, outdoors and in the ground only as protected installation, as well as for installation on cable trays for industrial systems, switch-boards and power stations. Good laying properties favour laying even with difficult routing. The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assure a construction free of partial discharges with high operational reliability.

## ■ NOTES

- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for maximum operational reliability, the core insulation and the outer conductive layer are simultaneously extruded and permanently welded together. For installation, a peeling tool is recommended.

## 6/10 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11023707	1 x 35 rm / 16	2	12	21	23.0 - 28.0	518.0	900.0
11023708	1 x 50 rm / 16	1	12	21	24.0 - 29.0	662.0	1040.0
11023709	1 x 70 rm / 16	2/0	12	21	25.0 - 31.0	854.0	1260.0
11023710	1 x 95 rm / 16	3/0	12	21	26.0 - 32.0	1094.0	1540.0
11023711	1 x 120 rm / 16	4/0	12	21	28.0 - 34.0	1334.0	1790.0
11023712	1 x 150 rm / 25	300 kcmil	12	21	29.0 - 35.0	1723.0	2160.0
11023713	1 x 185 rm / 25	350 kcmil	12	21	31.0 - 37.0	2059.0	2530.0
11023714	1 x 240 rm / 25	500 kcmil	12	21	33.0 - 39.0	2587.0	3090.0
11023715	1 x 300 rm / 25	600 kcmil	12	21	36.0 - 41.0	3163.0	3680.0
11023716	1 x 400 rm / 35	750 kcmil	12	21	38.0 - 45.0	4234.0	4650.0
11023717	1 x 500 rm / 35	1000 kcmil	12	21	41.0 - 48.0	5194.0	5740.0

### 12/20 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11023718	1 x 35 rm / 16	2	24	42	27.0 - 32.0	518.0	1060.0
11023719	1 x 50 rm / 16	1	24	42	28.0 - 33.0	662.0	1210.0
11023720	1 x 70 rm / 16	2/0	24	42	30.0 - 35.0	854.0	1450.0
11023721	1 x 95 rm / 16	3/0	24	42	31.0 - 36.0	1094.0	1740.0
11023722	1 x 120 rm / 16	4/0	24	42	32.0 - 38.0	1334.0	2000.0
11023723	1 x 150 rm / 25	300 kcmil	24	42	33.0 - 39.0	1723.0	2370.0
11023724	1 x 185 rm / 25	350 kcmil	24	42	35.0 - 41.0	2059.0	2750.0
11021526	1 x 240 rm / 25	500 kcmil	24	42	38.0 - 44.0	2587.0	3330.0
11023726	1 x 300 rm / 25	600 kcmil	24	42	40.0 - 46.0	3163.0	3920.0
11023727	1 x 400 rm / 35	750 kcmil	24	42	43.0 - 49.0	4234.0	4920.0
11023728	1 x 500 rm / 35	1000 kcmil	24	42	46.0 - 52.0	5194.0	6020.0

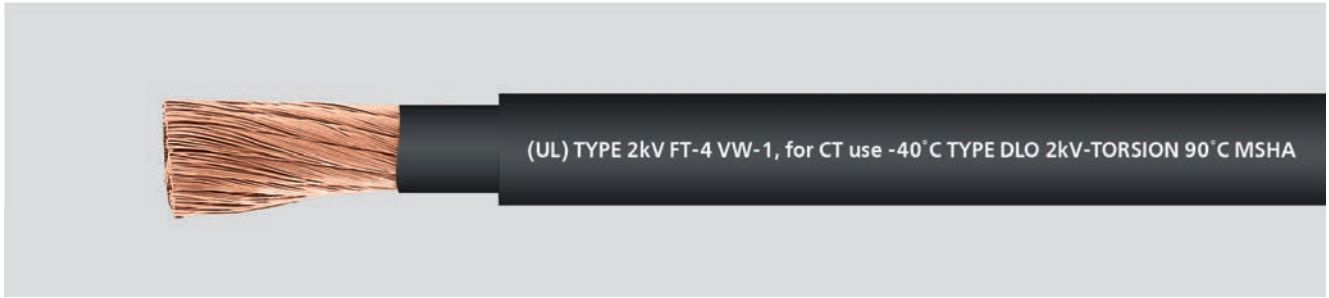
### 18/30 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Operating voltage <sup>1)</sup> max. kV	Test voltage kV	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11023729	1 x 50 rm / 16	1	36	63	32.0 - 38.0	662.0	1450.0
11023730	1 x 70 rm / 16	2/0	36	63	34.0 - 40.0	854.0	1690.0
11023731	1 x 95 rm / 16	3/0	36	63	35.0 - 41.0	1094.0	2000.0
11023732	1 x 120 rm / 16	4/0	36	63	37.0 - 43.0	1334.0	2270.0
11023733	1 x 150 rm / 25	300 kcmil	36	63	38.0 - 44.0	1723.0	2660.0
11023734	1 x 185 rm / 25	350 kcmil	36	63	40.0 - 46.0	2059.0	3040.0
11023735	1 x 240 rm / 25	500 kcmil	36	63	42.0 - 48.0	2587.0	3640.0
11023736	1 x 300 rm / 25	600 kcmil	36	63	45.0 - 51.0	3163.0	4250.0
11023737	1 x 400 rm / 35	750 kcmil	36	63	48.0 - 54.0	4234.0	5290.0
11023738	1 x 500 rm / 35	1000 kcmil	36	63	51.0 - 57.0	5194.0	6450.0

1) max. permissible operating voltage three-phase alternating current (AC) conductor/conductor

# HELUWIND® WK DLO, WK DLO-Torsion

2 kV, FT4, VW-1, RHH/RHW-2, UL44



## Technical data

- **Temperature range**  
flexing -40°C to +90°C
- **Nominal voltage**  
2000 V
- **Torsion application**  
only for WK DLO-Torsion  
+/- 150° per 1m
- **Torsion rating**  
Torsion tested in accordance with  
HELUKABEL test requirements
- **Approvals**  
RHH/RHW-2, PRI PRII, CSA RW90,  
CSA 22.2 No. 38, VW-1,  
cold impact test, cold bend test,  
wet or dry per UL44, for CT use
- **Flame test**  
CSA FT1, FT4, IEEE 1202

## Cable structure

- Special stranded bare copper wire,  
fine stranded acc. to ASTM-B3
- Insulation: EP
- Separating foil wrap
- Sheath: TPE/CPE
- Sheath colour: black

## Properties

- UV resistant

## Note

For more information, especially on  
custom cables, please contact us:  
wind@helukabel.de

## Application

The cable HELUWIND® WK DLO was specifically designed for use in wind turbines up to a nominal voltage of 2 kV. It has been specially developed for torsion applications in wind turbines. We supply the leading wind turbine manufacturers.

### WK DLO 2 kV

Part no.	Cross-section AWG / kcmil	Outer Ø app. mm	Weight app. kg / km	Outer Ø app. inch	Weight app. lb / kft
703156	14	5,9	37,0	0,23	0,0
703157	12	6,3	69,0	0,25	0,0
703158	10	7,2	100,0	0,28	0,0
702513	8	8,4	142,0	0,33	0,0
703159	6	9,4	200,0	0,37	0,0
703160	4	11,2	286,0	0,44	0,0
703161	2	12,7	370,0	0,50	0,0
703162	1	16,4	637,0	0,65	0,0
703163	1/0	16,7	715,0	0,66	0,0
703862	2/0	17,6	830,0	0,69	0,0
703164	3/0	19,6	1104,0	0,77	0,0
702863	4/0	21,0	1298,0	0,83	0,0
702514	262 kcmil	23,7	1590,0	0,93	0,0
703165	313 kcmil	25,4	1872,0	1,00	0,0
708857	373 kcmil	27,1	2176,0	1,07	0,0
703167	444 kcmil	28,8	2570,0	1,13	0,0
702515	535 kcmil	31,4	3046,0	1,24	0,0
703168	646 kcmil	33,6	3600,0	1,32	0,0
703169	777 kcmil	36,0	4290,0	1,42	0,0
703170	929 kcmil	38,4	5144,0	1,51	0,0
703171	1111 kcmil	42,5	6070,0	1,67	0,0

### WK DLO-Torsion 2 kV

Part no.	Cross-section AWG / kcmil	Outer Ø app. mm	Weight app. kg / km	Outer Ø app. inch	Weight app. lb / kft
709729	8	8,4	142,0	0,33	0,0
709730	6	9,4	200,0	0,37	0,0
709731	4	11,2	286,0	0,44	0,0
709732	2	12,7	370,0	0,50	0,0
709733	1	16,4	637,0	0,65	0,0
709734	1/0	16,7	715,0	0,66	0,0
709735	2/0	17,6	830,0	0,69	0,0
709288	3/0	19,6	1104,0	0,77	0,0
709289	4/0	21,0	1298,0	0,83	0,0
709290	262 kcmil	23,7	1590,0	0,93	0,0
709291	313 kcmil	25,4	1872,0	1,00	0,0
709292	373 kcmil	27,1	2176,0	1,07	0,0
709293	444 kcmil	28,8	2570,0	1,13	0,0
709294	535 kcmil	31,4	3046,0	1,24	0,0
709295	646 kcmil	33,6	3600,0	1,32	0,0
709296	777 kcmil	36,0	4290,0	1,42	0,0
709297	929 kcmil	38,4	5144,0	1,51	0,0
709298	1111 kcmil	42,5	6070,0	1,67	0,0

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK RHH/RHW-2 ALU

UL listed as types RHW/RHW-2. RW90/R90, FT4 per CSA



## Technical data

- **Temperature range**  
flexing -40°C to +90°C (wet & dry)
- **Nominal voltage**  
2000 V
- **Approvals**  
UL 44 for Thermoset-Insulated Wires and Cables  
ICEA S-95-658 / NEMA WC70 for Non-shielded 0-2 kV Cables  
All cross sections are rated VW1 (fire protection classification)

## Cable structure

- **Conductor:**
  - Aluminium AA-8000 alloy compacted conductor
  - Class B stranding, per ASTM B801
  - Sizes: 6 AWG - 1000 kcmil
- **Insulation:**
  - Flame retardant thermoset ethylene propylene rubber (EPR) compound
- **Sheath:**
  - Black flame retardant thermoset chlorinated polyethylene (CPE) compound

## Properties

- Sheath is rated Oil Resistance I or II per UL 44
- Rated Sun Resistance for CT use, 1/0 AWG and larger

## Note

- **RHH/RHW-2 600 V on request**
- For more information, especially on custom cables and connectivity solutions, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

For power, lighting, signal and control circuits installed in wet or dry locations. In conduit, duct, tray, and open air, and aerial installations. Suitable for use in industrial areas, fixed installation in wind turbines and utility systems where flame resistance is essential.

Part no.	Cross-section AWG / kcmil	Outer Ø app. mm	Weight app. kg / km	Outer Ø app. inch	Weight app. lb / kft
708746	6	8,9	0,0	0,35	71,0
708747	4	9,9	0,0	0,39	91,0
708748	2	11,4	0,0	0,45	124,0
708749	1	13,7	0,0	0,54	174,0
708750	1/0	14,5	0,0	0,57	202,0
708751	2/0	15,5	0,0	0,61	238,0
708752	3/0	16,8	0,0	0,66	281,0
708753	4/0	18,0	0,0	0,71	335,0

Part no.	Cross-section AWG / kcmil	Outer Ø app. mm	Weight app. kg / km	Outer Ø app. inch	Weight app. lb / kft
708754	250 kcmil	20,8	0,0	0,82	429,0
712222	300 kcmil	22,1	0,0	0,87	491,0
712223	350 kcmil	23,4	0,0	0,92	552,0
712224	400 kcmil	24,4	0,0	0,96	612,0
712225	500 kcmil	26,4	0,0	1,04	729,0
712226	600 kcmil	29,2	0,0	1,15	878,0
712227	750 kcmil	31,5	0,0	1,24	1052,0
712228	1000 kcmil	35,2	0,0	0,00	1338,0

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® SOLARFLEX®-X PREMIUM



Solar cable with improved water resistance acc. to TÜV Rheinland 2 PFG 2750



## TECHNICAL DATA

Cross-linked single core cable acc. to DIN VDE 0283-618 / DIN EN 50618, IEC 62930, TÜV Rheinland 2 PFG 2750

Temperature range fixed -40°C to +90°C

Permissible operating temperature of the conductor +120°C

Nominal voltage AC U<sub>0</sub>/U 1000/1000 V  
DC U<sub>0</sub>/U 1500/1500 V

Test voltage 6500 V

Minimum bending radius fixed 5x Outer-Ø

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- ozone-resistant acc. to DIN VDE 0283-618 / DIN EN 50618
- weather-resistant acc. to DIN VDE 0283-618 / DIN EN 50618 Appendix E
- DC Voltage resistance of the insulation acc. to DIN VDE 0283-618 / DIN EN 50618 Tab. 2
- Improved water resistance acc. to TÜV Rheinland 2 PFG 2750

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked compound
- x = without protective conductor
- Outer sheath: cross-linked compound
- Sheath colour: black

## PROPERTIES

- resistant to: UV radiation, ozone, weathering effects, water
- for outdoor use
- direct burial
- halogen-free

## TESTS

## APPLICATION

HELUPOWER® SOLARFLEX®-X PREMIUM is used for wiring solar modules on land and in floating solar parks on the water. A wide range of applications in different countries is possible due to EN 50618 and IEC 62930 certification. Suitable for direct burial; we recommend: laying in pipes. Not suitable for permanent installation in water. The maximum DC voltage of the system in which the cable is installed must not exceed 1.8 kV. The cable is suitable for use in and on devices and systems with protective insulation (protection class II).

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11024775	1 x 2.5	14	4.8 - 5.4	24.0	45.0
11024776	1 x 4	12	5.2 - 5.9	38.4	60.0
11024777	1 x 6	10	5.8 - 6.4	57.6	80.0
11024778	1 x 10	8	6.9 - 7.7	96.0	126.0
11024779	1 x 16	6	7.7 - 8.5	153.6	170.0
11024780	1 x 25	4	10.0 - 10.8	240.0	270.0
11024781	1 x 35	2	11.5 - 12.3	336.0	365.0
11024782	1 x 50	1	13.2 - 14.0	480.0	508.0
11024783	1 x 70	2/0	15.6 - 16.6	672.0	729.0
11024784	1 x 95	3/0	17.4 - 18.4	912.0	923.0
11024785	1 x 120	4/0	19.4 - 20.4	1152.0	1178.0
11024786	1 x 150	300 kcmil	20.7 - 21.7	1440.0	1460.0
11024787	1 x 185	350 kcmil	24.0 - 25.0	1776.0	1777.0
11024788	1 x 240	450 kcmil	26.6 - 27.8	2304.0	2252.0



# HELUPOWER® SOLARFLEX®-X RPVU90-CU

2000 V DC



## TECHNICAL DATA

Cross-linked single conductor cable acc. to UL Std. 4703, CSA Std. C22.2 No. 271-11

Temperature range static -40°C to +90°C  
Permissible operating temperature of the conductor +120°C

Nominal voltage UL DC 2000 V

Test voltage 10000 V

Minimum bending radius static 5x Outer Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Conductor insulation: cross-linked compound
- Outer jacket: cross-linked compound
- Jacket color: see table

## PROPERTIES

- Resistant to: UV radiation, ozone, weathering effects, water
- For outdoor use
- Direct burial
- Halogen-free

## TESTS

- Halogen-free acc. to IEC 60754-1
- Flame-retardant acc. to UL VW-1, CSA FT1
- Smoke density acc. to IEC 61034-1+2
- UV-resistant acc. to UL 2556, CSA C22.2 No. 2556

## APPLICATION

HELUPOWER® SOLARFLEX®-X RPVU90-CU is used for wiring solar modules. Suitable for direct burial; recommendation: laying in pipes.

No. conductors x AWG No.	Outer Ø min - max mm	Cu factor per km	Weight kg/km, approx.	Red	Black
				Part no.	Part no.
1 x 12	6.10 - 6.50	31,3	34	<b>18089427</b>	<b>18089426</b>
1 x 10	6.70 - 7.10	47.2	88	<b>18089429</b>	<b>18089428</b>
1 x 8	8.10 - 8.50	77.2	131	<b>18089431</b>	<b>18089430</b>



### TECHNICAL DATA

Cross-linked single conductor cable acc. to UL Std. 4703, CSA Std. C22.2 No. 271-11

Temperature range	static -40°C to +90°C
Permissible operating temperature of the conductor	+120°C
Nominal voltage	UL DC 2000 V
Test voltage	10000 V
Minimum bending radius	static 7x Outer Ø

### ■ CABLE STRUCTURE

- Aluminum, stranded compacted, AWG sizes
- Conductor insulation: cross-linked compound
- Outer jacket: cross-linked compound
- Jacket color: black

### ■ PROPERTIES

- Resistant to: UV radiation, ozone, weathering effects, water
- For outdoor use
- Direct burial
- Halogen-free

### ■ TESTS

- Halogen-free acc. to IEC 60754-1
- Flame-retardant acc. to UL VW-1, CSA FT1
- Smoke density acc. to IEC 61034-1+2
- UV-resistant acc. to UL 2556, CSA C22.2 No. 2556

### ■ APPLICATION

HELUPOWER® SOLARFLEX®-X RPVU90-AL is used for wiring solar modules. Suitable for direct burial; recommendation: laying in pipes.

Part no.	No. conductors x AWG No.	Outer Ø min - max mm	Cu factor per km	Weight kg/km, approx.
18089432	1 x 350 kcmil	24.30 - 25.10	537.6	916
18089433	1 x 500 kcmil	27.20 - 28.20	717.2	1156
18089434	1 x 750 kcmil	31.50 - 32.50	1162.9	1715

# HELUPOWER® THERMFLEX® 145



conductor stranded with optimal lay lengths, temperature-resistant, improved behaviour in case of fire



## TECHNICAL DATA

### Sheathed single core cable

**Temperature range** flexible -40°C to +120°C  
fixed -55°C to +145°C

**Short circuit temperature at the conductor**  
+250°C

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 700 V  
three-phase alternating current (AC) conductor/conductor 1200 V  
direct current (DC) conductor/earth 900 V  
direct current (DC) conductor/conductor 1800 V

**Test voltage** 4000 V

**Minimum bending radius** flexible 12.5x Outer-Ø  
fixed 4x Outer-Ø

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, no release of corrosive and toxic gases, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

## APPLICATION

This cable is used as a generator connection cable in wind power plants and wherever a high current carrying capacity is required and a reduced outer diameter is beneficial due to limited installation space. Other areas of application: connection cable of thermal class B (130°C) for motors, transformers, relays, coils, magnets; power unit connections in the automotive industry; halogen-free wiring of switch and control cabinets; connecting cable for heating devices; supply cable for high-performance luminaires in industrial areas, sports facilities and traffic infrastructure; wiring of charging stations and pantographs within e-Mobility applications.

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: black
- x = without protective conductor
- Outer sheath: cross-linked polyolefin
- Sheath colour: black

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001667	1 x 50	1	16.0	480.0	711.0
17001668	1 x 70	2/0	18.5	672.0	902.0
17001669	1 x 95	3/0	20.0	912.0	1028.0
17001670	1 x 120	4/0	21.0	1152.0	1515.0
17001671	1 x 150	250 kcmil	25.0	1440.0	1913.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001672	1 x 185	350 kcmil	28.5	1776.0	2243.0
17001673	1 x 240	400 kcmil	32.5	2304.0	2912.0
17001674	1 x 300	500 kcmil	35.0	2880.0	4089.0
17001675	1 x 400	750 kcmil	42.5	3840.0	5067.0

# HELUPOWER® THERMFLEX® 145-C



conductor stranded with optimal lay lengths, temperature-resistant, improved behaviour in case of fire, EMC-preferred type



## TECHNICAL DATA

### Sheathed single core cable

<b>Temperature range</b>	flexible -40°C to +120°C fixed -55°C to +145°C
<b>Short circuit temperature at the conductor</b>	+250°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage</b>	4000 V
<b>Minimum bending radius</b>	flexible 12.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification: black
- x = without protective conductor
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: cross-linked polyolefin
- Sheath colour: black

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001676	1 x 16	6	10.3	183.0	328.0
17001677	1 x 25	4	12.8	275.0	443.0
17001678	1 x 35	2	13.9	391.0	612.0
17001679	1 x 50	1	16.6	532.0	749.0
17001680	1 x 70	2/0	19.1	756.0	968.0
17001681	1 x 95	3/0	20.6	1030.0	1087.0

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, no release of corrosive and toxic gases, low smoke development

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C

## ■ APPLICATION

This cable is used as a generator connection cable in wind power plants and wherever a high current carrying capacity is required and a reduced outer diameter is beneficial due to limited installation space. Other areas of application: connection cable of thermal class B (130°C) for motors, transformers, relays, coils, magnets; power unit connections in the automotive industry; halogen-free wiring of switch and control cabinets; connecting cable for heating devices; supply cable for high-performance luminaires in industrial areas, sports facilities and traffic infrastructure; wiring of charging stations and pantographs within e-Mobility applications. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

## ■ NOTES

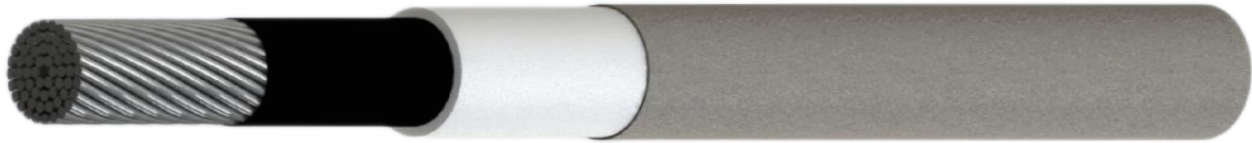
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17001682	1 x 120	4/0	23.0	1289.0	1595.0
17001683	1 x 150	250 kcmil	25.6	1568.0	2033.0
17001684	1 x 185	350 kcmil	29.1	1941.0	2363.0
17001685	1 x 240	400 kcmil	33.1	2568.0	3099.0
17001686	1 x 300	500 kcmil	35.6	3147.0	4221.0

# SIF/POL 4.2kV UL STYLE 3662

Flexible single core silicone insulated cable

with external impregnated polyester fiber braiding



## TECHNICAL DATA

Power cables acc. to UL-Std 758 (AWM) Style 3662, CSA-Std. 22.2 No. 210

Operating temperature	-55°C to +180°C Peaks: 210°C
Operating voltage	4.2 kV
Test voltage	9.4 kV
Breakdown voltage	10 kV
Minimum bending radius	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Tinned copper conductor according to ASTM B33
- Semiconductor tape
- Core insulation: Silicone
- Acrylic impregnated polyester braid
- Core colour: grey

## PROPERTIES

- Halogen-free
- resistant to: UV radiation, weathering effects

## TESTS

- halogen-free acc. to EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. EN 60754-2 / IEC 60754-2
- flame-retardant acc. to UL VW-1, CSA FT1
- smoke density acc. to EN 61034-1+2 / IEC 61034-1+2

## APPLICATION

For internal wiring and in protected locations at high temperature limited by maximum conductor temperature in normal use of 180°C. Suitable to be connected directly and permanently to a coil winding, motor or other component of electrical devices.  
For use in: lighting, furnaces, ovens, electric resistor applications, panel wiring, Industry, electronics, low smoke halogen free, indoor protected installations, flexible applications, ship & railroad construction and heavy duty mobile use.

## NOTES

- Solid conductor versions not for flexible applications.

Part no.	Cross-sec. mm <sup>2</sup>	AWG approx.	Outer Ø mm nominal	Outer Ø mm min.	Outer Ø mm max	Max. linear Resistance @20°C (Ω/km)	Current carrying capacity* A	Cu factor per km	Weight kg/km approx.
18000870	1.5	16	5.75	5.65	5.85	13.7	49	14.4	47.8
18000871	2.5	14	6.17	6.07	6.27	8.21	66	24.0	61.0
18000872	4	12	6.85	6.75	6.95	5.09	88	38.4	86.4
18000873	6	10	7.47	7.37	7.57	3.39	112	57.6	112.4
18000874	10	8	8.86	8.76	8.96	1.95	154	96.0	160.5
18000875	16	6	10.68	10.53	10.83	1.24	211	153.6	236.7
18000876	25	4	12.69	12.54	12.84	0.795	269	240.0	344.5
18000877	35	2	13.87	13.72	14.02	0.565	330	336.0	454.8
18000878	50	1	15.89	15.74	16.04	0.393	416	480.0	625.2
18000879	70	2/0	18.04	17.84	18.24	0.277	522	672.0	841.5
18000880	95	3/0	20.40	20.15	20.65	0.210	621	912.0	1120.2
18000881	120	4/0	22.53	22.28	22.78	0.164	723	1152.0	1461.6
18000882	150	300KCMIL	24.65	24.40	24.90	0.132	828	1440.0	1794.9
18000883	185	350KCMIL	27.57	27.32	27.82	0.108	952	1776.0	2211.3
18000884	240	400KCMIL	30.31	30.06	30.56	0.0817	1140	2304.0	2805.9
18000885	1.5 (SOLID)	16	5.44	5.34	5.54	12.20	49	14.4	46.6
18000886	2.5 (SOLID)	14	5.87	5.77	5.97	7.56	65	24.0	59.9
18000887	4 (SOLID)	12	6.45	6.35	6.55	4.70	87	38.4	83.7
18000888	6 (SOLID)	10	6.94	6.84	7.04	3.11	112	57.6	107.6
18000889	10 (SOLID)	8	8.16	8.06	8.26	1.84	150	96.0	160.6

\*) Current capacity in normal operation acc. to IEC 60287-1-1 at 30°C

# SIF/POL 7.2kV UL STYLE 3663

Flexible single core silicone insulated cable  
with external impregnated polyester fiber braiding



## TECHNICAL DATA

Power cables acc. to UL-Std 758 (AWM) Style 3663,  
CSA-Std. 22.2 No. 210

Operating temperature	-55°C to +180°C Peaks: 210°C
Operating voltage	6,6-7,2 kV
Test voltage	20 kV
Breakdown voltage	30 kV
Minimum bending radius fixed	10 x Outer-Ø

## CABLE STRUCTURE

- Tinned copper conductor according to ASTM B2, ASTM B33
- Core insulation: Silicone
- Acrylic impregnated polyester braid
- Core colour: grey

## PROPERTIES

- Halogen-free
- resistant to: UV radiation, weathering effects

## TESTS

- halogen-free acc. to EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. EN 60754-2 / IEC 60754-2
- flame-retardant acc. to UL VW-1, CSA FT1
- smoke density acc. to EN 61034-1+2 / IEC 61034-1+2

## APPLICATION

For internal wiring and in protected locations at high temperature limited by maximum conductor temperature in normal use of 180°C. Suitable to be connected directly and permanently to a coil winding, motor or other component of electrical devices.

For use in: lighting, furnaces, ovens, electric resistor applications, panel wiring, Industry, electronics, low smoke halogen free, indoor protected installations, flexible applications, ship & railroad construction and heavy duty mobile use.

## NOTES

- Solid conductor versions not for flexible applications.

Part no.	AWG approx.	Outer Ø mm nominal	Outer Ø mm min.	Outer Ø mm max.	Max. linear Resistance @20° C (Ω/km)	Current carrying capacity* A	Cu factor per km	Weight kg/km approx.
18000823	14	7,13	6,93	7,33	8,96	61	20,7	69,33
18000824	12	8,07	7,87	8,27	5,64	81	33,0	93,17
18000825	10	8,73	8,53	8,93	3,546	106	51,6	121,57
18000826	8	9,68	9,48	9,88	2,23	143	80,6	165,51
18000827	6	10,79	10,49	11,09	1,403	206	125,0	224,09
18000828	4	12,2	11,90	12,50	0,882	261	201,0	320,36
18000829	2	13,77	13,47	14,07	0,5548	322	317,0	461,64
18000830	1	15,1	14,80	15,40	0,4398	410	399,0	569,63
18000831	2/0	17,35	16,95	17,75	0,2766	519	631,0	836,4
18000832	3/0	19,76	19,36	20,16	0,2194	606	792,0	1058,27
18000833	4/0	21,46	20,96	21,96	0,1722	618	996,0	1301,64
18000834	300KCMIL	24,7	24,20	25,20	0,1227	821	1178,0	1798,14
18000835	350KCMIL	26,2	25,70	26,70	0,1052	937	1645,0	2075,67
18000836	500KCMIL	30,2	29,70	30,70	0,07287	1138	2345,0	2884,87
18000837	14(SOLID)	6,84	6,64	7,04	8,78	64	20,7	65,01
18000838	12(SOLID)	7,66	7,46	7,86	5,53	85	33,0	86,19
18000839	10(SOLID)	8,19	7,99	8,39	3,476	111	51,6	109,35

\*) Current capacity in normal operation acc. to IEC 60287-1-1 at 30°C

# SIF/POL 15kV UL STYLE 3664

Flexible single core silicone insulated cable

with external impregnated polyester fiber braiding



## TECHNICAL DATA

Power cables acc. to UL-Std 758 (AWM) Style 3664, CSA-Std. 22.2 No. 210

Operating temperature	-55°C to +180°C Peaks: 210°C
Operating voltage	15 kV
Test voltage	20 kV
Breakdown voltage	30 kV
Minimum bending radius fixed	5 x Outer-Ø

## CABLE STRUCTURE

- Tinned copper conductor according to ASTM B2, ASTM B33
- Core insulation: Silicone
- Acrylic impregnated polyester braid
- Core colour: black

## PROPERTIES

- Halogen-free
- resistant to: UV radiation, weathering effects

## TESTS

- halogen-free acc. to EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. EN 60754-2 / IEC 60754-2
- flame-retardant acc. to UL VW-1, CSA FT1
- smoke density acc. to EN 61034-1+2 / IEC 61034-1+2

## APPLICATION

For internal wiring and in protected locations at high temperature limited by maximum conductor temperature in normal use of 180°C. Suitable to be connected directly and permanently to a coil winding, motor or other component of electrical devices.

For use in: lighting, furnaces, ovens, electric resistor applications, panel wiring, Industry, electronics, low smoke halogen free, indoor protected installations, flexible applications, ship & railroad construction and heavy duty mobile use.

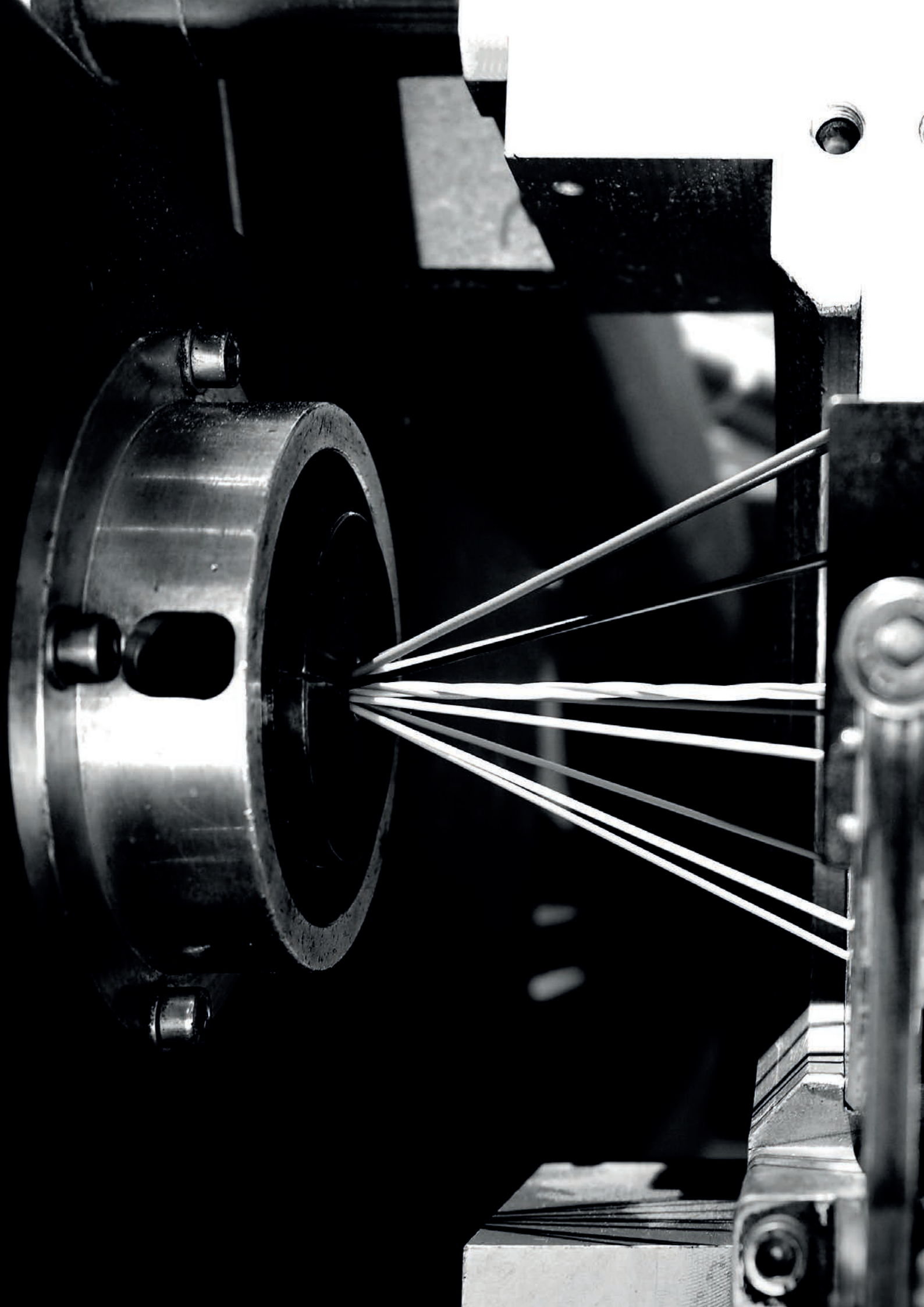
## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only.

Part no.	Cross-sec. mm <sup>2</sup>	AWG approx.	Outer Ø mm nominal	Outer Ø mm min.	Outer Ø mm max.	Max. linear Resistance @20° C (Ω/km)	Current carrying capacity* A	Cu factor per km	Weight kg/km approx.
18000840	2,5	14	9,62	9,42	9,82	8,62	61	20,7	112,46
18000841	4	12	10,16	9,96	10,36	5,43	81	33,0	132,72
18000842	6	10	10,83	10,63	11,03	3,409	107	51,6	162,41
18000843	10	8	11,58	11,38	11,78	2,144	143	80,6	205,52
18000844	16	6	12,59	12,29	12,89	1,348	190	125,0	263,71
18000845	25	4	14,20	13,90	14,50	0,8481	253	201,0	369,83
18000846	35	2	15,77	15,47	16,07	0,5335	312	317,0	519,83
18000847	50	1	17,10	16,70	17,50	0,423	413	399,0	626,53
18000848	70	2/0	19,40	19,00	19,80	0,266	495	631,0	901,84
18000849	95	3/0	21,80	21,30	22,30	0,211	594	792,0	1131,27
18000850	120	4/0	23,40	22,90	23,90	0,1673	606	996,0	1379,76
18000851	150	300KCMIL	26,60	26,10	27,10	0,118	805	1178,0	1893,6
18000852	185	350KCMIL	28,10	27,60	28,60	0,1011	923	1645,0	2176,58
18000853	202	400KCMIL	29,30	28,80	29,80	0,092	1083	1902,0	2417,65

\*) Current capacity in normal operation acc. to IEC 60287-1-1 at 30°C







# Multipolari posa fissa

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HELUKABEL® <VDE-REG 7032> JZ-500 25G1,5 QMM / 10110 300/500 V CE

## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

Temperature range	flexible -15°C to +80°C fixed -40°C to +80°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	4000 V
Breakdown voltage	8000 V
Minimum bending radius	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil,  
for details, see "Technical Information"
- conditionally torsional
- conditionally suitable for drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC  
VDE-Reg.-No. 7032, valid for temperature range up to +70°C

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. Used as a connection and control cable in machine tools, assembly lines and conveyor belts, production lines, in plant construction, air-conditioning technology, in smelters and steel mills. Select PVC compounds guarantee good flexibility, efficient and quick installation.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10001	2 x 0.5	20	4.8	9.6	40.0
10002	3 G 0.5	20	5.1	14.4	46.0
10003	3 x 0.5	20	5.1	14.4	46.0
10004	4 G 0.5	20	5.5	19.0	56.0
10005	4 x 0.5	20	5.5	19.0	56.0
10006	5 G 0.5	20	6.2	24.0	65.0
10007	5 x 0.5	20	6.2	24.0	65.0
10008	6 G 0.5	20	6.7	29.0	75.0
10009	7 G 0.5	20	6.7	33.6	80.0
10010	7 x 0.5	20	6.7	33.6	80.0
10011	8 G 0.5	20	7.4	38.0	97.0
10172	8 x 0.5	20	7.4	38.0	97.0
10012	10 G 0.5	20	8.6	48.0	116.0
10013	12 G 0.5	20	9.1	58.0	135.0
10014	12 x 0.5	20	9.1	58.0	135.0
10015	14 G 0.5	20	9.5	67.0	150.0
10183	16 G 0.5	20	10.0	76.0	175.0
10016	18 G 0.5	20	10.7	86.0	196.0
10017	20 G 0.5	20	11.3	96.0	215.0
10018	21 G 0.5	20	11.3	101.0	240.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10019	25 G 0.5	20	12.6	120.0	270.0
10020	30 G 0.5	20	13.5	144.0	310.0
10021	32 G 0.5	20	14.0	154.0	323.0
10022	34 G 0.5	20	14.7	163.0	362.0
10023	40 G 0.5	20	15.8	192.0	434.0
10024	42 G 0.5	20	15.8	202.0	449.0
10025	50 G 0.5	20	17.3	240.0	513.0
10169	52 G 0.5	20	17.3	252.0	534.0
10026	61 G 0.5	20	18.5	293.0	625.0
10027	65 G 0.5	20	19.2	312.0	682.0
10028	80 G 0.5	20	21.3	384.0	780.0
10029	100 G 0.5	20	23.8	480.0	980.0
10030	2 x 0.75	19	5.3	14.4	46.0
10031	3 G 0.75	19	5.6	21.6	54.0
10032	3 x 0.75	19	5.6	21.6	54.0
10033	4 G 0.75	19	6.3	28.8	66.0
10034	4 x 0.75	19	6.3	28.8	66.0
10035	5 G 0.75	19	6.9	36.0	80.0
10036	5 x 0.75	19	6.9	36.0	80.0
10037	6 G 0.75	19	7.7	43.0	99.0

# JZ-500 / OZ-500



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10177	6 x 0.75	19	7.7	43.0	99.0
10038	7 G 0.75	19	7.7	50.0	110.0
10039	7 x 0.75	19	7.7	50.0	110.0
10040	8 G 0.75	19	8.3	58.0	130.0
10173	8 x 0.75	19	8.3	58.0	130.0
10041	9 G 0.75	19	9.1	65.0	153.0
10042	10 G 0.75	19	9.8	72.0	162.0
10043	12 G 0.75	19	10.1	86.0	179.0
10044	12 x 0.75	19	10.1	86.0	179.0
10045	14 G 0.75	19	10.8	101.0	214.0
10046	15 G 0.75	19	11.4	108.0	218.0
10047	18 G 0.75	19	12.2	130.0	257.0
10533	19 G 0.75	19	12.2	137.0	264.0
10048	20 G 0.75	19	12.8	144.0	286.0
10049	21 G 0.75	19	12.8	151.0	320.0
10050	25 G 0.75	19	14.3	180.0	365.0
10534	27 G 0.75	19	14.5	195.0	382.0
10051	32 G 0.75	19	15.9	230.0	455.0
10052	34 G 0.75	19	16.7	245.0	510.0
10182	37 G 0.75	19	16.7	266.0	537.0
10053	40 G 0.75	19	18.0	288.0	595.0
10054	41 G 0.75	19	18.1	296.0	607.0
10055	42 G 0.75	19	18.1	302.0	612.0
10056	50 G 0.75	19	19.8	360.0	735.0
10057	61 G 0.75	19	21.2	439.0	845.0
10178	65 G 0.75	19	22.0	468.0	895.0
10058	80 G 0.75	19	24.3	576.0	1070.0
10059	100 G 0.75	19	27.1	720.0	1322.0
10060	2 x 1	18	5.6	19.2	60.0
10061	3 G 1	18	6.1	29.0	72.0
10062	3 x 1	18	6.1	29.0	72.0
10063	4 G 1	18	6.6	38.0	86.0
10064	4 x 1	18	6.6	38.0	86.0
10065	5 G 1	18	7.5	48.0	104.0
10066	5 x 1	18	7.5	48.0	104.0
10067	6 G 1	18	8.1	58.0	125.0
10068	7 G 1	18	8.1	67.0	141.0
10069	7 x 1	18	8.1	67.0	141.0
10070	8 G 1	18	9.0	77.0	175.0
10071	9 G 1	18	9.8	86.0	200.0
10180	10 G 1	18	10.6	96.0	217.0
10170	10 x 1	18	10.6	96.0	217.0
10072	12 G 1	18	10.9	115.0	230.0
10073	12 x 1	18	10.9	115.0	230.0
10074	14 G 1	18	11.5	134.0	271.0
10075	16 G 1	18	12.3	154.0	300.0
10076	18 G 1	18	12.9	173.0	343.0
10174	18 x 1	18	12.9	173.0	343.0
10197	19 G 1	18	12.9	182.0	355.0
10077	20 G 1	18	13.8	192.0	375.0
10184	20 x 1	18	13.8	192.0	375.0
10179	21 G 1	18	13.8	205.0	420.0
10175	24 G 1	18	15.4	230.0	440.0
10078	25 G 1	18	15.4	240.0	485.0
10176	25 x 1	18	15.4	240.0	485.0
10196	26 G 1	18	15.4	252.0	500.0
10198	27 G 1	18	15.4	259.0	534.0
10168	30 x 1	18	16.5	288.0	550.0
10079	34 G 1	18	17.9	326.0	650.0
10080	36 G 1	18	17.9	346.0	668.0
10199	37 G 1	18	17.9	355.0	701.0
10081	40 G 1	18	19.3	384.0	755.0
10167	40 x 1	18	19.3	384.0	755.0
10082	41 G 1	18	19.4	394.0	770.0
10083	42 G 1	18	19.4	403.0	810.0
10084	50 G 1	18	21.3	480.0	936.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10085	56 G 1	18	22.1	538.0	920.0
10086	61 G 1	18	22.7	586.0	1100.0
10087	65 G 1	18	23.6	628.0	1180.0
10088	80 G 1	18	26.3	768.0	1294.0
10089	100 G 1	18	29.3	960.0	1644.0
10090	2 x 1.5	16	6.4	29.0	70.0
10091	3 G 1.5	16	6.8	43.0	90.0
10092	3 x 1.5	16	6.8	43.0	90.0
10093	4 G 1.5	16	7.6	58.0	109.0
10094	4 x 1.5	16	7.6	58.0	109.0
10095	5 G 1.5	16	8.3	72.0	131.0
10096	5 x 1.5	16	8.3	72.0	131.0
10097	6 G 1.5	16	9.2	86.0	157.0
10098	7 G 1.5	16	9.2	101.0	184.0
10099	7 x 1.5	16	9.2	101.0	184.0
10100	8 G 1.5	16	10.1	115.0	216.0
11007735	8 x 1.5	16	10.1	115.0	216.0
10101	9 G 1.5	16	11.1	129.0	259.0
10181	10 G 1.5	16	12.0	144.0	275.0
10102	11 G 1.5	16	12.0	158.0	300.0
10103	12 G 1.5	16	12.4	173.0	309.0
10104	12 x 1.5	16	12.4	173.0	309.0
10105	14 G 1.5	16	13.0	202.0	345.0
10106	16 G 1.5	16	13.9	230.0	386.0
10107	18 G 1.5	16	14.8	259.0	440.0
10185	19 G 1.5	16	14.8	279.0	445.0
10108	20 G 1.5	16	15.6	288.0	490.0
10109	21 G 1.5	16	15.6	302.0	555.0
10110	25 G 1.5	16	17.6	360.0	620.0
10535	27 G 1.5	16	17.6	389.0	670.0
10111	32 G 1.5	16	19.5	461.0	790.0
10112	34 G 1.5	16	20.2	490.0	830.0
10536	37 G 1.5	16	20.2	533.0	892.0
10113	41 G 1.5	16	22.1	591.0	996.0
10114	42 G 1.5	16	22.1	605.0	1007.0
10115	50 G 1.5	16	24.2	720.0	1250.0
10116	56 G 1.5	16	25.1	806.0	1332.0
10117	61 G 1.5	16	25.8	878.0	1440.0
10187	65 G 1.5	16	26.9	936.0	1602.0
10118	80 G 1.5	16	29.8	1152.0	1871.0
10119	100 G 1.5	16	33.2	1440.0	2353.0
10120	2 x 2.5	14	7.8	48.0	112.0
10121	3 G 2.5	14	8.3	72.0	148.0
10122	3 x 2.5	14	8.3	72.0	148.0
10123	4 G 2.5	14	9.2	96.0	178.0
10124	4 x 2.5	14	9.2	96.0	178.0
10125	5 G 2.5	14	10.1	120.0	221.0
10126	5 x 2.5	14	10.1	120.0	221.0
10127	7 G 2.5	14	11.2	168.0	306.0
10128	7 x 2.5	14	11.2	168.0	306.0
10129	8 G 2.5	14	12.3	192.0	363.0
11007736	8 x 2.5	14	12.3	192.0	363.0
10548	10 G 2.5	14	14.8	240.0	429.0
10130	12 G 2.5	14	15.3	288.0	498.0
10131	14 G 2.5	14	16.2	336.0	569.0
10132	18 G 2.5	14	18.2	432.0	764.0
10133	21 G 2.5	14	19.4	504.0	914.0
10134	25 G 2.5	14	21.6	600.0	1044.0
10135	34 G 2.5	14	25.2	816.0	1470.0
10136	42 G 2.5	14	27.3	1008.0	1790.0
10137	50 G 2.5	14	30.0	1200.0	2095.0
10138	61 G 2.5	14	32.2	1464.0	2750.0
10139	100 G 2.5	14	41.4	2400.0	4450.0
10140	2 x 4	12	9.2	77.0	195.0
10141	3 G 4	12	9.7	115.0	230.0
10142	4 G 4	12	10.8	154.0	295.0

# JZ-500 / OZ-500



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10143	5 G 4	12	12.1	192.0	361.0
10144	7 G 4	12	13.4	269.0	458.0
10145	8 G 4	12	14.7	307.0	590.0
10549	10 G 4	12	17.6	384.0	687.0
10146	12 G 4	12	18.2	461.0	790.0
10147	3 G 6	10	11.9	173.0	355.0
10148	4 G 6	10	13.2	230.0	424.0
10149	5 G 6	10	14.7	288.0	525.0
10150	7 G 6	10	16.2	403.0	625.0
10151	3 G 10	8	14.8	288.0	540.0
10152	4 G 10	8	16.4	384.0	701.0
10153	5 G 10	8	18.3	480.0	858.0
10154	7 G 10	8	20.2	672.0	1106.0
10190	3 G 16	6	18.4	461.0	827.0
10155	4 G 16	6	20.4	614.0	1035.0
10156	5 G 16	6	22.8	768.0	1259.0
10157	7 G 16	6	25.2	1075.0	1780.0
10191	3 G 25	4	22.4	720.0	1186.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10158	4 G 25	4	25.1	960.0	1582.0
10159	5 G 25	4	27.9	1200.0	1999.0
10160	7 G 25	4	30.8	1680.0	2825.0
10192	3 G 35	2	25.2	1008.0	1585.0
10161	4 G 35	2	27.9	1344.0	2105.0
10162	5 G 35	2	31.0	1680.0	2633.0
10193	3 G 50	1	29.9	1440.0	2550.0
10163	4 G 50	1	33.0	1920.0	2940.0
10188	5 G 50	1	37.0	2400.0	2936.0
10194	3 G 70	2/0	34.1	2016.0	3180.0
10164	4 G 70	2/0	37.9	2688.0	4090.0
10189	5 G 70	2/0	42.4	3360.0	5443.0
10195	3 G 95	3/0	39.6	2736.0	4680.0
10165	4 G 95	3/0	43.9	3648.0	5540.0
10333	5 G 95	3/0	49.0	4560.0	6931.0
10166	4 G 120	4/0	48.8	4608.0	7000.0
13139	4 G 150	300 kcmil	54.4	5760.0	8340.0
13140	4 G 185	350 kcmil	62.3	7104.0	9904.0

# F-CY-JZ / F-CY-OZ / F-DY-OZ

EMC-preferred type



HELUKABEL® <VDE-REG 7034> F-CY-JZ 7G0,75 QMM / 16349 300/500 V CE

## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Test voltage core/screen</b>	2000 V
<b>Breakdown voltage</b>	8000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.5 - 2.5 mm <sup>2</sup> : approx. 150 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 0.5 - 2.5 mm <sup>2</sup> : approx. 270 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen:
  - 1 core(s): helically wound tinned copper wires, approx. coverage 85 %
  - 2 - 100 core(s): braided screen of tinned copper wires, approx. coverage 85 %
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)

### F-DY-OZ, helically wound tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16531	1 x 0.5	20	4.0	15.0	41.0
16557	1 x 0.75	19	4.3	19.0	44.0
16050	1 x 1	18	4.4	21.0	47.0

### F-CY-JZ / F-CY-OZ, braided screen of tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16320	2 x 0.5	20	5.7	35.0	45.0

- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:
  - 2 - 100 core(s): EAC
  - 2 - 100 core(s): VDE-Reg.-No. 7034, valid for temperature range up to +70°C

## ■ APPLICATION

For flexible use with free movement without tensile stress or forced movements in dry, moist and wet rooms but not outside; to be used as control and connecting cable in control and regulation technology, in the tool and machine building industry, in computer systems, as well as a signal cable in the electronic industry. A stabilizing foil separator between wire bound and braid reduces the outer diameter essentially and allows for smaller bending radius as well as lower weights. The disturbance free transmission of signals and impulses is ensured due to the high degree of screening. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16074	1 x 1.5	16	4.7	27.0	70.0
16097	1 x 2.5	14	5.5	39.0	50.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16321	3 G 0.5	20	6.0	42.0	55.0

# F-CY-JZ / F-CY-OZ / F-DY-OZ



EMC-preferred type

## F-CY-JZ / F-CY-OZ, braided screen of tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16533	3 x 0.5	20	6.0	42.0	55.0
16322	4 G 0.5	20	6.5	47.0	61.0
16534	4 x 0.5	20	6.5	47.0	61.0
16323	5 G 0.5	20	6.9	56.0	74.0
16535	5 x 0.5	20	6.9	56.0	74.0
16324	6 G 0.5	20	7.6	67.0	89.0
16536	6 x 0.5	20	7.6	67.0	89.0
16325	7 G 0.5	20	7.6	69.0	98.0
16537	7 x 0.5	20	7.6	69.0	98.0
16326	8 G 0.5	20	8.2	80.0	117.0
16538	8 x 0.5	20	8.2	80.0	117.0
16327	10 G 0.5	20	9.5	94.0	135.0
16539	10 x 0.5	20	9.5	94.0	135.0
16328	12 G 0.5	20	9.8	108.0	157.0
16540	12 x 0.5	20	9.8	108.0	157.0
16329	14 G 0.5	20	10.4	116.0	190.0
16541	14 x 0.5	20	10.4	116.0	190.0
16330	16 G 0.5	20	10.9	129.0	210.0
16542	16 x 0.5	20	10.9	129.0	210.0
16331	18 G 0.5	20	11.4	145.0	217.0
16543	18 x 0.5	20	11.4	145.0	217.0
16332	20 G 0.5	20	12.2	172.0	240.0
16544	20 x 0.5	20	12.2	172.0	240.0
16333	21 G 0.5	20	12.2	188.0	250.0
16545	21 x 0.5	20	12.2	188.0	250.0
16334	24 G 0.5	20	13.7	235.0	300.0
16546	24 x 0.5	20	13.7	235.0	300.0
16335	25 G 0.5	20	13.7	240.0	314.0
16547	25 x 0.5	20	13.7	240.0	314.0
16336	30 G 0.5	20	14.4	295.0	360.0
16548	30 x 0.5	20	14.4	295.0	360.0
16337	32 G 0.5	20	15.1	301.0	425.0
16549	32 x 0.5	20	15.1	301.0	425.0
16165	34 G 0.5	20	15.6	312.0	433.0
16550	34 x 0.5	20	15.6	312.0	433.0
16338	36 G 0.5	20	15.6	318.0	446.0
16551	36 x 0.5	20	15.6	318.0	446.0
16339	40 G 0.5	20	17.0	343.0	475.0
16552	40 x 0.5	20	17.0	343.0	475.0
16490	41 G 0.5	20	17.0	348.0	486.0
16340	50 G 0.5	20	18.4	406.0	573.0
16553	50 x 0.5	20	18.4	406.0	573.0
16341	61 G 0.5	20	19.6	508.0	653.0
16554	61 x 0.5	20	19.6	508.0	653.0
16342	80 G 0.5	20	22.5	680.0	784.0
16555	80 x 0.5	20	22.5	680.0	784.0
16343	100 G 0.5	20	25.0	804.0	995.0
16556	100 x 0.5	20	25.0	804.0	995.0
16344	2 x 0.75	19	6.2	40.0	59.0
16345	3 G 0.75	19	6.6	52.0	66.0
16559	3 x 0.75	19	6.6	52.0	66.0
16346	4 G 0.75	19	7.1	60.0	77.0
16560	4 x 0.75	19	7.1	60.0	77.0
16347	5 G 0.75	19	7.8	71.0	93.0
16561	5 x 0.75	19	7.8	71.0	93.0
16348	6 G 0.75	19	8.4	80.0	113.0
16562	6 x 0.75	19	8.4	80.0	113.0
16349	7 G 0.75	19	8.4	91.0	130.0
16563	7 x 0.75	19	8.4	91.0	130.0
16350	8 G 0.75	19	9.2	110.0	145.0
16564	8 x 0.75	19	9.2	110.0	145.0
16351	10 G 0.75	19	10.7	137.0	180.0
16565	10 x 0.75	19	10.7	137.0	180.0
16353	12 G 0.75	19	11.1	142.0	202.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16566	12 x 0.75	19	11.1	142.0	202.0
16354	14 G 0.75	19	11.5	180.0	225.0
16567	14 x 0.75	19	11.5	180.0	225.0
16355	16 G 0.75	19	12.3	200.0	275.0
16568	16 x 0.75	19	12.3	200.0	275.0
16356	18 G 0.75	19	12.9	212.0	292.0
16569	18 x 0.75	19	12.9	212.0	292.0
16447	19 G 0.75	19	12.9	230.0	308.0
16570	19 x 0.75	19	12.9	230.0	308.0
16357	20 G 0.75	19	13.9	238.0	320.0
16571	20 x 0.75	19	13.9	238.0	320.0
16358	21 G 0.75	19	13.9	246.0	378.0
16572	21 x 0.75	19	13.9	246.0	378.0
16359	24 G 0.75	19	15.4	270.0	435.0
16573	24 x 0.75	19	15.4	270.0	435.0
16360	25 G 0.75	19	15.4	281.0	415.0
16574	25 x 0.75	19	15.4	281.0	415.0
16361	27 G 0.75	19	15.4	304.0	435.0
16575	27 x 0.75	19	15.4	304.0	435.0
16362	30 G 0.75	19	16.4	320.0	450.0
16576	30 x 0.75	19	16.4	320.0	450.0
16363	32 G 0.75	19	17.0	342.0	484.0
16577	32 x 0.75	19	17.0	342.0	484.0
16166	34 G 0.75	19	17.8	345.0	502.0
16578	34 x 0.75	19	17.8	345.0	502.0
16364	36 G 0.75	19	17.8	350.0	535.0
16579	36 x 0.75	19	17.8	350.0	535.0
16448	37 G 0.75	19	17.8	361.0	592.0
16580	37 x 0.75	19	17.8	361.0	592.0
16365	40 G 0.75	19	19.1	369.0	610.0
16581	40 x 0.75	19	19.1	369.0	610.0
16491	41 G 0.75	19	19.3	400.0	622.0
16366	50 G 0.75	19	20.9	461.0	777.0
16582	50 x 0.75	19	20.9	461.0	777.0
16367	61 G 0.75	19	22.3	540.0	900.0
16583	61 x 0.75	19	22.3	540.0	900.0
16368	80 G 0.75	19	25.7	711.0	1210.0
16584	80 x 0.75	19	25.7	711.0	1210.0
16369	100 G 0.75	19	28.5	900.0	1445.0
16585	100 x 0.75	19	28.5	900.0	1445.0
16370	2 x 1	18	6.5	50.0	65.0
16371	3 G 1	18	6.9	60.0	80.0
16052	3 x 1	18	6.9	60.0	81.0
16372	4 G 1	18	7.6	71.0	98.0
16053	4 x 1	18	7.6	71.0	98.0
16373	5 G 1	18	8.2	88.0	127.0
16054	5 x 1	18	8.2	88.0	127.0
16374	6 G 1	18	9.0	97.0	144.0
16055	6 x 1	18	9.0	97.0	144.0
16375	7 G 1	18	9.0	111.0	158.0
16056	7 x 1	18	9.0	111.0	158.0
16376	8 G 1	18	9.7	127.0	197.0
16057	8 x 1	18	9.7	127.0	197.0
16377	10 G 1	18	11.3	150.0	232.0
16058	10 x 1	18	11.3	150.0	232.0
16378	12 G 1	18	11.9	184.0	260.0
16059	12 x 1	18	11.9	184.0	260.0
16379	14 G 1	18	12.4	196.0	302.0
16060	14 x 1	18	12.4	196.0	302.0
16380	16 G 1	18	13.0	209.0	346.0
16061	16 x 1	18	13.0	209.0	345.0
16381	18 G 1	18	14.0	260.0	380.0
16062	18 x 1	18	14.0	260.0	380.0
16352	19 G 1	18	14.0	280.0	412.0

# F-CY-JZ / F-CY-OZ / F-DY-OZ



EMC-preferred type

## F-CY-JZ / F-CY-OZ, braided screen of tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16382	20 G 1	18	14.9	317.0	440.0
16063	20 x 1	18	14.9	317.0	440.0
16383	24 G 1	18	16.5	320.0	493.0
16064	24 x 1	18	16.5	320.0	495.0
16384	25 G 1	18	16.5	349.0	534.0
16065	25 x 1	18	16.5	349.0	534.0
16439	27 G 1	18	16.5	400.0	562.0
16385	28 G 1	18	17.6	408.0	595.0
16066	28 x 1	18	17.6	408.0	595.0
16386	30 G 1	18	17.6	441.0	616.0
16067	30 x 1	18	17.6	441.0	616.0
16387	34 G 1	18	19.0	486.0	741.0
16068	34 x 1	18	19.0	486.0	741.0
16446	37 G 1	18	19.0	519.0	790.0
16388	40 G 1	18	20.4	510.0	835.0
16069	40 x 1	18	20.4	510.0	835.0
16492	41 G 1	18	20.6	531.0	843.0
16389	50 G 1	18	22.4	625.0	1025.0
16070	50 x 1	18	22.4	625.0	1025.0
16390	61 G 1	18	23.8	702.0	1205.0
16071	61 x 1	18	23.8	702.0	1200.0
16391	80 G 1	18	27.4	920.0	1445.0
16072	80 x 1	18	27.4	920.0	1440.0
16392	100 G 1	18	30.6	1120.0	1613.0
16073	100 x 1	18	30.6	1120.0	1610.0
16393	2 x 1.5	16	7.1	63.0	88.0
16394	3 G 1.5	16	7.7	80.0	100.0
16076	3 x 1.5	16	7.7	80.0	100.0
16395	4 G 1.5	16	8.3	97.0	126.0
16077	4 x 1.5	16	8.3	97.0	126.0
16396	5 G 1.5	16	9.2	119.0	160.0
16078	5 x 1.5	16	9.2	119.0	160.0
16397	7 G 1.5	16	9.9	147.0	208.0
16079	7 x 1.5	16	9.9	147.0	208.0
16398	8 G 1.5	16	10.9	170.0	244.0
16080	8 x 1.5	16	10.9	170.0	244.0
16399	10 G 1.5	16	12.7	193.0	315.0
16081	10 x 1.5	16	12.7	193.0	316.0
16400	12 G 1.5	16	13.5	267.0	338.0
16082	12 x 1.5	16	13.5	267.0	338.0
16401	14 G 1.5	16	14.1	283.0	383.0
16083	14 x 1.5	16	14.1	283.0	383.0
16402	16 G 1.5	16	15.0	315.0	424.0
16084	16 x 1.5	16	15.0	315.0	424.0
16403	18 G 1.5	16	15.7	374.0	479.0
16085	18 x 1.5	16	15.7	374.0	479.0
16449	19 G 1.5	16	15.7	386.0	508.0
16404	20 G 1.5	16	16.7	396.0	545.0
16086	20 x 1.5	16	16.7	396.0	545.0
16405	21 G 1.5	16	16.7	425.0	560.0
16406	24 G 1.5	16	18.5	458.0	690.0
16087	24 x 1.5	16	18.5	458.0	690.0
16407	25 G 1.5	16	18.5	526.0	705.0
16088	25 x 1.5	16	18.5	526.0	705.0
16450	27 G 1.5	16	18.7	531.0	774.0
16408	28 G 1.5	16	19.7	541.0	810.0
16089	28 x 1.5	16	19.7	541.0	810.0
16409	30 G 1.5	16	19.7	555.0	830.0
16090	30 x 1.5	16	19.7	555.0	830.0
11018804	31 G 1.5	16	20.8	569.0	797.0
16410	35 G 1.5	16	21.3	645.0	890.0
16091	35 x 1.5	16	21.3	645.0	890.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16451	37 G 1.5	16	21.3	674.0	945.0
16411	40 G 1.5	16	23.1	725.0	1060.0
16092	40 x 1.5	16	23.1	725.0	1060.0
16493	41 G 1.5	16	23.1	801.0	1071.0
16412	50 G 1.5	16	25.5	885.0	1290.0
16093	50 x 1.5	16	25.5	885.0	1440.0
16413	61 G 1.5	16	27.1	1100.0	1705.0
16094	61 x 1.5	16	27.1	1100.0	1700.0
16414	80 G 1.5	16	31.1	1324.0	2010.0
16095	80 x 1.5	16	31.1	1324.0	2000.0
16415	100 G 1.5	16	34.5	1641.0	2505.0
16096	100 x 1.5	16	34.5	1641.0	2500.0
16416	2 x 2.5	14	8.5	96.0	130.0
16417	3 G 2.5	14	9.2	144.0	167.0
16099	3 x 2.5	14	9.2	144.0	167.0
16418	4 G 2.5	14	10.0	148.0	195.0
16100	4 x 2.5	14	10.0	148.0	195.0
16419	5 G 2.5	14	11.0	181.0	223.0
16101	5 x 2.5	14	11.0	181.0	223.0
16420	7 G 2.5	14	12.1	255.0	344.0
16102	7 x 2.5	14	12.1	255.0	344.0
16421	10 G 2.5	14	15.7	340.0	460.0
16438	12 G 2.5	14	16.4	441.0	570.0
16103	12 x 2.5	14	16.4	441.0	522.0
16452	18 G 2.5	14	19.3	570.0	681.0
16422	2 x 4	12	10.5	120.0	185.0
16423	3 G 4	12	11.1	174.0	240.0
16105	3 x 4	12	11.1	174.0	240.0
16424	4 G 4	12	12.3	230.0	310.0
16106	4 x 4	12	12.3	230.0	310.0
16425	5 G 4	12	13.8	273.0	385.0
16107	5 x 4	12	13.8	273.0	400.0
16426	7 G 4	12	15.1	316.0	500.0
16108	7 x 4	12	15.1	316.0	500.0
16427	2 x 6	10	11.9	173.0	268.0
16428	3 G 6	10	12.6	240.0	330.0
16110	3 x 6	10	12.6	240.0	330.0
16429	4 G 6	10	14.2	305.0	415.0
16111	4 x 6	10	14.2	305.0	415.0
16430	5 G 6	10	15.6	439.0	509.0
16112	5 x 6	10	15.6	439.0	509.0
16431	7 G 6	10	17.1	505.0	672.0
16113	7 x 6	10	17.1	505.0	672.0
16432	2 x 10	8	15.3	255.0	425.0
16433	3 G 10	8	16.5	350.0	500.0
16115	3 x 10	8	16.5	350.0	500.0
16434	4 G 10	8	18.2	535.0	783.0
16116	4 x 10	8	18.2	535.0	783.0
16435	5 G 10	8	20.0	592.0	856.0
16117	5 x 10	8	20.0	592.0	856.0
16436	7 G 10	8	22.1	810.0	1305.0
16118	7 x 10	8	22.1	810.0	1300.0
16458	3 G 16	6	19.0	585.0	795.0
16457	3 x 16	6	19.0	585.0	795.0
16440	4 G 16	6	21.0	740.0	880.0
16437	5 G 16	6	23.1	895.0	1295.0
16441	4 G 25	4	26.4	1140.0	1570.0
16442	5 G 25	4	29.0	1380.0	1965.0
16443	4 G 35	2	29.0	1576.0	2070.0
16444	5 G 35	2	32.3	1930.0	2690.0
16445	4 G 50	1	34.8	2155.0	3015.0



# Y-CY-JZ / Y-CY-OZ

EMC-preferred type, with inner sheath



## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.5 - 2.5 mm <sup>2</sup> : approx. 150 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 0.5 - 2.5 mm <sup>2</sup> : approx. 270 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16200	2 x 0.5	20	7.0	41.0	67.0
16201	3 G 0.5	20	7.5	45.0	83.0
16169	3 x 0.5	20	7.5	45.0	83.0
16202	4 G 0.5	20	7.9	54.0	94.0
16170	4 x 0.5	20	7.9	54.0	94.0
16203	5 G 0.5	20	8.6	66.0	108.0
16171	5 x 0.5	20	8.6	66.0	108.0
16204	6 G 0.5	20	9.3	73.0	125.0
16205	7 G 0.5	20	9.3	79.0	136.0
17172	7 x 0.5	20	9.3	79.0	136.0
16206	8 G 0.5	20	9.9	82.0	150.0
16207	10 G 0.5	20	11.2	107.0	170.0
16208	12 G 0.5	20	11.5	137.0	195.0
16209	14 G 0.5	20	12.3	142.0	223.0
16210	16 G 0.5	20	12.8	147.0	250.0

- Sheath colour: transparent
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC VDE-Reg.-No. 7032, valid for temperature range up to +70°C

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry rooms, however, not suitable for outdoor use. Used as a connection and control cable in measurement and control technology, in machine and machine tool construction, in conveyers and production lines, in computers, as well as signal cables in electronics. Due to the high screening density, interference-free transmission of signals or pulses is ensured. The PVC inner sheath increases the mechanical load capacity of the cable; the transparent PVC outer sheath makes the tinned copper braid optically effective. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16211	18 G 0.5	20	13.7	156.0	277.0
16212	20 G 0.5	20	14.3	173.0	310.0
16315	21 G 0.5	20	14.3	189.0	331.0
16213	24 G 0.5	20	15.8	236.0	390.0
16214	25 G 0.5	20	15.8	250.0	407.0
16215	30 G 0.5	20	16.7	297.0	520.0
16216	32 G 0.5	20	17.2	312.0	550.0
16217	36 G 0.5	20	17.9	320.0	585.0
16218	40 G 0.5	20	18.5	345.0	654.0
16453	41 G 0.5	20	19.4	348.0	671.0
16219	50 G 0.5	20	20.9	407.0	740.0
16220	61 G 0.5	20	22.1	520.0	850.0
16221	80 G 0.5	20	25.4	690.0	1080.0
16222	100 G 0.5	20	28.1	805.0	1350.0
16223	2 x 0.75	19	7.7	46.0	87.0



# Y-CY-JZ / Y-CY-OZ



EMC-preferred type, with inner sheath

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16224	3 G 0.75	19	8.0	57.0	98.0
16173	3 x 0.75	19	8.0	57.0	98.0
16225	4 G 0.75	19	8.9	63.0	113.0
16196	4 x 0.75	19	8.9	63.0	113.0
16226	5 G 0.75	19	9.5	76.0	130.0
16174	5 x 0.75	19	9.5	76.0	130.0
16227	6 G 0.75	19	10.1	82.0	156.0
16228	7 G 0.75	19	10.1	100.0	184.0
16175	7 x 0.75	19	10.1	100.0	184.0
16229	8 G 0.75	19	10.9	112.0	221.0
16230	10 G 0.75	19	12.6	140.0	270.0
16231	12 G 0.75	19	13.0	175.0	292.0
16232	14 G 0.75	19	13.8	190.0	315.0
16233	16 G 0.75	19	14.4	204.0	335.0
16234	18 G 0.75	19	15.2	240.0	358.0
16235	20 G 0.75	19	16.2	262.0	420.0
16316	21 G 0.75	19	16.2	274.0	454.0
16236	24 G 0.75	19	17.7	291.0	480.0
16237	25 G 0.75	19	17.7	306.0	508.0
16238	27 G 0.75	19	17.7	326.0	535.0
16239	30 G 0.75	19	18.5	340.0	640.0
16240	32 G 0.75	19	19.5	349.0	688.0
16241	36 G 0.75	19	20.1	358.0	730.0
16242	40 G 0.75	19	20.9	371.0	950.0
16454	41 G 0.75	19	21.5	403.0	971.0
16243	50 G 0.75	19	23.6	470.0	1100.0
16244	61 G 0.75	19	25.0	550.0	1290.0
16245	80 G 0.75	19	28.6	715.0	1510.0
16246	100 G 0.75	19	31.6	910.0	1640.0
16248	2 x 1	18	8.0	54.0	97.0
16249	3 G 1	18	8.6	64.0	103.0
16176	3 x 1	18	8.6	64.0	103.0
16250	4 G 1	18	9.3	76.0	146.0
16177	4 x 1	18	9.3	76.0	146.0
16251	5 G 1	18	9.9	89.0	169.0
16178	5 x 1	18	9.9	89.0	169.0
16252	6 G 1	18	10.7	101.0	199.0
16253	7 G 1	18	10.7	114.0	219.0
16179	7 x 1	18	10.7	114.0	219.0
16254	8 G 1	18	11.8	130.0	270.0
16255	10 G 1	18	13.6	156.0	330.0
16256	12 G 1	18	14.0	186.0	350.0
16257	14 G 1	18	14.7	198.0	400.0
16258	16 G 1	18	15.3	214.0	422.0
16259	18 G 1	18	16.3	284.0	514.0
16260	20 G 1	18	17.0	325.0	545.0
16261	24 G 1	18	18.6	366.0	640.0
16262	25 G 1	18	18.6	387.0	689.0
16263	28 G 1	18	19.9	421.0	710.0
16264	30 G 1	18	19.9	457.0	762.0
16265	34 G 1	18	21.3	500.0	910.0
16266	40 G 1	18	22.2	536.0	1070.0
16455	41 G 1	18	23.0	578.0	1092.0
16267	50 G 1	18	25.3	681.0	1315.0
16268	61 G 1	18	26.9	710.0	1370.0
16269	80 G 1	18	30.7	940.0	1610.0
16270	100 G 1	18	33.9	1180.0	1840.0
16271	2 x 1.5	16	9.0	64.0	130.0
16272	3 G 1.5	16	9.4	82.0	152.0
16180	3 x 1.5	16	9.4	82.0	152.0
16273	4 G 1.5	16	10.0	99.0	168.0
16181	4 x 1.5	16	10.0	99.0	168.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16274	5 G 1.5	16	10.9	123.0	202.0
16182	5 x 1.5	16	10.9	123.0	202.0
16275	7 G 1.5	16	12.0	148.0	304.0
16183	7 x 1.5	16	12.0	148.0	304.0
16276	8 G 1.5	16	13.0	172.0	336.0
16277	10 G 1.5	16	15.0	198.0	420.0
16278	12 G 1.5	16	15.4	274.0	434.0
16279	14 G 1.5	16	16.4	294.0	480.0
16280	16 G 1.5	16	17.1	318.0	525.0
16281	18 G 1.5	16	18.0	386.0	640.0
16282	20 G 1.5	16	19.0	401.0	690.0
16317	21 G 1.5	16	19.0	447.0	720.0
16283	24 G 1.5	16	21.0	487.0	770.0
16284	25 G 1.5	16	21.0	531.0	805.0
16285	28 G 1.5	16	22.2	562.0	900.0
16286	30 G 1.5	16	22.2	598.0	950.0
16287	35 G 1.5	16	24.0	685.0	1100.0
16288	40 G 1.5	16	25.0	759.0	1350.0
16456	41 G 1.5	16	25.9	840.0	1381.0
16289	50 G 1.5	16	28.4	997.0	1675.0
16290	61 G 1.5	16	30.2	1120.0	1800.0
16291	80 G 1.5	16	34.4	1360.0	2300.0
16292	100 G 1.5	16	38.4	1690.0	2600.0
16293	2 x 2.5	14	10.4	110.0	180.0
16294	3 G 2.5	14	10.9	148.0	216.0
16295	4 G 2.5	14	12.0	169.0	267.0
16296	5 G 2.5	14	12.9	220.0	347.0
16297	7 G 2.5	14	14.2	284.0	407.0
16298	10 G 2.5	14	18.0	369.0	660.0
16318	12 G 2.5	14	18.5	470.0	722.0
16299	2 x 4	12	12.0	124.0	302.0
16300	3 G 4	12	12.6	178.0	340.0
16301	4 G 4	12	13.9	234.0	410.0
16302	5 G 4	12	15.2	284.0	502.0
16303	7 G 4	12	16.6	385.0	638.0
16304	2 x 6	10	14.0	176.0	350.0
16305	3 G 6	10	14.9	245.0	450.0
16306	4 G 6	10	16.4	316.0	559.0
16307	5 G 6	10	17.9	442.0	702.0
16308	7 G 6	10	19.6	530.0	907.0
16309	2 x 10	8	17.0	260.0	500.0
16310	3 G 10	8	18.1	367.0	750.0
16311	4 G 10	8	19.9	549.0	1020.0
16312	5 G 10	8	22.0	604.0	1115.0
16313	7 G 10	8	24.0	820.0	1500.0
16460	4 G 16	6	24.1	807.0	1380.0
16314	5 G 16	6	26.7	940.0	1553.0
16461	4 G 25	4	29.1	1169.0	1890.0
16462	5 G 25	4	32.2	1420.0	2270.0
16463	4 G 35	2	32.1	1680.0	2390.0
16464	5 G 35	2	35.5	2020.0	2885.0
16465	4 G 50	1	37.9	2370.0	3315.0
16157	5 G 50	1	42.0	2880.0	4150.0
16466	4 G 70	2/0	43.0	3257.0	4600.0
16158	5 G 70	2/0	47.8	4032.0	5750.0
16467	4 G 95	3/0	49.6	4060.0	6060.0
16159	5 G 95	3/0	54.8	5244.0	7580.0
16468	4 G 120	4/0	54.6	5231.0	7315.0
16160	5 G 120	4/0	59.7	6624.0	9150.0
16167	4 G 150	300 kcmil	59.8	7760.0	9680.0
16168	5 G 150	300 kcmil	65.5	8496.0	10170.0

# HELUCONTROL® JZ-510 MB

flexible, number coded, meter marking, increased flame retardancy Cca



HELUCONTROL® JZ-510 MB CE

## Technical data

- PVC control cable with reference to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Breakdown voltage**  
4000 V
- **Minimum bending radius**  
flexible 8 x cable Ø  
fixed 5 x cable Ø
- **CPR**  
Cca s3 d1 a3

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 5, IEC 60228 cl. 5
- Core insulation: PVC
- Black cores with continuous white numbering acc. to DIN VDE 0293
- GN-YE conductor, 3 cores and above in the outer layer
- Cores twisted together in layers with optimal lay length
- Outer sheath: PVC
- Outer sheath colour: grey
- Length marking: in metres

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)

## Note

- G = with green/yellow conductor  
X = without green/yellow conductor (OZ)
- also available with copper screen as JZ-510-C MB

## Application

For flexible applications with a medium mechanical stress factor and with free movement but without tensile stress load. Suitable for dry, moist and wet environments. Commonly used in computer systems, machine building, control equipment and office environments. Not intended for outdoor installation or for system wiring in conveyor belt or air-conditioning systems or steel plants. Selected special PVC compounds guarantee a good flexibility as well as an economic and fast installation.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11003966	2 x 0,5	4,8	9,6	35
11003967	3 G 0,5	5,1	14,4	41
11003968	3 x 0,5	5,1	14,4	41
11003969	4 G 0,5	5,5	19,0	49
11003970	4 x 0,5	5,5	19,0	49
11003971	5 G 0,5	6,2	24,0	55
11003972	5 x 0,5	6,2	24,0	55
11003973	7 G 0,5	6,7	33,6	69
11003974	7 x 0,5	6,7	33,6	69
11003975	10 G 0,5	8,6	48,0	104
11003976	10 x 0,5	8,6	48,0	104
11003977	12 G 0,5	9,1	58,0	118
11003978	12 x 0,5	9,1	58,0	118
11003979	18 G 0,5	10,7	86,0	195
11003983	25 G 0,5	12,6	120,0	265
11003995	2 x 0,75	5,3	14,4	43
11003996	3 G 0,75	5,6	21,6	51
11003997	3 x 0,75	5,6	21,6	51
11003998	4 G 0,75	6,3	28,8	63
11003999	4 x 0,75	6,3	28,8	63
11004000	5 G 0,75	6,9	36,0	69
11004001	5 x 0,75	6,9	36,0	69
11004002	7 G 0,75	7,7	50,0	90
11004003	7 x 0,75	7,7	50,0	90
11004004	10 G 0,75	9,8	72,0	129
11004005	10 x 0,75	9,8	72,0	129
11004006	12 G 0,75	10,1	86,0	148
11004007	12 x 0,75	10,1	86,0	148
11004008	18 G 0,75	12,2	130,0	250
11004012	25 G 0,75	14,3	180,0	350
11004024	2 x 1	5,6	19,2	54
11004025	3 G 1	6,1	29,0	62
11004026	3 x 1	6,1	29,0	62
11004027	4 G 1	6,6	37,4	76
11004028	4 x 1	6,6	38,4	76
11004029	5 G 1	7,5	48,0	87
11004030	5 x 1	7,5	48,0	87
11004031	7 G 1	8,1	67,0	113
11004032	7 x 1	8,1	67,0	113
11004033	10 G 1	10,6	96,0	162

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11004034	10 x 1	10,6	96,0	162
11004035	12 G 1	10,9	115,0	186
11004036	12 x 1	10,9	115,0	186
11004053	2 x 1,5	6,4	29,0	71
11004054	3 G 1,5	6,8	43,0	86
11004055	3 x 1,5	6,8	43,0	86
11004056	4 G 1,5	7,6	58,0	106
11004057	4 x 1,5	7,6	58,0	106
11004058	5 G 1,5	8,3	72,0	120
11004059	5 x 1,5	8,3	72,0	120
11004060	7 G 1,5	9,2	101,0	152
11004061	7 x 1,5	9,2	101,0	152
11004062	10 G 1,5	12,0	144,0	217
11004063	10 x 1,5	12,0	144,0	217
11004064	12 G 1,5	12,4	173,0	285
11004066	18 G 1,5	14,8	259,0	420
11004070	25 G 1,5	17,6	360,0	585
11004082	2 x 2,5	7,8	48,0	103
11004083	3 G 2,5	8,3	72,0	127
11004084	3 x 2,5	8,3	72,0	127
11004085	4 G 2,5	9,2	96,0	162
11004086	4 x 2,5	9,2	96,0	162
11004087	5 G 2,5	10,1	120,0	177
11004088	5 x 2,5	10,1	120,0	177
11004089	7 G 2,5	11,2	168,0	228
11004090	7 x 2,5	11,2	168,0	228
11004091	10 G 2,5	14,8	240,0	327
11004092	10 x 2,5	14,8	240,0	327
11004094	12 G 2,5	15,3	288,0	460
11004111	3 G 4	9,7	115,0	233
11004112	4 G 4	10,8	154,0	290
11004113	5 G 4	12,1	192,0	318
11004115	3 G 6	11,9	173,0	302
11004116	4 G 6	13,2	230,0	376
11004117	5 G 6	14,7	288,0	422
11004119	3 G 10	14,8	288,0	448
11004120	4 G 10	16,4	384,0	563
11004123	3 G 16	18,4	461,0	636
11004124	4 G 16	20,4	614,0	806

Dimensions and specifications may be changed without prior notice.

# HELUCONTROL® JZ-510-C MB

flexible, number coded, screened, meter marking, increased flame retardancy B2ca



HELUCONTROL® JZ-510-C MB CE

## Technical data

- PVC control cable with reference to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000V
- **Breakdown voltage**  
4000
- **Minimum bending radius**  
flexible 10 x cable Ø  
fixed 5 x cable Ø
- **CPR**  
B2ca s2 d0 a3

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 5 / IEC 60228 cl. 5
- Core insulation: PVC
- black cores with continuous white numbering acc. to DIN VDE 0293
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded together in layers with optimal lay length
- Wrapping: polyester foil
- screen: tinned copper braid, coverage approx. 60%
- Outer sheath: PVC
- Outer sheath colour: grey
- Length marking: in metres

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires (Cat. C) acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24

## Note

- G = with green/yellow conductor  
X = without green/yellow conductor (OZ)
- EMC = Electromagnetic compatibility
- also available without foil and screen as JZ-510 MB

## Application

For flexible applications with a medium mechanical stress factor and with free movement but without tensile stress load. Suitable for dry, moist and wet environments. Commonly used in computer systems, machine building, control equipment and office environments. Not intended for outdoor installation or for system wiring in conveyor belt or air-conditioning systems or steel plants. The copper screen coverage provides optimal EMC protection and ensures interference-free transfer of analogue or digital signals.

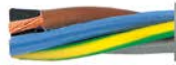
**EMC** = Electromagnetic compatibility. To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11004127	2 x 0,5	5,7	28,1	50
11004128	3 G 0,5	6,0	32,5	62
11004129	3 x 0,5	6,0	32,5	62
11004130	4 G 0,5	6,5	39,7	72
11004131	4 x 0,5	6,5	39,7	72
11004132	5 G 0,5	6,9	48,3	84
11004133	5 x 0,5	6,9	48,3	84
11004134	7 G 0,5	7,6	59,8	106
11004135	7 x 0,5	7,6	59,8	106
11004136	10 G 0,5	9,5	81,9	137
11004137	10 x 0,5	9,5	81,9	137
11004138	12 G 0,5	9,8	101,6	158
11004139	12 x 0,5	9,8	101,6	158
11004140	18 G 0,5	11,4	130,0	215
11004144	25 G 0,5	13,7	210,0	305
11004156	2 x 0,75	6,2	33,2	66
11004157	3 G 0,75	6,6	42,3	77
11004158	3 x 0,75	6,6	42,3	77
11004159	4 G 0,75	7,1	49,1	90
11004160	4 x 0,75	7,1	49,1	90
11004161	5 G 0,75	7,8	62,4	106
11004162	5 x 0,75	7,8	62,4	106
11004163	7 G 0,75	8,4	78,7	144
11004164	7 x 0,75	8,4	78,7	144
11004165	10 G 0,75	10,7	110,4	207
11004166	10 x 0,75	10,7	110,4	207
11004167	12 G 0,75	11,1	134,9	227
11004168	12 x 0,75	11,1	134,9	227
11004169	18 G 0,75	12,9	191,0	275
11004173	25 G 0,75	15,4	256,0	385
11004185	2 x 1	6,5	39,8	75
11004186	3 G 1	6,9	49,6	85
11004187	3 x 1	6,9	49,6	85
11004188	4 G 1	7,6	60,5	113
11004189	4 x 1	7,6	60,5	113
11004190	5 G 1	8,2	72,1	135
11004191	5 x 1	8,2	72,1	135
11004192	7 G 1	9,0	94,1	174
11004193	7 x 1	9,0	94,1	174
11004194	10 G 1	11,3	130,4	254

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per Km	Weight app. kg / km
11004195	10 x 1	11,3	130,4	254
11004196	12 G 1	11,9	154,6	276
11004197	12 x 1	11,9	154,6	277
11004214	2 x 1,5	7,1	50,3	100
11004215	3 G 1,5	7,7	66,1	119
11004216	3 x 1,5	7,7	66,1	119
11004217	4 G 1,5	8,3	81,9	138
11004218	4 x 1,5	8,3	81,9	138
11004219	5 G 1,5	9,2	101,3	167
11004220	5 x 1,5	9,2	101,3	167
11004221	7 G 1,5	9,9	127,9	237
11004222	7 x 1,5	9,9	127,9	237
11004223	10 G 1,5	12,7	175,3	330
11004224	10 x 1,5	12,7	175,3	330
11004225	12 G 1,5	13,5	243,0	305
11004227	18 G 1,5	15,7	345,0	450
11004231	25 G 1,5	18,5	485,0	615
11004243	2 x 2,5	8,5	83,0	137
11004244	3 G 2,5	9,2	113,7	169
11004245	3 x 2,5	9,2	113,7	169
11004246	4 G 2,5	10,0	136,1	210
11004247	4 x 2,5	10,0	136,1	210
11004248	5 G 2,5	11,0	173,6	268
11004249	5 x 2,5	11,0	173,6	268
11004250	7 G 2,5	12,1	228,9	326
11004251	7 x 2,5	12,1	228,9	326
11004252	10 G 2,5	15,7	307,8	504
11004253	10 x 2,5	15,7	307,8	504
11004254	12 G 2,5	16,4	403,0	490
11004272	3 G 4	10,7	150,8	276
11004273	4 G 4	11,6	197,8	344
11004274	5 G 4	12,8	241,8	422
11004276	3 G 6	12,6	212,2	357
11004277	4 G 6	14,1	275,7	449
11004278	5 G 6	15,8	366,9	566
11004280	3 G 10	15,6	328,9	571
11004281	4 G 10	17,2	466,1	764
11004284	3 G 16	18,1	458,8	822
11004285	4 G 16	20,0	705,2	1052

Dimensions and specifications may be changed without prior notice.



HELUKABEL® JB-500 5G1,5 QMM / 11082 300/500 V CE

## TECHNICAL DATA

**PVC control cable in alignment with DIN VDE 0285-525-2-11 / DIN EN 50525-2-11**

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to JB/OB colour code, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
X = without protective conductor (OB)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001	2 x 0.5	20	4.8	9.6	40.0
11002	3 G 0.5	20	5.1	14.4	46.0
11003	3 x 0.5	20	5.1	14.4	46.0
11004	4 G 0.5	20	5.5	19.2	56.0
11005	4 x 0.5	20	5.5	19.2	56.0
11006	5 G 0.5	20	6.2	24.0	65.0
11007	5 x 0.5	20	6.2	24.0	65.0
11008	6 G 0.5	20	6.7	29.0	75.0
11009	7 G 0.5	20	6.7	34.0	80.0
11010	7 x 0.5	20	6.7	34.0	84.0
11011	8 G 0.5	20	7.4	38.0	97.0
11012	10 G 0.5	20	8.6	48.0	116.0
11013	12 G 0.5	20	9.1	58.0	135.0
11014	14 G 0.5	20	9.5	67.0	150.0
11015	16 G 0.5	20	10.0	77.0	172.0
11019	30 G 0.5	20	13.5	144.0	310.0
11026	2 x 0.75	19	5.3	14.4	46.0
11027	3 G 0.75	19	5.6	21.6	54.0
11028	3 x 0.75	19	5.6	21.6	54.0
11029	4 G 0.75	19	6.3	28.8	66.0
11030	4 x 0.75	19	6.3	28.8	66.0
11031	5 G 0.75	19	6.9	36.0	80.0
11032	5 x 0.75	19	6.9	36.0	80.0
11033	6 G 0.75	19	7.7	43.2	99.0

- largely resistant to: oil,  
for details, see "Technical Information"
- conditionally suitable for drag chains
- conditionally torsional
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Certifications and Approvals:  
EAC

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a measuring and control cable in machine tools, assembly lines, conveyor belts, production lines, plant construction and in heating and air-conditioning technology.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11034	7 G 0.75	19	7.7	50.0	110.0
11035	7 x 0.75	19	7.7	50.0	110.0
11036	8 G 0.75	19	8.3	58.0	130.0
11037	9 G 0.75	19	9.1	65.0	153.0
11038	10 G 0.75	19	9.8	72.0	162.0
11039	12 G 0.75	19	10.1	86.0	179.0
11040	15 G 0.75	19	11.4	108.0	218.0
11041	18 G 0.75	19	12.2	130.0	257.0
11042	21 G 0.75	19	12.8	151.0	320.0
11043	25 G 0.75	19	14.3	180.0	365.0
11050	2 x 1	18	5.6	19.2	60.0
11051	3 G 1	18	6.1	29.0	72.0
11052	3 x 1	18	6.1	29.0	72.0
11053	4 G 1	18	6.6	38.4	86.0
11054	4 x 1	18	6.6	38.4	86.0
11055	5 G 1	18	7.5	48.0	104.0
11056	5 x 1	18	7.5	48.0	104.0
11057	6 G 1	18	8.1	58.0	125.0
11058	6 x 1	18	8.1	58.0	125.0
11059	7 G 1	18	8.1	67.0	141.0
11060	7 x 1	18	8.1	67.0	141.0
11061	8 G 1	18	9.0	77.0	175.0
11062	9 G 1	18	9.8	87.0	200.0
11063	10 G 1	18	10.6	96.0	207.0

# JB-500 / OB-500



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11064	12 G 1	18	10.9	115.0	230.0
11065	14 G 1	18	11.5	134.0	271.0
11066	16 G 1	18	12.3	154.0	300.0
11067	18 G 1	18	12.9	173.0	343.0
11068	20 G 1	18	13.8	192.0	375.0
11069	24 G 1	18	15.4	230.0	468.0
11070	25 G 1	18	15.4	240.0	485.0
11077	2 x 1.5	16	6.4	29.0	70.0
11078	3 G 1.5	16	6.8	43.0	90.0
11079	3 x 1.5	16	6.8	43.0	90.0
11080	4 G 1.5	16	7.6	58.0	109.0
11081	4 x 1.5	16	7.6	58.0	109.0
11082	5 G 1.5	16	8.3	72.0	131.0
11083	5 x 1.5	16	8.3	72.0	131.0
11084	6 G 1.5	16	9.2	86.4	157.0
11085	7 G 1.5	16	9.2	101.0	184.0
11086	7 x 1.5	16	9.2	101.0	184.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11087	8 G 1.5	16	10.1	115.0	216.0
11088	11 G 1.5	16	12.0	158.0	300.0
11089	12 G 1.5	16	12.4	173.0	309.0
11090	14 G 1.5	16	13.0	202.0	345.0
11091	16 G 1.5	16	13.9	230.0	386.0
11092	18 G 1.5	16	14.8	259.0	440.0
11093	20 G 1.5	16	15.6	288.0	490.0
11094	25 G 1.5	16	17.6	360.0	620.0
11104	2 x 2.5	14	7.8	48.0	112.0
11105	3 G 2.5	14	8.3	72.0	148.0
11106	3 x 2.5	14	8.3	72.0	148.0
11107	4 G 2.5	14	9.2	96.0	178.0
11108	4 x 2.5	14	9.2	96.0	178.0
11109	5 G 2.5	14	10.1	120.0	221.0
11110	5 x 2.5	14	10.1	120.0	221.0
11111	6 G 2.5	14	11.2	144.0	293.0
11112	7 G 2.5	14	11.2	168.0	306.0

# Y-CY-JB / Y-CY-OB

EMC-preferred type, with inner sheath



## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	0.5 - 1.5 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 2.5 - 185 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V 2.5 - 185 mm <sup>2</sup> : fixed and protected installation AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Test voltage core/screen</b>	2000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/ km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special-PVC
- Core identification acc. to JB/OB colour code, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE (JB),  
X = without protective conductor (OB)
- Cores stranded with optimal lay lengths
- Inner sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16121	2 x 0.5	20	7.0	41.0	67.0
16122	3 G 0.5	20	7.5	45.0	83.0
16123	4 G 0.5	20	7.9	54.0	94.0
16124	5 G 0.5	20	8.6	66.0	108.0
16125	2 x 0.75	19	7.7	46.0	87.0
16126	3 G 0.75	19	8.0	57.0	98.0
16127	4 G 0.75	19	8.9	63.0	113.0
16128	5 G 0.75	19	9.5	76.0	130.0
16129	2 x 1	18	8.0	54.0	97.0
16130	3 G 1	18	8.6	64.0	103.0
16131	4 G 1	18	9.3	76.0	146.0
16132	5 G 1	18	9.9	89.0	169.0
16133	2 x 1.5	16	9.0	64.0	130.0
16134	3 G 1.5	16	9.4	82.0	152.0
16135	4 G 1.5	16	10.0	99.0	168.0
16136	5 G 1.5	16	10.9	123.0	202.0
16137	2 x 2.5	14	11.2	110.0	180.0
16138	3 G 2.5	14	12.2	148.0	216.0

- Sheath colour: transparent
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry rooms, however, not suitable for outdoor use. Used as a connection and control cable in measurement and control technology, in machine and machine tool construction, in conveyers and production lines, in computers, as well as signal cables in electronics. Due to the high screening density, interference-free transmission of signals or pulses is ensured. The PVC inner sheath increases the mechanical load capacity of the cable; the transparent PVC outer sheath makes the tinned copper braid optically effective. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16139	4 G 2.5	14	13.2	169.0	267.0
16140	5 G 2.5	14	14.4	220.0	347.0
16141	2 x 4	12	13.6	124.0	302.0
16142	3 G 4	12	14.3	178.0	340.0
16143	4 G 4	12	15.7	234.0	410.0
16144	5 G 4	12	17.2	284.0	502.0
16145	2 x 6	10	15.0	176.0	350.0
16146	3 G 6	10	16.2	245.0	450.0
16147	4 G 6	10	17.6	316.0	559.0
16148	5 G 6	10	19.4	442.0	702.0
16149	2 x 10	8	18.4	260.0	500.0
16150	3 G 10	8	19.8	367.0	750.0
16151	4 G 10	8	21.5	549.0	1020.0
16152	5 G 10	8	24.0	604.0	1115.0
16153	4 G 16	6	26.1	807.0	1380.0
16154	5 G 16	6	28.7	940.0	1553.0
16469	4 G 25	4	31.4	1169.0	1890.0
16155	5 G 25	4	34.9	1420.0	2270.0

# Y-CY-JB / Y-CY-OB



EMC-preferred type, with inner sheath

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per Km	Weight kg/km, approx.
16470	4 G 35	2	34.2	1680.0	2390.0
16156	5 G 35	2	38.2	2020.0	2885.0
16471	4 G 50	1	40.4	2370.0	3315.0
16119	5 G 50	1	44.6	2880.0	4150.0
16472	4 G 70	2/0	45.5	3257.0	4600.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16473	4 G 95	3/0	51.7	4060.0	6060.0
16474	4 G 120	4/0	56.7	5231.0	7315.0
16247	4 G 150	300 kcmil	62.9	7760.0	9340.0
16319	4 G 185	350 kcmil	69.0	8104.0	11120.0



HELUKABEL® <VDE-REG 7032> JZ-500-BLACK 25G1,5 QMM / 10371 300/500V CE

## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects
- largely resistant to: oil,  
for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals:  
EAC  
VDE-Reg.-No. 7032, valid for temperature range up to +70°C

## APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors. May not be laid directly in soil or water. Used as a connection and control cable in machine and plant construction, in machine tools, production lines, assembly lines and conveyor belts.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10340	2 x 0.5	20	4.8	9.6	40.0
10341	3 G 0.5	20	5.1	14.4	46.0
11630	3 x 0.5	20	5.1	14.4	46.0
10342	4 G 0.5	20	5.5	19.0	56.0
11631	4 x 0.5	20	5.5	19.0	56.0
10343	5 G 0.5	20	6.2	24.0	65.0
11632	5 x 0.5	20	6.2	24.0	65.0
10344	7 G 0.5	20	6.7	33.6	80.0
11633	7 x 0.5	20	6.7	33.6	80.0
10345	12 G 0.5	20	9.0	58.0	135.0
11634	12 x 0.5	20	9.0	58.0	135.0
10346	18 G 0.5	20	10.7	86.0	196.0
10347	25 G 0.5	20	12.6	120.0	270.0
10348	2 x 0.75	19	5.3	14.4	46.0
10349	3 G 0.75	19	5.6	21.6	54.0
11635	3 x 0.75	19	5.6	21.6	54.0
10350	4 G 0.75	19	6.3	28.8	66.0
11636	4 x 0.75	19	6.3	28.8	66.0
10351	5 G 0.75	19	6.9	36.0	80.0
11637	5 x 0.75	19	6.9	36.0	80.0
10352	7 G 0.75	19	7.7	50.0	110.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11638	7 x 0.75	19	7.7	50.0	110.0
10353	12 G 0.75	19	10.0	86.0	179.0
11639	12 x 0.75	19	10.0	86.0	179.0
10354	18 G 0.75	19	12.2	130.0	257.0
10355	25 G 0.75	19	14.3	180.0	365.0
10356	2 x 1	18	5.6	19.2	60.0
10357	3 G 1	18	6.1	29.0	72.0
11640	3 x 1	18	6.1	29.0	72.0
10358	4 G 1	18	6.6	38.4	86.0
11641	4 x 1	18	6.6	38.4	86.0
10359	5 G 1	18	7.5	48.0	104.0
11642	5 x 1	18	7.5	48.0	104.0
10905	6 x 1	18	8.7	58.0	130.0
10360	7 G 1	18	8.1	67.0	141.0
11643	7 x 1	18	8.1	67.0	141.0
11007469	8 x 1	18	9.0	77.0	175.0
10906	10 G 1	18	10.4	96.0	226.0
10361	12 G 1	18	10.8	115.0	230.0
11644	12 x 1	18	10.8	115.0	230.0
10362	18 G 1	18	12.9	173.0	343.0
10363	25 G 1	18	15.4	240.0	485.0



# JZ-500-BLACK / OZ-500-BLACK



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10543	34 G 1	18	17.9	326.0	690.0
10364	2 x 1.5	16	6.4	29.0	70.0
10365	3 G 1.5	16	6.8	43.0	90.0
11645	3 x 1.5	16	6.8	43.0	90.0
10366	4 G 1.5	16	7.6	58.0	109.0
11646	4 x 1.5	16	7.6	58.0	109.0
10367	5 G 1.5	16	8.3	72.0	131.0
11647	5 x 1.5	16	8.3	72.0	131.0
10368	7 G 1.5	16	9.2	101.0	184.0
11648	7 x 1.5	16	9.2	101.0	184.0
10369	12 G 1.5	16	12.2	173.0	309.0
11649	12 x 1.5	16	12.2	173.0	309.0
10370	18 G 1.5	16	14.8	259.0	440.0
10371	25 G 1.5	16	17.6	360.0	620.0
10372	2 x 2.5	14	7.8	48.0	112.0
10373	3 G 2.5	14	8.3	72.0	148.0
11650	3 x 2.5	14	8.3	72.0	148.0
10374	4 G 2.5	14	9.2	96.0	178.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11651	4 x 2.5	14	9.2	96.0	178.0
10375	5 G 2.5	14	10.1	120.0	221.0
11652	5 x 2.5	14	10.1	120.0	221.0
10376	7 G 2.5	14	11.2	168.0	306.0
11653	7 x 2.5	14	11.2	168.0	306.0
10377	12 G 2.5	14	15.1	288.0	498.0
11654	12 x 2.5	14	15.1	288.0	498.0
10378	18 G 2.5	14	18.2	432.0	764.0
10379	25 G 2.5	14	21.6	600.0	1044.0
10380	4 G 4	12	10.8	154.0	295.0
10381	5 G 4	12	12.1	192.0	361.0
10382	4 G 6	10	13.2	230.0	424.0
10383	5 G 6	10	14.7	288.0	525.0
10384	4 G 10	8	16.4	384.0	701.0
10388	5 G 10	8	18.3	480.0	909.0
10385	4 G 16	6	20.4	614.0	1035.0
10386	4 G 25	4	25.1	960.0	1582.0
10387	4 G 35	2	27.9	1344.0	2105.0

# JZ-500-C-BLACK / OZ-500-C-BLACK

EMC-preferred type



HELUKABEL® JZ-500-C-BLACK 7G1,5 QMM / 10962 300/500 V CE

## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Test voltage core/screen</b>	2000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10934	2 x 0.5	20	5.7	35.0	45.0
10935	3 G 0.5	20	6.0	42.0	55.0
11479	3 x 0.5	20	6.0	42.0	55.0
10936	4 G 0.5	20	6.5	47.0	61.0
11480	4 x 0.5	20	6.5	47.0	61.0
10937	5 G 0.5	20	6.9	56.0	74.0
11481	5 x 0.5	20	6.9	56.0	74.0
10938	7 G 0.5	20	7.6	69.0	98.0
11482	7 x 0.5	20	7.6	69.0	98.0
10939	12 G 0.5	20	9.8	108.0	157.0
11483	12 x 0.5	20	9.8	108.0	157.0
10940	18 G 0.5	20	11.4	145.0	217.0
10941	25 G 0.5	20	13.7	240.0	314.0
10942	2 x 0.75	19	6.2	40.0	59.0
10943	3 G 0.75	19	6.6	52.0	66.0
11484	3 x 0.75	19	6.6	52.0	66.0
10944	4 G 0.75	19	7.1	60.0	77.0
11485	4 x 0.75	19	7.1	60.0	77.0
10945	5 G 0.75	19	7.8	71.0	93.0
11486	5 x 0.75	19	7.8	71.0	93.0
10946	7 G 0.75	19	8.4	91.0	130.0

## PROPERTIES

- resistant to: UV radiation, weathering effects
- largely resistant to: oil, for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors. Used as a connection and control cable in machine and plant construction, in machine tools, production lines, assembly lines and conveyor belts. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11487	7 x 0.75	19	8.4	91.0	130.0
10947	12 G 0.75	19	11.1	142.0	202.0
11488	12 x 0.75	19	11.1	142.0	202.0
10948	18 G 0.75	19	12.9	212.0	292.0
10949	25 G 0.75	19	15.4	281.0	415.0
11018007	42 G 0.75	19	18.2	430.0	595.3
10950	2 x 1	18	6.5	50.0	65.0
10951	3 G 1	18	6.9	60.0	80.0
11493	3 x 1	18	6.9	60.0	80.0
10952	4 G 1	18	7.6	71.0	98.0
11495	4 x 1	18	7.6	71.0	98.0
10953	5 G 1	18	8.2	88.0	127.0
11496	5 x 1	18	8.2	88.0	127.0
10954	7 G 1	18	9.0	111.0	158.0
11497	7 x 1	18	9.0	111.0	158.0
11007470	8 x 1	18	10.0	127.0	197.0
10955	12 G 1	18	11.9	184.0	260.0
11499	12 x 1	18	11.9	184.0	260.0
10956	18 G 1	18	14.0	260.0	380.0
10957	25 G 1	18	16.5	349.0	534.0
10958	2 x 1.5	16	7.1	63.0	88.0

# JZ-500-C-BLACK / OZ-500-C-BLACK



EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10959	3 G 1.5	16	7.7	80.0	100.0	11524	4 x 2.5	14	10.0	148.0	195.0
11500	3 x 1.5	16	7.7	80.0	100.0	10969	5 G 2.5	14	11.0	181.0	223.0
10960	4 G 1.5	16	8.3	97.0	126.0	11526	5 x 2.5	14	11.0	181.0	223.0
11502	4 x 1.5	16	8.3	97.0	126.0	10970	7 G 2.5	14	12.1	255.0	344.0
10961	5 G 1.5	16	9.2	119.0	160.0	11527	7 x 2.5	14	12.1	255.0	344.0
11503	5 x 1.5	16	9.2	119.0	160.0	10971	12 G 2.5	14	16.4	441.0	570.0
10962	7 G 1.5	16	9.9	147.0	208.0	11550	12 x 2.5	14	16.4	441.0	570.0
11520	7 x 1.5	16	9.9	147.0	208.0	10972	18 G 2.5	14	19.3	570.0	681.0
10963	12 G 1.5	16	13.5	267.0	338.0	10973	4 G 4	12	12.3	230.0	310.0
11522	12 x 1.5	16	13.5	267.0	338.0	10974	5 G 4	12	13.8	273.0	385.0
10964	18 G 1.5	16	15.7	374.0	479.0	10975	4 G 6	10	14.2	305.0	415.0
10965	25 G 1.5	16	18.5	526.0	705.0	10976	5 G 6	10	15.6	439.0	509.0
10966	2 x 2.5	14	8.5	96.0	130.0	10977	4 G 10	8	18.2	535.0	783.0
10967	3 G 2.5	14	9.2	144.0	167.0	10978	4 G 16	6	21.0	740.0	880.0
11523	3 x 2.5	14	9.2	144.0	167.0	10979	4 G 25	4	26.4	1140.0	1570.0
10968	4 G 2.5	14	10.0	148.0	195.0	10980	4 G 35	2	29.0	1576.0	2070.0

# JZ-500-ORANGE / OZ-500-ORANGE



to label exempted power circuits, particularly interlocking power circuits



## TECHNICAL DATA

PVC control cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, orange cores with consecutive labeling in black digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor (OZ)
- Cores stranded with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: orange (RAL 2003)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10537	2 x 1	18	5.6	19.2	60.0
10538	3 G 1	18	6.1	29.0	72.0
10539	3 x 1	18	6.1	29.0	72.0
10540	4 G 1	18	6.6	38.4	86.0
10541	4 x 1	18	6.6	38.4	86.0
10542	5 G 1	18	7.5	48.0	104.0
10544	2 x 1.5	16	6.4	29.0	70.0

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC  
VDE-Reg.-No. 7032, valid for temperature range up to +70°C

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a control cable acc. to EN 60204-1 or VDE 0113-1. According to this standard, it is recommended that insulated conductors of interlocking power circuits supplied by an external power supply that remain live when the main switch is turned off, are marked in orange.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10545	3 G 1.5	16	6.8	43.0	90.0
10546	4 G 1.5	16	7.6	58.0	109.0
10547	5 G 1.5	16	8.3	72.0	131.0
10747	3 G 2.5	14	8.3	72.0	148.0
10748	4 G 2.5	14	9.2	96.0	178.0
10749	5 G 2.5	14	10.1	120.0	221.0



HELUKABEL® JB-750 5G2,5 QMM / 11166 450/750 V CE

## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-11 / DIN EN 50525-2-11

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 450/750 V fixed and protected installation AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to JB/OB colour code, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
X = without protective conductor (OB)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11161	2 x 2.5	14	8.6	48.0	130.0
11162	3 G 2.5	14	9.3	72.0	164.0
11163	3 x 2.5	14	9.3	72.0	164.0
11164	4 G 2.5	14	10.2	96.0	200.0
11165	4 x 2.5	14	10.2	96.0	200.0
11166	5 G 2.5	14	11.4	120.0	247.0
11167	5 x 2.5	14	11.4	120.0	247.0
11168	6 G 2.5	14	12.6	144.0	301.0
11169	7 G 2.5	14	12.6	168.0	321.0
11121	2 x 4	12	10.6	76.8	195.0
11144	3 G 4	12	11.3	115.0	235.0
11122	4 G 4	12	12.6	154.0	295.0
11123	5 G 4	12	13.9	192.0	361.0
11124	7 G 4	12	15.4	269.0	498.0
11125	11 G 4	12	20.9	422.0	767.0
11126	3 G 6	10	12.8	173.0	355.0
11127	4 G 6	10	14.2	230.0	424.0
11128	5 G 6	10	15.8	288.0	525.0
11129	7 G 6	10	17.4	403.0	625.0
11153	3 G 10	8	16.2	290.0	611.0
11130	4 G 10	8	18.2	384.0	701.0
11131	5 G 10	8	20.1	480.0	858.0
11132	7 G 10	8	22.2	672.0	1106.0

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

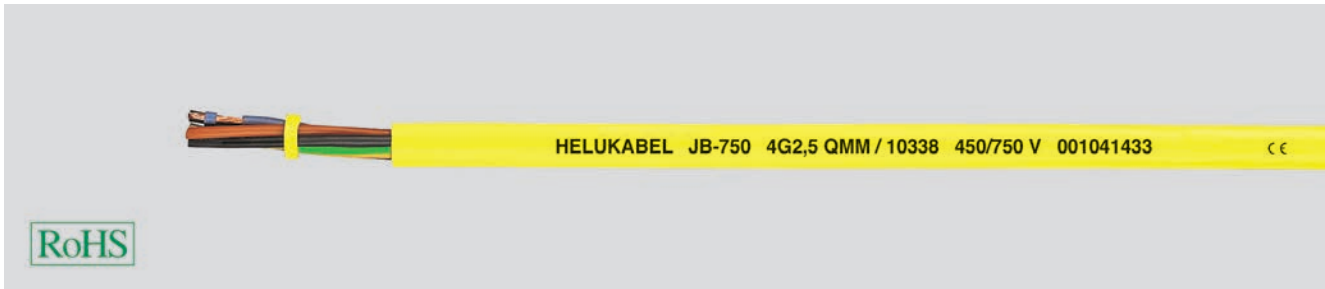
Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a connection and control cable in machine tools, assembly lines, conveyor belts, production lines, plant construction, heating and air-conditioning technology, power plants, smelters and steel mills.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- cleanroom qualification tested on analog types; please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11154	3 G 16	6	19.8	461.0	912.0
11133	4 G 16	6	22.2	614.0	1035.0
11134	5 G 16	6	24.4	768.0	1259.0
11135	7 G 16	6	27.0	1075.0	1780.0
11155	3 G 25	4	24.4	720.0	1388.0
11136	4 G 25	4	27.2	960.0	1581.0
11137	5 G 25	4	30.1	1200.0	1997.0
11156	3 G 35	2	27.0	1008.0	1767.0
11138	4 G 35	2	30.0	1344.0	2105.0
11139	5 G 35	2	33.4	1680.0	2636.0
11157	3 G 50	1	31.9	1440.0	2556.0
11140	4 G 50	1	35.6	1920.0	2940.0
11145	5 G 50	1	39.3	2400.0	3936.0
11158	3 G 70	2/0	36.4	2016.0	3182.0
11141	4 G 70	2/0	40.3	2688.0	4090.0
11146	5 G 70	2/0	44.9	3360.0	5443.0
11159	3 G 95	3/0	41.5	2736.0	4676.0
11142	4 G 95	3/0	46.2	3648.0	5540.0
11147	5 G 95	3/0	51.3	4560.0	6931.0
11160	3 G 120	4/0	45.8	3456.0	5630.0
11143	4 G 120	4/0	51.4	4608.0	7000.0
11148	4 G 150	300 kcmil	58.2	5760.0	8340.0
11149	4 G 185	350 kcmil	64.4	7104.0	9904.0

# JB-750 yellow 750 V, connection cable für warning indication, flexible, colour coded, meter marking



## Technical data

- Special-PVC connection cable for warning indication adapted to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to  $80 \times 10^6$  cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293
- GN-YE conductor
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour yellow (RAL 1016)
- with meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

These cables are used for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms but not suitable for open air, as connection cable with yellow outer sheath as a special warning indication. Recommendation in accordance to EN 60204 part 1 and DIN VDE 0113 part 1.

CE The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
10334	3 G 1,5	7,8	43,0	100,0	16	10337	3 G 2,5	9,3	72,0	154,0	14
10335	4 G 1,5	8,5	58,0	121,0	16	10338	4 G 2,5	10,2	96,0	208,0	14
10336	5 G 1,5	9,6	72,0	148,0	16	10339	5 G 2,5	11,4	120,0	229,0	14

Dimensions and specifications may be changed without prior notice. (RA01)



## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0262, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7,5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10550	2 x 0.5	20	6.2	9.6	56.0
10551	3 G 0.5	20	6.5	14.0	68.0
10552	3 x 0.5	20	6.5	14.0	68.0
10553	4 G 0.5	20	7.0	19.0	100.0
10554	4 x 0.5	20	7.0	19.0	100.0
10555	5 G 0.5	20	7.9	24.0	117.0
10556	5 x 0.5	20	7.9	24.0	117.0
10557	6 G 0.5	20	8.5	29.0	126.0
10558	7 G 0.5	20	8.5	34.0	138.0
10559	7 x 0.5	20	8.5	34.0	138.0
10560	8 G 0.5	20	9.4	38.0	150.0
10561	8 x 0.5	20	9.4	38.0	150.0
10562	10 G 0.5	20	11.0	48.0	176.0
10563	12 G 0.5	20	11.3	58.0	200.0
10564	12 x 0.5	20	11.3	58.0	200.0
10565	14 G 0.5	20	11.9	67.0	230.0
10566	16 G 0.5	20	12.7	76.0	250.0
10567	18 G 0.5	20	13.3	86.0	276.0
10568	20 G 0.5	20	14.2	96.0	293.0
10569	21 G 0.5	20	14.2	96.0	305.0
10570	25 G 0.5	20	15.8	120.0	335.0
10571	30 G 0.5	20	16.9	144.0	348.0
10572	32 G 0.5	20	18.7	154.0	355.0

- resistant to: UV radiation, weathering effects
- largely resistant to: oil, for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Used as a connection and control cable in machine tools, assembly lines and conveyor belts, production lines, in plant construction, heating and air-conditioning technology, in smelters and steel mills. Suitable for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors (fixed installation). May not be laid directly in soil (suitable for direct burial starting with an outer diameter of 18.0 mm) or water. Primarily used in southern European and Arabic countries, as well as in eastern states.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10573	34 G 0.5	20	19.3	163.0	520.0
10574	40 G 0.5	20	20.0	192.0	590.0
10575	42 G 0.5	20	20.6	202.0	595.0
10576	50 G 0.5	20	22.3	240.0	715.0
10577	52 G 0.5	20	22.3	252.0	740.0
10578	61 G 0.5	20	23.5	293.0	840.0
10579	65 G 0.5	20	24.2	312.0	880.0
10580	80 G 0.5	20	26.7	384.0	960.0
10581	100 G 0.5	20	29.7	480.0	1050.0
10582	2 x 0.75	19	6.7	14.0	66.0
10583	3 G 0.75	19	7.1	22.0	74.0
10584	3 x 0.75	19	7.1	22.0	74.0
10585	4 G 0.75	19	7.7	29.0	126.0
10586	4 x 0.75	19	7.7	29.0	126.0
10587	5 G 0.75	19	8.5	36.0	140.0
10588	5 x 0.75	19	8.5	36.0	140.0
10589	6 G 0.75	19	9.5	43.0	170.0
10590	6 x 0.75	19	9.5	43.0	170.0
10591	7 G 0.75	19	9.5	50.0	190.0
10592	7 x 0.75	19	9.5	50.0	190.0
10593	8 G 0.75	19	10.2	58.0	212.0
10594	8 x 0.75	19	10.2	58.0	212.0
10595	9 G 0.75	19	11.1	65.0	227.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10596	10 G 0.75	19	12.2	72.0	238.0
10597	12 G 0.75	19	12.6	86.0	257.0
10598	12 x 0.75	19	12.6	86.0	257.0
10599	14 G 0.75	19	13.2	101.0	286.0
10600	15 G 0.75	19	14.0	108.0	319.0
10601	18 G 0.75	19	14.8	130.0	362.0
10602	20 G 0.75	19	15.7	144.0	394.0
10603	21 G 0.75	19	15.7	151.0	422.0
10604	25 G 0.75	19	17.5	180.0	486.0
10605	32 G 0.75	19	20.3	230.0	595.0
10606	34 G 0.75	19	21.1	245.0	638.0
10607	37 G 0.75	19	21.1	260.0	696.0
10608	40 G 0.75	19	21.8	288.0	726.0
10609	41 G 0.75	19	22.5	296.0	750.0
10610	42 G 0.75	19	22.5	302.0	770.0
10611	50 G 0.75	19	24.4	360.0	895.0
10612	61 G 0.75	19	25.8	439.0	1070.0
10613	65 G 0.75	19	26.7	468.0	1110.0
10614	80 G 0.75	19	29.7	576.0	1500.0
10615	100 G 0.75	19	33.0	720.0	1889.0
10616	2 x 1	18	7.0	19.2	80.0
10617	3 G 1	18	7.4	29.0	96.0
10618	3 x 1	18	7.4	29.0	96.0
10619	4 G 1	18	8.2	38.0	100.0
10620	4 x 1	18	8.2	38.0	100.0
10621	5 G 1	18	9.0	48.0	130.0
10622	5 x 1	18	9.0	48.0	130.0
10623	6 G 1	18	9.9	58.0	150.0
10624	7 G 1	18	9.9	67.0	170.0
10625	7 x 1	18	9.9	67.0	170.0
10626	8 G 1	18	10.9	77.0	230.0
10627	9 G 1	18	11.7	86.0	250.0
10628	10 G 1	18	12.8	96.0	270.0
10629	10 x 1	18	12.8	96.0	270.0
10630	12 G 1	18	13.2	115.0	290.0
10631	12 x 1	18	13.2	115.0	290.0
10632	14 G 1	18	14.0	134.0	320.0
10633	16 G 1	18	14.8	154.0	360.0
10634	18 G 1	18	15.7	173.0	405.0
10635	18 x 1	18	15.7	173.0	405.0
10636	20 G 1	18	16.7	192.0	450.0
10637	20 x 1	18	16.7	192.0	480.0
10638	21 G 1	18	16.7	205.0	510.0
10639	24 G 1	18	19.6	236.0	550.0
10640	25 G 1	18	19.6	240.0	570.0
10641	25 x 1	18	19.6	240.0	570.0
10642	26 G 1	18	19.6	252.0	590.0
10643	30 x 1	18	20.6	308.0	650.0
10644	34 G 1	18	22.1	326.0	750.0
10645	36 G 1	18	22.1	346.0	790.0
10646	40 G 1	18	22.9	384.0	850.0
10647	40 x 1	18	22.9	384.0	850.0
10648	41 G 1	18	23.7	394.0	890.0
10649	42 G 1	18	23.7	403.0	900.0
10650	50 G 1	18	25.6	480.0	1100.0
10651	56 G 1	18	26.4	538.0	1190.0
10652	61 G 1	18	27.3	586.0	1266.0
10653	65 G 1	18	28.3	628.0	1560.0
10654	80 G 1	18	31.5	786.0	1810.0
10655	100 G 1	18	35.0	960.0	1950.0
10656	2 x 1.5	16	8.2	29.0	95.0
10657	3 G 1.5	16	8.7	43.0	112.0
10658	3 x 1.5	16	8.7	43.0	112.0
10659	4 G 1.5	16	9.7	58.0	139.0
10660	4 x 1.5	16	9.7	58.0	139.0
10661	5 G 1.5	16	10.5	72.0	170.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10662	5 x 1.5	16	10.5	72.0	170.0
10663	6 G 1.5	16	11.6	86.0	190.0
10664	7 G 1.5	16	11.6	101.0	225.0
10665	7 x 1.5	16	11.6	101.0	225.0
10666	8 G 1.5	16	12.7	115.0	250.0
10667	9 G 1.5	16	13.9	130.0	280.0
10668	10 G 1.5	16	15.2	144.0	300.0
10669	11 G 1.5	16	15.2	158.0	330.0
10670	12 G 1.5	16	15.7	173.0	370.0
10671	12 x 1.5	16	15.7	173.0	370.0
10672	14 G 1.5	16	16.6	202.0	400.0
10673	16 G 1.5	16	17.5	230.0	450.0
10674	18 G 1.5	16	19.6	259.0	520.0
10675	19 G 1.5	16	19.6	279.0	550.0
10676	20 G 1.5	16	20.6	288.0	600.0
10677	21 G 1.5	16	20.6	302.0	600.0
10678	25 G 1.5	16	22.6	360.0	730.0
10679	32 G 1.5	16	24.7	461.0	880.0
10680	34 G 1.5	16	25.6	490.0	950.0
10681	40 G 1.5	16	26.8	576.0	990.0
10682	42 G 1.5	16	27.7	605.0	1120.0
10683	50 G 1.5	16	30.4	720.0	1400.0
10684	56 G 1.5	16	31.5	806.0	1530.0
10685	61 G 1.5	16	32.6	878.0	1700.0
10686	65 G 1.5	16	33.5	936.0	1900.0
10687	80 G 1.5	16	37.5	1152.0	2300.0
10688	100 G 1.5	16	41.8	1440.0	2700.0
10689	2 x 2.5	14	9.6	48.0	160.0
10690	3 G 2.5	14	10.1	72.0	175.0
10691	3 x 2.5	14	10.1	72.0	175.0
10692	4 G 2.5	14	11.2	96.0	203.0
10693	4 x 2.5	14	11.2	96.0	203.0
10694	5 G 2.5	14	12.5	120.0	251.0
10695	5 x 2.5	14	12.5	120.0	251.0
10696	7 G 2.5	14	13.8	168.0	330.0
10697	7 x 2.5	14	13.8	168.0	330.0
10698	8 G 2.5	14	15.1	192.0	400.0
10699	12 G 2.5	14	19.6	288.0	553.0
10700	14 G 2.5	14	20.5	336.0	630.0
10701	18 G 2.5	14	22.6	432.0	795.0
10702	21 G 2.5	14	23.8	504.0	930.0
10703	25 G 2.5	14	26.2	600.0	1110.0
10704	34 G 2.5	14	30.4	816.0	1450.0
10705	42 G 2.5	14	33.0	1008.0	1750.0
10706	50 G 2.5	14	36.3	1200.0	2100.0
10707	61 G 2.5	14	38.8	1464.0	2540.0
10708	100 G 2.5	14	50.0	2400.0	3850.0
10709	2 x 4	12	11.0	77.0	180.0
10710	3 G 4	12	11.6	115.0	230.0
10711	4 G 4	12	12.9	154.0	310.0
10712	5 G 4	12	14.3	192.0	410.0
10713	7 G 4	12	15.8	269.0	540.0
10714	8 G 4	12	17.3	307.0	710.0
10715	12 G 4	12	22.1	461.0	860.0
10716	3 G 6	10	13.1	173.0	370.0
10717	4 G 6	10	14.5	230.0	430.0
10718	5 G 6	10	16.2	288.0	650.0
10719	7 G 6	10	19.0	403.0	860.0
10720	3 G 10	8	16.7	288.0	660.0
10721	4 G 10	8	19.5	384.0	790.0
10722	5 G 10	8	21.3	480.0	960.0
10723	7 G 10	8	23.2	672.0	1300.0
10724	3 G 16	6	21.1	461.0	700.0
10725	4 G 16	6	22.9	614.0	1100.0
10726	5 G 16	6	25.2	768.0	1600.0
10727	7 G 16	6	27.6	1075.0	1890.0



# JZ-600 / OZ-600



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10728	3 G 25	4	25.0	720.0	1450.0
10729	4 G 25	4	27.4	960.0	1600.0
10730	5 G 25	4	30.7	1200.0	2050.0
10731	7 G 25	4	34.0	1680.0	2900.0
10732	3 G 35	2	27.5	1008.0	1900.0
10733	4 G 35	2	30.4	1344.0	2400.0
10734	5 G 35	2	34.0	1680.0	2900.0
10735	3 G 50	1	32.2	1440.0	2700.0
10736	4 G 50	1	35.8	1920.0	3400.0
10742	5 G 50	1	39.9	2400.0	4361.0
10737	3 G 70	2/0	36.4	2016.0	3300.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
10738	4 G 70	2/0	40.4	2688.0	4400.0
10743	5 G 70	2/0	45.1	3360.0	5807.0
10739	3 G 95	3/0	41.9	2736.0	5050.0
10740	4 G 95	3/0	46.4	3648.0	6010.0
10744	5 G 95	3/0	51.7	4560.0	7752.0
10741	4 G 120	4/0	51.3	4608.0	7500.0
11007924	5 G 120	4/0	56.4	5760.0	7659.0
10745	4 G 150	300 kcmil	57.0	5760.0	8640.0
11007925	5 G 150	300 kcmil	62.9	7200.0	9562.0
10746	4 G 185	350 kcmil	62.8	7104.0	10380.0

# JZ-600-Y-CY / OZ-600-Y-CY

EMC-preferred type, with inner sheath



HELUKABEL® JZ-600 Y-CY 4G2,5 QMM / 11576 0,6/1 kV CE

## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0262, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC
- Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11464	2 x 0.5	20	8.4	41.0	115.0
11465	3 G 0.5	20	8.8	45.0	127.0
11466	4 G 0.5	20	9.3	54.0	149.0
11467	5 G 0.5	20	10.1	66.0	169.0
11469	7 G 0.5	20	10.9	79.0	230.0
11472	12 G 0.5	20	14.0	137.0	386.0
11475	18 G 0.5	20	16.3	156.0	428.0
11478	25 G 0.5	20	19.0	250.0	693.0
11489	2 x 0.75	19	8.9	46.0	128.0
11490	3 G 0.75	19	9.3	57.0	143.0
11491	4 G 0.75	19	10.1	63.0	164.0
11492	5 G 0.75	19	11.0	76.0	198.0
11494	7 G 0.75	19	11.9	100.0	232.0
11498	12 G 0.75	19	15.4	175.0	360.0
11501	18 G 0.75	19	18.0	240.0	562.0
11504	25 G 0.75	19	21.9	306.0	729.0
11516	2 x 1	18	9.2	54.0	146.0
11517	3 G 1	18	9.8	64.0	165.0

- largely resistant to: oil, for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Used as a connection and control cable in machine tools, assembly lines and conveyor belts, production lines, plant construction, heating and air-conditioning technology and in smelters and steel mills. Suitable for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors (fixed installation). May not be laid directly in soil (suitable for direct burial starting with an outer diameter of 20 mm) or water. Due to its extended nominal voltage range and good UV resistance, this cable is primarily used in Southern Europe, Arabic, Asian and Eastern countries. Due to the high screening density, interference-free transmission of signals or pulses is ensured. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11518	4 G 1	18	10.4	76.0	204.0
11519	5 G 1	18	11.6	89.0	224.0
11521	7 G 1	18	12.3	114.0	379.0
11525	12 G 1	18	16.2	186.0	430.0
11528	18 G 1	18	18.9	284.0	636.0
11532	25 G 1	18	22.8	387.0	837.0
11546	2 x 1.5	16	10.4	64.0	175.0
11547	3 G 1.5	16	11.3	82.0	213.0
11548	4 G 1.5	16	12.0	99.0	247.0
11549	5 G 1.5	16	13.1	123.0	300.0
11551	7 G 1.5	16	14.6	148.0	364.0
11556	12 G 1.5	16	18.7	274.0	668.0
11559	18 G 1.5	16	22.8	386.0	844.0
11563	25 G 1.5	16	26.2	531.0	1356.0
11574	2 x 2.5	14	12.0	110.0	241.0
11575	3 G 2.5	14	12.6	148.0	266.0
11576	4 G 2.5	14	13.9	169.0	351.0
11577	5 G 2.5	14	15.4	220.0	434.0

# JZ-600-Y-CY / OZ-600-Y-CY

EMC-preferred type, with inner sheath



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11578	7 G 2.5	14	16.6	284.0	517.0
11580	12 G 2.5	14	22.8	470.0	862.0
11582	18 G 2.5	14	26.2	572.0	1236.0
11584	25 G 2.5	14	30.6	740.0	1659.0
11590	2 x 4	12	13.4	124.0	306.0
11591	3 G 4	12	14.7	178.0	444.0
11592	4 G 4	12	15.9	234.0	489.0
11593	5 G 4	12	17.6	284.0	623.0
11594	7 G 4	12	19.0	385.0	775.0
11596	12 G 4	12	25.5	581.0	1244.0
11597	2 x 6	10	15.2	176.0	433.0
11598	3 G 6	10	16.2	245.0	572.0
11599	4 G 6	10	17.8	316.0	673.0
11600	5 G 6	10	19.4	442.0	841.0
11601	7 G 6	10	22.2	530.0	1078.0
11602	2 x 10	8	18.6	260.0	640.0
11603	3 G 10	8	20.0	367.0	820.0
11604	4 G 10	8	22.7	549.0	979.0
11605	5 G 10	8	24.8	604.0	1207.0
11606	7 G 10	8	26.8	820.0	2210.0
11607	2 x 16	6	23.2	491.0	1150.0
11608	3 G 16	6	24.5	653.0	1395.0
11609	4 G 16	6	26.5	807.0	1426.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11610	5 G 16	6	29.3	940.0	2720.0
11611	7 G 16	6	32.0	1345.0	3213.0
11612	3 G 25	4	29.0	920.0	1810.0
11613	4 G 25	4	32.0	1169.0	2261.0
11614	5 G 25	4	35.3	1420.0	2773.0
11615	7 G 25	4	38.6	1921.0	4980.0
11616	3 G 35	2	31.9	1250.0	2400.0
11617	4 G 35	2	35.0	1680.0	2973.0
11618	5 G 35	2	38.6	2020.0	3548.0
11619	3 G 50	1	37.0	1887.0	3120.0
11620	4 G 50	1	40.8	2370.0	3873.0
11621	5 G 50	1	45.2	2880.0	4634.0
11622	3 G 70	2/0	41.5	2516.0	4220.0
11623	4 G 70	2/0	45.9	3257.0	5546.0
11624	5 G 70	2/0	50.8	4032.0	6410.0
11625	3 G 95	3/0	47.4	3086.0	5240.0
11626	4 G 95	3/0	52.3	4060.0	6538.0
11627	5 G 95	3/0	57.4	5244.0	7812.0
11628	3 G 120	4/0	52.2	4176.0	7210.0
11629	4 G 120	4/0	56.9	5231.0	7994.0
13137	4 G 150	300 kcmil	63.3	7760.0	10305.0
13147	4 G 185	350 kcmil	69.4	8104.0	12154.0

# SY-JZ / SY-OZ

galvanised steel wire braid, with inner sheath



## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 20x Outer-Ø fixed 6x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC
- Steel wire braid, galvanised
- Outer sheath: PVC
- Sheath colour: transparent
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil,  
for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC  
VDE-Reg.-No. 7032, valid for temperature range up to +70°C

## ■ APPLICATION

Used as a connection and control cable for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use in machine tools, plant construction and data technology. Due to the dense braiding, the cable is well protected against mechanical damage. The galvanisation of the braid prevents corrosion and guarantees improved solderability of the braid.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- cleanroom qualification tested on analog types; please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12001	2 x 0.5	20	7.4	9.6	80.0
12002	3 G 0.5	20	7.7	14.4	92.0
12003	4 G 0.5	20	8.1	19.2	102.0
12004	5 G 0.5	20	9.0	24.0	119.0
12005	7 G 0.5	20	9.5	33.6	157.0
12006	10 G 0.5	20	11.4	48.0	205.0
12007	12 G 0.5	20	11.9	58.0	218.0
12008	14 G 0.5	20	12.5	67.0	242.0
12009	18 G 0.5	20	13.7	86.0	340.0
12010	21 G 0.5	20	14.3	101.0	370.0
12114	25 G 0.5	20	15.8	120.0	406.0
12012	30 G 0.5	20	16.7	144.0	439.0
12013	35 G 0.5	20	17.9	168.0	500.0
12014	40 G 0.5	20	18.5	192.0	565.0
12015	42 G 0.5	20	19.4	202.0	593.0
12016	50 G 0.5	20	20.9	240.0	690.0
12017	61 G 0.5	20	22.1	293.0	843.0
12018	80 G 0.5	20	25.4	384.0	1050.0
12011	100 G 0.5	20	28.1	480.0	1240.0
12019	2 x 0.75	19	7.9	14.4	98.0
12020	3 G 0.75	19	8.2	21.6	103.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12021	4 G 0.75	19	9.1	28.8	122.0
12022	5 G 0.75	19	9.7	36.0	142.0
12112	6 G 0.75	19	10.5	43.2	180.0
12023	7 G 0.75	19	10.5	50.0	185.0
12188	8 G 0.75	19	11.1	57.6	201.0
12024	9 G 0.75	19	12.1	65.0	249.0
12113	10 G 0.75	19	12.8	72.0	252.0
12025	12 G 0.75	19	13.4	86.0	292.0
12026	15 G 0.75	19	14.4	108.0	335.0
12027	18 G 0.75	19	15.2	130.0	388.0
12028	21 G 0.75	19	16.2	151.0	474.0
12029	25 G 0.75	19	17.7	180.0	503.0
12030	32 G 0.75	19	19.5	230.0	644.0
12031	34 G 0.75	19	20.1	245.0	663.0
12032	41 G 0.75	19	21.5	296.0	741.0
12033	50 G 0.75	19	23.6	360.0	925.0
12034	61 G 0.75	19	25.0	439.0	1082.0
12035	2 x 1	18	8.2	19.2	112.0
12036	3 G 1	18	9.0	28.8	132.0
12037	4 G 1	18	9.5	38.4	143.0
12038	5 G 1	18	10.1	48.0	166.0

# SY-JZ / SY-OZ



## galvanised steel wire braid, with inner sheath

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12039	6 G 1	18	10.9	58.0	22.0
12040	7 G 1	18	10.9	67.0	227.0
12041	8 G 1	18	12.0	77.0	277.0
12042	9 G 1	18	12.8	86.0	295.0
12043	12 G 1	18	14.0	115.0	340.0
12044	14 G 1	18	14.7	134.0	420.0
12045	18 G 1	18	16.3	173.0	500.0
12046	20 G 1	18	17.0	192.0	532.0
12047	25 G 1	18	18.6	240.0	664.0
12048	34 G 1	18	21.3	326.0	845.0
12049	36 G 1	18	21.3	346.0	857.0
12050	41 G 1	18	23.0	394.0	993.0
12051	50 G 1	18	25.3	480.0	1112.0
12052	56 G 1	18	25.9	538.0	1225.0
12053	61 G 1	18	26.9	586.0	1306.0
12054	65 G 1	18	27.8	624.0	1504.0
12055	80 G 1	18	30.7	768.0	1750.0
12056	100 G 1	18	33.9	960.0	1950.0
12057	2 x 1.5	16	9.2	29.0	129.0
12058	3 G 1.5	16	9.6	43.0	149.0
12059	4 G 1.5	16	10.4	58.0	185.0
12060	5 G 1.5	16	11.1	72.0	205.0
12109	6 G 1.5	16	12.2	87.0	255.0
12061	7 G 1.5	16	12.2	101.0	285.0
12062	8 G 1.5	16	13.2	115.0	340.0
12063	9 G 1.5	16	14.1	130.0	347.0
12064	10 G 1.5	16	15.0	144.0	418.0
12065	11 G 1.5	16	15.0	158.0	430.0
12066	12 G 1.5	16	15.4	173.0	444.0
12067	14 G 1.5	16	16.4	202.0	533.0
12068	18 G 1.5	16	18.0	259.0	593.0
12069	25 G 1.5	16	21.0	360.0	781.0
12070	32 G 1.5	16	23.1	461.0	1015.0
12071	34 G 1.5	16	24.0	490.0	1124.0
12072	42 G 1.5	16	25.9	605.0	1401.0
12073	50 G 1.5	16	28.4	720.0	1583.0
12074	61 G 1.5	16	30.2	878.0	1810.0
12075	80 G 1.5	16	34.4	1152.0	2316.0
12076	100 G 1.5	16	38.4	1440.0	2900.0
12077	2 x 2.5	14	10.6	48.0	185.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12078	3 G 2.5	14	11.1	72.0	248.0
12079	4 G 2.5	14	12.2	96.0	290.0
12080	5 G 2.5	14	13.3	120.0	347.0
12081	7 G 2.5	14	14.2	168.0	420.0
12082	12 G 2.5	14	18.5	288.0	660.0
12083	14 G 2.5	14	19.7	336.0	750.0
12084	18 G 2.5	14	21.6	432.0	893.0
12085	20 G 2.5	14	23.0	480.0	1169.0
12086	25 G 2.5	14	25.6	600.0	1458.0
12087	30 G 2.5	14	27.3	720.0	1686.0
12088	34 G 2.5	14	29.4	816.0	1869.0
12089	50 G 2.5	14	34.7	1200.0	2200.0
12090	61 G 2.5	14	36.8	1464.0	3000.0
12115	3 G 4	12	12.6	117.0	350.0
12091	4 G 4	12	13.9	154.0	428.0
12092	5 G 4	12	15.2	192.0	504.0
12093	7 G 4	12	16.6	269.0	640.0
12094	11 G 4	12	21.0	422.0	1204.0
12095	4 G 6	10	16.4	230.0	571.0
12096	5 G 6	10	17.9	288.0	671.0
12097	7 G 6	10	19.6	403.0	845.0
12098	4 G 10	8	19.9	384.0	943.0
12099	5 G 10	8	22.0	480.0	1065.0
12100	7 G 10	8	24.0	672.0	1551.0
12101	4 G 16	6	24.1	614.0	1360.0
12102	5 G 16	6	26.7	768.0	1740.0
12103	7 G 16	6	29.2	1075.0	2166.0
12104	4 G 25	4	29.1	960.0	2020.0
12105	5 G 25	4	32.2	1200.0	2465.0
12106	4 G 35	2	32.1	1344.0	2570.0
12107	5 G 35	2	35.5	1680.0	3185.0
12108	4 G 50	1	37.9	1920.0	3513.0
12116	5 G 50	1	42.0	2400.0	4248.0
12111	4 G 70	2/0	43.0	2688.0	4810.0
12117	5 G 70	2/0	47.8	3360.0	5880.0
12110	4 G 95	3/0	49.6	3648.0	6360.0
12118	5 G 95	3/0	54.8	4560.0	8071.0
12119	4 G 120	4/0	54.6	4608.0	8170.0
12327	4 G 150	300 kcmil	59.8	5760.0	9970.0

# SY-JB / SY-OB

galvanised steel wire braid, with inner sheath



## TECHNICAL DATA

PVC control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

Temperature range	flexible -15°C to +80°C fixed -40°C to +80°C
Nominal voltage	0.5 - 2.5 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 4 - 150 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V
Test voltage core/core	4000 V
Test voltage core/screen	2000 V
Minimum bending radius	flexible 20x Outer-Ø fixed 6x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special-PVC
- Core identification acc. to JB/OB colour code, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer (JB),  
X = without protective conductor (OB)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC acc. to DIN VDE 0207-363-4-1 /  
DIN EN 50363-4-1 (compound type TM2)
- Steel wire braid, galvanised
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 /  
DIN EN 50363-4-1 (compound type TM2)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12200	2 x 0.5	20	7.4	9.6	80.0
12201	3 G 0.5	20	7.7	14.4	92.0
12202	4 G 0.5	20	8.1	19.2	102.0
12203	5 G 0.5	20	9.0	24.0	119.0
12204	7 G 0.5	20	9.5	33.6	157.0
12205	10 G 0.5	20	11.4	48.0	205.0
12206	12 G 0.5	20	11.9	58.0	218.0
12218	2 x 0.75	19	7.9	14.4	98.0
12219	3 G 0.75	19	8.2	21.6	103.0
12220	4 G 0.75	19	9.1	28.8	122.0
12221	5 G 0.75	19	9.7	36.0	142.0
12312	6 G 0.75	19	10.5	43.2	180.0
12222	7 G 0.75	19	10.5	50.0	185.0
12223	9 G 0.75	19	12.1	65.0	249.0
12313	10 G 0.75	19	12.8	72.0	252.0
12224	12 G 0.75	19	13.4	86.0	292.0
12234	2 x 1	18	8.2	19.2	112.0
12235	3 G 1	18	9.0	28.8	132.0
12236	4 G 1	18	9.5	38.4	143.0
12237	5 G 1	18	10.1	48.0	166.0
12238	6 G 1	18	10.9	58.0	220.0
12239	7 G 1	18	10.9	67.0	227.0

- Sheath colour: transparent
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil,  
for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Used as a connection and control cable for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry rooms, however, not suitable for outdoor use in machine tools, plant construction and in data processing technology. Due to the dense braiding, the cable is well protected against mechanical damage. The galvanisation of the braid prevents corrosion and guarantees improved solderability of the braid.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12240	8 G 1	18	12.0	77.0	277.0
12241	9 G 1	18	12.8	86.0	295.0
12242	12 G 1	18	14.0	115.0	340.0
12256	2 x 1.5	16	9.2	29.0	129.0
12257	3 G 1.5	16	9.6	43.0	149.0
12258	4 G 1.5	16	10.4	58.0	185.0
12259	5 G 1.5	16	11.1	72.0	205.0
12260	6 G 1.5	16	12.2	87.0	255.0
12261	7 G 1.5	16	12.2	101.0	285.0
12262	8 G 1.5	16	13.2	115.0	340.0
12263	9 G 1.5	16	14.1	130.0	347.0
12264	10 G 1.5	16	15.0	144.0	418.0
12265	11 G 1.5	16	15.0	158.0	430.0
12266	12 G 1.5	16	15.4	173.0	444.0
12277	2 x 2.5	14	10.6	48.0	185.0
12278	3 G 2.5	14	11.1	72.0	248.0
12279	4 G 2.5	14	12.2	96.0	290.0
12280	5 G 2.5	14	13.3	120.0	347.0
12281	7 G 2.5	14	14.2	168.0	420.0
12282	12 G 2.5	14	18.5	288.0	660.0
12291	2 x 4	12	13.6	77.0	330.0
12318	3 G 4	12	14.3	115.0	375.0

# SY-JB / SY-OB

galvanised steel wire braid, with inner sheath



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12292	4 G 4	12	15.7	154.0	428.0
12293	5 G 4	12	17.2	192.0	504.0
12294	7 G 4	12	18.6	269.0	640.0
12295	3 G 6	10	16.2	173.0	543.0
12296	4 G 6	10	17.6	230.0	571.0
12297	5 G 6	10	19.4	288.0	671.0
12298	7 G 6	10	21.0	403.0	845.0
12319	3 G 10	8	19.8	288.0	735.0
12299	4 G 10	8	21.5	384.0	943.0
12300	5 G 10	8	24.0	480.0	1065.0
12301	7 G 10	8	26.6	672.0	1551.0
12320	3 G 16	6	23.5	461.0	1080.0
12302	4 G 16	6	26.1	614.0	1360.0
12303	5 G 16	6	28.7	768.0	1740.0
12304	7 G 16	6	31.4	1075.0	2166.0
12321	3 G 25	4	28.6	720.0	1630.0
12305	4 G 25	4	31.4	960.0	2020.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12306	5 G 25	4	34.9	1200.0	2465.0
12322	3 G 35	2	31.3	1008.0	1932.0
12307	4 G 35	2	34.2	1344.0	2570.0
12308	5 G 35	2	38.2	1680.0	3185.0
12323	3 G 50	1	36.4	1440.0	2679.0
12309	4 G 50	1	40.4	1920.0	3513.0
12314	5 G 50	1	44.6	2400.0	4248.0
12324	3 G 70	2/0	41.1	2016.0	2790.0
12310	4 G 70	2/0	45.5	2688.0	4810.0
12315	5 G 70	2/0	50.4	3360.0	5880.0
12325	3 G 95	3/0	47.0	2736.0	4870.0
12311	4 G 95	3/0	51.7	3648.0	6360.0
12316	5 G 95	3/0	57.2	4560.0	8071.0
12326	3 G 120	4/0	51.6	3456.0	6230.0
12317	4 G 120	4/0	56.7	4608.0	8170.0
12328	4 G 150	300 kcmil	62.9	5760.0	9970.0



### TECHNICAL DATA

#### PVC Installation cable

<b>Temperature range</b>	fixed -40°C to +70°C during installation +5°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

### ■ CABLE STRUCTURE

- Copper conductor bare, 1.5 - 10 mm<sup>2</sup>: solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1; 16 - 35 mm<sup>2</sup>: stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification acc. to DIN VDE 0293-308,
  - 1 core(s): black or green-yellow
  - 2 - 5 core(s): colour coded
  - 7 - 12 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Core sheathing (filling compound) for multi-core cables

- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM1)
- Sheath colour: grey (RAL 7035)

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### ■ APPLICATION

For industrial and domestic installations; suitable for dry, damp and wet environments; for installation above, on, in and under plaster as well as in masonry walls and in concrete, however not for direct embedding in vibration, compacted or tamped concrete. Suitable for outdoor installation as long as the cable is protected against direct sunlight.

### ■ NOTES

- re = round, solid conductor
- rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

#### NYM-O acc. to DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39001	1 x 1.5 re	16	5.4	14.4	40.0
39006	2 x 1.5 re	16	8.7	29.0	170.0
39007	3 x 1.5 re	16	9.1	43.0	135.0
39009	4 x 1.5 re	16	9.8	58.0	160.0
39017	5 x 1.5 re	16	10.3	72.0	190.0
39023	7 x 1.5 re	16	11.5	101.0	235.0
39024	1 x 2.5 re	14	6.0	24.0	70.0
39008	3 x 2.5 re	14	10.4	72.0	190.0
39010	4 x 2.5 re	14	11.3	96.0	230.0
39018	5 x 2.5 re	14	12.0	120.0	270.0
39002	1 x 4 re	12	6.6	38.0	80.0
39011	4 x 4 re	12	13.0	154.0	330.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39019	5 x 4 re	12	14.5	192.0	410.0
39003	1 x 6 re	10	7.2	58.0	105.0
39012	4 x 6 re	10	15.1	230.0	460.0
39020	5 x 6 re	10	16.1	288.0	540.0
39004	1 x 10 re	8	8.4	96.0	155.0
39013	4 x 10 re	8	17.6	384.0	680.0
39021	5 x 10 re	8	19.2	480.0	850.0
39005	1 x 16 rm	6	9.9	154.0	230.0
39014	4 x 16 rm	6	21.3	614.0	1048.0
39022	5 x 16 rm	6	23.4	768.0	1280.0
39015	4 x 25 rm	4	25.8	960.0	1649.0
39016	4 x 35 rm	2	28.5	1344.0	2000.0

#### NYM-J acc. to DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39050	1 G 1.5 re	16	5.4	14.4	40.0
39056	3 G 1.5 re	16	9.1	43.0	135.0
39058	4 G 1.5 re	16	9.8	58.0	160.0
39066	5 G 1.5 re	16	10.3	72.0	190.0
39072	7 G 1.5 re	16	11.5	101.0	235.0
39055	1 G 2.5 re	14	6.0	24.0	70.0
39057	3 G 2.5 re	14	10.4	72.0	190.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39059	4 G 2.5 re	14	11.3	96.0	230.0
39067	5 G 2.5 re	14	12.0	120.0	270.0
39075	7 G 2.5 re	14	13.2	168.0	342.0
39051	1 G 4 re	12	6.6	38.0	80.0
39074	3 G 4 re	12	12.0	115.0	258.0
39060	4 G 4 re	12	13.0	154.0	330.0
39068	5 G 4 re	12	14.5	192.0	410.0



# NYM-J / NYM-O / (N)YM-J

PVC Installation cable



## NYM-J acc. to DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39052	1 G 6 re	10	7.2	58.0	105.0
39078	3 G 6 re	10	13.0	173.0	320.0
39061	4 G 6 re	10	15.1	230.0	460.0
39069	5 G 6 re	10	16.1	288.0	540.0
39053	1 G 10 re	8	8.4	96.0	155.0
39062	4 G 10 re	8	17.6	384.0	680.0
39070	5 G 10 re	8	19.2	480.0	850.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39054	1 G 16 rm	6	9.9	154.0	230.0
39063	4 G 16 rm	6	21.3	614.0	1048.0
39071	5 G 16 rm	6	23.4	768.0	1280.0
39064	4 G 25 rm	4	25.8	960.0	1649.0
39073	5 G 25 rm	4	28.7	1200.0	1970.0
39065	4 G 35 rm	2	28.5	1344.0	2000.0

## (N)YM-J in alignment with DIN VDE 0250-204

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39076	10 G 1.5 re	16	13.8	144.0	330.0
39077	12 G 1.5 re	16	14.4	173.0	405.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
39080	12 G 2.5 re	14	15.4	288.0	660.0
39079	1 G 25 rm	4	12.0	240.0	325.0



HELUKABEL® (N)YM(St)-J 3G1,5 / 43050 300/500 V CE

## TECHNICAL DATA

PVC Installation cable in alignment with DIN VDE 0250-204

**Temperature range** fixed -40°C to +70°C  
during installation +5°C to +70°C

**Permissible operating temperature of the conductor** +70°C

**Nominal voltage** AC U<sub>0</sub>/U 300/500 V

**Test voltage core/core** 2000 V

**Minimum bending radius** fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, 1.5 - 10 mm<sup>2</sup>: solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1; 16 - 25 mm<sup>2</sup>: stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T11)
- Core identification acc. to DIN VDE 0293-308, 3 - 5 core(s): colour coded  
7 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded in layers with optimal lay lengths
- drain wire, tinned copper, solid
- Screen: plastic-coated aluminium foil (St)
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM1)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Beidraht mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
43050	3 G 1.5 re	16	1.5	10.5	58.0	154.0
43051	4 G 1.5 re	16	1.5	11.5	72.0	184.0
43052	5 G 1.5 re	16	1.5	12.0	87.0	208.0
43053	7 G 1.5 re	16	1.5	13.0	115.0	250.0
43054	3 G 2.5 re	14	1.5	12.0	87.0	217.0
43055	4 G 2.5 re	14	1.5	13.0	111.0	256.0
43056	5 G 2.5 re	14	1.5	13.5	135.0	280.0
43057	3 G 4 re	12	1.5	13.5	130.0	228.0

- Sheath colour: grey (RAL 7035)

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Installation cable with static screen, designed for the effective limitation of electromagnetic interference fields. The design proves to be advantageous for installation in the computer sector, in hospitals, in industrial control rooms with interference-sensitive devices as well as in living areas of people that are extremely sensitive to radiation. Suitable for installation in dry, damp or wet environments; for installation above, on, in and under plaster as well as in masonry walls and in concrete, however not for direct embedding in vibration, compacted or tamped concrete. Suitable for outdoor installation as long as the cable is protected against direct sunlight.

## ■ NOTES

- re = round, solid conductor  
rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Beidraht mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
43058	4 G 4 re	12	1.5	14.5	168.0	359.0
43059	5 G 4 re	12	1.5	16.5	207.0	440.0
43060	3 G 6 re	10	1.5	15.0	187.0	378.0
43061	4 G 6 re	10	1.5	16.5	245.0	477.0
43062	5 G 6 re	10	1.5	17.5	303.0	565.0
43063	5 G 10 re	8	1.5	21.5	495.0	840.0
43064	5 G 16 rm	6	2.5	26.0	792.0	1353.0
43065	5 G 25 rm	4	2.5	31.5	1224.0	2017.0

# NHXMH-J / NHXMH-O

enhanced characteristics during fire conditions



## TECHNICAL DATA

Installation cable acc. to DIN VDE 0250-214

<b>Temperature range</b>	fixed -30°C to +70°C during installation +5°C to +70°C
<b>Permissible operating temperature of the conductor</b>	+70°C
<b>Short circuit temperature at the conductor</b>	+250°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, 1.5 - 10 mm<sup>2</sup>: solid acc. to DIN VDE 0295 Class 1 / IEC 60228 Class 1; 16 - 35 mm<sup>2</sup>: stranded acc. to DIN VDE 0295 Class 2 / IEC 60228 Class 2
- Core insulation: XLPE
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black oder green-yellow  
2 - 5 core(s): colour coded  
7 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Core sheathing (filling compound) for multi-core cables
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-24 (compound type HM2)
- Sheath colour: grey (RAL 7035)

## PROPERTIES

- resistant to: ozone

- halogen-free
- flame-retardant
- reduced fire propagation, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-396 / DIN EN 50396

## APPLICATION

Halogen-free installation cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in industrial facilities, municipal facilities, hotels, airports, underground stations, railway stations, hospitals, department stores, banks, schools, theatres, cinemas, high-rise buildings, process control centres etc. Suitable for installation in dry, damp or wet environments; for installation above, on, in and under plaster as well as in masonry walls and in concrete, however not for direct embedding in vibration, compacted or tamped concrete. Suitable for outdoor installation as long as the cable is protected against direct sunlight.

## NOTES

- re = round, solid conductor  
rm = round, stranded conductor
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### NHXMH-O

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53300	1 x 1.5 re	16	5.0 - 8.4	15.0	49.0
53306	2 x 1.5 re	16	7.6 - 9.2	29.0	110.0
53301	1 x 2.5 re	14	5.4 - 8.8	24.0	60.0
53307	2 x 2.5 re	14	8.4 - 10.1	48.0	136.0
53302	1 x 4 re	12	6.0 - 9.5	39.0	80.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53308	2 x 4 re	12	9.6 - 11.6	77.0	202.0
53303	1 x 6 re	10	6.4 - 10.0	58.0	111.0
53304	1 x 10 re	8	7.4 - 11.3	96.0	160.0
53305	1 x 16 rm	6	8.5 - 12.4	154.0	232.0

### NHXMH-J

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53350	3 G 1.5 re	16	8.0 - 9.6	43.0	130.0
53358	4 G 1.5 re	16	8.5 - 10.3	58.0	151.0
53366	5 G 1.5 re	16	9.1 - 11.0	72.0	177.0
53374	7 G 1.5 re	16	9.9 - 11.9	101.0	209.0
53351	3 G 2.5 re	14	8.7 - 10.6	72.0	163.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
53359	4 G 2.5 re	14	9.5 - 11.5	96.0	200.0
53367	5 G 2.5 re	14	10.4 - 12.3	120.0	238.0
53375	7 G 2.5 re	14	11.4 - 13.8	168.0	300.0
53192	1 G 4 re	12	6.0 - 9.5	39.0	80.0
53352	3 G 4 re	12	10.1 - 12.2	115.0	235.0

# NHXMH-J / NHXMH-O

enhanced characteristics during fire conditions



## NHXMH-J

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
53360	4 G 4 re	12	11.3 - 13.7	154.0	300.0
53368	5 G 4 re	12	12.5 - 15.1	192.0	345.0
53193	1 G 6 re	10	6.4 - 10.0	58.0	111.0
53353	3 G 6 re	10	11.5 - 13.9	173.0	323.0
53361	4 G 6 re	10	12.7 - 15.3	230.0	400.0
53369	5 G 6 re	10	13.7 - 16.6	288.0	475.0
53194	1 G 10 re	8	7.4 - 11.3	96.0	160.0
53354	3 G 10 re	8	13.8 - 16.7	288.0	485.0
53362	4 G 10 re	8	15.1 - 18.2	384.0	603.0
53370	5 G 10 re	8	16.3 - 19.7	480.0	720.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
53195	1 G 16 rm	6	8.5 - 12.4	154.0	232.0
53355	3 G 16 rm	6	16.5 - 20.0	461.0	850.0
53363	4 G 16 rm	6	18.0 - 21.8	615.0	940.0
53371	5 G 16 rm	6	19.7 - 23.8	768.0	1142.0
53356	3 G 25 rm	4	20.4 - 24.6	720.0	1152.0
53364	4 G 25 rm	4	22.6 - 27.3	960.0	1432.0
53372	5 G 25 rm	4	24.7 - 29.8	1200.0	1800.0
53357	3 G 35 rm	2	22.7 - 27.4	1008.0	1503.0
53365	4 G 35 rm	2	24.9 - 30.0	1344.0	1930.0
53373	5 G 35 rm	2	27.5 - 33.2	1680.0	2490.0



HELUKABEL® JZ-500 PUR 4G4 QMM / 23379 300/500 V CE

## TECHNICAL DATA

**PUR control and connection cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1**

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23314	2 x 0.5	20	4.8	9.6	45.0
23315	3 G 0.5	20	5.1	14.4	55.0
23316	3 x 0.5	20	5.1	14.4	55.0
23317	4 G 0.5	20	5.5	19.0	65.0
23318	4 x 0.5	20	5.5	19.0	65.0
23319	5 G 0.5	20	6.2	24.0	75.0
23320	5 x 0.5	20	6.2	24.0	75.0
23321	7 G 0.5	20	6.7	33.6	90.0
23322	7 x 0.5	20	6.7	33.6	90.0
23323	10 G 0.5	20	8.6	48.0	120.0
23324	12 G 0.5	20	8.9	58.0	135.0
23325	18 G 0.5	20	10.7	86.0	205.0
23326	25 G 0.5	20	12.4	120.0	270.0
23327	34 G 0.5	20	14.3	163.0	380.0
23328	42 G 0.5	20	15.8	202.0	415.0
23329	2 x 0.75	19	5.3	14.4	44.0
23330	3 G 0.75	19	5.6	21.6	53.0
23331	3 x 0.75	19	5.6	21.6	53.0
23332	4 G 0.75	19	6.3	29.0	64.0
23333	4 x 0.75	19	6.3	29.0	64.0
23334	5 G 0.75	19	6.9	36.0	76.0
23335	5 x 0.75	19	6.9	36.0	76.0

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Connection and control cable, which is distinguished by its high abrasion resistance and notch-tensile strength properties. Due to its resistance to coolant emulsions, it is suited for use in particularly critical locations in machine, tool and plant construction, rolling mills and steelworks. Suitable for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23336	7 G 0.75	19	7.5	50.0	96.0
23337	7 x 0.75	19	7.5	50.0	96.0
23338	10 G 0.75	19	9.6	72.0	140.0
23339	12 G 0.75	19	9.9	86.0	170.0
23340	18 G 0.75	19	12.2	130.0	260.0
23341	25 G 0.75	19	14.1	180.0	282.0
23342	34 G 0.75	19	16.5	245.0	475.0
23343	42 G 0.75	19	18.1	302.0	600.0
23344	2 x 1	18	5.6	19.0	53.0
23345	3 G 1	18	5.9	29.0	63.0
23346	3 x 1	18	5.9	29.0	63.0
23347	4 G 1	18	6.7	38.0	75.0
23348	4 x 1	18	6.7	38.0	75.0
23349	5 G 1	18	7.3	48.0	89.0
23350	5 x 1	18	7.3	48.0	89.0
23351	7 G 1	18	8.1	67.0	115.0
23352	7 x 1	18	8.1	67.0	115.0
23353	10 G 1	18	10.2	96.0	166.0
23354	12 G 1	18	10.6	115.0	201.0
23355	18 G 1	18	12.9	173.0	289.0
23356	25 G 1	18	15.1	240.0	380.0
23357	34 G 1	18	17.7	326.0	645.0

# JZ-500-PUR / OZ-500-PUR



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23358	42 G 1	18	19.5	403.0	730.0
23359	50 G 1	18	21.3	480.0	890.0
23360	2 x 1.5	16	6.4	29.0	68.0
23361	3 G 1.5	16	6.8	43.0	87.0
23362	3 x 1.5	16	6.8	43.0	87.0
23363	4 G 1.5	16	7.4	58.0	106.0
23364	4 x 1.5	16	7.4	58.0	106.0
23365	5 G 1.5	16	8.3	72.0	131.0
23366	5 x 1.5	16	8.3	72.0	131.0
23367	7 G 1.5	16	9.2	101.0	173.0
23368	7 x 1.5	16	9.2	101.0	173.0
23369	12 G 1.5	16	12.0	173.0	293.0
23370	18 G 1.5	16	14.2	259.0	454.0
23371	25 G 1.5	16	17.0	360.0	641.0
23372	30 G 1.5	16	18.6	410.0	800.0
23373	2 x 2.5	14	7.8	48.0	110.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23374	3 G 2.5	14	8.3	72.0	146.0
23375	4 G 2.5	14	9.2	96.0	183.0
23376	5 G 2.5	14	10.1	120.0	222.0
23377	7 G 2.5	14	11.2	168.0	293.0
23378	12 G 2.5	14	15.0	288.0	512.0
23379	4 G 4	12	10.9	154.0	291.0
23380	5 G 4	12	12.1	192.0	355.0
23381	7 G 4	12	13.2	269.0	503.0
23382	4 G 6	10	13.0	230.0	468.0
23383	5 G 6	10	14.5	288.0	570.0
23384	7 G 6	10	16.2	403.0	808.0
23385	4 G 10	8	16.5	384.0	720.0
23386	5 G 10	8	18.3	480.0	894.0
23387	7 G 10	8	20.2	672.0	1295.0
23388	4 G 16	6	20.2	614.0	1063.0

# PURö-JZ / PURö-OZ

enhanced oil resistance



HELUKABEL® PURö-JZ 4G4 QMM / 22174 300/500 V CE

## TECHNICAL DATA

**PUR control and connection cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1**

<b>Temperature range</b>	flexible -20°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: oil-resistant PVC in alignment with DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12), with improved gliding behaviour
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22100	2 x 0.5	20	4.8	9.6	45.0
22101	3 G 0.5	20	5.1	14.4	55.0
22102	4 G 0.5	20	5.5	19.0	65.0
22103	5 G 0.5	20	6.2	24.0	75.0
22104	7 G 0.5	20	6.7	33.6	90.0
22105	8 G 0.5	20	7.4	38.0	105.0
22106	10 G 0.5	20	8.3	48.0	120.0
22107	12 G 0.5	20	8.7	58.0	135.0
22108	14 G 0.5	20	9.5	67.0	170.0
22109	18 G 0.5	20	10.7	86.0	205.0
22110	21 G 0.5	20	11.3	96.0	225.0
22111	25 G 0.5	20	12.6	120.0	270.0
22112	30 G 0.5	20	13.5	144.0	315.0
22113	34 G 0.5	20	14.3	163.0	380.0
22114	42 G 0.5	20	15.8	202.0	415.0
22115	50 G 0.5	20	17.5	240.0	550.0
22116	2 x 0.75	19	5.3	14.4	44.0
22117	3 G 0.75	19	5.6	21.6	53.0
22118	4 G 0.75	19	6.3	29.0	64.0
22119	5 G 0.75	19	6.9	36.0	76.0
22120	7 G 0.75	19	7.5	50.0	96.0

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Connection and control cable with a high-grade oil-resistant PVC core insulation. Due to its resistance to mineral oils, notably against coolant emulsions, it is suited for use in particularly critical locations in machine, tool and plant construction, rolling mills and steelworks. Suitable for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, as well as outdoors.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22121	8 G 0.75	19	8.3	58.0	111.0
22122	10 G 0.75	19	9.2	72.0	140.0
22123	12 G 0.75	19	9.8	86.0	170.0
22124	14 G 0.75	19	10.6	101.0	202.0
22125	18 G 0.75	19	12.2	130.0	260.0
22126	21 G 0.75	19	12.7	151.0	269.0
22127	25 G 0.75	19	14.3	180.0	282.0
22128	30 G 0.75	19	15.3	216.0	400.0
22129	34 G 0.75	19	16.5	245.0	475.0
22130	42 G 0.75	19	18.1	302.0	600.0
22131	50 G 0.75	19	19.8	360.0	720.0
22132	2 x 1	18	5.6	19.0	53.0
22133	3 G 1	18	5.9	29.0	63.0
22134	4 G 1	18	6.6	38.0	75.0
22135	5 G 1	18	7.3	48.0	89.0
22136	7 G 1	18	8.1	67.0	115.0
22137	8 G 1	18	8.8	77.0	131.0
22138	10 G 1	18	9.8	96.0	166.0
22139	12 G 1	18	10.4	115.0	201.0
22140	14 G 1	18	11.4	134.0	230.0
22141	18 G 1	18	12.9	173.0	289.0

# PURö-JZ / PURö-OZ

enhanced oil resistance



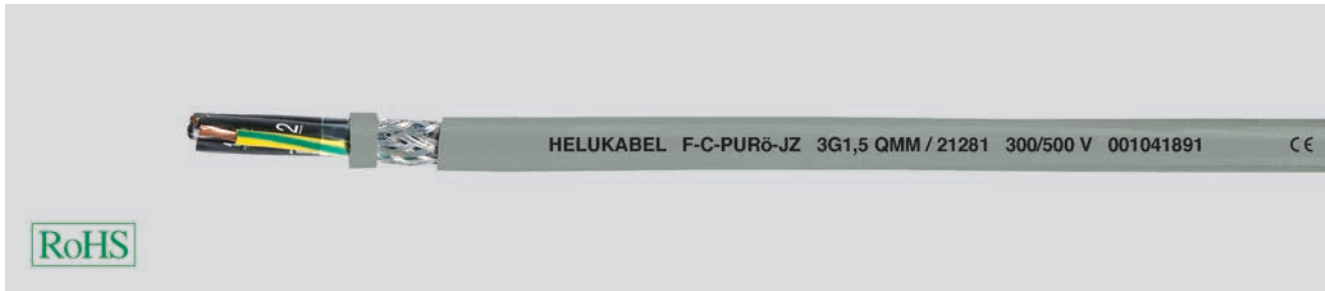
Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22142	21 G 1	18	13.8	196.0	306.0
22143	25 G 1	18	15.4	240.0	380.0
22144	32 G 1	18	17.1	308.0	620.0
22145	34 G 1	18	17.7	326.0	645.0
22146	42 G 1	18	19.5	403.0	730.0
22147	50 G 1	18	21.3	480.0	890.0
22148	2 x 1.5	16	6.4	29.0	68.0
22149	3 G 1.5	16	6.8	43.0	87.0
22150	4 G 1.5	16	7.4	58.0	106.0
22151	5 G 1.5	16	8.3	72.0	131.0
22152	7 G 1.5	16	9.2	101.0	173.0
22153	8 G 1.5	16	10.0	115.0	199.0
22154	10 G 1.5	16	10.9	144.0	245.0
22155	12 G 1.5	16	11.8	173.0	293.0
22156	14 G 1.5	16	13.0	202.0	347.0
22157	18 G 1.5	16	14.6	259.0	454.0
22158	21 G 1.5	16	15.6	302.0	534.0
22159	25 G 1.5	16	17.4	360.0	641.0
22160	30 G 1.5	16	18.6	410.0	800.0
22161	34 G 1.5	16	20.0	490.0	945.0
22162	42 G 1.5	16	21.8	605.0	1100.0
22163	50 G 1.5	16	24.2	720.0	1250.0
22164	2 x 2.5	14	7.8	48.0	110.0
22165	3 G 2.5	14	8.3	72.0	146.0
22166	4 G 2.5	14	9.2	96.0	183.0
22167	5 G 2.5	14	10.1	120.0	222.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22168	7 G 2.5	14	11.2	168.0	293.0
22169	12 G 2.5	14	14.8	288.0	512.0
22170	18 G 2.5	14	18.2	432.0	740.0
22171	25 G 2.5	14	21.6	600.0	940.0
22172	2 x 4	12	9.2	77.0	147.0
22173	3 G 4	12	9.8	115.0	228.0
22174	4 G 4	12	10.9	154.0	291.0
22175	5 G 4	12	12.1	192.0	355.0
22176	7 G 4	12	13.2	269.0	503.0
22177	3 G 6	10	11.9	173.0	362.0
22178	4 G 6	10	13.0	230.0	468.0
22179	5 G 6	10	14.5	288.0	570.0
22180	7 G 6	10	16.2	403.0	808.0
22181	3 G 10	8	14.9	288.0	555.0
22182	4 G 10	8	16.5	384.0	720.0
22183	5 G 10	8	18.3	480.0	894.0
22184	7 G 10	8	20.2	672.0	1295.0
22185	4 G 16	6	20.1	614.0	1063.0
22186	5 G 16	6	22.6	768.0	1400.0
22187	7 G 16	6	24.8	1075.0	1800.0
22188	4 G 25	4	25.0	960.0	1590.0
22189	4 G 35	2	28.7	1344.0	2200.0
22190	4 G 50	1	34.1	1920.0	2400.0
22191	4 G 70	2/0	40.2	2688.0	4400.0
22192	4 G 95	3/0	46.0	3648.0	6000.0



# F-C-PURÖ-JZ

tear and coolant resistant, Cu-screened, without inner sheath, EMC-preferred type, increased oil resistant, meter marking



## Technical data

- Special-PUR control cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**  
flexing -20°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage** min. 6000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable  $\varnothing$   
fixed installation 5x cable  $\varnothing$
- **Radiation resistance**  
up to  $100 \times 10^6$  cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of **oil resistant** PVC compound type T12 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3 for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Separating foil
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath of special **full-polyurethane** compound type Tmpu to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001) also available in other colours on request
- with meter marking

## Properties

- **Resistant to**  
UV-Radiation  
Oxygene  
Ozone  
Hydrolysis  
Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**PURÖ-JZ**

## Application

Extremely robust control cable characterised by high abrasion and notch resistance properties. Used for critical areas in such applications as machinery, tooling and plant construction, in rolling mills and steel works because of the resistance to mineral oils and to coolant emulsions in particular. Rapid and safe installation assured by the good flexibility of the cable. Suitable for outdoor installation.

An interference-free transmission of signals and pulses is assured by the high screening density. The ideal interference-protected control cable for such applications as given above.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
21200	2 x 0,5	5,6	35,0	44,0	20	21227	2 x 0,75	6,1	40,0	60,0	19
21201	3 G 0,5	5,9	42,0	56,0	20	21228	3 G 0,75	6,4	52,0	67,0	19
21202	4 G 0,5	6,4	47,0	60,0	20	21229	4 G 0,75	7,0	60,0	76,0	19
21203	5 G 0,5	6,9	56,0	75,0	20	21230	5 G 0,75	7,6	71,0	92,0	19
21205	7 G 0,5	7,6	69,0	97,0	20	21232	7 G 0,75	8,2	91,0	131,0	19
21207	10 G 0,5	9,5	94,0	133,0	20	21234	10 G 0,75	10,3	137,0	180,0	19
21208	12 G 0,5	9,8	108,0	158,0	20	21235	12 G 0,75	10,6	142,0	204,0	19
21209	14 G 0,5	10,4	116,0	190,0	20	21236	14 G 0,75	11,5	180,0	226,0	19
21211	18 G 0,5	11,5	145,0	218,0	20	21238	18 G 0,75	12,7	212,0	290,0	19
21213	21 G 0,5	12,2	188,0	252,0	20	21240	21 G 0,75	13,9	246,0	376,0	19
21215	25 G 0,5	13,5	240,0	315,0	20	21242	25 G 0,75	15,2	281,0	413,0	19
21217	30 G 0,5	14,4	295,0	362,0	20	21245	32 G 0,75	17,0	342,0	485,0	19
21220	36 G 0,5	15,6	318,0	447,0	20	21249	41 G 0,75	19,5	400,0	611,0	19
21221	40 G 0,5	17,0	343,0	475,0	20	21251	50 G 0,75	21,1	461,0	775,0	19
21224	50 G 0,5	18,4	406,0	572,0	20						

# F-C-PURÖ-JZ

tear and coolant resistant, Cu-screened, without inner sheath, EMC-preferred type, increased oil resistant, meter marking

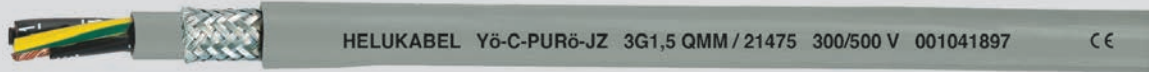


Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
21253	2 x 1	6,5	50,0	66,0	18
21254	3 G 1	6,9	60,0	82,0	18
21255	4 G 1	7,4	71,0	100,0	18
21256	5 G 1	8,0	88,0	128,0	18
21257	6 G 1	8,8	97,0	145,0	18
21258	7 G 1	8,8	111,0	157,0	18
21259	8 G 1	9,8	127,0	198,0	18
21261	10 G 1	11,3	150,0	230,0	18
21262	12 G 1	11,7	184,0	262,0	18
21263	14 G 1	12,4	196,0	302,0	18
21264	16 G 1	13,0	209,0	345,0	18
21265	18 G 1	13,8	260,0	381,0	18
21267	21 G 1	14,9	319,0	480,0	18
21268	25 G 1	16,3	349,0	535,0	18
21273	34 G 1	18,6	486,0	740,0	18
21276	41 G 1	20,4	531,0	855,0	18
21278	50 G 1	22,2	625,0	1027,0	18
21280	2 x 1,5	7,1	63,0	87,0	16
21281	3 G 1,5	7,5	80,0	102,0	16
21282	4 G 1,5	8,1	97,0	127,0	16
21283	5 G 1,5	9,0	119,0	159,0	16
21285	7 G 1,5	9,9	147,0	207,0	16
21286	8 G 1,5	11,0	170,0	245,0	16
21287	10 G 1,5	12,5	193,0	313,0	16
21288	12 G 1,5	13,1	267,0	340,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
21290	14 G 1,5	13,7	283,0	384,0	16
21291	16 G 1,5	14,8	315,0	425,0	16
21292	18 G 1,5	15,5	374,0	480,0	16
21295	21 G 1,5	16,5	425,0	563,0	16
21296	25 G 1,5	18,1	526,0	704,0	16
21297	34 G 1,5	21,2	629,0	870,0	16
21298	42 G 1,5	22,9	819,0	1040,0	16
21299	50 G 1,5	25,1	885,0	1292,0	16
21300	2 x 2,5	8,5	96,0	131,0	14
21301	3 G 2,5	9,0	144,0	168,0	14
21302	4 G 2,5	9,8	148,0	194,0	14
21303	5 G 2,5	10,8	181,0	222,0	14
21304	7 G 2,5	11,9	255,0	345,0	14
21305	10 G 2,5	15,5	340,0	462,0	14
21306	12 G 2,5	16,0	441,0	570,0	14
21313	2 x 4	10,0	120,0	187,0	12
21314	3 G 4	10,6	174,0	243,0	12
21315	4 G 4	11,6	230,0	310,0	12
21316	5 G 4	12,8	273,0	386,0	12
21317	7 G 4	14,2	316,0	498,0	12
21319	3 G 6	12,6	240,0	333,0	10
21320	4 G 6	14,2	305,0	414,0	10
21321	5 G 6	15,4	439,0	510,0	10
21322	7 G 6	17,0	505,0	673,0	10

Dimensions and specifications may be changed without prior notice. (RA02)

# Yö-C-PURö-JZ tear and coolant resistant, Cu-screened, with inner sheath, increased oil resistant, EMC-preferred type, meter marking



## Technical data

- Special-PUR sheathed multicore cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**  
flexing -20°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
up to 2,5 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
from 4 mm<sup>2</sup> U<sub>0</sub>/U 450/750 V
- **Test voltage** 4000 V
- **Breakdown voltage** min. 8000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Outer sheath of **oil resistant** PVC compound type TI2 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3 for better sliding abilities
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay-length
- Inner sheath of **oil resistant** PVC
- Tinned copper braided screen, approx. 85% coverage
- Core wrapping of fleece guarantees easy cable stripping
- Outer sheath of special **full-polyurethane** compound type TMPU to DIN EN 50363-10-2
- Sheath colour grey (RAL 7001)
- with meter marking

## Properties

- **Resistant to**  
UV-Radiation  
Oxygene  
Ozone  
Hydrolysis  
Microbes
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- unscreened analogue type:  
**PURö-JZ**

## Application

Extremely robust control cable characterised by high abrasion and notch resistance properties. Used for critical areas in such applications as machinery, tooling and plant construction, in rolling mills and steel works because of the resistance to mineral oils and to coolant emulsions in particular. The mechanical strength of the cable is increased by the additional oil-resistant inner sheath. The ideal interference-protected control cable for such applications as given above. Suitable for outdoor installation.

These screened cables are particularly suitable for the interference-free transmission in instrumentation and control engineering applications (electromagnetic compatibility).

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
21400	2 x 0,5	7,0	41,0	68,0	20	21425	2 x 0,75	7,7	46,0	88,0	19
21401	3 G 0,5	7,3	45,0	84,0	20	21426	3 G 0,75	8,0	57,0	98,0	19
21402	4 G 0,5	7,9	54,0	95,0	20	21427	4 G 0,75	8,5	63,0	112,0	19
21403	5 G 0,5	8,4	66,0	107,0	20	21428	5 G 0,75	9,3	76,0	130,0	19
21405	7 G 0,5	9,1	79,0	135,0	20	21430	7 G 0,75	9,9	100,0	185,0	19
21407	10 G 0,5	10,7	107,0	170,0	20	21432	10 G 0,75	11,8	140,0	270,0	19
21408	12 G 0,5	11,5	137,0	195,0	20	21433	12 G 0,75	12,7	175,0	294,0	19
21409	14 G 0,5	12,2	142,0	222,0	20	21434	14 G 0,75	13,3	190,0	317,0	19
21411	18 G 0,5	13,5	156,0	278,0	20	21436	18 G 0,75	14,9	240,0	357,0	19
21413	21 G 0,5	14,2	189,0	330,0	20	21438	21 G 0,75	15,4	274,0	455,0	19
21415	25 G 0,5	15,7	250,0	406,0	20	21440	25 G 0,75	17,5	306,0	510,0	19
21416	30 G 0,5	16,2	297,0	520,0	20	21443	32 G 0,75	18,9	349,0	688,0	19
21419	36 G 0,5	17,7	320,0	587,0	20	21446	41 G 0,75	21,0	403,0	951,0	19
21420	40 G 0,5	18,4	345,0	655,0	20	21447	50 G 0,75	23,1	470,0	1100,0	19
21421	50 G 0,5	20,7	407,0	742,0	20						

# YÖ-C-PURÖ-JZ tear and coolant resistant, Cu-screened, with inner sheath, increased oil resistant, EMC-preferred type, meter marking



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
21451	2 x 1	8,0	54,0	98,0	18
21452	3 G 1	8,3	64,0	102,0	18
21453	4 G 1	9,0	76,0	145,0	18
21454	5 G 1	9,7	89,0	170,0	18
21456	7 G 1	10,3	114,0	220,0	18
21457	8 G 1	11,2	130,0	270,0	18
21458	10 G 1	12,6	156,0	330,0	18
21459	12 G 1	13,3	186,0	350,0	18
21460	14 G 1	14,1	198,0	402,0	18
21461	16 G 1	14,8	214,0	420,0	18
21462	18 G 1	15,6	284,0	515,0	18
21463	20 G 1	16,4	325,0	545,0	18
21465	25 G 1	18,5	387,0	690,0	18
21468	34 G 1	20,9	500,0	912,0	18
21469	41 G 1	21,5	578,0	1070,0	18
21470	50 G 1	24,8	681,0	1318,0	18
21474	2 x 1,5	8,6	64,0	130,0	16
21475	3 G 1,5	9,2	82,0	152,0	16
21476	4 G 1,5	9,8	99,0	167,0	16
21477	5 G 1,5	10,8	123,0	203,0	16
21479	7 G 1,5	11,7	148,0	305,0	16
21480	8 G 1,5	12,6	172,0	335,0	16
21481	10 G 1,5	14,2	198,0	422,0	16
21482	12 G 1,5	14,9	274,0	435,0	16
21483	14 G 1,5	15,8	294,0	480,0	16
21484	16 G 1,5	16,7	318,0	525,0	16
21485	18 G 1,5	17,4	386,0	642,0	16
21487	21 G 1,5	18,5	447,0	722,0	16
21489	25 G 1,5	20,8	531,0	803,0	16
21492	34 G 1,5	23,2	671,0	1068,0	16
21494	42 G 1,5	25,0	890,0	1370,0	16
21495	50 G 1,5	27,4	997,0	1677,0	16
21499	2 x 2,5	10,1	110,0	180,0	14
21500	3 G 2,5	10,8	148,0	215,0	14
21501	4 G 2,5	11,5	169,0	268,0	14
21502	5 G 2,5	12,8	220,0	349,0	14
21503	7 G 2,5	14,0	284,0	406,0	14
21504	12 G 2,5	17,9	470,0	720,0	14

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
21507	2 x 4	13,3	124,0	300,0	12
21508	3 G 4	14,0	178,0	340,0	12
21509	4 G 4	15,3	234,0	408,0	12
21510	5 G 4	16,7	284,0	504,0	12
21511	7 G 4	18,4	321,0	640,0	12
21512	3 G 6	15,6	245,0	453,0	10
21513	4 G 6	17,0	316,0	560,0	10
21514	5 G 6	18,6	442,0	700,0	10
21515	7 G 6	20,4	530,0	905,0	10
21516	3 G 10	19,0	367,0	750,0	8
21517	4 G 10	21,1	549,0	1023,0	8
21518	5 G 10	23,1	604,0	1114,0	8
21519	7 G 10	25,6	820,0	1505,0	8
21521	4 G 16	25,3	807,0	1385,0	6
21522	5 G 16	28,0	940,0	1550,0	6
21524	4 G 25	31,1	1169,0	1894,0	4
21525	5 G 25	34,3	1420,0	2272,0	4
21526	4 G 35	33,9	1680,0	2395,0	2
21527	5 G 35	37,8	2020,0	2890,0	2
21528	4 G 50	40,1	2370,0	3312,0	1
21529	5 G 50	45,0	2880,0	4100,0	1
21530	4 G 70	46,0	3257,0	4605,0	2/0
21531	5 G 70	50,6	4032,0	5710,0	2/0
21532	4 G 95	51,2	4060,0	6055,0	3/0
21533	5 G 95	56,5	5244,0	7520,0	3/0
21534	4 G 120	56,3	5231,0	7318,0	4/0

Dimensions and specifications may be changed without prior notice. (RA02)

# HELUCONTROL® PUR-ORANGE-JZ / HELUCONTROL® PUR-ORANGE-OZ



with inner sheath



HELUKABEL® HELUCONTROL® PUR-ORANGE-JZ 4G2,5 QMM / 22027 300/500 V CE

## TECHNICAL DATA

PUR control and connection cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC in alignment with DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification: acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE (JZ),  
x = without protective conductor (OZ)
- Cores stranded with optimal lay lengths
- Inner sheath: PVC
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: orange (RAL 2003)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Robust control and connection cable characterised by high oil resistance, abrasion resistance and notch toughness. Areas of application are machine and tool construction, shipyards, rolling mills and steelworks, construction sites, oil drilling and coal mining. Also often used in plants as a hand tool cable or extension cable.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22001	2 x 0.75	19	6.9	14.4	50.0
22002	3 G 0.75	19	7.2	21.6	70.0
22003	4 G 0.75	19	7.9	28.8	80.0
22004	5 G 0.75	19	8.5	36.0	100.0
22005	7 G 0.75	19	9.8	50.0	140.0
22006	2 x 1	18	7.2	19.2	63.0
22007	3 G 1	18	7.7	29.0	76.0
22008	4 G 1	18	8.3	38.0	95.0
22009	5 G 1	18	9.1	48.0	120.0
22010	7 G 1	18	10.5	67.0	170.0
22015	2 x 1.5	16	8.0	29.0	80.0
22016	3 G 1.5	16	8.4	43.0	105.0
22017	4 G 1.5	16	9.2	58.0	135.0
22018	5 G 1.5	16	9.9	72.0	158.0
22019	7 G 1.5	16	11.9	101.0	221.0
22025	2 x 2.5	14	9.4	48.0	150.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22026	3 G 2.5	14	9.9	72.0	173.0
22027	4 G 2.5	14	10.9	96.0	203.0
22028	5 G 2.5	14	12.1	120.0	253.0
22029	7 G 2.5	14	14.1	168.0	356.0
22033	3 G 4	12	11.8	115.0	250.0
22034	4 G 4	12	12.7	154.0	300.0
22035	5 G 4	12	13.9	192.0	370.0
22036	7 G 4	12	16.5	269.0	500.0
22037	4 G 6	10	15.0	230.0	480.0
22038	5 G 6	10	16.5	288.0	583.0
22039	7 G 6	10	19.7	403.0	780.0
22040	4 G 10	8	18.6	384.0	740.0
22041	5 G 10	8	20.5	480.0	920.0
22042	4 G 16	6	21.4	614.0	1100.0
22043	5 G 16	6	23.8	768.0	1400.0

# PUR-YELLOW

PVC-inner sheath, high abrasion, coolant resistant, meter marking



## Technical data

- Special-PVC/PUR cable adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**  
flexing -15°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 adapted to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308  
- up to 5 cores coloured  
- from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay length
- Inner sheath of PVC
- Outer sheath of PUR compound type TMPU to DIN EN 50363-10-2
- Sheath colour: yellow (RAL 1021)
- With meter marking

## Properties

- High flexibility at low temperature
- High abrasion resistance
- **Resistant to**  
Oils and fats  
Non-alcoholic fuels and kerosene  
Atmospheric influences  
UV-radiation  
Oxygene and ozone  
Microbes and rotting  
Sea and waste water  
Vibrations
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OB).
- Part.no. 22212 = JB-version.
- Part.no. 22220 = JZ-version.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Robust connecting and control cable with an outstanding resistance to oil and abrasion. Suitable for use in tool making and machine industries, steel works, on building sites and in the oil and coal industries. The cable can also be used for portable tools. etc. To be recommended if the cable comes into contact with chemical agents.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22200	2 x 0,75	6,4	14,4	50,0	19
22201	3 G 0,75	6,8	21,6	70,0	19
22202	4 G 0,75	7,3	28,8	80,0	19
22203	5 G 0,75	8,2	36,0	100,0	19
22204	7 G 0,75	9,2	50,0	140,0	19
22205	2 x 1	7,2	19,2	63,0	18
22206	3 G 1	7,6	29,0	76,0	18
22207	4 G 1	8,0	38,0	95,0	18
22208	5 G 1	8,8	48,0	120,0	18
22209	7 G 1	10,0	67,0	170,0	18
22210	2 x 1,5	7,8	29,0	80,0	16
22211	3 G 1,5	8,3	43,0	105,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22212	4 G 1,5	9,0	58,0	135,0	16
22220	4 G 1,5	9,0	58,0	135,0	16
22213	5 G 1,5	9,7	72,0	158,0	16
22214	7 G 1,5	11,2	101,0	221,0	16
22215	2 x 2,5	9,2	48,0	150,0	14
22216	3 G 2,5	9,6	72,0	173,0	14
22217	4 G 2,5	11,0	96,0	203,0	14
22218	5 G 2,5	12,0	120,0	253,0	14
22219	7 G 2,5	13,7	168,0	356,0	14
22221	4 G 4	13,2	153,6	310,0	12
22222	5 G 4	14,8	192,0	370,0	12
22233	4 G 35	33,0	1344,0	2100,0	2

Dimensions and specifications may be changed without prior notice. (RA02)



## TECHNICAL DATA

PUR control and connection cable in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

<b>Temperature range</b>	flexible -40°C to +90°C
<b>Nominal voltage</b>	0.5 - 1 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 1.5 - 16 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: TPE
- Core identification acc. to DIN VDE 0293-308,  
2 - 5 core(s): colour coded  
6 - 41 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special grade of full polyurethane in alignment with DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: see table
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- flexible in cold temperatures
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Robust, flexible cable for use in dry, damp and wet rooms, as well as outdoors. 0.5-1 mm<sup>2</sup>: for connecting devices with light mechanical stress in households and offices (e.g. portable household appliances, hand lamps). 1.5-16 mm<sup>2</sup>: for connecting devices with medium mechanical stress in commercial and agricultural workshops (e.g. power tools such as drills, circular saws). When installed in pipes or similar closed systems, the cable is permitted for use up to and including 1000 V alternating voltage or 750 V direct voltage to earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	blue (RAL 5015)	brown (RAL 8003)	yellow (RAL 1021)	grey (RAL 7001)	green (RAL 6018)	orange (RAL 2003)	red (RAL 3000)	violet (RAL 4005)
					Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	
2 x 0.5	20	5.8	9.6	40.0	18120	18122	18123	18127	18121	18125	18124	18126
3 G 0.5	20	6.1	14.4	47.0	18130	18132	18133	18137	18131	18135	18134	18136
4 G 0.5	20	6.7	19.0	57.0	18140	18142	18143	18147	18141	18145	18144	18146
5 G 0.5	20	7.5	24.0	65.0	18150	18152	18153	18157	18151	18155	18154	18156
7 G 0.5	20	8.9	33.6	94.0	18160	18162	18163	18167	18161	18165	18164	18166
12 G 0.5	20	10.9	58.0	150.0	18170	18172	18173	18177	18171	18175	18174	18176
18 G 0.5	20	12.9	86.0	208.0	18180	18182	18183	18187	18181	18185	18184	18186
25 G 0.5	20	15.4	120.0	276.0	18190	18192	18193	18197	18191	18195	18194	18196
34 G 0.5	20	17.9	163.0	393.0	18200	18202	18203	18207	18201	18205	18204	18206
41 G 0.5	20	19.5	197.0	460.0	18210	18212	18213	18217	18211	18215	18214	18216
2 x 0.75	19	6.3	14.0	52.0	18220	18222	18223	18227	18221	18225	18224	18226
3 G 0.75	19	6.7	21.6	62.0	18230	18232	18233	18237	18231	18235	18234	18236
4 G 0.75	19	7.5	28.8	80.0	18240	18242	18243	18247	18241	18245	18244	18246
5 G 0.75	19	8.1	36.0	94.0	18250	18252	18253	18257	18251	18255	18254	18256
6 G 0.75	19	9.1	43.0	111.0	18260	18262	18263	18267	18261	18265	18264	18266

## abrasion-resistant, flexible in cold temperatures

No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	blue	brown	yellow	grey	green	orange	red	violet
					(RAL 5015) Part no.	(RAL 8003) Part no.	(RAL 1021) Part no.	(RAL 7001) Part no.	(RAL 6018) Part no.	(RAL 2003) Part no.	(RAL 3000) Part no.	(RAL 4005) Part no.
7 G 0.75	19	9.8	50.0	160.0	18270	18272	18273	18277	18271	18275	18274	18276
12 G 0.75	19	12.2	86.0	191.0	18280	18282	18283	18287	18281	18285	18284	18286
18 G 0.75	19	14.4	130.0	267.0	18290	18292	18293	18297	18291	18295	18294	18296
25 G 0.75	19	17.1	180.0	376.0	18300	18302	18303	18307	18301	18305	18304	18306
34 G 0.75	19	19.9	245.0	506.0	18310	18312	18313	18317	18311	18315	18314	18316
41 G 0.75	19	21.6	296.0	596.0	18320	18322	18323	18327	18321	18325	18324	18326
2 x 1	18	6.6	19.2	59.0	18330	18332	18333	18337	18331	18335	18334	18336
3 G 1	18	7.0	29.0	70.0	18340	18342	18343	18347	18341	18345	18344	18346
4 G 1	18	7.9	38.0	87.0	18350	18352	18353	18357	18351	18355	18354	18356
5 G 1	18	8.6	48.0	100.0	18360	18362	18363	18367	18361	18365	18364	18366
6 G 1	18	9.5	58.0	131.0	18370	18372	18373	18377	18371	18375	18374	18376
7 G 1	18	10.5	67.0	182.0	18380	18382	18383	18387	18381	18385	18384	18386
12 G 1	18	12.8	115.0	230.0	18390	18392	18393	18397	18391	18395	18394	18396
18 G 1	18	15.3	173.0	325.0	18400	18402	18403	18407	18401	18405	18404	18406
25 G 1	18	18.2	240.0	476.0	18410	18412	18413	18417	18411	18415	18414	18416
34 G 1	18	21.1	326.0	616.0	18420	18422	18423	18427	18421	18425	18424	18426
41 G 1	18	23.0	394.0	724.0	18430	18432	18433	18437	18431	18435	18434	18436
2 x 1.5	16	8.2	29.0	92.0	18440	18442	18443	18447	18441	18445	18444	18446
3 G 1.5	16	8.9	43.0	108.0	18450	18452	18453	18457	18451	18455	18454	18456
4 G 1.5	16	9.7	58.0	144.0	18460	18462	18463	18467	18461	18465	18464	18466
5 G 1.5	16	10.8	72.0	168.0	18470	18472	18473	18477	18471	18475	18474	18476
6 G 1.5	16	12.0	86.0	201.0	18480	18482	18483	18487	18481	18485	18484	18486
7 G 1.5	16	13.0	101.0	230.0	18490	18492	18493	18497	18491	18495	18494	18496
12 G 1.5	16	16.3	173.0	306.0	18500	18502	18503	18507	18501	18505	18504	18506
18 G 1.5	16	19.4	259.0	464.0	18510	18512	18513	18517	18511	18515	18514	18516
25 G 1.5	16	23.0	360.0	641.0	18520	18522	18523	18527	18521	18525	18524	18526
34 G 1.5	16	26.8	490.0	857.0	18530	18532	18533	18537	18531	18535	18534	18536
41 G 1.5	16	29.3	590.0	1010.0	18540	18542	18543	18547	18541	18545	18544	18546
2 x 2.5	14	9.6	48.0	120.0	18550	18552	18553	18557	18551	18555	18554	18556
3 G 2.5	14	10.4	72.0	148.0	18560	18562	18563	18567	18561	18565	18564	18566
4 G 2.5	14	11.4	96.0	184.0	18570	18572	18573	18577	18571	18575	18574	18576
5 G 2.5	14	12.7	120.0	224.0	18580	18582	18583	18587	18581	18585	18584	18586
7 G 2.5	14	15.3	168.0	301.0	18590	18592	18593	18597	18591	18595	18594	18596
12 G 2.5	14	19.2	288.0	489.0	18600	18602	18603	18607	18601	18605	18604	18606
2 x 4	12	11.4	77.0	149.0	18610	18612	18613	18617	18611	18615	18614	18616
3 G 4	12	12.3	115.0	240.0	18620	18622	18623	18627	18621	18625	18624	18626
4 G 4	12	13.7	154.0	297.0	18630	18632	18633	18637	18631	18635	18634	18636
5 G 4	12	15.2	192.0	360.0	18640	18642	18643	18647	18641	18645	18644	18646
7 G 4	12	18.4	268.0	540.0	18650	18652	18653	18657	18651	18655	18654	18656
2 x 6	10	12.8	115.0	240.0	18660	18662	18663	18667	18661	18665	18664	18666
3 G 6	10	13.8	173.0	370.0	18670	18672	18673	18677	18671	18675	18674	18676
4 G 6	10	15.4	230.0	472.0	18680	18682	18683	18687	18681	18685	18684	18686
5 G 6	10	17.0	288.0	581.0	18690	18692	18693	18697	18691	18695	18694	18696
7 G 6	10	20.8	403.0	698.0	18700	18702	18703	18707	18701	18705	18704	18706
3 G 10	8	17.3	288.0	560.0	18710	18712	18713	18717	18711	18715	18714	18716
4 G 10	8	19.4	384.0	718.0	18720	18722	18723	18727	18721	18725	18724	18726
5 G 10	8	21.4	480.0	896.0	18730	18732	18733	18737	18731	18735	18734	18736
3 G 16	6	23.0	461.0	940.0	18740	18742	18743	18747	18741	18745	18744	18746
4 G 16	6	25.4	614.0	1068.0	18750	18752	18753	18757	18751	18755	18754	18756
5 G 16	6	28.1	768.0	1810.0	18760	18762	18763	18767	18761	18765	18764	18766





HELUKABEL® H03VV-F <I>HAR</I> CE



HELUKABEL® H03VV-F <I>HAR</I> CE

## TECHNICAL DATA

PVC connection cable, 2 - 4 core(s): acc. to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11, IEC 60227-5; 5 - 7 core(s): in alignment with DIN VDE 0285-525-2-11 / DIN EN 50525-2-11

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/300 V
<b>Test voltage core/core</b>	2000 V
<b>Breakdown voltage</b>	4000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-308,  
2 - 5 core(s): colour coded  
6 - 7 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor

- Cores stranded with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: see table

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Used for households and offices, for appliances and applications with light wear, e.g. radios, table and floor lamps, office machines.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### H03VV-F / Sheath color: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
29736	2 x 0.5	20	4.6 - 5.9	9.6	40.0
29739	3 G 0.5	20	4.9 - 6.3	14.4	49.0
29742	4 G 0.5	20	5.4 - 6.9	19.2	61.0
29400	2 x 0.75	19	4.9 - 6.3	14.4	49.0
29403	3 G 0.75	19	5.2 - 6.7	21.6	59.0
29406	4 G 0.75	19	5.7 - 7.3	29.0	72.0

### H03VV-F / Sheath color: white

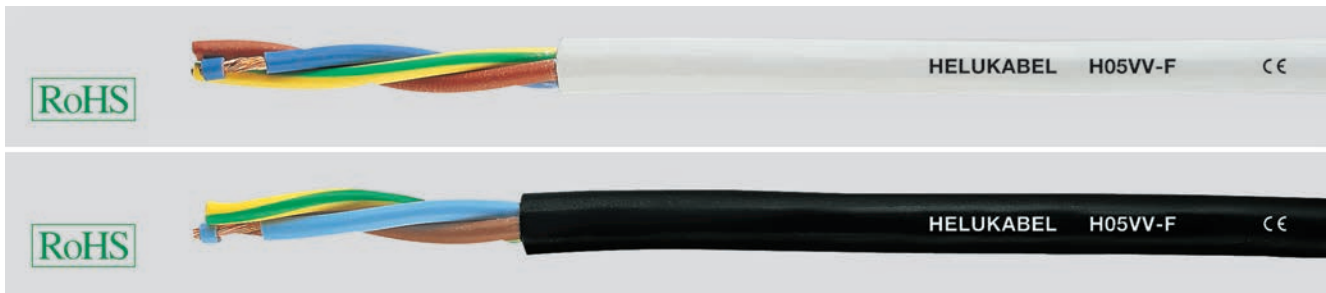
Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
29737	2 x 0.5	20	4.6 - 5.9	9.6	40.0
29740	3 G 0.5	20	4.9 - 6.3	14.4	49.0
29743	4 G 0.5	20	5.4 - 6.9	19.2	61.0
29401	2 x 0.75	19	4.9 - 6.3	14.4	49.0
29404	3 G 0.75	19	5.2 - 6.7	21.6	59.0
29407	4 G 0.75	19	5.7 - 7.3	29.0	72.0

### 03VV-F / Sheath color: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
29409	5 G 0.75	19	6.5 - 8.2	36.0	87.0
29412	6 G 0.75	19	7.1 - 9.0	43.0	98.0
29415	7 G 0.75	19	7.1 - 9.0	50.0	108.0

### 03VV-F / Sheath color: white

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
29410	5 G 0.75	19	6.5 - 8.2	36.0	87.0
29413	6 G 0.75	19	7.1 - 9.0	43.0	98.0
29416	7 G 0.75	19	7.1 - 9.0	50.0	108.0



## Technical data

- PVC control cable acc. to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11 and IEC 60227-5
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage** U<sub>0</sub>/U 300/500 V
- Max. permissible **operating voltage** in three-phase and one-phase a.c. system U<sub>0</sub>/U 318/550 V in direct current system U<sub>0</sub>/U 413/825 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MΩm x km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Radiation resistance** up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308 - up to 5 cores coloured - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour black or white

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor
- These types are also available with UL-approbation.
- The above list contains a selection of the types we carry as stock. Other sizes available on request.
- Cables with 7 cores and cross-sec. 6 mm<sup>2</sup> are only available in adaption designation 05VV-F.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

These cables are especially suited to use for the appliance with medium mechanical stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. As far as this cable is admitted to the relevant specifications of the equipment.

These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences of heat.

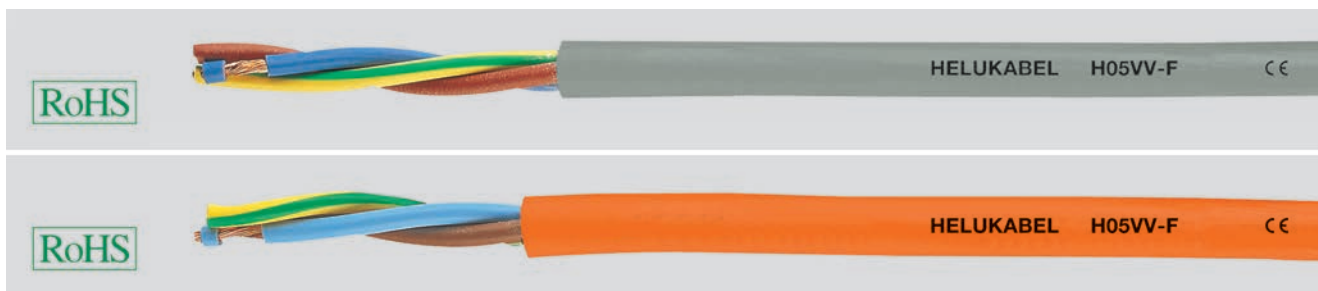
The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts. They are not qualified for use in outdoors or for use with industrial and farmer machineries, exceptionally in tailoring, etc.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
29450	2 x 0,75	black	5,7 - 7,2	14,4	50,0	19
29451	2 x 0,75	white	5,7 - 7,2	14,4	50,0	19
29452	3 G 0,75	black	6,0 - 7,6	21,6	60,0	19
29453	3 G 0,75	white	6,0 - 7,6	21,6	60,0	19
29454	4 G 0,75	black	6,6 - 8,3	29,0	73,0	19
29455	4 G 0,75	white	6,6 - 8,3	29,0	73,0	19
29456	5 G 0,75	black	7,4 - 9,3	36,0	88,0	19
29457	5 G 0,75	white	7,4 - 9,3	36,0	88,0	19
29458	2 x 1	black	5,9 - 7,5	19,0	57,0	18
29459	2 x 1	white	5,9 - 7,5	19,0	57,0	18
29460	3 G 1	black	6,3 - 8,0	29,0	73,0	18
29461	3 G 1	white	6,3 - 8,0	29,0	73,0	18
29462	4 G 1	black	7,1 - 9,0	38,0	85,0	18
29463	4 G 1	white	7,1 - 9,0	38,0	85,0	18
29464	5 G 1	black	7,8 - 9,8	48,0	105,0	18
29465	5 G 1	white	7,8 - 9,8	48,0	105,0	18
29466	7 G 1	black	9,7 - 12,1	67,0	131,0	18
29467	7 G 1	white	9,7 - 12,1	67,0	131,0	18
29484	2 x 1,5	black	6,8 - 8,6	29,0	82,0	16
29485	2 x 1,5	white	6,8 - 8,6	29,0	82,0	16
29468	3 G 1,5	black	7,4 - 9,4	43,0	95,0	16
29469	3 G 1,5	white	7,4 - 9,4	43,0	95,0	16
29470	4 G 1,5	black	8,4 - 10,5	58,0	117,0	16
29471	4 G 1,5	white	8,4 - 10,5	58,0	117,0	16
29472	5 G 1,5	black	9,3 - 11,6	72,0	144,0	16
29473	5 G 1,5	white	9,3 - 11,6	72,0	144,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
29474	7 G 1,5	black	11,3 - 14,0	101,0	183,0	16
29475	7 G 1,5	white	11,3 - 14,0	101,0	183,0	16
29478	3 G 2,5	black	9,2 - 11,4	72,0	152,0	14
29479	3 G 2,5	white	9,2 - 11,4	72,0	152,0	14
29480	4 G 2,5	black	10,1 - 12,5	96,0	192,0	14
29481	4 G 2,5	white	10,1 - 12,5	96,0	192,0	14
29482	5 G 2,5	black	11,2 - 13,9	120,0	243,0	14
29483	5 G 2,5	white	11,2 - 13,9	120,0	243,0	14
29486	7 G 2,5	black	13,8 - 17,1	168,0	316,0	14
29487	7 G 2,5	white	13,8 - 17,1	168,0	316,0	14
29825	3 G 4	black	10,5 - 13,1	115,0	235,0	12
29826	3 G 4	white	10,5 - 13,1	115,0	235,0	12
29488	4 G 4	black	11,5 - 14,3	154,0	300,0	12
29489	4 G 4	white	11,5 - 14,3	154,0	300,0	12
29490	5 G 4	black	13,0 - 16,1	192,0	361,0	12
29491	5 G 4	white	13,0 - 16,1	192,0	361,0	12
29492	4 G 6	black	12,9 - 15,9	230,0	490,0	10
29493	4 G 6	white	12,9 - 15,9	230,0	490,0	10

Dimensions and specifications may be changed without prior notice. (RA01)



## Technical data

- PVC-control cables to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11 and IEC 60227-5
- **Temperature range** flexing -5°C to +70°C fixed installation -40°C to +70°C
- **Nominal voltage**  $U_0/U$  300/500 V
- Max. permissible **operating voltage** in three-phase and one-phase a.c. system  $U_0/U$  318/550 V in direct current system  $U_0/U$  413/825 V
- **Test voltage** 2000 V
- **Breakdown voltage** min. 4000 V
- **Insulation resistance** min. 20 MΩ·km
- **Minimum bending radius** flexing 7,5x cable Ø
- **Radiation resistance** up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293-308 - up to 5 cores coloured - from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Sheath colour by request

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor
- Please complete the part number for these cables by adding the suffix for the colour required as per the list:  
0 = approx.RAL 5015 blue  
1 = approx.RAL 6018 green  
2 = approx.RAL 8003 brown  
3 = approx.RAL 1021 yellow  
4 = approx.RAL 3000 red  
5 = approx.RAL 2003 orange  
6 = approx.RAL 4005 violet  
7 = approx.RAL 7001/7032 grey  
8 = gold  
9 = dusty gold  
Further colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

These cables are especially suited to use for the appliance with medium mechanical stress in households, kitchens and offices, also for household appliances in damp and wet areas, e. g. refrigerators, washing machines, spin-driver etc. As far as this cable is admitted to the relevant specifications of the equipment. These cables are suited to be used for cooking and heating apparatus under the condition that cable does not come in direct contact with hot parts of the apparatus and no other influences of heat. The cables are suitable for fixed installation in furnitures, partition walls, decoration covering and in hollow spaces of prefabricated building parts.

They are not qualified for use in outdoors or for use with industrial and farmer machineries, exceptionally in tailoring, etc.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
3011x	2 x 0,75	5,7 - 7,2	14,4	50,0	19	3020x	2 x 1,5	6,8 - 8,6	29,0	82,0	16
3012x	3 G 0,75	6,0 - 7,6	21,6	60,0	19	3021x	3 G 1,5	7,4 - 9,4	43,0	95,0	16
3013x	4 G 0,75	6,6 - 8,3	29,0	73,0	19	3022x	4 G 1,5	8,4 - 10,5	58,0	117,0	16
3014x	5 G 0,75	7,4 - 9,3	36,0	88,0	19	3023x	5 G 1,5	9,3 - 11,6	72,0	144,0	16
3015x	2 x 1	5,9 - 7,5	19,0	57,0	18	3024x	3 G 2,5	9,2 - 11,4	72,0	152,0	14
3016x	3 G 1	6,3 - 8,0	29,0	73,0	18	3025x	4 G 2,5	10,1 - 12,5	96,0	192,0	14
3017x	4 G 1	7,1 - 9,0	38,0	85,0	18	3026x	5 G 2,5	11,2 - 13,9	120,0	243,0	14
3018x	5 G 1	7,8 - 9,8	48,0	105,0	18						

Dimensions and specifications may be changed without prior notice. (RA01)

# H05VV5-F

oil-resistant



HELUKABEL® <HAR> H05VV5-F 18G1,5 QMM / 13044 300/500 V CE

## TECHNICAL DATA

PVC control cable acc. to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, IEC 60227-75

Temperature range	flexible -5°C to +70°C fixed -40°C to +70°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	2000 V
Breakdown voltage	4000 V
Minimum bending radius	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
13122	2 x 0.5	20	5.2 - 6.6	9.7	46.0
13001	3 G 0.5	20	5.5 - 7.0	14.4	54.0
13002	4 G 0.5	20	6.2 - 7.9	19.0	65.0
13003	5 G 0.5	20	6.8 - 8.6	24.0	80.0
13004	6 G 0.5	20	7.6 - 9.6	29.0	104.0
13005	7 G 0.5	20	8.3 - 10.4	33.6	119.0
13920	8 G 0.5	20	9.2 - 11.5	38.0	134.0
13006	9 G 0.5	20	9.7 - 12.1	43.0	136.0
13921	10 G 0.5	20	10.0 - 12.2	48.0	166.0
13007	12 G 0.5	20	10.4 - 12.9	58.0	186.0
13922	14 G 0.5	20	10.9 - 13.6	67.0	215.0
13008	18 G 0.5	20	12.3 - 15.3	86.0	251.0
13009	25 G 0.5	20	14.8 - 18.2	120.0	349.0
13923	27 G 0.5	20	15.1 - 18.6	129.6	373.0
13010	34 G 0.5	20	17.2 - 21.2	163.0	480.0
13924	36 G 0.5	20	17.0 - 20.9	172.0	510.0
13125	41 G 0.5	20	18.8 - 23.1	196.0	570.0
13011	50 G 0.5	20	20.5 - 25.2	240.0	658.0
13123	2 x 0.75	19	5.7 - 7.2	14.1	52.0
13013	3 G 0.75	19	6.0 - 7.6	21.6	68.0
13014	4 G 0.75	19	6.6 - 8.3	29.0	82.0
13015	5 G 0.75	19	7.4 - 9.3	36.0	107.0
13016	6 G 0.75	19	8.1 - 10.1	43.0	132.0

- resistant to: oil
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a connection and control cable in machine and machine tool construction, assembly lines, conveyers and production lines. Even various chemical compounds cannot harm the cable. As a cable suitable for damp rooms, it is also preferred for the operation of machines in breweries, bottling plants and car washes. The cables may engage in flexible movement after installation, provided the cables are not mechanically overloaded during the movements.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
13017	7 G 0.75	19	9.0 - 11.3	50.0	145.0
13926	8 G 0.75	19	9.9 - 12.3	58.0	189.0
13018	9 G 0.75	19	10.6 - 13.2	65.0	194.0
13019	12 G 0.75	19	11.0 - 13.7	86.0	231.0
13927	14 G 0.75	19	11.7 - 14.5	101.0	274.0
13020	18 G 0.75	19	13.2 - 16.4	130.0	313.0
13021	25 G 0.75	19	15.8 - 19.5	180.0	461.0
13928	27 G 0.75	19	16.2 - 19.9	195.0	493.0
13022	34 G 0.75	19	18.0 - 22.3	245.0	614.0
13929	36 G 0.75	19	18.2 - 22.4	259.0	646.0
13126	41 G 0.75	19	20.1 - 24.6	295.0	730.0
13023	50 G 0.75	19	21.9 - 26.8	360.0	896.0
13119	2 x 1	18	5.9 - 7.5	19.0	66.0
13025	3 G 1	18	6.3 - 8.0	29.0	78.0
13026	4 G 1	18	6.9 - 8.7	38.0	104.0
13027	5 G 1	18	7.8 - 9.8	48.0	123.0
13028	6 G 1	18	8.7 - 10.8	58.0	152.0
13029	7 G 1	18	9.5 - 11.8	67.0	183.0
13931	8 G 1	18	10.5 - 13.0	77.0	220.0
13030	9 G 1	18	11.4 - 14.0	86.0	230.0
13031	12 G 1	18	11.8 - 14.6	115.0	269.0
13932	14 G 1	18	12.6 - 14.6	134.0	361.0
13032	18 G 1	18	14.0 - 17.2	173.0	400.0

# H05VV5-F

oil-resistant



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
13933	19 G 1	18	14.3 - 17.6	183.0	413.0
13033	25 G 1	18	16.9 - 20.8	240.0	546.0
13934	27 G 1	18	17.0 - 21.0	259.0	582.0
13034	34 G 1	18	19.2 - 23.6	326.0	724.0
13124	36 G 1	18	19.4 - 23.8	348.0	775.0
13935	37 G 1	18	19.4 - 23.8	355.0	785.0
13127	41 G 1	18	21.4 - 26.2	392.0	822.0
13035	50 G 1	18	23.3 - 28.5	480.0	1052.0
13120	2 x 1.5	16	6.8 - 8.6	29.0	77.0
13037	3 G 1.5	16	7.4 - 9.4	43.0	97.0
13038	4 G 1.5	16	8.2 - 10.2	58.0	128.0
13039	5 G 1.5	16	9.1 - 11.4	72.0	149.0
13040	6 G 1.5	16	10.2 - 12.6	86.0	196.0
13041	7 G 1.5	16	11.3 - 14.1	101.0	216.0
13937	8 G 1.5	16	12.2 - 15.1	115.0	271.0
13042	9 G 1.5	16	13.3 - 16.5	130.0	282.0
13043	12 G 1.5	16	13.8 - 17.0	173.0	324.0
13121	14 G 1.5	16	14.7 - 18.1	202.0	372.0
13044	18 G 1.5	16	16.5 - 20.3	259.0	485.0
13938	19 G 1.5	16	16.7 - 20.5	274.0	495.0
13045	25 G 1.5	16	19.9 - 24.4	360.0	671.0
13939	27 G 1.5	16	20.3 - 24.9	389.0	695.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
13046	32 G 1.5	16	22.2 - 27.1	461.0	820.0
13047	34 G 1.5	16	22.9 - 28.0	490.0	881.0
13940	36 G 1.5	16	23.0 - 28.2	518.0	905.0
13941	37 G 1.5	16	23.0 - 28.2	532.0	920.0
13128	41 G 1.5	16	25.2 - 30.9	590.0	1085.0
13048	50 G 1.5	16	27.7 - 33.9	720.0	1381.0
13943	2 x 2.5	14	8.4 - 10.6	48.0	110.0
13050	3 G 2.5	14	9.2 - 11.4	72.0	154.0
13051	4 G 2.5	14	10.1 - 12.5	96.0	212.0
13052	5 G 2.5	14	11.2 - 13.9	120.0	242.0
13053	7 G 2.5	14	13.6 - 16.8	168.0	350.0
13945	8 G 2.5	14	14.9 - 18.3	192.0	379.0
13054	12 G 2.5	14	16.8 - 20.6	288.0	543.0
13946	14 G 2.5	14	17.8 - 20.6	336.0	611.0
13055	18 G 2.5	14	20.2 - 24.8	432.0	787.0
13056	25 G 2.5	14	24.2 - 29.6	600.0	1175.0
13947	27 G 2.5	14	24.7 - 30.2	648.0	1280.0
13057	34 G 2.5	14	27.9 - 34.1	816.0	1529.0
13948	36 G 2.5	14	28.0 - 34.2	864.0	1791.0
13949	41 G 2.5	14	30.4 - 37.1	984.0	1905.0
13058	50 G 2.5	14	33.0 - 40.3	1200.0	2290.0

# 05VV5-F

oil-resistant



HELUKABEL® 05VV5-F 4G4 QMM / 13135 300/500 V CE

## TECHNICAL DATA

PVC connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

Temperature range	flexible -5°C to +70°C fixed -40°C to +70°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	2000 V
Breakdown voltage	4000 V
Minimum bending radius	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

Part no.	No. of cores x nominal	approx. AWG	Outer-Ø approx. mm	Cu factor per km	Approx. weight kg/km
13133	2 x 4	12	10.7	77.0	195.0
13134	3 G 4	12	11.3	115.0	230.0
13135	4 G 4	12	12.4	154.0	295.0
13136	5 G 4	12	13.9	192.0	361.0
13138	7 G 4	12	16.6	269.0	466.0
13141	12 G 4	12	20.8	461.0	810.0
13142	2 x 6	10	12.0	116.0	280.0
13143	3 G 6	10	12.9	173.0	358.0
13144	4 G 6	10	14.2	230.0	424.0
13145	5 G 6	10	15.9	288.0	525.0
13146	7 G 6	10	18.9	403.0	625.0
13148	3 G 10	8	16.3	288.0	540.0
13149	4 G 10	8	18.1	384.0	701.0
13150	5 G 10	8	20.3	480.0	858.0

## PROPERTIES

- resistant to: oil
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a connection cable in machine and machine tool construction, assembly lines, conveyers and production lines. Even various chemical compounds cannot harm the cable. As a cable suitable for damp rooms, it is also preferred for the operation of machines in breweries, bottling plants and car washes.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. of cores x nominal	approx. AWG	Outer-Ø approx. mm	Cu factor per km	Approx. weight kg/km
13151	7 G 10	8	24.3	672.0	1106.0
13153	3 G 16	6	18.8	461.0	827.0
13154	4 G 16	6	20.9	614.0	1035.0
13155	5 G 16	6	23.4	768.0	1259.0
13156	7 G 16	6	28.5	1075.0	1780.0
13159	4 G 25	4	26.3	960.0	1582.0
13160	5 G 25	4	29.5	1200.0	1852.0
13161	3 G 35	2	26.5	1008.0	1614.0
13162	4 G 35	2	29.5	1344.0	2110.0
13163	5 G 35	2	32.8	1680.0	2652.0
13164	3 G 50	1	32.2	1440.0	2560.0
13165	4 G 50	1	36.1	1920.0	2972.0
13166	5 G 50	1	40.3	2400.0	3948.0

# H05VVC4V5-K



EMC-preferred type, with inner sheath, oil resistant



## TECHNICAL DATA

PVC control cable acc. to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, IEC 60227-74

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	2000 V
<b>Breakdown voltage</b>	4000 V
<b>Coupling resistance</b>	at 30 MHz, max. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5)
- Sheath colour: grey (RAL 7001)

## ■ PROPERTIES

- resistant to: oil
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
HAR  
EAC

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a connection cable in machine and machine tool construction, assembly lines, conveyers and production lines. Even various chemical compounds cannot harm the cable. As a cable suitable for damp rooms, it is also preferred for the operation of machines in breweries, bottling plants and car washes. For interference-free data signal transmission in measurement and control technology in case electromagnetic screening is required. The cables may engage in flexible movement after installation, provided the cables are not mechanically overloaded during the movements. These shielded cables are not designed for permanent bending stresses. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
13951	2 x 0.5	20	7.7 - 9.6	41.0	92.0
13060	3 G 0.5	20	8.0 - 10.0	45.0	109.0
13061	4 G 0.5	20	8.5 - 10.7	54.0	126.0
13062	5 G 0.5	20	9.3 - 11.6	66.0	156.0
13063	6 G 0.5	20	9.9 - 12.4	73.0	176.0
13064	7 G 0.5	20	10.8 - 13.5	79.0	192.0
13952	8 G 0.5	20	11.7 - 14.5	82.0	211.0
13065	9 G 0.5	20	12.8 - 15.8	94.0	230.0
13066	12 G 0.5	20	13.3 - 16.5	137.0	280.0
13953	14 G 0.5	20	13.4 - 16.6	142.0	302.0
13067	18 G 0.5	20	15.1 - 18.6	156.0	384.0
13068	25 G 0.5	20	17.7 - 21.7	250.0	556.0
13954	27 G 0.5	20	18.0 - 22.1	255.0	599.0
13069	34 G 0.5	20	20.1 - 24.7	316.0	634.0
13955	36 G 0.5	20	20.1 - 24.7	320.0	620.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
13129	41 G 0.5	20	21.7 - 26.6	348.0	770.0
13070	50 G 0.5	20	24.0 - 29.3	407.0	970.0
13957	2 x 0.75	19	8.0 - 10.0	46.0	102.0
13072	3 G 0.75	19	8.3 - 10.4	57.0	115.0
13073	4 G 0.75	19	9.1 - 11.3	63.0	150.0
13074	5 G 0.75	19	9.7 - 12.1	76.0	173.0
13075	6 G 0.75	19	10.5 - 13.1	82.0	195.0
13076	7 G 0.75	19	11.5 - 14.3	100.0	235.0
13958	8 G 0.75	19	12.1 - 15.0	112.0	268.0
13077	9 G 0.75	19	13.3 - 16.5	130.0	285.0
13078	12 G 0.75	19	13.9 - 17.2	175.0	327.0
13959	14 G 0.75	19	14.4 - 17.7	190.0	362.0
13079	18 G 0.75	19	16.2 - 19.9	240.0	488.0
13080	25 G 0.75	19	18.7 - 22.6	306.0	654.0
13960	27 G 0.75	19	19.3 - 23.7	326.0	708.0

# H05VVC4V5-K



EMC-preferred type, with inner sheath, oil resistant

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
13081	34 G 0.75	19	21.3 - 26.2	346.0	821.0	13972	8 G 1.5	16	14.9 - 18.3	172.0	345.0
13961	36 G 0.75	19	21.3 - 26.2	358.0	899.0	13101	9 G 1.5	16	16.0 - 19.7	187.0	380.0
13130	41 G 0.75	19	23.1 - 28.3	403.0	970.0	13102	12 G 1.5	16	16.7 - 20.5	274.0	500.0
13082	50 G 0.75	19	25.3 - 31.0	470.0	1160.0	13973	14 G 1.5	16	17.6 - 21.6	294.0	560.0
13963	2 x 1	18	8.2 - 10.3	54.0	114.0	13103	18 G 1.5	16	19.6 - 24.1	386.0	707.0
13084	3 G 1	18	8.8 - 11.0	64.0	142.0	13974	19 G 1.5	16	19.6 - 24.1	394.0	723.0
13085	4 G 1	18	9.4 - 11.7	76.0	175.0	13104	25 G 1.5	16	22.7 - 27.8	531.0	950.0
13086	5 G 1	18	10.3 - 12.8	89.0	205.0	13975	27 G 1.5	16	23.4 - 28.6	546.0	1014.0
13087	6 G 1	18	11.0 - 13.6	101.0	236.0	13105	32 G 1.5	16	25.4 - 31.1	638.0	1133.0
13088	7 G 1	18	12.2 - 15.1	114.0	264.0	13106	34 G 1.5	16	26.6 - 32.5	671.0	1204.0
13964	8 G 1	18	13.1 - 16.2	130.0	301.0	13976	36 G 1.5	16	26.6 - 32.5	700.0	1261.0
13089	9 G 1	18	13.9 - 17.2	144.0	335.0	13977	37 G 1.5	16	26.6 - 32.5	720.0	1300.0
13090	12 G 1	18	14.7 - 18.1	186.0	420.0	13132	41 G 1.5	16	28.5 - 34.8	840.0	1453.0
13965	14 G 1	18	15.3 - 18.8	198.0	433.0	13107	50 G 1.5	16	31.2 - 38.0	997.0	1663.0
13091	18 G 1	18	16.9 - 20.8	284.0	561.0	13985	2 x 2.5	14	10.7 - 13.3	110.0	190.0
13966	19 G 1	18	16.9 - 20.8	307.0	584.0	13109	3 G 2.5	14	11.3 - 14.0	148.0	243.0
13092	25 G 1	18	19.8 - 24.2	387.0	766.0	13110	4 G 2.5	14	12.6 - 15.5	169.0	280.0
13967	27 G 1	18	20.2 - 24.7	410.0	822.0	13111	5 G 2.5	14	13.9 - 17.2	220.0	342.0
13093	34 G 1	18	22.5 - 27.6	500.0	996.0	13112	7 G 2.5	14	16.5 - 20.3	284.0	439.0
13968	36 G 1	18	22.5 - 27.6	511.0	1001.0	13979	8 G 2.5	14	17.7 - 21.8	314.0	489.0
13969	37 G 1	18	22.5 - 27.6	523.0	1018.0	13113	12 G 2.5	14	19.9 - 24.4	470.0	760.0
13131	41 G 1	18	24.7 - 30.2	578.0	1155.0	13980	14 G 2.5	14	20.9 - 25.6	504.0	890.0
13094	50 G 1	18	26.8 - 32.7	681.0	1300.0	13114	18 G 2.5	14	23.3 - 28.5	572.0	1052.0
13971	2 x 1.5	16	9.3 - 11.6	64.0	146.0	13115	25 G 2.5	14	27.4 - 33.5	740.0	1375.0
13096	3 G 1.5	16	9.7 - 12.1	82.0	176.0	13981	27 G 2.5	14	28.2 - 34.5	971.0	1507.0
13097	4 G 1.5	16	10.7 - 13.2	99.0	207.0	13116	34 G 2.5	14	31.5 - 38.5	1179.0	1892.0
13098	5 G 1.5	16	11.8 - 14.7	123.0	235.0	13982	36 G 2.5	14	31.5 - 38.5	1268.0	1998.0
13099	6 G 1.5	16	12.7 - 15.7	125.0	279.0	13983	41 G 2.5	14	33.5 - 40.8	1473.0	2286.0
13100	7 G 1.5	16	14.1 - 17.4	148.0	314.0	13117	50 G 2.5	14	36.5 - 44.4	1660.0	2673.0



# 05VVC4V5-K

EMC-preferred type, with inner sheath, oil-resistant



HELUKABEL® 05VVC4V5-K 4G4 QMM / 13172 300/500 V C €

## TECHNICAL DATA

PVC connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	2000 V
<b>Breakdown voltage</b>	4000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5)

Part no.	No. of cores x nominal	approx. AWG	Outer-Ø approx. mm	Cu factor per km	Approx. weight kg/km
13170	2 x 4	12	12.8	124.0	236.0
13171	3 G 4	12	13.8	178.0	361.0
13172	4 G 4	12	14.9	234.0	430.0
13173	5 G 4	12	16.3	284.0	509.0
13175	7 G 4	12	19.5	385.0	660.0
13178	12 G 4	12	23.5	581.0	979.0
13179	2 x 6	10	14.2	176.0	296.0
13180	3 G 6	10	15.2	245.0	420.0
13181	4 G 6	10	16.5	316.0	579.0
13182	5 G 6	10	18.3	442.0	719.0
13183	7 G 6	10	21.7	530.0	1031.0
13185	3 G 10	8	18.8	367.0	655.0
13186	4 G 10	8	20.7	549.0	894.0
13187	5 G 10	8	22.7	604.0	927.0

- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use as a connection cable in machine and machine tool construction, assembly lines, conveyers and production lines. Even various chemical compounds cannot harm the cable. As a cable suitable for damp rooms, it is also preferred for the operation of machines in breweries, bottling plants and car washes. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. of cores x nominal	approx. AWG	Outer-Ø approx. mm	Cu factor per km	Approx. weight kg/km
13188	7 G 10	8	27.8	820.0	1518.0
13190	3 G 16	6	23.0	653.0	993.0
13191	4 G 16	6	25.2	807.0	1340.0
13192	5 G 16	6	27.8	940.0	1626.0
13193	7 G 16	6	33.9	1345.0	2080.0
13196	4 G 25	4	30.7	1169.0	1692.0
13197	5 G 25	4	34.1	1420.0	1972.0
13198	3 G 35	2	31.0	1250.0	1704.0
13199	4 G 35	2	34.1	1680.0	2320.0
13189	5 G 35	2	37.3	2020.0	2780.0
13194	3 G 50	1	35.7	1887.0	2661.0
13195	4 G 50	1	37.7	2370.0	3194.0
13184	5 G 50	1	42.7	2880.0	4247.0

# H05BQ-F

robust, flexible in cold temperatures



HELUKABEL® H05BQ-F <HARD> CE

## TECHNICAL DATA

PUR connection cable acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

**Temperature range** flexible -40°C to +80°C  
fixed -50°C to +90°C

**Permissible operating temperature of the conductor**  
+90°C

**Nominal voltage** AC U<sub>0</sub>/U 300/500 V

**Test voltage core/core** 2000 V

**Minimum bending radius** flexible 5x Outer-Ø  
fixed 3x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-1 / DIN EN 50363-1 (compound type EI6)
- Core identification acc. to DIN VDE 0293-308, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TPU)
- Sheath colour: orange (RAL 2003)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
22050	2 x 0.75	19	5.7 - 7.4	14.4	52.0
22051	3 G 0.75	19	6.2 - 8.1	22.0	63.0
22052	4 G 0.75	19	6.8 - 8.8	29.0	80.0
22053	5 G 0.75	19	7.6 - 9.9	36.0	96.0

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant
- for outdoor use
- flexible in cold temperatures
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Robust, flexible cable for use in dry, damp and wet rooms as well as outdoors. In households and offices for connecting devices where the cable is subject to light mechanical stress, e.g. soldering irons, portable household appliances and hand-held inspection lights.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
22054	2 x 1	18	6.1 - 8.0	19.0	59.0
22055	3 G 1	18	6.5 - 8.5	29.0	71.0
22056	4 G 1	18	7.1 - 9.3	38.0	89.0
22057	5 G 1	18	8.0 - 10.3	48.0	112.0



## TECHNICAL DATA

Rubber connection cable acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

Temperature range flexible -25°C to +60°C  
fixed -30°C to +60°C

Permissible operating temperature of the conductor +60°C

Nominal voltage AC U<sub>0</sub>/U 300/500 V

Max. permissible operating voltage  
alternating current (AC) conductor/earth 318 V  
three-phase alternating current (AC) conductor/conductor 550 V  
direct current (DC) conductor/earth 413 V  
direct current (DC) conductor/conductor 825 V

Test voltage core/core 2000 V

Minimum bending radius 7.5x Outer-Ø

- Core identification acc. to DIN VDE 0293-308, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-2-1 / DIN EN 50363-2-1 (compound type EM3)
- Sheath colour: black

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

For use in dry, damp or wet rooms for connecting devices subject to low levels of mechanical stress in households, kitchens or offices (e.g. vacuum cleaners, kitchen appliances, portable household appliances, garden tools). For temporary and limited use outdoors.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-1 / DIN EN 50363-1 (compound type EI4)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
35001	2 x 0.75	19	5.7 - 7.4	14.4	60.0
35005	3 G 0.75	19	6.2 - 8.1	21.6	74.0
35009	4 G 0.75	19	6.8 - 8.8	29.0	78.0
35019	5 G 0.75	19	7.6 - 9.9	36.0	99.0
35002	2 x 1	18	6.1 - 8.0	19.0	72.0
35006	3 G 1	18	6.5 - 8.5	29.0	85.0
35010	4 G 1	18	7.1 - 9.3	38.0	98.0
35020	5 G 1	18	8.0 - 10.3	48.0	134.0
35003	2 x 1.5	16	7.6 - 9.8	29.0	98.0
35007	3 G 1.5	16	8.0 - 10.4	43.0	120.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
35011	4 G 1.5	16	9.0 - 11.6	58.0	150.0
35013	5 G 1.5	16	9.8 - 12.7	72.0	180.0
35004	2 x 2.5	14	9.0 - 11.6	48.0	145.0
35008	3 G 2.5	14	9.6 - 12.4	72.0	170.0
35012	4 G 2.5	14	10.7 - 13.8	96.0	220.0
35014	5 G 2.5	14	11.9 - 15.3	120.0	270.0
35015	3 G 4	12	11.3 - 14.5	115.0	260.0
35017	4 G 4	12	12.7 - 16.2	154.0	340.0
35016	3 G 6	10	12.8 - 16.3	173.0	361.0
35018	4 G 6	10	14.2 - 18.1	230.0	462.0

# H05SS-F / H05SST-F heat-resistant multicore cable



## Technical data

- Heat-resistant multicore cable to DIN VDE 0285-525-2-83 / DIN EN 50525-2-83
- **Temperature range** fixed installation -60°C to + 180°C (for short time +250°C)
- Permissible **operating temperature** at conductor +180°C
- **Nominal voltage** U<sub>0</sub>/U 300/500 V
- **Test voltage** 2000 V
- **Specific volume resistivity** min. 200 MΩm x km
- **Minimum bending radius** flexing 7,5x cable Ø fixed installation 4x cable Ø
- **Radiation resistance** up to 20x10<sup>6</sup> cJ/kg (up to 20 Mrad)

## Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked rubber (SiR) compound type EI2 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of cross-linked rubber compound type EM9 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black (RAL 9005) also available in other colours on request

## H05SST-F

- Construction as per H05SS-F
- Polyester braiding

## Properties

- Advantages Hardly changes of dielectric strength and the insulation resistance also at high temperatures
- These cables may be damaged by pulling over sharp-edges or by abrasion during the installation and application. To avoid this, it should be treated with great care during the installation and application of the cable.

## Tests

- Behavior in fire Test of vertical flame-propagation to VDE 0482-332-1-2, DIN EN 60332-1-2, not valid for the cables with outer polyesterbraiding (Type H05SST-F)

## Note

- G = with green-yellow conductor
- x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Multicore cables insulated and sheathed with heat resistant silicone rubber without strain relieving elements are used in high temperatures or with contact to hot-surfaces. These cables are installed for fixed installation, mechanical protected, for internal wiring of lighting fixtures in industrial application. It is recommended for the application of the apparatus which are moving during the operation with less mechanical stress.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

## H05SS-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22290	2 x 0,75	5,7 - 7,4	14,4	59,0	19
22291	3 G 0,75	6,2 - 8,1	21,6	71,0	19
22292	4 G 0,75	6,8 - 8,8	28,8	93,0	19
22293	5 G 0,75	7,6 - 9,9	36,0	113,0	19
22294	2 x 1	6,1 - 8,0	19,2	67,0	18
22295	3 G 1	6,5 - 8,5	29,0	86,0	18
22296	4 G 1	7,1 - 9,3	38,4	105,0	18
22297	5 G 1	8,0 - 10,3	48,0	129,0	18
22298	2 x 1,5	7,6 - 9,8	29,0	91,0	16
22299	3 G 1,5	8,0 - 10,4	43,0	110,0	16
22300	4 G 1,5	9,0 - 11,6	58,0	137,0	16
22301	5 G 1,5	9,8 - 12,7	72,0	165,0	16
22302	2 x 2,5	9,0 - 11,6	48,0	150,0	14
22303	3 G 2,5	9,6 - 12,4	72,0	170,0	14
22304	4 G 2,5	10,7 - 13,8	96,0	211,0	14
22305	5 G 2,5	11,9 - 15,3	120,0	255,0	14
22306	3 G 4	11,3 - 14,5	115,0	251,0	12
22307	4 G 4	12,7 - 16,2	154,0	330,0	12
22308	3 G 6	12,8 - 16,3	173,0	379,0	10
22309	4 G 6	14,2 - 18,1	230,0	494,0	10

## H05SST-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22343	2 x 0,75	6,7 - 8,4	14,4	63,0	19
22344	3 G 0,75	7,2 - 9,1	21,6	75,0	19
22345	4 G 0,75	7,8 - 9,8	28,8	99,0	19
22346	5 G 0,75	8,6 - 10,9	36,0	120,0	19
22347	2 x 1	7,1 - 9,0	19,2	71,0	18
22348	3 G 1	7,5 - 9,5	29,0	91,0	18
22349	4 G 1	8,1 - 10,3	38,4	111,0	18
22350	5 G 1	9,0 - 11,3	48,0	137,0	18
22351	2 x 1,5	8,6 - 10,8	29,0	97,0	16
22352	3 G 1,5	9,0 - 11,4	43,0	117,0	16
22353	4 G 1,5	10,0 - 12,6	58,0	145,0	16
22354	5 G 1,5	10,8 - 13,7	72,0	175,0	16
22355	2 x 2,5	10,0 - 12,6	48,0	159,0	14
22356	3 G 2,5	10,6 - 13,4	72,0	180,0	14
22357	4 G 2,5	11,7 - 14,8	96,0	224,0	14
22358	5 G 2,5	12,9 - 16,3	120,0	270,0	14
22359	3 G 4	12,3 - 15,5	115,0	266,0	12
22360	4 G 4	13,7 - 17,2	154,0	350,0	12
22361	3 G 6	13,8 - 17,3	173,0	402,0	10
22362	4 G 6	15,2 - 19,1	230,0	524,0	10

Dimensions and specifications may be changed without prior notice. (RE01)

# H05RN-F / 05RN-F

weather-resistant



HELUKABEL® <HAR> H05 RN-F 3G1 QMM CE

## TECHNICAL DATA

Rubber connection cable, H05RN-F acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21; 05RN-F in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

**Temperature range** flexible -25°C to +60°C  
fixed -30°C to +60°C

**Permissible operating temperature of the conductor** +60°C

**Nominal voltage** AC U<sub>0</sub>/U 300/500 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 318 V  
three-phase alternating current (AC) conductor/conductor 550 V  
direct current (DC) conductor/earth 413 V  
direct current (DC) conductor/conductor 825 V

**Test voltage core/core** 2000 V

**Minimum bending radius** 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-1 / DIN EN 50363-1 (compound type E14)

### H05RN-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
36001	2 x 0.75	19	5.7 - 7.4	14.4	78.0
36003	3 G 0.75	19	6.2 - 8.1	21.6	90.0
36008	4 G 0.75	19	6.8 - 8.8	29.0	94.0
36002	2 x 1	18	6.1 - 8.0	19.0	94.0
36004	3 G 1	18	6.5 - 8.5	29.0	114.0

- Core identification acc. to DIN VDE 0293-308, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-2-1 / DIN EN 50363-2-1 (compound type EM2)
- Sheath colour: black

## ■ PROPERTIES

- resistant to: weathering effects
- for outdoor use

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Connection cable for use in dry, damp and wet rooms as well as outdoors; for connecting appliances in households, kitchens or offices involving light mechanical stress (e.g. hoovers, kitchen appliances and other portable household and garden equipment)

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### 05RN-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
36005	3 G 1.5	16	8.6 - 11.0	43.0	157.0
36006	5 G 1.5	16	10.5 - 13.5	72.0	228.0



## TECHNICAL DATA

Rubber connection cable, H07RN-F acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21; 07RN-F in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

<b>Temperature range</b>	flexible -25°C to +60°C fixed -30°C to +60°C
<b>Permissible operating temperature of the conductor</b>	+60°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 450/750 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 476 V three-phase alternating current (AC) conductor/conductor 825 V direct current (DC) conductor/earth 619 V direct current (DC) conductor/conductor 1238 V
<b>Test voltage core/core</b>	2500 V
<b>Tensile stress</b>	during installation and operation, 15 N/mm <sup>2</sup>
<b>Minimum bending radius</b>	fixed 4x Outer-Ø flexible, guidance via roles 7.5x Outer-Ø flexible, winding on drums 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-1 / DIN EN 50363-1 (compound type EI4)

- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black  
2 - 5 core(s): colour coded  
7 - 37 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-2-1 / DIN EN 50363-2-1 (compound type EM2)
- Sheath colour: black

## PROPERTIES

- resistant to: oil, weathering effects
- for outdoor use

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
H07RN-F: HAR  
EAC

## APPLICATION

Heavy duty, rubber sheathed cable for use with medium mechanical stress in dry, damp, wet rooms, in agricultural premises and outdoors. Suitable for equipment in commercial operations, e.g. heating plates, hand lamps, electric tools such as drills or circular saws. For fixed installation on plaster as well as in temporary constructions. When installed in pipes or similar enclosed systems, the use of the cable is permitted up to and including 1000 V AC voltage or up to 750 V DC voltage against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### H07RN-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37019	2 x 1	18	7.7 - 10.0	19.0	98.0
37027	3 G 1	18	8.3 - 10.7	29.0	130.0
37044	4 G 1	18	9.2 - 11.9	38.0	150.0
37001	1 x 1.5	16	5.7 - 7.1	14.4	58.0
37020	2 x 1.5	16	8.5 - 11.0	29.0	135.0
37028	3 G 1.5	16	9.2 - 11.9	43.0	165.0
37080	3 x 1.5	16	9.2 - 11.9	43.0	165.0
37045	4 G 1.5	16	10.2 - 13.1	58.0	200.0
37061	5 G 1.5	16	11.2 - 14.4	72.0	240.0
37092	7 G 1.5	16	14.7 - 18.7	101.0	375.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37093	12 G 1.5	16	17.6 - 22.4	175.0	460.0
37095	24 G 1.5	16	24.3 - 30.7	346.0	1015.0
37002	1 x 2.5	14	6.3 - 7.9	24.0	71.0
37021	2 x 2.5	14	10.2 - 13.1	48.0	193.0
37029	3 G 2.5	14	10.9 - 14.0	72.0	235.0
37081	3 x 2.5	14	10.9 - 14.0	72.0	235.0
37046	4 G 2.5	14	12.1 - 15.5	96.0	290.0
37062	5 G 2.5	14	13.3 - 17.0	120.0	345.0
37079	7 G 2.5	14	17.1 - 21.8	168.0	520.0
37096	12 G 2.5	14	20.6 - 26.2	288.0	760.0

# H07RN-F / 07RN-F



oil resistant, weather-resistant

## H07RN-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37097	18 G 2.5	14	24.4 - 30.9	432.0	850.0
37099	24 G 2.5	14	28.8 - 36.4	576.0	1390.0
37003	1 x 4	12	7.2 - 9.0	38.0	100.0
37022	2 x 4	12	11.8 - 15.1	77.0	280.0
37030	3 G 4	12	12.7 - 16.2	115.0	320.0
37082	3 x 4	12	12.7 - 16.2	115.0	320.0
37047	4 G 4	12	14.0 - 17.9	154.0	395.0
37063	5 G 4	12	15.6 - 19.9	192.0	485.0
37004	1 x 6	10	7.9 - 9.8	58.0	130.0
37023	2 x 6	10	13.1 - 16.8	115.0	330.0
37031	3 G 6	10	14.1 - 18.0	173.0	420.0
37083	3 x 6	10	14.1 - 18.0	173.0	495.0
37048	4 G 6	10	15.7 - 20.0	230.0	540.0
37064	5 G 6	10	17.5 - 22.2	288.0	650.0
37005	1 x 10	8	9.5 - 11.9	96.0	230.0
37024	2 x 10	8	17.7 - 22.6	192.0	586.0
37032	3 G 10	8	19.1 - 24.2	288.0	810.0
37084	3 x 10	8	19.1 - 24.2	288.0	880.0
37049	4 G 10	8	20.9 - 26.5	384.0	950.0
37089	4 x 10	8	20.9 - 26.5	384.0	1065.0
37065	5 G 10	8	22.9 - 29.1	480.0	1200.0
37006	1 x 16	6	10.8 - 13.4	154.0	290.0
37025	2 x 16	6	20.2 - 25.7	307.0	810.0
37033	3 G 16	6	21.8 - 27.6	461.0	1050.0
37085	3 x 16	6	21.8 - 27.6	461.0	1095.0
37050	4 G 16	6	23.8 - 30.1	614.0	1260.0
37066	5 G 16	6	26.4 - 33.3	768.0	1550.0
37007	1 x 25	4	12.7 - 15.8	240.0	420.0
37026	2 x 25	4	24.3 - 30.7	480.0	1160.0
37034	3 G 25	4	26.1 - 33.0	720.0	1250.0
37086	3 x 25	4	26.1 - 33.0	720.0	1450.0
37051	4 G 25	4	28.9 - 36.6	960.0	1860.0
37090	4 x 25	4	28.9 - 36.6	960.0	1995.0
37067	5 G 25	4	32.0 - 40.4	1200.0	2250.0
37008	1 x 35	2	14.3 - 17.9	336.0	530.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37035	3 G 35	2	29.3 - 37.1	1008.0	1900.0
37087	3 x 35	2	29.3 - 37.1	1008.0	1900.0
37052	4 G 35	2	32.5 - 41.1	1344.0	2380.0
37068	5 G 35	2	35.7 - 45.1	1680.0	2750.0
37009	1 x 50	1	16.5 - 20.6	480.0	750.0
37036	3 G 50	1	34.1 - 42.9	1440.0	2600.0
37088	3 x 50	1	34.1 - 42.9	1440.0	2600.0
37053	4 G 50	1	37.7 - 47.5	1920.0	3190.0
37091	5 G 50	1	41.8 - 53.0	2400.0	3950.0
37010	1 x 70	2/0	18.6 - 23.3	672.0	960.0
37037	3 G 70	2/0	38.4 - 48.3	2016.0	3400.0
37054	4 G 70	2/0	42.7 - 54.0	2688.0	4260.0
37154	5 G 70	2/0	47.5 - 60.0	3360.0	4740.0
37011	1 x 95	3/0	20.8 - 26.0	912.0	1250.0
37038	3 G 95	3/0	43.3 - 54.0	2736.0	4450.0
37055	4 G 95	3/0	48.4 - 61.0	3648.0	5600.0
34090	5 G 95	3/0	54.0 - 67.0	4560.0	6600.0
37012	1 x 120	4/0	22.8 - 28.6	1152.0	1560.0
37039	3 G 120	4/0	47.4 - 60.0	3456.0	5180.0
37056	4 G 120	4/0	53.0 - 66.0	4608.0	6830.0
37013	1 x 150	300 kcmil	25.2 - 31.4	1440.0	1900.0
37040	3 G 150	300 kcmil	52.0 - 66.0	4320.0	6500.0
37057	4 G 150	300 kcmil	58.0 - 73.0	5760.0	8320.0
37014	1 x 185	350 kcmil	27.6 - 34.4	1776.0	2300.0
37041	3 G 185	350 kcmil	57.0 - 72.0	5328.0	7860.0
37058	4 G 185	350 kcmil	64.0 - 80.0	7104.0	9800.0
37015	1 x 240	500 kcmil	30.6 - 38.3	2304.0	2950.0
37042	3 G 240	500 kcmil	65.0 - 82.0	6912.0	10224.0
37059	4 G 240	500 kcmil	72.0 - 91.0	9216.0	12100.0
37016	1 x 300	600 kcmil	33.5 - 41.9	2880.0	3600.0
37043	3 G 300	600 kcmil	72.0 - 90.0	8640.0	12620.0
37060	4 G 300	600 kcmil	80.0 - 101.0	11520.0	15200.0
37017	1 x 400	750 kcmil	37.4 - 46.8	3840.0	4600.0
37018	1 x 500	1000 kcmil	41.3 - 52.0	4800.0	6000.0

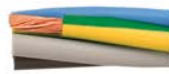
## 07RN-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
40152	7 G 1	18	13.3 - 15.3	68.0	280.0
40153	12 G 1	18	17.4 - 19.4	116.0	415.0
40154	18 G 1	18	20.3 - 22.3	173.0	575.0
40155	24 G 1	18	23.5 - 25.5	231.0	730.0
40156	36 G 1	18	27.4 - 29.4	346.0	1030.0
37094	19 G 1.5	16	20.7 - 26.3	274.0	810.0
37075	27 G 1.5	16	25.5 - 31.5	385.0	1100.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
37098	19 G 2.5	14	25.5 - 31.0	456.0	1075.0
37076	27 G 2.5	14	30.0 - 37.0	640.0	1521.0
37077	37 G 2.5	14	34.0 - 37.5	720.0	1940.0
34349	5 G 120	4/0	58.0 - 73.0	5760.0	8180.0
34127	5 G 150	300 kcmil	64.0 - 80.0	7200.0	10600.0
11017183	5 G 185	350 kcmil	71.0 - 89.0	8880.0	12060.0
11022923	5 G 240	500 kcmil	80.0 - 100.0	11520.0	15840.0

# HELUPOWER® H07RN-F LSOH

oil-resistant, implementable up to a water depth of 100 m



HELUKABEL® HELUPOWER® H07RN-F LSOH <HAR> CE

## TECHNICAL DATA

Rubber connection cable acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

**Temperature range** flexible -40°C to +90°C  
fixed -50°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Short-circuit temperature at conductor** +250°C

**Nominal voltage** AC  $U_0/U$  450/750 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 476 V  
three-phase alternating current (AC) conductor/conductor 825 V  
direct current (DC) conductor/earth 619 V  
direct current (DC) conductor/conductor 1238 V

**Test voltage core/core** 2500 V

**Minimum bending radius** flexible 6x Outer-Ø  
fixed 4x Outer-Ø

• Sheath colour: black

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects, lubricating oils, greases
- for outdoor use
- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

Halogen-free rubber sheathed cables for use with medium mechanical stress in dry, damp, wet rooms and outdoors. Can only be used in stagnant waters (also in salt water) up to a water depth of 100 m (AD8) and a water temperature of min. +5°C. When installed in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC voltage or up to 750 V DC voltage against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special rubber
- Core identification acc. to DIN VDE 0293-308, 1 core(s): black  
2 - 5 core(s): colour coded  
7 - 12 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special rubber

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30737	1 x 1.5	16	5.7 - 6.5	14.4	51.0
30738	1 x 2.5	14	6.3 - 7.2	24.0	67.0
30739	1 x 4	12	7.2 - 8.1	38.0	92.0
30740	1 x 6	10	7.9 - 8.8	58.0	121.0
30741	1 x 10	8	9.5 - 11.5	96.0	186.0
30742	1 x 16	6	10.8 - 13.0	154.0	256.0
30743	1 x 25	4	12.7 - 15.0	240.0	368.0
30744	1 x 35	2	14.3 - 16.5	336.0	485.0
30745	1 x 50	1	16.5 - 19.5	480.0	668.0
30746	1 x 70	2/0	18.6 - 22.5	672.0	905.0
30747	1 x 95	3/0	20.8 - 25.4	912.0	1180.0
30748	1 x 120	4/0	22.8 - 27.6	1152.0	1460.0
30749	1 x 150	300 kcmil	25.2 - 30.3	1440.0	1810.0
30750	1 x 185	350 kcmil	27.6 - 33.0	1776.0	2165.0
30751	1 x 240	500 kcmil	30.6 - 36.3	2304.0	2750.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30752	1 x 300	600 kcmil	33.5 - 39.0	2880.0	3271.0
30753	1 x 400	750 kcmil	37.4 - 41.5	3840.0	4286.0
30754	1 x 500	1000 kcmil	41.3 - 46.0	4800.0	5301.0
30755	1 x 630	1250 kcmil	45.5 - 50.0	6048.0	6959.0
30756	2 x 1	18	7.7 - 9.0	19.0	93.0
30757	2 x 1.5	16	8.5 - 9.9	29.0	115.0
30758	2 x 2.5	14	10.2 - 11.7	48.0	165.0
30759	2 x 4	12	11.8 - 13.4	77.0	225.0
30760	2 x 6	10	13.1 - 14.9	115.0	300.0
30761	2 x 10	8	17.7 - 20.0	192.0	550.0
30762	2 x 16	6	20.2 - 22.6	307.0	745.0
30763	2 x 25	4	24.3 - 27.0	480.0	1060.0
30764	3 G 1	18	8.3 - 9.7	29.0	120.0
30765	3 G 1.5	16	9.2 - 10.7	43.0	150.0
30766	3 G 2.5	14	10.9 - 12.5	72.0	200.0



# HELUPOWER® H07RN-F LSOH

oil-resistant, implementable up to a water depth of 100 m



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30767	3 G 4	12	12.7 - 14.4	115.0	295.0
30768	3 G 6	10	14.1 - 16.0	173.0	380.0
30769	3 G 10	8	19.1 - 21.5	288.0	675.0
30770	3 G 16	6	21.8 - 24.3	461.0	950.0
30771	3 G 25	4	26.1 - 28.8	720.0	1355.0
30772	3 G 35	2	29.3 - 32.5	1008.0	1765.0
30773	3 G 50	1	34.1 - 37.0	1440.0	2415.0
30774	3 G 70	2/0	38.4 - 40.9	2016.0	3230.0
30775	3 G 95	3/0	43.3 - 47.4	2736.0	4225.0
30776	3 G 120	4/0	47.4 - 53.2	3456.0	5190.0
30777	3 G 150	300 kcmil	52.0 - 57.5	4320.0	6415.0
30778	3 G 185	350 kcmil	57.0 - 62.7	5328.0	7700.0
30779	3 G 240	500 kcmil	65.0 - 71.4	6912.0	9458.0
30780	3 G 300	600 kcmil	72.0 - 78.3	8640.0	11635.0
30781	4 G 1	18	9.2 - 10.7	38.0	145.0
30782	4 G 1.5	16	10.2 - 11.7	58.0	175.0
30783	4 G 2.5	14	12.1 - 13.8	96.0	255.0
30784	4 G 4	12	14.0 - 15.9	154.0	355.0
30785	4 G 6	10	15.7 - 17.7	230.0	485.0
30786	4 G 10	8	20.9 - 23.6	384.0	845.0
30787	4 G 16	6	23.8 - 26.4	614.0	1185.0
30788	4 G 25	4	28.9 - 32.1	960.0	1730.0
30789	4 G 35	2	32.5 - 36.0	1344.0	2250.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
30790	4 G 50	1	37.7 - 41.5	1920.0	3085.0
30791	4 G 70	2/0	42.7 - 47.1	2688.0	4145.0
30792	4 G 95	3/0	48.4 - 54.9	3648.0	5465.0
30793	4 G 120	4/0	53.0 - 57.5	4608.0	6670.0
30794	4 G 150	300 kcmil	58.0 - 63.6	5760.0	8290.0
30795	4 G 185	350 kcmil	64.0 - 69.7	7104.0	9385.0
30796	5 G 1	18	10.2 - 11.7	48.0	180.0
30797	5 G 1.5	16	11.2 - 12.8	72.0	220.0
30798	5 G 2.5	14	13.3 - 15.1	120.0	310.0
30799	5 G 4	12	15.6 - 17.9	192.0	445.0
30800	5 G 6	10	17.5 - 20.0	288.0	605.0
30801	5 G 10	8	22.9 - 25.7	480.0	1035.0
30802	5 G 16	6	26.4 - 30.0	768.0	1465.0
30803	5 G 25	4	32.0 - 35.4	1200.0	2145.0
30804	5 G 35	2	35.7 - 39.5	1680.0	2579.0
30805	5 G 50	1	41.8 - 47.0	2400.0	3594.0
30806	5 G 70	2/0	47.5 - 52.5	3360.0	4837.0
30807	5 G 95	3/0	54.0 - 58.0	4560.0	6269.0
30808	7 G 1.5	16	14.7 - 17.5	101.0	355.0
30809	7 G 2.5	14	17.1 - 20.0	168.0	498.0
30810	12 G 1.5	16	17.6 - 21.0	173.0	505.0
30811	12 G 2.5	14	20.6 - 24.5	288.0	710.0

# H07BQ-F / 07BQ-F

robust, flexible in cold temperatures



## TECHNICAL DATA

**PUR control and connection cable, H07BQ-F acc. to DIN VDE 0285-525-2-21 / DIN EN 50525-2-21; 07BQ-F in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21**

**Temperature range** flexible -40°C to +80°C  
fixed -50°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Nominal voltage** AC U<sub>0</sub>/U 450/750 V

**Test voltage core/core** 2500 V

**Minimum bending radius** flexible 5x Outer-Ø  
fixed 3x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-1 / DIN EN 50363-1 (compound type EI6)
- Core identification acc. to DIN VDE 0293-308, 2 - 5 core(s): colour coded  
7 - 12 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: orange (RAL 2003)

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant
- for outdoor use
- flexible in cold temperatures
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals:  
H07BQ-F: HAR  
H07BQ-F: EAC

## ■ APPLICATION

For medium mechanical stress in dry, damp or wet rooms as well as outdoors in commercial and agricultural workplaces or on construction sites for connecting equipment, e.g. hand lamps, power tools such as drills, circular saws and grinders. When laid in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC or 750 V DC against earth.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### H07BQ-F without filling compound

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
22058	2 x 1.5	16	7.6 - 9.8	29.0	92.0
22059	3 G 1.5	16	8.0 - 10.4	43.0	109.0
22060	4 G 1.5	16	9.0 - 11.6	58.0	145.0
22061	5 G 1.5	16	9.8 - 12.7	72.0	169.0
22064	2 x 2.5	14	9.0 - 11.6	48.0	121.0
22065	3 G 2.5	14	9.6 - 12.4	72.0	164.0
22066	4 G 2.5	14	10.7 - 13.8	96.0	207.0
22067	5 G 2.5	14	11.9 - 16.3	120.0	262.0
22072	2 x 4	12	10.6 - 13.7	77.0	194.0
22068	3 G 4	12	11.3 - 14.5	115.0	224.0
22069	4 G 4	12	12.7 - 16.2	154.0	327.0
22080	5 G 4	12	14.1 - 17.9	192.0	415.0
22073	2 x 6	10	11.8 - 15.1	115.0	311.0
22070	3 G 6	10	12.8 - 16.3	173.0	310.0
22071	4 G 6	10	14.2 - 18.1	230.0	496.0

### H07BQ-F with filling compound

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
220958	2 x 1.5	16	7.6 - 9.8	29.0	92.0
220959	3 G 1.5	16	8.0 - 10.4	43.0	109.0
220960	4 G 1.5	16	9.0 - 11.6	58.0	145.0
220961	5 G 1.5	16	9.8 - 12.7	72.0	169.0
220964	2 x 2.5	14	9.0 - 11.6	48.0	121.0
220965	3 G 2.5	14	9.6 - 12.4	72.0	164.0
220966	4 G 2.5	14	10.7 - 13.8	96.0	207.0
220967	5 G 2.5	14	11.9 - 16.3	120.0	262.0
220972	2 x 4	12	10.6 - 13.7	77.0	194.0
220968	3 G 4	12	11.3 - 14.5	115.0	224.0
220969	4 G 4	12	12.7 - 16.2	154.0	327.0
220980	5 G 4	12	14.1 - 17.9	192.0	415.0
220973	2 x 6	10	11.8 - 15.1	115.0	311.0
220970	3 G 6	10	12.8 - 16.3	173.0	310.0
220971	4 G 6	10	14.2 - 18.1	230.0	496.0

# H07BQ-F / 07BQ-F

robust, flexible in cold temperatures



## H07BQ-F without filling compound

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
22081	5 G 6	10	15.7 - 20.0	288.0	586.0
22074	2 x 10	8	15.6 - 19.9	192.0	428.0
22076	3 G 10	8	16.8 - 21.4	288.0	640.0
22078	4 G 10	8	18.6 - 23.6	384.0	738.0
22082	5 G 10	8	20.4 - 25.9	480.0	968.0
22075	2 x 16	6	17.9 - 22.8	307.0	600.0
22077	3 G 16	6	19.5 - 24.7	461.0	758.0
22079	4 G 16	6	21.3 - 27.0	614.0	1187.0
22083	5 G 16	6	23.7 - 30.0	768.0	1475.0

## H07BQ-F with filling compound

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
220981	5 G 6	10	15.7 - 20.0	288.0	586.0
220974	2 x 10	8	15.6 - 19.9	192.0	428.0
220976	3 G 10	8	16.8 - 21.4	288.0	640.0
220978	4 G 10	8	18.6 - 23.6	384.0	738.0
220982	5 G 10	8	20.4 - 25.9	480.0	968.0
220975	2 x 16	6	17.9 - 22.8	307.0	600.0
220977	3 G 16	6	19.5 - 24.7	461.0	758.0
220979	4 G 16	6	21.3 - 27.0	614.0	1187.0
220983	5 G 16	6	23.7 - 30.0	768.0	1475.0

## 07BQ-F without filling compound

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
22062	7 G 1.5	16	12.2 - 15.1	101.0	230.0
22063	12 G 1.5	16	15.0 - 18.4	173.0	398.0
22828	4 G 25	4	26.7 - 32.6	960.0	1550.0
22829	5 G 25	4	29.6 - 36.1	1220.0	1920.0
22830	4 G 35	2	31.3 - 38.2	1344.0	2120.0
22831	5 G 35	2	34.5 - 42.0	1680.0	2600.0
22832	4 G 50	1	34.9 - 42.6	1920.0	2920.0
22833	5 G 50	1	38.6 - 47.0	2400.0	3700.0
22835	4 G 70	2/0	38.9 - 47.3	2688.0	3900.0
22836	5 G 70	2/0	43.0 - 52.3	3368.0	5020.0
22837	4 G 95	3/0	44.9 - 54.6	3648.0	5150.0
22838	5 G 95	3/0	49.7 - 60.4	4560.0	6520.0
22839	4 G 120	4/0	47.9 - 58.2	4608.0	6550.0
22840	5 G 120	4/0	53.1 - 64.5	5760.0	8050.0
22841	4 G 150	300 kcmil	53.5 - 65.0	5760.0	7950.0
22842	5 G 185	350 kcmil	65.6 - 79.6	8880.0	9350.0
22843	4 G 240	500 kcmil	68.1 - 82.6	9216.0	12200.0

## 07BQ-F with filling compound

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
220962	7 G 1.5	16	12.2 - 15.1	101.0	230.0
220963	12 G 1.5	16	15.0 - 18.4	173.0	398.0
228928	4 G 25	4	26.7 - 32.6	960.0	1550.0
228929	5 G 25	4	29.6 - 36.1	1220.0	1920.0
228930	4 G 35	2	31.3 - 38.2	1344.0	2120.0
228931	5 G 35	2	34.5 - 42.0	1680.0	2600.0
228932	4 G 50	1	34.9 - 42.6	1920.0	2920.0
228933	5 G 50	1	38.6 - 47.0	2400.0	3700.0
228935	4 G 70	2/0	38.9 - 47.3	2688.0	3900.0
228936	5 G 70	2/0	43.0 - 52.3	3368.0	5020.0
228937	4 G 95	3/0	44.9 - 54.6	3648.0	5150.0
228938	5 G 95	3/0	49.7 - 60.4	4560.0	6520.0
228939	4 G 120	4/0	47.9 - 58.2	4608.0	6550.0
228940	5 G 120	4/0	53.1 - 64.5	5760.0	8050.0
228941	4 G 150	300 kcmil	53.5 - 65.0	5760.0	7950.0
228942	5 G 185	350 kcmil	65.6 - 79.6	8880.0	9350.0
228943	4 G 240	500 kcmil	68.1 - 82.6	9216.0	12200.0

# H07ZZ-F

for heavy mechanical stress



HELUKABEL® <HAR> H07 ZZ-F 7G1,5 QMM / 37247 450/750 V CE

## TECHNICAL DATA

Control and connection cable acc. to DIN VDE 0285-525-3-21 / DIN EN 50525-3-21

Temperature range flexible -5°C to +80°C  
fixed -20°C to +80°C

Permissible operating temperature of the conductor +90°C

Nominal voltage flexible AC  $U_0/U$  450/750 V

Test voltage core/core 2500 V

Minimum bending radius flexible 8x Outer-Ø  
fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-5 / DIN EN 50363-5 (compound type EI8)
- Core identification acc. to DIN VDE 0293-308, 1 core(s): black  
2 - 5 core(s): colour coded  
6 - 36 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-6 / DIN EN 50363-6 (compound type EM8)
- Sheath colour: black

## PROPERTIES

- resistant to: ozone
- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0285-525-1 / DIN EN 50525-1 appendix B
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

For use in dry, damp and wet rooms in commercial and agricultural workshops for connecting equipment where cables are subject to heavy mechanical loads. When laid in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC or 750 V DC against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37176	1 x 1.5	16	5.7 - 7.1	14.4	58.0
37177	1 x 2.5	14	6.3 - 7.9	24.0	71.0
37178	1 x 4	12	7.2 - 9.0	38.0	100.0
37179	1 x 6	10	7.9 - 9.8	58.0	130.0
37180	1 x 10	8	9.5 - 11.9	96.0	230.0
37181	1 x 16	6	10.8 - 13.4	154.0	290.0
37182	1 x 25	4	12.7 - 15.8	240.0	420.0
37183	1 x 35	2	14.3 - 17.9	336.0	530.0
37184	1 x 50	1	16.5 - 20.6	480.0	750.0
37185	1 x 70	2/0	18.6 - 23.3	672.0	960.0
37186	1 x 95	3/0	20.8 - 26.0	912.0	1250.0
37187	1 x 120	4/0	22.8 - 28.6	1152.0	1560.0
37188	1 x 150	300 kcmil	25.2 - 31.4	1440.0	1900.0
37189	1 x 185	350 kcmil	27.6 - 34.4	1776.0	2300.0
37190	1 x 240	500 kcmil	30.6 - 38.3	2304.0	2950.0
37191	1 x 300	600 kcmil	33.5 - 41.9	2880.0	3600.0
37192	1 x 400	750 kcmil	37.4 - 46.8	3840.0	4600.0
37193	1 x 500	1000 kcmil	41.3 - 52.0	4800.0	6000.0
37194	2 x 1	18	7.7 - 10.0	19.0	95.0
37195	2 x 1.5	16	8.5 - 11.0	29.0	119.0
37196	2 x 2.5	14	10.2 - 13.1	48.0	172.0
37197	2 x 4	12	11.8 - 15.1	77.0	239.0
37198	2 x 6	10	13.1 - 16.8	115.0	319.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37199	2 x 10	8	17.7 - 22.6	192.0	572.0
37200	2 x 16	6	20.2 - 25.7	307.0	767.0
37201	2 x 25	4	24.3 - 30.7	480.0	1154.0
37202	3 G 1	18	8.3 - 10.7	29.0	115.0
37203	3 G 1.5	16	9.2 - 11.9	43.0	144.0
37204	3 G 2.5	14	10.9 - 14.0	72.0	211.0
37205	3 G 4	12	12.7 - 16.2	115.0	290.0
37206	3 G 6	10	14.1 - 18.0	173.0	391.0
37207	3 G 10	8	19.1 - 24.2	288.0	706.0
37208	3 G 16	6	21.8 - 27.6	461.0	961.0
37209	3 G 25	4	26.1 - 33.0	720.0	1438.0
37210	3 G 35	2	29.3 - 37.1	1008.0	1814.0
37211	3 G 50	1	34.1 - 42.9	1440.0	2550.0
37212	3 G 70	2/0	38.4 - 48.3	2016.0	3210.0
37213	3 G 95	3/0	43.3 - 54.0	2736.0	4423.0
37214	3 G 120	4/0	47.4 - 60.0	3456.0	5405.0
37215	3 G 150	300 kcmil	52.0 - 66.0	4320.0	6725.0
37216	3 G 185	350 kcmil	57.0 - 72.0	5328.0	8222.0
37217	3 G 240	500 kcmil	65.0 - 82.0	6192.0	10224.0
37218	3 G 300	600 kcmil	72.0 - 90.0	8640.0	12620.0
37219	4 G 1	18	9.2 - 11.9	38.0	141.0
37220	4 G 1.5	16	10.2 - 13.1	58.0	176.0
37221	4 G 2.5	14	12.1 - 15.5	96.0	235.0

# H07ZZ-F

for heavy mechanical stress



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37222	4 G 4	12	14.0 - 17.9	154.0	365.0
37223	4 G 6	10	15.7 - 20.0	230.0	501.0
37224	4 G 10	8	20.9 - 26.5	384.0	872.0
37225	4 G 16	6	23.8 - 30.1	614.0	1194.0
37226	4 G 25	4	28.9 - 36.6	960.0	1822.0
37227	4 G 35	2	32.5 - 41.1	1344.0	2307.0
37228	4 G 50	1	37.7 - 47.5	1920.0	3253.0
37229	4 G 70	2/0	42.7 - 54.0	2688.0	4130.0
37230	4 G 95	3/0	48.4 - 61.0	3648.0	5720.0
37231	4 G 120	4/0	53.0 - 66.0	4608.0	6965.0
37232	4 G 150	300 kcmil	58.0 - 73.0	5760.0	8644.0
37233	4 G 185	350 kcmil	64.0 - 80.0	7104.0	10598.0
37234	4 G 240	500 kcmil	72.0 - 91.0	9216.0	12100.0
37235	4 G 300	600 kcmil	80.0 - 101.0	11520.0	15200.0
37236	5 G 1	18	10.2 - 13.1	48.0	170.0
37237	5 G 1.5	16	11.2 - 14.4	72.0	214.0
37238	5 G 2.5	14	13.3 - 17.0	120.0	316.0
37239	5 G 4	12	15.6 - 19.9	192.0	448.0
37240	5 G 6	10	17.5 - 22.2	288.0	607.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37241	5 G 10	8	22.9 - 29.1	480.0	1075.0
37242	5 G 16	6	26.4 - 33.3	768.0	1480.0
37243	5 G 25	4	32.0 - 40.4	1200.0	2255.0
37244	6 G 1.5	16	13.4 - 17.2	84.0	287.0
37245	6 G 2.5	14	15.7 - 20.0	144.0	420.0
37246	6 G 4	12	18.2 - 23.2	230.0	583.0
37247	7 G 1.5	16	14.7 - 18.7	101.0	303.0
37248	7 G 2.5	14	17.1 - 21.8	168.0	448.0
37249	12 G 1.5	16	17.6 - 22.4	173.0	496.0
37250	12 G 2.5	14	20.6 - 26.2	288.0	724.0
37251	12 G 4	12	24.4 - 30.9	461.0	1042.0
37252	18 G 1.5	16	20.7 - 26.3	259.0	702.0
37253	18 G 2.5	14	24.4 - 30.9	432.0	1045.0
37254	18 G 4	12	28.8 - 36.4	691.0	1430.0
37255	24 G 1.5	16	24.3 - 30.7	346.0	935.0
37256	24 G 2.5	14	28.8 - 36.4	576.0	1325.0
37257	36 G 1.5	16	27.8 - 35.2	518.0	1297.0
37258	36 G 2.5	14	33.2 - 41.8	864.0	1949.0

# JZ-500 HMH / OZ-500 HMH

highly flame-retardant



HELUKABEL® JZ-500 HMH 25G1 QMM / 11252 300/500 V halogen-free CE

## TECHNICAL DATA

Control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, DIN VDE 0285-525-3-11 / DIN EN 50525-3-11

Temperature range	flexible -25°C to +70°C fixed -40°C to +70°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	4000 V
Minimum bending radius	flexible 12.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: halogen-free polymer acc. to DIN VDE 0207-363-7 / DIN EN 50363-7 (compound type T16)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer (JZ), x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-363-8 / DIN EN 50363-8 (compound type TM7)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11201	2 x 0.5	20	4.8	9.6	43.0
11202	3 G 0.5	20	5.1	14.4	50.0
11332	3 x 0.5	20	5.1	14.4	50.0
11203	4 G 0.5	20	5.5	19.0	60.0
11333	4 x 0.5	20	5.5	19.0	60.0
11204	5 G 0.5	20	6.2	24.0	71.0
11334	5 x 0.5	20	6.2	24.0	71.0
11205	7 G 0.5	20	6.7	33.6	84.0
11206	8 G 0.5	20	7.4	38.0	101.0
11207	10 G 0.5	20	8.6	48.0	121.0
11208	12 G 0.5	20	9.1	58.0	142.0
11209	16 G 0.5	20	10.0	76.0	183.0
11210	18 G 0.5	20	10.7	86.0	204.0
11211	20 G 0.5	20	11.3	96.0	227.0
11212	25 G 0.5	20	12.6	120.0	283.0
11213	30 G 0.5	20	13.5	144.0	324.0
11214	34 G 0.5	20	14.7	163.0	367.0
11215	37 G 0.5	20	14.7	178.0	381.0
11216	41 G 0.5	20	15.8	197.0	417.0
11217	42 G 0.5	20	15.8	202.0	454.0
11218	50 G 0.5	20	17.3	240.0	519.0

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## APPLICATION

Control and connection cable in tool machinery, conveyor belts, production lines, plant construction, in air-conditioning devices, in metallurgical, steel and rolling mills. For fixed installation and flexible applications with occasional, not constantly recurring free movement without forced motion, without tensile stress and for medium mechanical stress. The cable is suitable for use in dry, damp and wet locations and on plaster.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11219	61 G 0.5	20	18.5	293.0	635.0
11220	65 G 0.5	20	19.8	312.0	694.0
11221	2 x 0.75	19	5.3	14.4	47.0
11222	3 G 0.75	19	5.6	21.6	56.0
11335	3 x 0.75	19	5.6	21.6	56.0
11223	4 G 0.75	19	6.3	29.0	69.0
11336	4 x 0.75	19	6.3	29.0	69.0
11224	5 G 0.75	19	6.9	36.0	83.0
11337	5 x 0.75	19	6.9	36.0	83.0
11225	7 G 0.75	19	7.7	50.0	114.0
11338	7 x 0.75	19	7.7	50.0	114.0
11226	8 G 0.75	19	8.3	58.0	136.0
11227	10 G 0.75	19	9.8	72.0	172.0
11228	12 G 0.75	19	10.1	86.0	183.0
11229	16 G 0.75	19	11.4	115.0	241.0
11230	18 G 0.75	19	12.2	130.0	266.0
11231	20 G 0.75	19	12.8	144.0	291.0
11232	25 G 0.75	19	14.3	180.0	374.0
11233	30 G 0.75	19	15.3	216.0	450.0
11234	34 G 0.75	19	16.7	245.0	517.0
11235	37 G 0.75	19	16.7	260.0	541.0

# JZ-500 HMH / OZ-500 HMH



highly flame-retardant

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11236	41 G 0.75	19	18.2	296.0	611.0
11237	42 G 0.75	19	18.2	302.0	621.0
11238	50 G 0.75	19	19.8	360.0	742.0
11239	61 G 0.75	19	21.2	439.0	853.0
11240	65 G 0.75	19	22.6	468.0	909.0
11017876	100 G 0.75	19	27.5	720.0	1220.0
11241	2 x 1	18	5.6	19.2	63.0
11242	3 G 1	18	6.1	29.0	74.0
11339	3 x 1	18	6.1	29.0	74.0
11243	4 G 1	18	6.7	38.4	90.0
11340	4 x 1	18	6.7	38.4	90.0
11244	5 G 1	18	7.5	48.0	109.0
11007669	5 x 1	18	7.5	48.0	109.0
11245	7 G 1	18	8.1	67.0	151.0
11246	8 G 1	18	9.0	77.0	184.0
11247	10 G 1	18	10.6	96.0	224.0
11248	12 G 1	18	10.9	115.0	243.0
11249	16 G 1	18	12.3	154.0	314.0
11250	18 G 1	18	12.9	173.0	361.0
11251	20 G 1	18	13.8	192.0	387.0
11252	25 G 1	18	15.4	240.0	496.0
11253	34 G 1	18	17.9	326.0	670.0
11254	37 G 1	18	17.9	355.0	713.0
11255	41 G 1	18	19.5	394.0	784.0
11256	42 G 1	18	19.5	403.0	824.0
11257	50 G 1	18	21.3	480.0	952.0
11258	61 G 1	18	22.7	586.0	1140.0
11259	65 G 1	18	24.3	628.0	1201.0
11260	2 x 1.5	16	6.4	29.0	70.0
11261	3 G 1.5	16	6.8	43.0	94.0
11341	3 x 1.5	16	6.8	43.0	94.0
11262	4 G 1.5	16	7.6	58.0	112.0
11263	5 G 1.5	16	8.3	72.0	141.0
11264	7 G 1.5	16	9.2	101.0	191.0
11265	8 G 1.5	16	9.9	115.0	224.0
11266	10 G 1.5	16	12.0	144.0	282.0
11267	12 G 1.5	16	12.4	173.0	311.0
11268	16 G 1.5	16	13.9	230.0	392.0
11269	18 G 1.5	16	14.8	259.0	450.0
11270	20 G 1.5	16	15.6	288.0	497.0
11271	25 G 1.5	16	17.6	360.0	630.0
11272	34 G 1.5	16	20.2	490.0	842.0
11273	37 G 1.5	16	20.2	533.0	897.0
11274	50 G 1.5	16	24.2	720.0	1277.0
11275	61 G 1.5	16	25.8	878.0	1460.0
11276	65 G 1.5	16	27.8	936.0	1612.0
11277	2 x 2.5	14	7.8	48.0	118.0
11278	3 G 2.5	14	8.3	72.0	151.0
11279	4 G 2.5	14	9.3	96.0	181.0
11280	5 G 2.5	14	10.1	120.0	224.0
11281	7 G 2.5	14	11.2	168.0	316.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11282	8 G 2.5	14	12.3	192.0	370.0
11283	10 G 2.5	14	14.8	240.0	451.0
11284	12 G 2.5	14	15.3	288.0	499.0
11285	16 G 2.5	14	17.1	384.0	720.0
11286	18 G 2.5	14	18.2	432.0	769.0
11287	20 G 2.5	14	19.4	480.0	911.0
11288	25 G 2.5	14	21.6	600.0	1047.0
11289	30 G 2.5	14	23.0	720.0	1280.0
11290	2 x 4	12	9.2	77.0	199.0
11291	3 G 4	12	9.8	115.0	247.0
11292	4 G 4	12	10.9	154.0	299.0
11293	5 G 4	12	12.1	192.0	369.0
11294	7 G 4	12	13.4	269.0	463.0
11295	8 G 4	12	14.7	307.0	601.0
11296	10 G 4	12	17.6	384.0	698.0
11297	12 G 4	12	18.2	461.0	790.0
11298	16 G 4	12	20.5	614.0	1130.0
11299	18 G 4	12	21.6	691.0	1280.0
11300	2 x 6	10	11.0	115.0	266.0
11301	3 G 6	10	11.9	173.0	360.0
11302	4 G 6	10	13.2	230.0	429.0
11303	5 G 6	10	14.7	288.0	529.0
11304	7 G 6	10	16.2	403.0	631.0
11305	2 x 10	8	13.8	192.0	440.0
11306	3 G 10	8	14.9	288.0	550.0
11307	4 G 10	8	16.6	384.0	708.0
11308	5 G 10	8	18.3	480.0	862.0
11309	7 G 10	8	20.2	672.0	1124.0
11310	2 x 16	6	17.6	307.0	642.0
11311	3 G 16	6	18.7	461.0	830.0
11312	4 G 16	6	20.8	614.0	1060.0
11313	5 G 16	6	22.8	768.0	1270.0
11314	7 G 16	6	25.2	1075.0	1794.0
11315	3 G 25	4	22.7	720.0	1190.0
11316	4 G 25	4	25.2	960.0	1594.0
11317	5 G 25	4	27.9	1200.0	2014.0
11318	3 G 35	2	26.3	1008.0	1590.0
11319	4 G 35	2	29.2	1344.0	2200.0
11320	5 G 35	2	32.3	1680.0	2693.0
11321	3 G 50	1	31.0	1440.0	2571.0
11322	4 G 50	1	34.4	1920.0	3087.0
11323	5 G 50	1	38.3	2400.0	3980.0
11324	3 G 70	2/0	36.2	2016.0	3207.0
11325	4 G 70	2/0	40.3	2688.0	4077.0
11326	5 G 70	2/0	44.7	3360.0	5501.0
11327	3 G 95	3/0	41.7	2736.0	4708.0
11328	4 G 95	3/0	46.4	3648.0	5590.0
11329	5 G 95	3/0	51.5	4560.0	6972.0
11330	3 G 120	4/0	46.2	3456.0	5515.0
11331	4 G 120	4/0	51.4	4608.0	7100.0

# JZ-500 HMH-C / OZ-500 HMH-C



highly flame-retardant, EMC-preferred type



HELUKABEL® JZ-500 HMH-C 4G2,5 QMM / 11746 300/500 V halogen-free CE

## TECHNICAL DATA

Control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, DIN VDE 0285-525-3-11 / DIN EN 50525-3-11

Temperature range	flexible -25°C to +70°C fixed -40°C to +70°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	4000 V
Test voltage core/screen	2000 V
Coupling resistance	at 30 MHz, approx. 250 Ohm/km
Minimum bending radius	flexible 12.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: halogen-free polymer acc. to DIN VDE 0207-363-7 / DIN EN 50363-7 (compound type T16)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE (JZ), x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-363-8 / DIN EN 50363-8 (compound type TM7)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11656	2 x 0.5	20	5.6	35.0	46.0
11657	3 G 0.5	20	5.9	42.0	56.0
11342	3 x 0.5	20	5.9	42.0	56.0
11658	4 G 0.5	20	6.3	47.0	62.0
11343	4 x 0.5	20	6.3	47.0	62.0
11659	5 G 0.5	20	6.8	56.0	75.0
11660	7 G 0.5	20	7.3	69.0	98.0
11017510	8 x 0.5	20	8.0	80.0	115.0
11663	12 G 0.5	20	9.7	108.0	158.0
11665	18 G 0.5	20	11.3	145.0	216.0
11667	25 G 0.5	20	13.4	240.0	315.0
11678	2 x 0.75	19	6.1	40.0	60.0
11679	3 G 0.75	19	6.4	52.0	68.0
11344	3 x 0.75	19	6.4	52.0	68.0
11680	4 G 0.75	19	6.9	60.0	78.0
11345	4 x 0.75	19	6.9	60.0	78.0

- largely resistant to: oil
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## APPLICATION

Control and connection cable in tool machinery, conveyor belts, production lines, plant construction, in air-conditioning devices, in metallurgical, steel and rolling mills. For fixed installation and flexible applications with occasional, not constantly recurring free movement without forced motion, without tensile stress and for medium mechanical stress. The cable is suitable for use in dry, damp and wet locations and on plaster. The high degree of screening assures an interference-free transmission of signals and pulses. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and allround large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- cleanroom qualification tested on analog types; please note "clean-room qualification" in your order

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11681	5 G 0.75	19	7.5	71.0	95.0
11346	5 x 0.75	19	7.5	71.0	95.0
11682	7 G 0.75	19	8.3	91.0	130.0
11347	7 x 0.75	19	8.3	91.0	130.0
11685	12 G 0.75	19	10.9	142.0	203.0
11687	18 G 0.75	19	12.8	212.0	290.0
11689	25 G 0.75	19	15.1	281.0	413.0
11700	2 x 1	18	6.4	50.0	66.0
11701	3 G 1	18	6.8	60.0	80.0
11348	3 x 1	18	6.8	60.0	80.0
11702	4 G 1	18	7.3	71.0	100.0
11349	4 x 1	18	7.3	71.0	100.0
11703	5 G 1	18	8.1	88.0	130.0
11704	7 G 1	18	8.7	111.0	160.0
11707	12 G 1	18	11.6	184.0	260.0
11709	18 G 1	18	13.7	260.0	382.0



# JZ-500 HMH-C / OZ-500 HMH-C



highly flame-retardant, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11711	25 G 1	18	16.2	349.0	540.0
11722	2 x 1.5	16	7.0	63.0	88.0
11723	3 G 1.5	16	7.4	80.0	100.0
11350	3 x 1.5	16	7.4	80.0	100.0
11724	4 G 1.5	16	8.2	97.0	125.0
11725	5 G 1.5	16	8.9	119.0	158.0
11726	7 G 1.5	16	9.8	147.0	210.0
11729	12 G 1.5	16	13.2	267.0	340.0
11731	18 G 1.5	16	15.6	374.0	480.0
11733	25 G 1.5	16	18.2	526.0	702.0
11744	2 x 2.5	14	8.4	96.0	132.0
11745	3 G 2.5	14	8.9	144.0	168.0
11746	4 G 2.5	14	9.9	148.0	195.0
11747	5 G 2.5	14	10.9	181.0	222.0
11748	7 G 2.5	14	11.8	255.0	345.0
11751	12 G 2.5	14	16.1	441.0	572.0
11766	2 x 4	12	9.8	120.0	184.0
11768	3 G 4	12	10.4	174.0	238.0
11769	4 G 4	12	11.5	230.0	305.0
11770	5 G 4	12	12.7	273.0	388.0
11771	7 G 4	12	14.2	316.0	504.0
11781	2 x 6	10	11.6	173.0	270.0
11782	3 G 6	10	12.5	240.0	328.0
11783	4 G 6	10	14.1	305.0	416.0
11784	5 G 6	10	15.5	439.0	510.0
11785	7 G 6	10	17.0	505.0	670.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11786	2 x 10	8	14.6	255.0	420.0
11787	3 G 10	8	15.7	350.0	495.0
11788	4 G 10	8	17.4	535.0	785.0
11789	5 G 10	8	19.3	592.0	855.0
11790	7 G 10	8	21.2	810.0	1308.0
11793	4 G 16	6	20.4	740.0	882.0
11794	5 G 16	6	22.4	895.0	1293.0
11812	7 G 16	6	24.8	1282.0	2149.0
11795	3 G 25	4	22.3	1070.0	1432.0
11796	4 G 25	4	24.9	1140.0	1911.0
11797	5 G 25	4	27.8	1380.0	2414.0
11798	3 G 35	2	26.2	1240.0	1914.0
11799	4 G 35	2	29.1	1576.0	2542.0
11800	5 G 35	2	32.1	1930.0	3180.0
11801	3 G 50	1	30.5	1675.0	3080.0
11802	4 G 50	1	34.5	2155.0	3550.0
11803	5 G 50	1	38.3	2794.0	4753.0
11804	3 G 70	2/0	36.0	2288.0	3840.0
11805	4 G 70	2/0	40.1	3120.0	4939.0
11806	5 G 70	2/0	44.3	3705.0	6572.0
11807	3 G 95	3/0	40.9	3010.0	5651.0
11808	4 G 95	3/0	45.6	4043.0	6690.0
11809	5 G 95	3/0	50.3	5026.0	8370.0
11810	3 G 120	4/0	45.4	3812.0	6342.0
11811	4 G 120	4/0	50.0	5069.0	8453.0
11813	4 G 185	350 kcmil	62.5	8040.0	10800.0

# MEGAFLEX® 500

oil resistant, highly flame-retardant



HELUKABEL® MEGAFLEX® 500 25G1,5 QMM / 13427 300/500 V E170315 AWM  
STYLE 20939 cUL AWM I/II A/B 80°C 600 V FT1 halogen-free FRNC oil resistant CE

## TECHNICAL DATA

Control and connection cable acc. to UL-Std. 758 (AWM)  
Style 20939, in alignment with DIN VDE 0285-525-3-11 /  
DIN EN 50525-3-11

Temperature range	flexible -30°C to +80°C fixed -40°C to +80°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
Test voltage core/core	3000 V
Minimum bending radius	flexible 10x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: halogen-free polymer
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: halogen-free polymer
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects, hydrolysis, greases
- abrasion-resistant, wear-resistant
- for outdoor use
- flexible

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13344	2 x 0.5	20	5.3	9.6	43.0
13345	3 G 0.5	20	5.6	14.4	50.0
13346	3 x 0.5	20	5.6	14.4	50.0
13347	4 G 0.5	20	6.0	19.0	60.0
13348	4 x 0.5	20	6.0	19.0	60.0
13349	5 G 0.5	20	6.6	24.0	71.0
13350	5 x 0.5	20	6.6	24.0	71.0
13351	7 G 0.5	20	7.7	33.6	84.0
13352	8 G 0.5	20	8.3	38.0	101.0
13353	10 G 0.5	20	9.2	48.0	121.0
13354	12 G 0.5	20	9.5	58.0	142.0
13355	16 G 0.5	20	10.7	76.0	183.0
13356	18 G 0.5	20	11.3	86.0	204.0
13357	20 G 0.5	20	12.1	96.0	227.0
13359	25 G 0.5	20	13.5	120.0	283.0

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- toxicity of combustion gases acc. to NF X 70-100
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403
- hydrolysis-resistant acc. to DIN VDE 0349-1 / DIN EN 61234-1 / IEC 61234-1
- alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396
- certifications and approvals:  
EAC

## APPLICATION

For fixed installation or flexible applications with non-recurring free movement, without forced movement control and without tensile stress; for heavy mechanical load in dry, damp and wet rooms as well as outdoors. Can be used as a connecting and control cable in machine and plant construction, HVAC technology, warehousing and materials handling technology, shipbuilding, renewable energy sector such as wind turbine construction.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13360	30 G 0.5	20	14.5	144.0	324.0
13361	34 G 0.5	20	15.8	163.0	367.0
13362	37 G 0.5	20	15.8	178.0	381.0
13363	41 G 0.5	20	17.1	197.0	417.0
13364	42 G 0.5	20	17.1	202.0	454.0
13365	50 G 0.5	20	18.8	240.0	519.0
13366	61 G 0.5	20	20.1	293.0	635.0
13367	65 G 0.5	20	20.8	312.0	694.0
13368	2 x 0.75	19	5.5	14.4	47.0
13369	3 G 0.75	19	5.8	21.6	56.0
13370	3 x 0.75	19	5.8	21.6	56.0
13371	4 G 0.75	19	6.3	29.0	69.0
13372	4 x 0.75	19	6.3	29.0	69.0
13373	5 G 0.75	19	6.9	36.0	83.0
13374	5 x 0.75	19	6.9	36.0	83.0

# MEGAFLEX® 500

oil resistant, highly flame-retardant



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13375	7 G 0.75	19	8.0	50.0	114.0
13376	7 x 0.75	19	8.0	50.0	114.0
13377	8 G 0.75	19	8.6	58.0	136.0
13378	10 G 0.75	19	9.6	72.0	172.0
13379	12 G 0.75	19	9.9	86.0	183.0
13380	16 G 0.75	19	11.2	115.0	241.0
13381	18 G 0.75	19	12.0	130.0	266.0
13382	20 G 0.75	19	12.6	144.0	291.0
13383	25 G 0.75	19	14.3	180.0	374.0
13384	30 G 0.75	19	15.1	216.0	450.0
13385	34 G 0.75	19	16.5	245.0	517.0
13386	37 G 0.75	19	16.5	260.0	541.0
13387	41 G 0.75	19	17.9	296.0	611.0
13388	42 G 0.75	19	17.9	302.0	621.0
13389	50 G 0.75	19	19.8	360.0	742.0
13390	61 G 0.75	19	21.2	439.0	853.0
13392	65 G 0.75	19	21.8	468.0	909.0
13393	2 x 1	18	5.8	19.2	63.0
13394	3 G 1	18	6.2	29.0	74.0
13395	3 x 1	18	6.2	29.0	74.0
13396	4 G 1	18	6.7	38.4	90.0
13397	4 x 1	18	6.7	38.4	90.0
13398	5 G 1	18	7.3	48.0	109.0
13399	7 G 1	18	8.6	67.0	151.0
13400	8 G 1	18	9.5	77.0	184.0
13401	10 G 1	18	10.5	96.0	224.0
13402	12 G 1	18	10.8	115.0	243.0
13403	16 G 1	18	12.2	154.0	314.0
13404	18 G 1	18	13.0	173.0	361.0
13405	20 G 1	18	13.7	192.0	387.0
13406	25 G 1	18	15.3	240.0	496.0
13407	34 G 1	18	17.8	326.0	670.0
13408	37 G 1	18	17.8	355.0	713.0
13409	41 G 1	18	19.6	394.0	784.0
13410	42 G 1	18	19.6	403.0	824.0
13411	50 G 1	18	21.4	480.0	952.0
13412	61 G 1	18	22.9	586.0	1140.0
13413	65 G 1	18	23.7	628.0	1201.0
13414	2 x 1.5	16	6.8	29.0	70.0
13415	3 G 1.5	16	7.2	43.0	94.0
13416	3 x 1.5	16	7.2	43.0	94.0
13417	4 G 1.5	16	7.8	58.0	112.0
13418	5 G 1.5	16	8.6	72.0	141.0
13419	7 G 1.5	16	10.6	101.0	191.0
13420	8 G 1.5	16	11.4	115.0	224.0
13421	10 G 1.5	16	12.6	144.0	282.0
13422	12 G 1.5	16	13.2	173.0	311.0
13423	16 G 1.5	16	14.8	230.0	392.0
13425	18 G 1.5	16	15.8	259.0	450.0
13426	20 G 1.5	16	16.7	288.0	497.0
13427	25 G 1.5	16	18.8	360.0	630.0
13428	34 G 1.5	16	21.8	490.0	842.0
13429	37 G 1.5	16	21.8	533.0	897.0
13430	50 G 1.5	16	26.3	720.0	1277.0
13431	61 G 1.5	16	28.0	878.0	1460.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13432	65 G 1.5	16	29.0	936.0	1612.0
13433	2 x 2.5	14	8.0	48.0	118.0
13434	3 G 2.5	14	8.5	72.0	151.0
13435	4 G 2.5	14	9.5	96.0	181.0
13436	5 G 2.5	14	10.6	120.0	224.0
13437	7 G 2.5	14	13.0	168.0	316.0
13438	8 G 2.5	14	14.0	192.0	370.0
13439	10 G 2.5	14	15.6	240.0	451.0
13440	12 G 2.5	14	16.1	288.0	499.0
13441	16 G 2.5	14	18.2	384.0	720.0
13442	18 G 2.5	14	19.2	432.0	769.0
13443	20 G 2.5	14	20.5	480.0	911.0
13444	25 G 2.5	14	23.0	600.0	1047.0
13445	30 G 2.5	14	24.5	720.0	1280.0
13446	2 x 4	12	10.4	77.0	199.0
13447	3 G 4	12	11.0	115.0	247.0
13448	4 G 4	12	12.3	154.0	299.0
13449	5 G 4	12	13.7	192.0	369.0
13450	7 G 4	12	16.7	269.0	463.0
13451	8 G 4	12	18.4	307.0	601.0
13452	10 G 4	12	20.2	384.0	698.0
13453	12 G 4	12	21.1	461.0	790.0
13454	16 G 4	12	23.7	614.0	1130.0
13455	18 G 4	12	25.2	691.0	1280.0
13456	2 x 6	10	10.7	115.0	266.0
13457	3 G 6	10	11.4	173.0	360.0
13458	4 G 6	10	12.6	230.0	429.0
13459	5 G 6	10	14.3	288.0	529.0
13460	7 G 6	10	17.4	403.0	631.0
13461	2 x 10	8	14.4	192.0	440.0
13462	3 G 10	8	15.3	288.0	550.0
13463	4 G 10	8	17.2	384.0	708.0
13464	5 G 10	8	19.1	480.0	862.0
13465	7 G 10	8	23.5	672.0	1124.0
13466	2 x 16	6	16.6	307.0	642.0
13467	3 G 16	6	17.8	461.0	830.0
13468	4 G 16	6	20.0	641.0	1060.0
13469	5 G 16	6	22.4	768.0	1270.0
13470	7 G 16	6	27.2	1075.0	1794.0
13471	3 G 25	4	22.7	720.0	1190.0
13472	4 G 25	4	25.3	960.0	1594.0
13473	5 G 25	4	28.4	1200.0	2014.0
13474	3 G 35	2	25.3	1008.0	1590.0
13475	4 G 35	2	28.1	1344.0	2200.0
13476	5 G 35	2	31.7	1680.0	2693.0
13477	3 G 50	1	29.5	1440.0	2571.0
13478	4 G 50	1	33.0	1920.0	3087.0
13479	5 G 50	1	37.1	2400.0	3980.0
13480	3 G 70	2/0	35.5	2016.0	3207.0
13481	4 G 70	2/0	39.5	2688.0	4077.0
13482	5 G 70	2/0	44.5	3360.0	5501.0
13483	3 G 95	3/0	39.9	2736.0	4708.0
13484	4 G 95	3/0	44.6	3648.0	5590.0
13486	3 G 120	4/0	44.8	3456.0	5515.0

# MEGAFLEX® 500-C

oil resistant, highly flame-retardant, EMC-preferred type



HELUKABEL® MEGAFLEX® 500-C 7G1,5 QMM / 13552 300/500 V E170315 AWM  
STYLE 20939 c AWM I/II A/B 80°C 600 V FT1 halogen-free FRNC oil resistant CE

## TECHNICAL DATA

Control and connection cable acc. to UL-Std. 758 (AWM)  
Style 20939, in alignment with DIN VDE 0285-525-3-11 /  
DIN EN 50525-3-11

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/ km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: halogen-free polymer
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: halogen-free polymer
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects, hydrolysis, greases
- abrasion-resistant, wear-resistant
- for outdoor use
- flexible

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- toxicity of combustion gases acc. to NF X 70-100
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403
- hydrolysis-resistant acc. to DIN VDE 0349-1 / DIN EN 61234-1 / IEC 61234-1
- alternate bending test acc. to DIN VDE 0473-396 / DIN EN 50396
- certifications and approvals:  
EAC

## ■ APPLICATION

For fixed installation or flexible applications with non-recurring free movement, without forced movement control and without tensile stress; for heavy mechanical load in dry, damp and wet rooms as well as outdoors. Can be used as a connecting and control cable in machine and plant construction, HVAC technology, warehousing and materials handling technology, shipbuilding, renewable energy sector such as wind turbine construction. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13500	2 x 0.5	20	5.9	35.0	46.0
13501	3 G 0.5	20	6.1	42.0	56.0
13502	3 x 0.5	20	6.1	42.0	56.0
13503	4 G 0.5	20	6.6	47.0	62.0
13504	4 x 0.5	20	6.6	47.0	62.0
13505	5 G 0.5	20	7.3	56.0	75.0
13506	5 x 0.5	20	7.3	56.0	75.0
13507	7 G 0.5	20	8.4	69.0	98.0
13508	8 G 0.5	20	9.1	80.0	116.0
13509	10 G 0.5	20	9.9	94.0	135.0
13510	12 G 0.5	20	10.4	108.0	158.0
13511	16 G 0.5	20	11.4	129.0	210.0
13512	18 G 0.5	20	12.1	145.0	216.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13514	20 G 0.5	20	12.7	172.0	240.0
11021527	24 x 0.5	20	14.5	222.0	292.0
13515	25 G 0.5	20	14.5	240.0	315.0
13516	2 x 0.75	19	6.1	40.0	60.0
13517	3 G 0.75	19	6.3	52.0	68.0
13518	3 x 0.75	19	6.3	52.0	68.0
13519	4 G 0.75	19	6.8	60.0	78.0
13520	4 x 0.75	19	6.8	60.0	78.0
13521	5 G 0.75	19	7.5	71.0	95.0
13522	5 x 0.75	19	7.5	71.0	95.0
13523	7 G 0.75	19	8.7	91.0	130.0
13524	7 x 0.75	19	8.7	91.0	130.0
13525	8 G 0.75	19	9.5	110.0	145.0

# MEGAFLEX® 500-C

oil resistant, highly flame-retardant, EMC-preferred type



Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
13526	10 G 0.75	19	10.5	137.0	180.0
13527	12 G 0.75	19	10.8	142.0	203.0
13528	16 G 0.75	19	12.0	200.0	275.0
13529	18 G 0.75	19	12.6	212.0	290.0
13530	20 G 0.75	19	13.5	238.0	320.0
13531	25 G 0.75	19	15.1	281.0	413.0
13532	2 x 1	18	6.4	50.0	66.0
13533	3 G 1	18	6.7	60.0	80.0
13534	3 x 1	18	6.7	60.0	80.0
13535	4 G 1	18	7.4	71.0	100.0
13536	4 x 1	18	7.4	71.0	100.0
13537	5 G 1	18	8.0	88.0	118.0
11021565	5 x 1	18	8.0	88.0	118.0
11021357	6 x 1	18	8.6	100.0	145.0
13538	7 G 1	18	9.5	111.0	160.0
11021358	7 x 1	18	9.5	111.0	160.0
13539	8 G 1	18	10.1	127.0	197.0
13540	10 G 1	18	11.1	150.0	232.0
13541	12 G 1	18	11.7	184.0	260.0
13542	16 G 1	18	13.1	209.0	346.0
13543	18 G 1	18	13.8	260.0	382.0
13544	20 G 1	18	14.7	317.0	440.0
13545	25 G 1	18	16.3	349.0	540.0
13546	2 x 1.5	16	7.5	63.0	88.0
13547	3 G 1.5	16	7.9	80.0	100.0
13548	3 x 1.5	16	7.9	80.0	100.0
13549	4 G 1.5	16	8.5	97.0	125.0
11021528	4 x 1.5	16	8.5	97.0	125.0
13550	5 G 1.5	16	9.5	119.0	158.0
11021529	6 x 1.5	16	10.5	133.0	184.0
13552	7 G 1.5	16	11.2	147.0	210.0
11021530	7 x 1.5	16	11.2	147.0	210.0
13554	8 G 1.5	16	12.3	170.0	244.0
13556	10 G 1.5	16	13.6	193.0	315.0
13557	12 G 1.5	16	14.0	267.0	340.0
11021356	12 x 1.5	16	14.0	267.0	340.0
13558	16 G 1.5	16	15.8	315.0	424.0
13559	18 G 1.5	16	16.6	374.0	477.0

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11021590	18 x 1.5	16	16.6	374.0	477.0
13560	20 G 1.5	16	17.6	396.0	545.0
13561	25 G 1.5	16	20.0	526.0	702.0
13562	2 x 2.5	14	8.7	96.0	132.0
13563	3 G 2.5	14	9.3	144.0	168.0
11021531	3 x 2.5	14	9.3	144.0	168.0
13565	4 G 2.5	14	10.3	148.0	198.0
11021591	4 x 2.5	14	10.3	148.0	198.0
13566	5 G 2.5	14	11.3	181.0	256.0
13567	7 G 2.5	14	13.7	255.0	345.0
13568	8 G 2.5	17	14.9	285.0	390.0
13569	10 G 2.5	14	16.4	340.0	482.0
13570	12 G 2.5	14	17.1	441.0	572.0
13571	2 x 4	12	11.1	120.0	220.0
13572	3 G 4	12	11.9	174.0	251.0
13573	4 G 4	12	13.2	230.0	305.0
13574	5 G 4	12	14.7	273.0	388.0
13575	7 G 4	12	17.6	316.0	504.0
13576	2 x 6	10	11.4	173.0	270.0
13577	3 G 6	10	12.2	240.0	351.0
13578	4 G 6	10	13.6	305.0	464.0
13579	5 G 6	10	15.1	439.0	546.0
13580	7 G 6	10	18.3	505.0	670.0
13581	2 x 10	8	15.2	255.0	461.0
13582	3 G 10	8	16.2	350.0	574.0
13583	4 G 10	8	17.9	535.0	785.0
13584	5 G 10	8	20.3	592.0	914.0
13585	7 G 10	8	24.4	810.0	1308.0
13586	2 x 16	6	17.6	422.0	670.0
13587	3 G 16	6	18.8	585.0	911.0
13588	4 G 16	6	21.1	740.0	1105.0
13589	5 G 16	6	23.6	895.0	1293.0
13590	7 G 16	6	28.7	1282.0	2149.0
13591	4 G 25	4	26.7	1140.0	1911.0
13592	4 G 35	2	29.5	1576.0	2542.0
13593	4 G 50	1	34.4	2155.0	3550.0
13594	4 G 70	2/0	40.9	3120.0	4939.0

# HELUCONTROL® JZ-520-HMH LSOH GREY

CPR: B2ca, flexible control cable, halogen-free, extremely fire resistant



HELUCONTROL® JZ-520-HMH LSOH GREY

## Technical data

- halogen-free flexible control cable acc. to DIN VDE 0482-575 / DIN EN 50575
- **Temperature range**  
flexing -15°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 12,5x cable Ø  
fixed 4x cable Ø
- **CPR**  
B2ca s1a d0 a1

## Cable structure

- bare copper-conductor acc. to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- core insulation: halogen-free polymer compound type TI7 acc. to DIN VDE 0207-363-7 / DIN EN 50363-7
- core identification: black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- cores stranded in layers with optimal lay-length
- outer sheath: halogen-free polymer compound type M1 acc. to DIN VDE 0207-363-0 / DIN EN 50363-0
- outer sheath colour: grey (RAL 7001)
- with meter marking

## Properties

- the materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- reaction to fire acc. to DIN EN 50399 / DIN VDE 0482-399
- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- flame test on bunched wires acc. to DIN VDE 0482-322-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 & DIN VDE 0482-322-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- corrosiveness of combustion gases
- acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- oil resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## Note

- CPR: Cca for 2x0.5, 3G0.5, 2x0.75, 3G0.75
- G = with green-yellow conductor  
x = without green-yellow conductor (OZ)
- screened analogue type:  
HELUCONTROL® JZ-520 HMH-C LSOH GREY

## Application

Used as measuring, monitoring and control cable in: machine tooling, conveyor belt systems, production lines, plant installations, air-conditioning systems, foundries and steel mills. For use in fixed and flexible applications with little to medium mechanical stress, occasional free movement and no tensile load stress. The cable is suitable for use in dry, damp and wet locations and on plaster.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11008617	2 x 0,5	4,8	9,6	43
11008618	3 G 0,5	5,1	14,4	50
11008619	3 x 0,5	5,1	14,4	50
11008620	4 G 0,5	5,5	19,2	55
11008621	4 x 0,5	5,5	19,2	55
11008622	5 G 0,5	6,2	24,0	66
11008623	5 x 0,5	6,2	24,0	66
11008624	7 G 0,5	6,7	33,6	81
11008627	12 G 0,5	8,7	57,6	126
11008629	18 G 0,5	10,7	86,4	194
11008631	25 G 0,5	14,3	180,0	345
11008640	2 x 0,75	5,3	14,4	47
11008641	3 G 0,75	5,6	21,6	56
11008642	3 x 0,75	5,6	21,6	56
11008643	4 G 0,75	6,3	28,8	72
11008644	4 x 0,75	6,3	28,8	72
11008645	5 G 0,75	6,9	36,0	86
11008646	5 x 0,75	6,9	36,0	86
11008647	7 G 0,75	7,5	50,4	107
11008648	7 x 0,75	7,5	50,4	107

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11008651	12 G 0,75	9,8	86,4	173
11008653	18 G 0,75	12,2	129,6	266
11008655	25 G 0,75	14,3	180,0	345
11008664	2 x 1	5,6	19,2	55
11008665	3 G 1	5,9	28,8	66
11008666	3 x 1	5,9	28,8	66
11008667	4 G 1	6,6	38,4	83
11008668	4 x 1	6,6	38,4	83
11008669	5 G 1	7,3	48,0	101
11008670	7 G 1	8,1	67,2	130
11008673	12 G 1	10,4	115,0	207
11008675	18 G 1	12,9	172,8	314
11008677	25 G 1	15,4	240,0	423
11008685	2 x 1,5	6,4	28,8	74
11008686	3 G 1,5	6,8	43,2	90
11008687	3 x 1,5	6,8	43,2	90
11008688	4 G 1,5	7,4	57,6	110
11008689	5 G 1,5	8,3	72,0	136
11008690	7 G 1,5	9,2	100,8	175
11008693	12 G 1,5	11,8	172,8	276

# HELUCONTROL® JZ-520-HMH LSOH GREY

CPR: B2ca, flexible control cable, halogen-free, extremely fire resistant

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11008695	18 G 1,5	14,6	259,2	421	11008720	7 G 4	13,2	268,8	403
11008697	25 G 1,5	17,4	360,0	563	11008726	2 x 6	11,0	115,2	240
11008703	2 x 2,5	7,8	48,0	114	11008727	3 G 6	11,9	172,8	304
11008704	3 G 2,5	8,3	72,0	139	11008728	4 G 6	13,0	230,4	377
11008705	4 G 2,5	9,2	96,0	175	11008729	5 G 6	14,5	288,0	468
11008706	5 G 2,5	10,1	120,0	212	11008730	7 G 6	16,2	403,2	611
11008707	7 G 2,5	11,2	168,0	273	11008731	2 x 10	13,8	192,0	385
11008710	12 G 2,5	14,8	288,0	458	11008732	3 G 10	14,9	288,0	488
11008716	2 x 4	9,3	76,8	167	11008733	4 G 10	16,5	384,0	615
11008717	3 G 4	9,8	115,2	204	11008734	5 G 10	18,3	480,0	759
11008718	4 G 4	10,9	153,6	258	11008735	7 G 10	20,2	672,0	978
11008719	5 G 4	12,1	192,0	317					

Dimensions and specifications may be changed without prior notice.

# HELUCONTROL® JZ-520-HMH-C LSOH GREY

**CPR: B2ca, flexible control cable, halogen-free, extremely fire resistant, Cu-screened, EMC-preferred type**



HELUCONTROL® JZ-520-HMH-C LSOH GREY

## Technical data

- halogen-free flexible control cable acc. to DIN VDE 0482-575 / DIN EN 50575
- **Temperature range**  
flexing -15°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 12,5x cable Ø  
fixed 4x cable Ø
- **CPR**  
B2ca s1a d0 a1

## Cable structure

- bare copper-conductor acc. to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- core insulation: halogen-free polymer compound type T17 acc. to DIN VDE 0207-363-7 / DIN EN 50363-7
- core identification: black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- cores stranded in layers with optimal lay-length
- separating polyester tape
- screen: tinned copper braid, approx. 85% coverage
- outer sheath: halogen-free polymer compound type M1 acc. to DIN VDE 0207-363-0 / DIN EN 50363-0
- outer Sheath colour grey (RAL 7001)
- with meter marking

## Properties

- the materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

### Tests

- reaction to fire acc. to DIN EN 50399 / DIN VDE 0482-399
- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- flame test on bunched wires acc. to DIN VDE 0482-322-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 & DIN VDE 0482-322-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- oil resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

### Note

- G = with green-yellow conductor  
x = without green-yellow conductor (OZ)
- unscreened analogue type:  
HELUCONTROL® JZ-520 HMH LSOH GREY

## Application

Used as measuring, monitoring and control cable in: machine tooling, conveyor belt systems, production lines, plant installations, air-conditioning systems, foundries and steel mills. For use in fixed and flexible applications with little to medium mechanical stress, occasional free movement and no tensile load stress. The cable is suitable for use in dry, damp and wet locations and on plaster.

**EMC** = electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.



# HELUCONTROL® JZ-520-HMH-C LSOH GREY

CPR: B2ca, flexible control cable, halogen-free, extremely fire resistant, Cu-screened, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11008758	2 x 0,5	5,7	35,0	50
11008759	3 G 0,5	5,9	42,0	60
11008760	3 x 0,5	5,9	42,0	60
11008761	4 G 0,5	6,4	47,0	70
11008762	4 x 0,5	6,4	47,0	70
11008763	5 G 0,5	6,9	56,0	80
11008764	7 G 0,5	7,6	69,0	100
11008765	12 G 0,5	9,7	108,0	160
11008766	18 G 0,5	11,5	145,0	225
11008767	25 G 0,5	13,7	240,0	320
11008768	2 x 0,75	6,1	40,0	60
11008769	3 G 0,75	6,3	52,0	70
11008770	3 x 0,75	6,3	52,0	70
11008771	4 G 0,75	6,8	60,0	80
11008772	4 x 0,75	6,8	60,0	80
11008773	5 G 0,75	7,4	71,0	100
11008774	5 x 0,75	7,4	71,0	100
11008775	7 G 0,75	8,2	91,0	130
11008776	7 x 0,75	8,2	91,0	130
11008777	12 G 0,75	10,5	142,0	210
11008778	18 G 0,75	12,7	212,0	295
11008779	25 G 0,75	15,0	281,0	420
11008780	2 x 1	6,4	50,0	70
11008781	3 G 1	6,7	60,0	80
11008782	3 x 1	6,7	60,0	80
11008783	4 G 1	7,2	71,0	100
11008784	4 x 1	7,2	71,0	100
11008785	5 G 1	8,0	88,0	135
11008786	7 G 1	8,7	111,0	160
11008787	12 G 1	11,4	184,0	260
11008788	18 G 1	13,6	260,0	380

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11008789	25 G 1	16,2	349,0	535
11008790	2 x 1,5	7,0	63,0	90
11008791	3 G 1,5	7,4	80,0	100
11008792	3 x 1,5	7,4	80,0	100
11008793	4 G 1,5	8,1	97,0	125
11008794	5 G 1,5	9,0	119,0	160
11008795	7 G 1,5	9,8	147,0	210
11008796	12 G 1,5	12,8	267,0	340
11008797	18 G 1,5	15,6	374,0	480
11008798	25 G 1,5	18,4	526,0	700
11008799	2 x 2,5	8,4	96,0	135
11008800	3 G 2,5	8,8	144,0	170
11008801	4 G 2,5	9,8	148,0	195
11008802	5 G 2,5	10,8	181,0	230
11008803	7 G 2,5	11,9	255,0	340
11008804	12 G 2,5	15,8	441,0	570
11008805	2 x 4	10,0	120,0	180
11008806	3 G 4	10,6	174,0	240
11008807	4 G 4	11,6	230,0	310
11008808	5 G 4	12,8	273,0	385
11008809	7 G 4	14,2	316,0	510
11008810	2 G 6	11,7	173,0	270
11008811	3 G 6	12,5	240,0	330
11008812	4 G 6	13,8	305,0	420
11008813	5 G 6	15,4	439,0	510
11008814	7 G 6	17,0	505,0	670
11008815	2 x 10	14,4	255,0	420
11008816	3 G 10	15,6	350,0	500
11008817	4 G 10	17,2	535,0	780
11008818	5 G 10	19,1	592,0	860
11008819	7 G 10	21,2	810,0	1300

Dimensions and specifications may be changed without prior notice.

# JZ-600 HMH / OZ-600 HMH

highly flame-retardant, 0.6/1 kV



HELUKABEL® JZ-600 HMH 25G1,5 QMM / 12770 0,6/1 kV halogen-free CE

## TECHNICAL DATA

Control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, DIN VDE 0285-525-3-11 / DIN EN 50525-3-11

Temperature range	flexible -25°C to +70°C fixed -40°C to +70°C
Nominal voltage	AC U <sub>0</sub> /U 600/1000 V
Test voltage core/core	4000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: halogen-free polymer acc. to DIN VDE 0207-363-7 / DIN EN 50363-7 (compound type T16)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer (JZ),  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-363-8 / DIN EN 50363-8 (compound type TM7)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects
- largely resistant to: oil

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12723	2 x 0.5	20	6.2	9.6	57.0
12724	3 G 0.5	20	6.5	14.4	69.0
12725	3 x 0.5	20	6.5	14.4	69.0
12726	4 G 0.5	20	7.1	19.0	104.0
12727	4 x 0.5	20	7.1	19.0	104.0
12728	5 G 0.5	20	7.9	24.0	121.0
12729	5 x 0.5	20	7.9	24.0	121.0
12730	7 G 0.5	20	8.5	33.6	145.0
12731	10 G 0.5	20	11.0	48.0	186.0
12732	12 G 0.5	20	11.3	58.0	224.0
12733	18 G 0.5	20	13.5	86.0	292.0
12734	25 G 0.5	20	15.8	120.0	357.0
12735	2 x 0.75	19	6.7	14.4	68.0
12736	3 G 0.75	19	7.1	21.6	77.0
12737	3 x 0.75	19	7.1	21.6	77.0
12738	4 G 0.75	19	7.7	29.0	136.0
12739	4 x 0.75	19	7.7	29.0	136.0
12740	5 G 0.75	19	8.5	36.0	152.0
12741	5 x 0.75	19	8.5	36.0	152.0

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Control and connection cable in tool machinery, conveyor belts, production lines, plant construction, in air-conditioning devices, in metallurgical, steel and rolling mills. For fixed installation and flexible applications with occasional, not constantly recurring free movement without forced motion, without tensile stress and for medium mechanical stress. The cable is suitable for use in dry, damp and wet locations, outdoors (fixed installation) and on plaster.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12742	7 G 0.75	19	9.5	50.0	208.0
12743	10 G 0.75	19	12.2	72.0	250.0
12744	12 G 0.75	19	12.6	86.0	271.0
12745	18 G 0.75	19	14.8	130.0	387.0
12746	25 G 0.75	19	17.5	180.0	498.0
12747	2 x 1	18	7.0	19.2	82.0
12748	3 G 1	18	7.4	29.0	99.0
12749	3 x 1	18	7.4	29.0	99.0
12750	4 G 1	18	8.3	38.4	140.0
12751	4 x 1	18	8.3	38.4	140.0
12752	5 G 1	18	9.2	48.0	160.0
12753	5 x 1	18	9.2	48.0	160.0
12754	7 G 1	18	9.9	67.0	217.0
12755	10 G 1	18	12.8	96.0	271.0
12756	12 G 1	18	13.2	115.0	301.0
12757	18 G 1	18	15.7	173.0	417.0
12758	25 G 1	18	18.6	240.0	576.0
12759	2 x 1.5	16	8.2	29.0	97.0
12760	3 G 1.5	16	8.7	43.0	119.0

# JZ-600 HMH / OZ-600 HMH



highly flame-retardant, 0.6/1 kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12761	3 x 1.5	16	8.7	43.0	119.0
12762	4 G 1.5	16	9.7	58.0	148.0
12763	4 x 1.5	16	9.7	58.0	148.0
12764	5 G 1.5	16	10.7	72.0	172.0
12765	5 x 1.5	16	10.7	72.0	172.0
12766	7 G 1.5	16	11.6	101.0	243.0
12767	10 G 1.5	16	15.2	144.0	311.0
12768	12 G 1.5	16	15.7	173.0	392.0
12769	18 G 1.5	16	18.6	259.0	529.0
12770	25 G 1.5	16	22.2	360.0	741.0
11007186	34 G 1.5	16	25.6	490.0	1126.0
11007187	37 G 1.5	16	25.6	533.0	1157.0
12771	2 x 2.5	14	9.6	48.0	160.0
12772	3 G 2.5	14	10.2	72.0	177.0
12773	3 x 2.5	14	10.2	72.0	177.0
12774	4 G 2.5	14	11.3	96.0	209.0
12775	4 x 2.5	14	11.3	96.0	209.0
12776	5 G 2.5	14	12.5	120.0	272.0
12777	5 x 2.5	14	12.5	120.0	272.0
12778	7 G 2.5	14	13.8	168.0	340.0
12779	10 G 2.5	14	17.8	240.0	561.0
12780	12 G 2.5	14	18.6	288.0	799.0
12781	18 G 2.5	14	22.0	432.0	940.0
12782	25 G 2.5	14	26.2	600.0	1121.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12783	3 G 4	12	11.7	115.0	255.0
12784	4 G 4	12	13.0	154.0	319.0
12785	5 G 4	12	14.3	192.0	423.0
12786	3 G 6	10	13.2	173.0	380.0
12787	4 G 6	10	14.6	230.0	441.0
12788	5 G 6	10	16.2	288.0	657.0
12789	3 G 10	8	16.8	288.0	668.0
12790	4 G 10	8	18.6	384.0	796.0
12791	5 G 10	8	20.5	480.0	972.0
12792	3 G 16	6	20.2	461.0	832.0
12793	4 G 16	6	22.6	614.0	1122.0
12794	5 G 16	6	25.0	768.0	1604.0
12795	3 G 25	4	24.8	720.0	1457.0
12796	4 G 25	4	27.6	960.0	1611.0
12797	5 G 25	4	30.5	1200.0	2070.0
12798	3 G 35	2	27.4	1008.0	1914.0
12799	4 G 35	2	30.4	1344.0	2424.0
12800	5 G 35	2	33.6	1680.0	2970.0
12801	4 G 50	1	35.8	1920.0	3467.0
11018081	5 G 50	1	39.9	2400.0	3550.0
12802	4 G 70	2/0	40.7	2688.0	4491.0
12803	4 G 95	3/0	46.6	3648.0	6170.0
12804	4 G 120	4/0	51.4	4608.0	7618.0

# JZ-600 HMH-C

highly flame-retardant, 0.6/1 kV, EMC-preferred type



HELUKABEL® JZ-600 HMH-C 4G4 QMM / 12886 0,6/1 kV halogen-free CE

## TECHNICAL DATA

Control and connection cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, DIN VDE 0285-3-11 / DIN EN 50525-3-11

Temperature range	flexible -25°C to +70°C fixed -40°C to +70°C
Nominal voltage	AC U <sub>0</sub> /U 600/1000 V
Test voltage core/core	4000 V
Coupling resistance	at 30 MHz, approx. 250 Ohm/km
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: halogen-free polymer acc. to DIN VDE 0207-363-7 / DIN EN 50363-7 (compound type TI6)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer (JZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: halogen-free polymer
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: halogen-free polymer acc. to DIN VDE 0207-363-8 / DIN EN 50363-8 (compound type TM7)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects
- largely resistant to: oil

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Control and connection cable in tool machinery, conveyor belts, production lines, plant construction, in air-conditioning devices, in metallurgical, steel and rolling mills. For fixed installation and flexible applications with occasional, not constantly recurring free movement without forced motion, without tensile stress and for medium mechanical stress. The cable is suitable for use in dry, damp and wet locations, outdoors (fixed installation) and on plaster. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and allround large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12850	3 G 0.5	20	8.7	45.0	150.0
12851	4 G 0.5	20	9.4	54.0	170.0
12852	5 G 0.5	20	10.0	66.0	199.0
12853	7 G 0.5	20	10.8	79.0	235.0
12854	12 G 0.5	20	14.1	137.0	320.0
12855	18 G 0.5	20	16.0	156.0	428.0
12856	25 G 0.5	20	18.7	250.0	503.0
12857	3 G 0.75	19	9.4	57.0	155.0
12858	4 G 0.75	19	10.0	63.0	190.0
12859	5 G 0.75	19	10.9	76.0	228.0
12860	7 G 0.75	19	11.6	100.0	323.0
12861	12 G 0.75	19	15.3	175.0	410.0
12862	18 G 0.75	19	17.5	240.0	560.0
12863	25 G 0.75	19	20.6	306.0	730.0
12864	3 G 1	18	9.7	64.0	163.0
12865	4 G 1	18	10.6	76.0	200.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12866	5 G 1	18	11.3	89.0	239.0
12867	7 G 1	18	12.4	114.0	289.0
12868	12 G 1	18	15.9	186.0	464.0
12869	18 G 1	18	18.4	284.0	628.0
12870	25 G 1	18	21.7	387.0	855.0
12871	3 G 1.5	16	11.0	82.0	187.0
12872	4 G 1.5	16	11.8	99.0	240.0
12873	5 G 1.5	16	13.0	123.0	289.0
12874	7 G 1.5	16	14.3	148.0	383.0
12875	12 G 1.5	16	18.6	274.0	592.0
12876	18 G 1.5	16	21.7	386.0	806.0
12877	25 G 1.5	16	25.3	531.0	1241.0
11007188	30 G 1.5	16	26.8	561.0	1174.0
11007189	36 G 1.5	16	29.3	659.0	1383.0
12878	3 G 2.5	14	12.7	148.0	298.0
12879	4 G 2.5	14	14.0	169.0	345.0

# JZ-600 HMH-C



highly flame-retardant, 0.6/1 kV, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12880	5 G 2.5	14	15.2	220.0	427.0
12881	7 G 2.5	14	16.5	284.0	561.0
12882	12 G 2.5	14	21.7	470.0	857.0
12883	18 G 2.5	14	25.5	572.0	1355.0
12884	25 G 2.5	14	29.9	740.0	1995.0
12885	3 G 4	12	14.4	178.0	391.0
12886	4 G 4	12	15.7	234.0	527.0
12887	5 G 4	12	17.1	284.0	700.0
12888	3 G 6	10	16.1	245.0	629.0
12889	4 G 6	10	17.5	316.0	731.0
12890	5 G 6	10	19.1	442.0	1105.0
12891	3 G 10	8	19.9	367.0	1125.0
12892	4 G 10	8	21.7	549.0	1345.0
12893	5 G 10	8	23.9	604.0	1635.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12894	4 G 16	6	26.5	807.0	1395.0
12895	5 G 16	6	29.4	940.0	1870.0
12896	7 G 16	6	32.1	1345.0	2720.0
12897	3 G 25	4	29.2	920.0	2465.0
12898	4 G 25	4	32.3	1169.0	2750.0
12899	5 G 25	4	35.4	1420.0	3490.0
12900	3 G 35	2	31.9	1250.0	3230.0
12901	4 G 35	2	35.3	1680.0	4100.0
12902	5 G 35	2	38.7	2020.0	4950.0
12903	4 G 50	1	41.1	2370.0	5780.0
12904	4 G 70	2/0	46.0	3257.0	7480.0
12905	4 G 95	3/0	51.7	4060.0	10220.0
12906	4 G 120	4/0	56.3	5231.0	13750.0
12907	4 G 150	4/0	62.2	6794.0	15900.0

# H07ZZ-F

for heavy mechanical stress



HELUKABEL® <HAR> H07 ZZ-F 7G1,5 QMM / 37247 450/750 V CE

## TECHNICAL DATA

Control and connection cable acc. to DIN VDE 0285-525-3-21 / DIN EN 50525-3-21

Temperature range flexible -5°C to +80°C  
fixed -20°C to +80°C

Permissible operating temperature of the conductor +90°C

Nominal voltage flexible AC  $U_0/U$  450/750 V

Test voltage core/core 2500 V

Minimum bending radius flexible 8x Outer-Ø  
fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-363-5 / DIN EN 50363-5 (compound type EI8)
- Core identification acc. to DIN VDE 0293-308,
  - 1 core(s): black
  - 2 - 5 core(s): colour coded
  - 6 - 36 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,
  - G = with protective conductor GN-YE, in the outer layer,
  - x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: rubber acc. to DIN VDE 0207-363-6 / DIN EN 50363-6 (compound type EM8)
- Sheath colour: black

## PROPERTIES

- resistant to: ozone
- halogen-free

## TESTS

- halogen-free acc. to DIN VDE 0285-525-1 / DIN EN 50525-1 appendix B
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- ozone-resistant acc. to DIN VDE 0473-811-403 / DIN EN 60811-403

## APPLICATION

For use in dry, damp and wet rooms in commercial and agricultural workshops for connecting equipment where cables are subject to heavy mechanical loads. When laid in pipes or similar closed systems, the use of the cable is permitted up to and including 1000 V AC or 750 V DC against earth.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37176	1 x 1.5	16	5.7 - 7.1	14.4	58.0
37177	1 x 2.5	14	6.3 - 7.9	24.0	71.0
37178	1 x 4	12	7.2 - 9.0	38.0	100.0
37179	1 x 6	10	7.9 - 9.8	58.0	130.0
37180	1 x 10	8	9.5 - 11.9	96.0	230.0
37181	1 x 16	6	10.8 - 13.4	154.0	290.0
37182	1 x 25	4	12.7 - 15.8	240.0	420.0
37183	1 x 35	2	14.3 - 17.9	336.0	530.0
37184	1 x 50	1	16.5 - 20.6	480.0	750.0
37185	1 x 70	2/0	18.6 - 23.3	672.0	960.0
37186	1 x 95	3/0	20.8 - 26.0	912.0	1250.0
37187	1 x 120	4/0	22.8 - 28.6	1152.0	1560.0
37188	1 x 150	300 kcmil	25.2 - 31.4	1440.0	1900.0
37189	1 x 185	350 kcmil	27.6 - 34.4	1776.0	2300.0
37190	1 x 240	500 kcmil	30.6 - 38.3	2304.0	2950.0
37191	1 x 300	600 kcmil	33.5 - 41.9	2880.0	3600.0
37192	1 x 400	750 kcmil	37.4 - 46.8	3840.0	4600.0
37193	1 x 500	1000 kcmil	41.3 - 52.0	4800.0	6000.0
37194	2 x 1	18	7.7 - 10.0	19.0	95.0
37195	2 x 1.5	16	8.5 - 11.0	29.0	119.0
37196	2 x 2.5	14	10.2 - 13.1	48.0	172.0
37197	2 x 4	12	11.8 - 15.1	77.0	239.0
37198	2 x 6	10	13.1 - 16.8	115.0	319.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37199	2 x 10	8	17.7 - 22.6	192.0	572.0
37200	2 x 16	6	20.2 - 25.7	307.0	767.0
37201	2 x 25	4	24.3 - 30.7	480.0	1154.0
37202	3 G 1	18	8.3 - 10.7	29.0	115.0
37203	3 G 1.5	16	9.2 - 11.9	43.0	144.0
37204	3 G 2.5	14	10.9 - 14.0	72.0	211.0
37205	3 G 4	12	12.7 - 16.2	115.0	290.0
37206	3 G 6	10	14.1 - 18.0	173.0	391.0
37207	3 G 10	8	19.1 - 24.2	288.0	706.0
37208	3 G 16	6	21.8 - 27.6	461.0	961.0
37209	3 G 25	4	26.1 - 33.0	720.0	1438.0
37210	3 G 35	2	29.3 - 37.1	1008.0	1814.0
37211	3 G 50	1	34.1 - 42.9	1440.0	2550.0
37212	3 G 70	2/0	38.4 - 48.3	2016.0	3210.0
37213	3 G 95	3/0	43.3 - 54.0	2736.0	4423.0
37214	3 G 120	4/0	47.4 - 60.0	3456.0	5405.0
37215	3 G 150	300 kcmil	52.0 - 66.0	4320.0	6725.0
37216	3 G 185	350 kcmil	57.0 - 72.0	5328.0	8222.0
37217	3 G 240	500 kcmil	65.0 - 82.0	6192.0	10224.0
37218	3 G 300	600 kcmil	72.0 - 90.0	8640.0	12620.0
37219	4 G 1	18	9.2 - 11.9	38.0	141.0
37220	4 G 1.5	16	10.2 - 13.1	58.0	176.0
37221	4 G 2.5	14	12.1 - 15.5	96.0	235.0

# H07ZZ-F

for heavy mechanical stress



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37222	4 G 4	12	14.0 - 17.9	154.0	365.0
37223	4 G 6	10	15.7 - 20.0	230.0	501.0
37224	4 G 10	8	20.9 - 26.5	384.0	872.0
37225	4 G 16	6	23.8 - 30.1	614.0	1194.0
37226	4 G 25	4	28.9 - 36.6	960.0	1822.0
37227	4 G 35	2	32.5 - 41.1	1344.0	2307.0
37228	4 G 50	1	37.7 - 47.5	1920.0	3253.0
37229	4 G 70	2/0	42.7 - 54.0	2688.0	4130.0
37230	4 G 95	3/0	48.4 - 61.0	3648.0	5720.0
37231	4 G 120	4/0	53.0 - 66.0	4608.0	6965.0
37232	4 G 150	300 kcmil	58.0 - 73.0	5760.0	8644.0
37233	4 G 185	350 kcmil	64.0 - 80.0	7104.0	10598.0
37234	4 G 240	500 kcmil	72.0 - 91.0	9216.0	12100.0
37235	4 G 300	600 kcmil	80.0 - 101.0	11520.0	15200.0
37236	5 G 1	18	10.2 - 13.1	48.0	170.0
37237	5 G 1.5	16	11.2 - 14.4	72.0	214.0
37238	5 G 2.5	14	13.3 - 17.0	120.0	316.0
37239	5 G 4	12	15.6 - 19.9	192.0	448.0
37240	5 G 6	10	17.5 - 22.2	288.0	607.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min. - max. mm	Cu factor per km	Weight kg/km, approx.
37241	5 G 10	8	22.9 - 29.1	480.0	1075.0
37242	5 G 16	6	26.4 - 33.3	768.0	1480.0
37243	5 G 25	4	32.0 - 40.4	1200.0	2255.0
37244	6 G 1.5	16	13.4 - 17.2	84.0	287.0
37245	6 G 2.5	14	15.7 - 20.0	144.0	420.0
37246	6 G 4	12	18.2 - 23.2	230.0	583.0
37247	7 G 1.5	16	14.7 - 18.7	101.0	303.0
37248	7 G 2.5	14	17.1 - 21.8	168.0	448.0
37249	12 G 1.5	16	17.6 - 22.4	173.0	496.0
37250	12 G 2.5	14	20.6 - 26.2	288.0	724.0
37251	12 G 4	12	24.4 - 30.9	461.0	1042.0
37252	18 G 1.5	16	20.7 - 26.3	259.0	702.0
37253	18 G 2.5	14	24.4 - 30.9	432.0	1045.0
37254	18 G 4	12	28.8 - 36.4	691.0	1430.0
37255	24 G 1.5	16	24.3 - 30.7	346.0	935.0
37256	24 G 2.5	14	28.8 - 36.4	576.0	1325.0
37257	36 G 1.5	16	27.8 - 35.2	518.0	1297.0
37258	36 G 2.5	14	33.2 - 41.8	864.0	1949.0

# JZ-602 / OZ-602

90°C, 600 V



HELUKABEL® JZ-602 9A AWM 14 AWG(2,5 mm²)4C E170315 CSA AWM I/II A/B FT1 600 V 90°C CE

## TECHNICAL DATA

PVC control and connection cable acc. to UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +90°C fixed -40°C to +90°C
Nominal voltage	UL (AWM) AC 600 V
Test voltage core/core	3000 V
Breakdown voltage	6000 V
Minimum bending radius	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to UL-Std. 758 (AWM) Style 11008, CSA-Std. C22.2 No. 210
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83090	2 x 0.5	20	5.0	10.8	49.0
83091	3 G 0.5	20	5.3	16.1	58.0
83092	4 G 0.5	20	5.7	21.5	69.0
83093	5 G 0.5	20	6.2	27.0	84.0
83094	7 G 0.5	20	6.7	37.6	123.0
83100	8 G 0.5	20	7.2	43.0	140.0
83101	9 G 0.5	20	7.8	48.4	177.0
83095	12 G 0.5	20	8.8	64.5	192.0
83096	18 G 0.5	20	10.5	97.0	256.0
83097	25 G 0.5	20	12.4	134.5	358.0
83098	34 G 0.5	20	14.3	182.8	487.0
83099	41 G 0.5	20	15.4	220.4	580.0
83080	2 x 1	18	5.8	19.2	53.0
83081	3 G 1	18	6.1	27.0	61.0
83565	3 x 1	18	6.1	27.0	61.0
83082	4 G 1	18	6.6	38.4	74.0
83083	5 G 1	18	7.3	48.0	90.0
83084	7 G 1	18	7.9	67.0	130.0
83102	8 G 1	18	8.8	76.8	144.0
83103	9 G 1	18	9.4	86.4	180.0
83085	12 G 1	18	10.6	115.2	198.0
83086	18 G 1	18	12.7	173.0	274.0
83087	25 G 1	18	15.0	240.0	384.0
83088	34 G 1	18	17.5	326.0	494.0
83089	41 G 1	18	18.8	394.0	508.0
83070	2 x 1.5	16	6.4	28.8	73.0
83071	3 G 1.5	16	6.8	44.0	94.0

- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

UL/CSA approved, flexible control cable (up to 600 V) for machine, tool and plant construction. Suitable for medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use.

## NOTES

- the conductor is metrically (mm²) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83072	4 G 1.5	16	7.4	58.0	117.0
83073	5 G 1.5	16	8.1	72.0	140.0
83074	7 G 1.5	16	9.0	101.0	186.0
83104	9 G 1.5	16	10.7	129.7	244.0
83075	12 G 1.5	16	11.8	173.0	319.0
83076	18 G 1.5	16	14.4	260.0	451.0
83077	25 G 1.5	16	17.0	360.0	625.0
83078	34 G 1.5	16	19.8	490.0	840.0
83079	41 G 1.5	16	21.5	590.0	1032.0
83060	2 x 2.5	14	7.6	48.0	115.0
83061	3 G 2.5	14	8.1	72.0	143.0
83062	4 G 2.5	14	9.0	96.0	185.0
83063	5 G 2.5	14	9.9	120.0	221.0
83064	7 G 2.5	14	11.0	168.0	293.0
83065	9 G 2.5	14	13.1	216.0	429.0
83066	12 G 2.5	14	14.7	288.0	563.0
83067	18 G 2.5	14	17.8	432.0	854.0
83068	19 G 2.5	14	17.8	456.0	914.0
83069	25 G 2.5	14	21.2	600.0	1188.0
83051	3 G 4	12	9.5	115.0	232.0
83052	4 G 4	12	10.6	154.0	298.0
83053	5 G 4	12	11.7	192.0	358.0
83054	7 G 4	12	13.0	269.0	460.0
83041	3 G 6	10	11.5	173.0	360.0
83042	4 G 6	10	12.8	231.0	402.0
83043	5 G 6	10	14.3	288.0	484.0
83044	7 G 6	10	15.8	403.0	630.0



# JZ-602 / OZ-602

90°C, 600 V



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83031	3 G 10	8	14.9	288.0	535.0
83032	4 G 10	8	16.5	384.0	653.0
83033	5 G 10	8	18.5	480.0	786.0
83034	7 G 10	8	20.4	672.0	1100.0
83020	2 x 16	6	17.6	307.0	640.0
83021	3 G 16	6	18.6	461.0	810.0
83022	4 G 16	6	20.5	615.0	1045.0
83023	5 G 16	6	23.0	768.0	1260.0
83024	7 G 16	6	25.2	1075.0	1760.0
83011	3 G 25	4	23.1	720.0	1180.0
83012	4 G 25	4	25.4	960.0	1507.0
83013	5 G 25	4	28.4	1200.0	1858.0
83014	7 G 25	4	31.4	1680.0	2830.0
83001	3 G 35	2	25.4	1008.0	1590.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83002	4 G 35	2	28.2	1344.0	2123.0
83003	5 G 35	2	31.5	1680.0	2612.0
83004	3 G 50	1	30.1	1440.0	2652.0
83005	4 G 50	1	33.4	1920.0	3058.0
83006	5 G 50	1	37.3	2400.0	4093.0
83007	3 G 70	2/0	34.2	2016.0	3307.0
83008	4 G 70	2/0	37.9	2688.0	4254.0
83009	5 G 70	2/0	42.4	3360.0	5661.0
83010	3 G 95	3/0	38.6	2736.0	4867.0
83015	4 G 95	3/0	42.7	3648.0	5762.0
83016	5 G 95	3/0	47.8	4560.0	7208.0
83017	3 G 120	4/0	42.9	3456.0	5580.0
83018	4 G 120	4/0	47.6	4608.0	7280.0
83019	5 G 120	4/0	53.1	5760.0	8692.0

# JZ-602-CY / OZ-602-CY

90°C, 600 V, EMC-preferred type



## TECHNICAL DATA

PVC control and connection cable acc. to UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -10°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to UL-Std. 758 (AWM) Style 11008, CSA-Std. C22.2 No. 210
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: PVC acc. to UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210

- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

UL/CSA approved, flexible control cable (up to 600 V) for machine, tool and plant construction. Suitable for medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. Designed for export-oriented mechanical engineers, specifically in the USA and Canada. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82990	2 x 0.5	20	7.0	35.0	93.0
82991	3 G 0.5	20	7.3	42.0	124.0
82992	4 G 0.5	20	7.7	47.0	133.0
82993	5 G 0.5	20	8.2	56.0	153.0
82994	7 G 0.5	20	8.9	69.0	191.0
82995	9 G 0.5	20	10.0	87.0	243.0
82996	12 G 0.5	20	11.0	108.0	322.0
82997	18 G 0.5	20	13.1	145.0	374.0
82998	25 G 0.5	20	15.0	240.0	436.0
82999	34 G 0.5	20	16.9	312.0	560.0
83000	41 G 0.5	20	18.4	348.0	663.0
82979	2 x 1	18	7.8	50.0	107.0
82980	3 G 1	18	8.2	60.0	130.0
82981	4 G 1	18	8.9	71.0	155.0
82982	5 G 1	18	9.5	88.0	181.0
82983	7 G 1	18	10.1	111.0	209.0
82984	9 G 1	18	11.8	139.0	321.0
82985	12 G 1	18	13.3	184.0	341.0
82986	18 G 1	18	15.3	260.0	473.0
82987	25 G 1	18	18.0	349.0	650.0
82988	34 G 1	18	20.5	486.0	781.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82989	41 G 1	18	22.0	531.0	892.0
82968	2 x 1.5	16	8.4	63.0	136.0
82969	3 G 1.5	16	9.0	80.0	165.0
82970	4 G 1.5	16	9.6	97.0	192.0
82971	5 G 1.5	16	10.5	119.0	224.0
82972	7 G 1.5	16	11.2	147.0	273.0
82973	9 G 1.5	16	13.3	182.0	340.0
82974	12 G 1.5	16	14.7	267.0	461.0
82975	18 G 1.5	16	17.0	374.0	674.0
82976	25 G 1.5	16	20.2	526.0	950.0
82977	34 G 1.5	16	23.0	629.0	1203.0
82978	41 G 1.5	16	25.1	801.0	1588.0
82959	2 x 2.5	14	9.8	96.0	173.0
82960	3 G 2.5	14	10.5	144.0	220.0
82961	4 G 2.5	14	11.2	148.0	270.0
82962	5 G 2.5	14	12.5	181.0	329.0
82963	7 G 2.5	14	13.6	255.0	428.0
82964	9 G 2.5	14	15.9	309.0	580.0
82965	12 G 2.5	14	17.5	441.0	761.0
82966	18 G 2.5	14	21.0	570.0	1140.0
82967	25 G 2.5	14	24.6	738.0	1551.0

# JZ-602-CY / OZ-602-CY

90°C, 600 V, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82954	2 x 4	12	11.2	120.0	209.0
82955	3 G 4	12	12.0	174.0	310.0
82956	4 G 4	12	13.3	230.0	456.0
82957	5 G 4	12	14.6	273.0	532.0
82958	7 G 4	12	15.8	316.0	737.0
82949	2 x 6	10	13.4	173.0	318.0
82950	3 G 6	10	14.3	240.0	411.0
82951	4 G 6	10	15.4	305.0	572.0
82952	5 G 6	10	16.9	439.0	732.0
82953	7 G 6	10	18.6	505.0	961.0
82945	3 G 10	8	17.7	350.0	741.0
82946	4 G 10	8	19.8	535.0	988.0
82947	5 G 10	8	21.7	592.0	1202.0
82948	7 G 10	8	23.6	810.0	1743.0
82941	3 G 16	6	21.9	585.0	1088.0
82942	4 G 16	6	24.0	740.0	1662.0
82943	5 G 16	6	26.6	895.0	2021.0
82944	7 G 16	6	28.8	1282.0	2720.0
82937	3 G 25	4	26.7	1070.0	1947.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82938	4 G 25	4	29.1	1140.0	2591.0
82939	5 G 25	4	32.3	1380.0	3197.0
82940	7 G 25	4	35.2	1870.0	4530.0
82934	3 G 35	2	29.1	1240.0	2701.0
82935	4 G 35	2	32.1	1576.0	3277.0
82936	5 G 35	2	35.4	1930.0	4530.0
82488	3 G 50	1	34.0	1675.0	2870.0
82780	4 G 50	1	37.4	2155.0	3960.0
82781	5 G 50	1	41.3	2794.0	4371.0
82782	3 G 70	2/0	38.4	2288.0	3647.0
82783	4 G 70	2/0	42.3	3120.0	4882.0
82914	5 G 70	2/0	46.7	3705.0	5876.0
82915	3 G 95	3/0	42.9	3010.0	4751.0
82916	4 G 95	3/0	47.2	4043.0	6368.0
82917	5 G 95	3/0	52.4	5026.0	7843.0
82918	3 G 120	4/0	47.3	3812.0	5899.0
82919	4 G 120	4/0	52.2	5069.0	8010.0
82920	5 G 120	4/0	57.9	5877.0	9205.0



HELUKABEL JZ-603 <VDE><HAR> H05VV5-F 4 G 0,5 QMM AWM STYLE 2587 20AWG 4C VW-1 LL113926 CSA  
AWM I/II A/B 90°C 600V FT1 300/500V



### Technical data

- Special PVC control cable with oil resistant outer sheath to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51 and UL Style 2587
- **Temperature range**  
HAR  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C  
UL/CSA  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
HAR U<sub>0</sub>/U 300/500 V  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

### Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of oil resistant special PVC compound type TM5 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: grey (RAL 7001)
- With meter marking

### Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Oil resistant to DIN VDE 0473-811-404 / DIN EN 60811-404, UL-Std.1581 part 50.182

### Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**JZ-603-CY**

### Application

UL-CSA-HAR approved cables offer any company exporting anywhere in the world, primarily designed for exporters, used in machine tools, control systems, assembly lines and other industrial equipment. These cables are suitable for flexible use for mechanical stresses with free movements in dry, moist and wet rooms but not for open air.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
83704	2 x 0,5	20	5,8	9,6	52,0
83650	3 G 0,5	20	6,1	14,0	63,0
83651	4 G 0,5	20	6,7	19,0	69,0
83652	5 G 0,5	20	7,3	24,0	87,0
83653	7 G 0,5	20	8,8	34,0	119,0
83654	12 G 0,5	20	11,1	58,0	198,0
83655	18 G 0,5	20	12,9	86,0	266,0
83656	25 G 0,5	20	16,0	120,0	380,0
83657	34 G 0,5	20	17,7	163,0	508,0
83658	41 G 0,5	20	19,5	197,0	594,0
83659	50 G 0,5	20	21,3	240,0	715,0
83660	61 G 0,5	20	23,8	293,0	840,0
83705	2 x 0,75	19	6,1	14,4	66,0
83661	3 G 0,75	19	6,5	22,0	76,0
83662	4 G 0,75	19	7,1	29,0	85,0
83663	5 G 0,75	19	7,9	36,0	113,0
83664	7 G 0,75	19	9,5	50,0	144,0
83665	12 G 0,75	19	11,6	86,0	245,0
83666	18 G 0,75	19	13,9	130,0	327,0
83667	25 G 0,75	19	17,1	180,0	466,0
83668	34 G 0,75	19	19,1	245,0	626,0
83669	41 G 0,75	19	20,9	296,0	747,0
83670	50 G 0,75	19	23,0	360,0	896,0
83671	61 G 0,75	19	25,3	439,0	1070,0
83706	2 x 1	18	6,4	19,2	70,0
83672	3 G 1	18	6,8	29,0	88,0
83673	4 G 1	18	7,5	39,0	99,0
83674	5 G 1	18	8,4	48,0	132,0
83675	7 G 1	18	10,0	67,0	170,0
83676	12 G 1	18	12,5	115,0	285,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
83677	18 G 1	18	14,7	173,0	405,0
83678	25 G 1	18	18,0	240,0	570,0
83679	34 G 1	18	20,3	326,0	742,0
83680	41 G 1	18	22,4	394,0	885,0
83681	50 G 1	18	24,3	480,0	1071,0
83682	61 G 1	18	26,8	586,0	1265,0
83707	2 x 1,5	16	7,4	28,8	91,0
83683	3 G 1,5	16	8,0	43,0	110,0
83684	4 G 1,5	16	8,7	58,0	141,0
83685	5 G 1,5	16	9,8	72,0	167,0
83686	7 G 1,5	16	11,9	101,0	225,0
83687	12 G 1,5	16	14,5	173,0	361,0
83688	18 G 1,5	16	17,4	259,0	518,0
83689	25 G 1,5	16	21,3	360,0	730,0
83690	34 G 1,5	16	24,1	490,0	945,0
83691	41 G 1,5	16	26,2	591,0	1135,0
83692	50 G 1,5	16	28,8	720,0	1381,0
83693	61 G 1,5	16	31,5	878,0	1640,0
83708	2 x 2,5	14	9,1	48,0	125,0
83694	3 G 2,5	14	9,9	72,0	169,0
83695	4 G 2,5	14	11,0	96,0	209,0
83696	5 G 2,5	14	12,0	120,0	256,0
83697	7 G 2,5	14	14,6	168,0	340,0
83698	12 G 2,5	14	18,1	288,0	579,0
83699	18 G 2,5	14	22,1	432,0	851,0
83700	25 G 2,5	14	26,5	600,0	1175,0
83701	34 G 2,5	14	29,9	816,0	1529,0
83702	50 G 2,5	14	35,2	1200,0	2290,0
83703	61 G 2,5	14	38,4	1464,0	2724,0

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-603-CY

Multi approval control cable, oil resistant, Cu-screened, EMC-preferred, meter marking



## Technical data

- Special PVC control cable with oil resistant outer sheath to DIN VDE 0285-525-2-51, DIN EN 50525-2-51 and to UL Style 2587
- **Temperature range**  
HAR  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C  
UL/CSA  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
HAR U<sub>0</sub>/U 300/500 V  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min. 20 MΩm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Coupling resistance**  
max. 250 Ωm/km

## Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC based inner sheath
- Tinned copper braiding screening, 85% coverage
- Outer sheath of special PVC, oil resistant compound type TM5 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1
- Oil resistant to DIN VDE 0473-811-404/ DIN EN 60811-404, UL 1581 part 50.182.

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

## JZ-603

## Application

UL-CSA-HAR approved cables offer any company exporting anywhere in the world, primarily designed for exporters, used in machine tools, control systems, assembly lines and other industrial equipment. These cables are suitable for flexible use for medium mechanical stresses with free movements in dry, moist and wet rooms but not for open air.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
83709	2 x 0,5	20	8,0	41,0	90,0	83711	2 x 1	18	8,6	54,0	113,0
83720	3 G 0,5	20	8,3	45,0	105,0	83742	3 G 1	18	9,2	64,0	144,0
83721	4 G 0,5	20	8,9	54,0	123,0	83743	4 G 1	18	9,8	76,0	178,0
83722	5 G 0,5	20	9,7	66,0	147,0	83744	5 G 1	18	10,7	89,0	205,0
83723	7 G 0,5	20	11,2	79,0	195,0	83745	7 G 1	18	12,5	114,0	263,0
83724	12 G 0,5	20	13,6	137,0	276,0	83746	12 G 1	18	15,1	186,0	424,0
83725	18 G 0,5	20	15,4	156,0	418,0	83747	18 G 1	18	17,3	284,0	560,0
83726	25 G 0,5	20	18,6	250,0	504,0	83748	25 G 1	18	21,1	387,0	760,0
83727	34 G 0,5	20	20,8	316,0	632,0	83749	34 G 1	18	23,5	500,0	945,0
83728	41 G 0,5	20	22,6	348,0	750,0	83750	41 G 1	18	25,5	578,0	1151,0
83729	50 G 0,5	20	24,8	407,0	968,0	83751	50 G 1	18	27,6	681,0	1300,0
83730	61 G 0,5	20	26,0	520,0	1068,0	83752	61 G 1	18	32,4	710,0	1500,0
83710	2 x 0,75	19	8,3	46,0	101,0	83712	2 x 1,5	16	9,6	64,0	144,0
83731	3 G 0,75	19	8,6	57,0	127,0	83753	3 G 1,5	16	10,1	82,0	160,0
83732	4 G 0,75	19	9,4	63,0	155,0	83754	4 G 1,5	16	11,0	99,0	210,0
83733	5 G 0,75	19	10,1	76,0	180,0	83755	5 G 1,5	16	12,3	123,0	240,0
83734	7 G 0,75	19	11,9	100,0	225,0	83756	7 G 1,5	16	14,2	148,0	305,0
83735	12 G 0,75	19	14,2	175,0	326,0	83757	12 G 1,5	16	17,1	274,0	482,0
83736	18 G 0,75	19	16,6	240,0	457,0	83758	18 G 1,5	16	20,0	386,0	611,0
83737	25 G 0,75	19	20,0	306,0	635,0	83759	25 G 1,5	16	24,0	531,0	950,0
83738	34 G 0,75	19	22,4	346,0	805,0	83760	34 G 1,5	16	27,1	671,0	1200,0
83739	41 G 0,75	19	24,0	403,0	908,0	83761	41 G 1,5	16	29,7	840,0	1400,0
83740	50 G 0,75	19	26,2	470,0	1155,0	83762	50 G 1,5	16	31,8	997,0	1665,0
83741	61 G 0,75	19	30,0	550,0	1400,0	83763	61 G 1,5	16	34,6	1120,0	1852,0

# JZ-603-CY

Multi approval control cable, oil resistant, Cu-screened,  
EMC-preferred, meter marking



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
83713	2 x 2,5	14	11,4	110,0	189,0
83764	3 G 2,5	14	12,0	148,0	244,0
83765	4 G 2,5	14	13,4	169,0	296,0
83766	5 G 2,5	14	14,6	220,0	367,0
83767	7 G 2,5	14	17,2	284,0	478,0
83768	12 G 2,5	14	21,2	470,0	622,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
83769	18 G 2,5	14	24,8	572,0	1010,0
83770	25 G 2,5	14	29,8	740,0	1375,0
83771	34 G 2,5	14	33,4	1179,0	1893,0
83772	50 G 2,5	14	39,0	1660,0	2666,0
83773	61 G 2,5	14	41,0	1992,0	3077,0

Dimensions and specifications may be changed without prior notice. (RN01)

# H05VV-F/SJT

300 V



## TECHNICAL DATA

PVC connection cable acc. to DIN VDE 0285-525-2-11 / DIN EN 50525-2-11, UL-Std. 62, CSA-Std. C22.2 No. 49

<b>Temperature range</b>	HAR flexible -5°C to +70°C HAR fixed -40°C to +70°C UL/CSA (SJT) flexible -5°C to +60°C UL/CSA (SJT) fixed -40°C to +60°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V UL/CSA AC 300 V
<b>Test voltage</b>	2500 V
<b>Test voltage (spark test)</b>	6000 V
<b>Breakdown voltage</b>	5000 V
<b>Minimum bending radius</b>	fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, AWG sizes
- Core insulation: Special-PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type TI2), UL-Std. 62, CSA-Std. C22.2 No. 49
- Core identification acc. to DIN VDE 0293-308, colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2), UL-Std. 62, CSA-Std. C22.2 No. 49
- Sheath colour: see table

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2
- certifications and approvals:  
HAR  
EAC

## APPLICATION

This HAR, UL and CSA standardised, flexible PVC cable can be used in particular in appliances intended for export. For medium mechanical stress for use in households and offices, including damp rooms; including household appliances such as refrigerators, hoovers and washing machines.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	grey	orange	black	white
					Part no.	Part no.	Part no.	Part no.
2 x 17	1.04	7.4	20.0	86.0	<b>28066</b>	<b>31105</b>	<b>28034</b>	<b>28050</b>
3 G 17	1.04	7.9	30.0	98.0	<b>28067</b>	<b>31115</b>	<b>28035</b>	<b>28051</b>
4 G 17	1.04	8.8	40.0	123.0	<b>28068</b>	<b>31125</b>	<b>28036</b>	<b>28052</b>
5 G 17	1.04	9.6	50.0	146.0	<b>28069</b>	<b>31135</b>	<b>28037</b>	<b>28053</b>
2 x 15	1.65	8.1	31.7	106.0	<b>28070</b>	<b>31145</b>	<b>28038</b>	<b>28054</b>
3 G 15	1.65	8.7	47.5	128.0	<b>28071</b>	<b>31155</b>	<b>28039</b>	<b>28055</b>
4 G 15	1.65	9.8	63.4	164.0	<b>28072</b>	<b>31165</b>	<b>28040</b>	<b>28056</b>
5 G 15	1.65	10.8	79.2	201.0	<b>28073</b>	<b>31175</b>	<b>28041</b>	<b>28057</b>
2 x 13	2.63	9.5	50.5	150.0	<b>28074</b>	<b>31185</b>	<b>28042</b>	<b>28058</b>
3 G 13	2.63	10.2	75.7	184.0	<b>28075</b>	<b>31195</b>	<b>28043</b>	<b>28059</b>
4 G 13	2.63	11.2	101.0	229.0	<b>28076</b>	<b>31205</b>	<b>28044</b>	<b>28060</b>
5 G 13	2.63	12.5	126.2	281.0	<b>28077</b>	<b>31215</b>	<b>28045</b>	<b>28061</b>
2 x 11	4.17	10.8	80.1	204.0	<b>28078</b>	<b>31225</b>	<b>28046</b>	<b>28062</b>
3 G 11	4.17	11.6	120.1	254.0	<b>28079</b>	<b>31235</b>	<b>28047</b>	<b>28063</b>
4 G 11	4.17	12.8	160.1	315.0	<b>28080</b>	<b>31245</b>	<b>28048</b>	<b>28064</b>
5 G 11	4.17	14.4	200.2	393.0	<b>28081</b>	<b>31255</b>	<b>28049</b>	<b>28065</b>



UL SJOOW 90°C SUN & WATER RES 300 V FT2 CSA TYPE SJOOW 90°C FT2

## TECHNICAL DATA

Rubber control and connection cable acc. to UL-Std. 62, CSA-Std. C22.2 No. 49

**Temperature range** flexible -20°C to +90°C  
fixed -40°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Nominal voltage** AC U 300 V

**Test voltage core/core** 2500 V

**Minimum bending radius** flexible 10x Outer-Ø  
fixed 6x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded, AWG sizes
- Core insulation: rubber (EPR)
- Core identification:
  - 2 core(s): black, white
  - 3 core(s): black, white, green
  - 4 core(s): black, white, red, green
- x = without protective conductor
- Cores stranded with optimal lay lengths
- Wrapping

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
11131802	2 x 18	6.8 - 8.0	10	15.8	84.0
11131803	3 x 18	7.3 - 8.6	10	23.7	100.0
11131804	4 x 18	8.0 - 9.3	7	31.6	106.0
11131602	2 x 16	7.4 - 8.7	13	25.2	94.0
11131603	3 x 16	7.9 - 9.2	13	37.7	112.0
11131604	4 x 16	8.8 - 10.0	10	50.3	139.0
11131402	2 x 14	8.2 - 9.6	18	39.9	123.0
11131403	3 x 14	8.9 - 10.0	18	59.9	152.0

\*) Current carrying capacity at 30°C in air

- Outer sheath: rubber (CPE)
- Sheath colour: black

## ■ PROPERTIES

- resistant to: oil, ozone, weathering effects, greases, water, UV radiation (SUN RES)
- for outdoor use

## ■ TESTS

- flame-retardant acc. to CSA FT2
- certifications and approvals:
  - Mine Safety and Health Administration (MSHA), U.S. Department of Labor
  - for Class 1 Div. 2 explosive environments acc. to NEC Art. 501

## ■ APPLICATION

Standardised, heavy, rubber-sheathed cable for usage in dry, moist, wet rooms as well as outdoors. Used as supply cable in industrial plants and processing facilities, for cranes, hand lamps, lifting devices, construction machinery and motors.

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
11131404	4 x 14	9.9 - 11.0	15	79.9	191.0
11131202	2 x 12	9.8 - 11.6	25	63.4	180.0
11131203	3 x 12	10.5 - 12.1	25	95.0	217.0
11131204	4 x 12	11.6 - 13.2	20	126.7	270.0
11131002	2 x 10	13.6 - 15.4	30	101.0	322.0
11131003	3 x 10	14.1 - 16.1	30	151.5	376.0
11131004	4 x 10	15.8 - 17.8	25	202.0	525.0





UL SOOW 90°C SUN & WATER RES 600 V FT2 CSA TYPE SOOW 90°C FT2

## TECHNICAL DATA

Rubber control and connection cable acc. to UL-Std. 62, CSA-Std. C22.2 No. 49

**Temperature range** flexible -20°C to +90°C  
fixed -40°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Nominal voltage** AC U 600 V

**Test voltage core/core** 2500 V

**Minimum bending radius** flexible 10x Outer-Ø  
fixed 6x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded, AWG sizes
- Core insulation: rubber (EPR)
- Core identification:
  - 2 core(s): black, white
  - 3 core(s): black, white, green
  - 4 core(s): black, white, red, green
  - 5 core(s): black, white, red, orange, green
  - 10 core(s): black, white, red, green, orange, blue, white-black, red-black, green-black, orange-black
- x = without protective conductor

- Cores stranded in layers with optimal lay lengths
- Wrapping
- Outer sheath: rubber (CPE)
- Sheath colour: black

## ■ PROPERTIES

- resistant to: oil, ozone, weathering effects, greases, water, UV radiation (SUN RES)
- for outdoor use

## ■ TESTS

- flame-retardant acc. to CSA FT2
- certifications and approvals:
  - Mine Safety and Health Administration (MSHA), U.S. Department of Labor for Class 1 Div. 2 explosive environments acc. to NEC Art. 501

## ■ APPLICATION

Standardised, heavy, rubber-sheathed cable for usage in dry, moist, wet rooms as well as outdoors. Used as supply cable in industrial plants and processing facilities, for cranes, hand lamps, lifting devices, construction machinery and motors.

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
11161802	2 x 18	8.4 - 9.8	10	15.8	113.0
11161803	3 x 18	8.8 - 10.2	10	23.7	133.0
11161804	4 x 18	9.6 - 10.9	7	31.6	141.0
11161805	5 x 18	11.5 - 13.0	5.6	39.5	194.0
11161602	2 x 16	9.0 - 10.4	13	25.2	126.0
11161603	3 x 16	9.5 - 10.9	13	37.7	148.0
11161604	4 x 16	10.3 - 11.7	10	50.3	174.0
11161605	5 x 16	12.1 - 14.0	8	62.9	233.1
11019915	10 x 16	15.1 - 17.7	7	130.0	377.0
11161402	2 x 14	12.4 - 14.0	18	39.9	237.0
11161403	3 x 14	12.9 - 14.6	18	59.9	273.0
11161404	4 x 14	13.9 - 15.7	15	79.9	321.0
11161405	5 x 14	15.8 - 17.9	12	99.8	400.0
11161202	2 x 12	13.9 - 15.9	25	63.4	314.0
11161203	3 x 12	14.5 - 16.6	25	95.0	359.0
11161204	4 x 12	15.8 - 18.0	20	126.7	406.1
11161205	5 x 12	16.9 - 19.6	16	158.4	524.0

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
11161002	2 x 10	15.1 - 17.4	30	101.0	386.0
11161003	3 x 10	16.0 - 18.3	30	151.5	462.0
11161004	4 x 10	17.3 - 19.7	25	202.0	554.0
11161005	5 x 10	18.7 - 21.3	20	252.5	644.0
11160803	3 x 8	21.1 - 23.6	40	240.9	713.0
11160804	4 x 8	23.5 - 26.7	35	321.3	921.0
11160805	5 x 8	25.4 - 29.2	28	401.6	1120.0
11160603	3 x 6	23.8 - 27.9	55	383.0	979.7
11160604	4 x 6	26.7 - 30.5	45	510.7	1240.0
11160605	5 x 6	29.0 - 33.8	36	638.4	1500.0
11160403	3 x 4	28.2 - 32.5	70	610.6	1424.0
11160404	4 x 4	31.5 - 36.8	60	814.1	1904.0
11160405	5 x 4	33.3 - 36.8	48	1017.6	2143.0
11160203	3 x 2	32.3 - 38.1	95	967.7	1959.0
11160204	4 x 2	35.9 - 41.9	80	1290.2	2477.5
11160205	5 x 2	39.0 - 43.1	64	1612.8	3064.0

\*) Current carrying capacity at 30°C in air

# TRAYCONTROL® 500

flexible, oil-resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



HELUKABEL TRAYCONTROL 500 P/N 63111 14AWG (2,08mm²)4C (UL) TC-ER 90°C DRY 75°C WET 600 V SUN RES DIR BUR OIL RES I/II E330430 OR MTW "FLEXING" OR WTTC 1000 V OR c(UL)CIC TC FT4 LL257839 CSA AWM I/II 90°C 600 V FT4 CE ROHS

## Technical data

- PVC control cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
flexing 4x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTC 1000 V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Black or TPE outer sheath

## Application

HELUKABEL® TRAYCONTROL® 500 is a flexible, oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63079	0,507	2 x 20	6,6	9,8	58,0
63080	0,507	3 x 20	7,0	14,6	61,0
63081	0,507	4 x 20	7,5	19,5	76,0
63082	0,507	5 x 20	8,1	24,4	89,0
63083	0,507	7 x 20	8,7	34,1	120,0
63084	0,507	9 x 20	9,8	43,8	201,0
63085	0,507	12 x 20	10,1	58,4	250,0
63086	0,507	18 x 20	12,9	87,6	295,0
63087	0,507	25 x 20	15,7	121,7	362,0
63088	0,963	2 x 18	7,3	18,5	68,0
63089	0,963	3 x 18	7,6	27,8	88,0
63090	0,963	4 x 18	8,2	37,0	98,0
63091	0,963	5 x 18	8,9	46,3	116,0
63092	0,963	7 x 18	9,6	64,8	149,0
63093	0,963	9 x 18	11,0	83,2	186,0
63094	0,963	10 x 18	11,6	92,5	199,0
63095	0,963	12 x 18	12,2	111,0	245,0
63096	0,963	15 x 18	13,5	138,7	292,0

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63097	0,963	16 x 18	13,6	147,9	306,0
63098	0,963	18 x 18	15,0	166,4	366,0
63099	0,963	19 x 18	15,1	175,7	384,0
63100	0,963	25 x 18	17,4	231,2	451,0
63101	0,963	27 x 18	17,7	249,6	521,0
63102	0,963	34 x 18	19,7	314,4	625,0
63103	0,963	37 x 18	20,1	342,0	684,0
63104	0,963	41 x 18	21,0	379,0	744,0
63105	0,963	50 x 18	24,0	462,3	933,0
63106	0,963	61 x 18	25,2	564,0	1095,0
63107	1,31	2 x 16	7,8	25,2	80,0
63108	1,31	3 x 16	8,2	37,8	86,0
63109	1,31	4 x 16	8,8	50,3	115,0
63110	1,31	5 x 16	9,6	62,9	126,0
63112	1,31	6 x 16	10,2	75,5	164,0
63113	1,31	7 x 16	10,5	88,0	171,0
63114	1,31	8 x 16	11,1	100,7	201,0
63115	1,31	9 x 16	12,0	113,2	237,0

Continuation ►

# TRAYCONTROL® 500

flexible, oil-resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63116	1,31	10 x 16	12,4	125,8	259,0
63117	1,31	12 x 16	13,6	151,0	301,0
63118	1,31	14 x 16	14,5	176,1	365,0
63119	1,31	15 x 16	15,2	188,7	379,0
63120	1,31	16 x 16	16,0	201,3	405,0
63121	1,31	18 x 16	16,4	226,4	443,0
63122	1,31	19 x 16	16,6	239,0	458,0
63123	1,31	20 x 16	17,2	251,6	491,0
63124	1,31	25 x 16	18,9	314,5	564,0
63125	1,31	27 x 16	19,3	339,6	629,0
63126	1,31	30 x 16	20,0	377,3	701,0
63127	1,31	34 x 16	22,5	427,6	775,0
63128	1,31	40 x 16	23,5	503,1	946,0
63129	1,31	41 x 16	24,0	515,7	967,0
63130	1,31	50 x 16	26,1	628,8	1137,0
63131	1,31	61 x 16	27,5	767,2	1345,0
63132	2,08	2 x 14	8,9	40,0	100,0
63133	2,08	3 x 14	9,2	60,0	112,0
63111	2,08	4 x 14	10,1	80,0	141,0
63164	2,08	5 x 14	10,9	100,0	152,0
63165	2,08	6 x 14	11,5	120,0	205,0
63166	2,08	7 x 14	12,0	140,0	216,0
63167	2,08	9 x 14	14,7	180,0	312,0
63168	2,08	10 x 14	15,8	200,0	378,0
63169	2,08	12 x 14	16,4	240,0	434,0
63170	2,08	16 x 14	18,0	320,0	550,0
63171	2,08	18 x 14	18,9	359,0	616,0
63172	2,08	19 x 14	19,0	380,0	634,0
63173	2,08	25 x 14	23,0	500,0	817,0
63174	3,31	2 x 12	9,7	63,0	132,0
63175	3,31	3 x 12	10,2	95,0	177,0
63176	3,31	4 x 12	11,2	127,0	201,0
63177	3,31	5 x 12	12,3	159,0	274,0

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63178	3,31	6 x 12	13,6	191,0	315,0
63179	3,31	7 x 12	13,9	222,0	353,0
63180	3,31	9 x 12	16,4	286,0	476,0
63181	3,31	12 x 12	18,3	381,0	613,0
63182	3,31	16 x 12	19,8	508,0	783,0
63183	3,31	19 x 12	22,3	604,0	918,0
63184	3,31	20 x 12	23,1	636,0	961,0
63185	3,31	25 x 12	25,8	794,0	1236,0
63186	5,26	2 x 10	12,2	101,0	213,0
63187	5,26	3 x 10	12,9	151,5	283,0
63188	5,26	4 x 10	15,0	202,0	387,0
63189	5,26	5 x 10	16,3	252,5	473,0
63190	5,26	7 x 10	17,7	353,5	607,0
63191	5,26	9 x 10	20,6	454,5	771,0
63192	5,26	12 x 10	24,1	606,0	1061,0
63193	5,26	19 x 10	27,2	959,5	1528,0
63194	8,37	3 x 8	17,0	241,1	420,0
63195	8,37	4 x 8	19,2	321,4	662,0
63196	8,37	5 x 8	21,0	401,8	784,0
63197	13,3	3 x 6	19,5	383,1	701,0
63198	13,3	4 x 6	22,4	510,7	908,0
63199	13,3	5 x 6	24,5	638,4	1149,0
62802	21,2	3 x 4	24,4	610,6	1061,0
62803	21,2	4 x 4	27,0	814,1	1366,0
62804	21,2	5 x 4	29,9	1017,6	1631,0
62805	33,6	3 x 2	28,2	967,7	1480,0
62806	33,6	4 x 2	31,4	1290,3	1922,0
62807	33,6	5 x 2	34,6	1612,8	2363,0
62808	42,3	4 x 1	35,6	1624,0	2397,0
62809	52,9	4 x 1/0	38,7	2031,0	2938,0
62810	67,3	4 x 2/0	42,1	2584,0	3559,0
62811	84,4	4 x 3/0	49,4	3256,0	4181,0
62812	106,7	4 x 4/0	52,0	4097,0	5747,0

Dimensions and specifications may be changed without prior notice. (RN01)

# TRAYCONTROL® 500-C

flexible, oil-resistant, screened, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79, EMC-preferred type



## Technical data

- PVC control cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 6x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTC 1000 V, DP-1, OIL RES I & II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Black or TPE outer sheath

## Application

HELUKABEL® TRAYCONTROL® 500-C is a flexible, screened and oil-resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62813	0,507	2 x 20	7,0	35,0	95,0
62814	0,507	3 x 20	7,6	42,0	115,0
62815	0,507	7 x 20	9,4	69,0	164,0
62816	0,507	12 x 20	11,0	108,0	266,0
62817	0,507	25 x 20	16,1	240,0	435,0
62818	0,963	2 x 18	8,1	50,0	110,0
62819	0,963	3 x 18	8,2	60,0	118,0
62820	0,963	4 x 18	8,8	71,0	136,0
62821	0,963	5 x 18	9,4	88,0	148,0
62822	0,963	7 x 18	10,1	111,0	192,0
62823	0,963	9 x 18	11,4	140,0	244,0
62824	0,963	10 x 18	12,0	150,0	283,0
62825	0,963	12 x 18	12,9	184,0	329,0
62826	0,963	15 x 18	14,8	207,0	377,0
62827	0,963	18 x 18	15,7	260,0	435,0

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62828	0,963	19 x 18	15,7	280,0	443,0
62829	0,963	25 x 18	17,7	349,0	571,0
62830	1,31	3 x 16	8,9	74,0	144,0
62831	1,31	4 x 16	9,6	90,0	172,0
62832	1,31	5 x 16	10,3	104,0	188,0
62833	1,31	6 x 16	10,5	120,0	203,0
62834	1,31	7 x 16	11,3	134,0	244,0
62835	1,31	9 x 16	12,6	165,0	308,0
62836	1,31	10 x 16	12,9	180,0	346,0
62837	1,31	12 x 16	15,1	244,0	423,0
62838	1,31	15 x 16	16,4	270,0	441,0
62839	1,31	18 x 16	17,3	319,0	512,0
62840	1,31	19 x 16	17,6	327,0	503,0
62841	1,31	20 x 16	17,5	340,0	524,0
62842	1,31	25 x 16	19,6	434,0	704,0

# TRAYCONTROL® 500-C

flexible, oil-resistant, screened, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79,  
EMC-preferred type



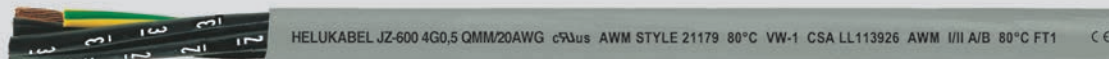
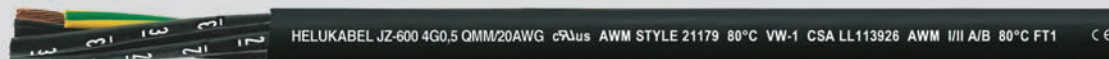
Part no.	Cross-section mm <sup>2</sup>	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62843	2,08	3 x 14	9,8	112,0	179,0
62844	2,08	4 x 14	10,7	121,0	222,0
62845	2,08	5 x 14	11,6	150,0	266,0
62846	2,08	7 x 14	12,5	200,0	326,0
62847	2,08	9 x 14	15,0	240,0	435,0
62848	2,08	10 x 14	16,3	264,0	427,0
62849	2,08	12 x 14	16,9	350,0	592,0
62850	2,08	15 x 14	18,3	409,0	635,0
62851	2,08	18 x 14	19,5	471,0	780,0
62852	2,08	19 x 14	19,7	505,0	799,0
62853	2,08	25 x 14	23,3	652,0	1042,0
62854	3,31	3 x 12	11,4	137,0	237,0
62855	3,31	4 x 12	12,2	169,0	314,0
62856	3,31	5 x 12	13,4	201,0	386,0
62857	3,31	6 x 12	14,6	236,0	425,0
62858	3,31	7 x 12	15,5	262,0	496,0
62859	3,31	9 x 12	17,7	334,0	740,0

Part no.	Cross-section mm <sup>2</sup>	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62860	3,31	12 x 12	19,7	434,0	887,0
62861	3,31	15 x 12	21,0	531,0	903,0
62862	3,31	19 x 12	23,1	720,0	1123,0
62863	3,31	20 x 12	25,0	764,0	1490,0
62864	3,31	25 x 12	27,1	914,0	1865,0
62865	5,26	3 x 10	14,1	240,0	389,0
62866	5,26	4 x 10	15,5	305,0	549,0
62867	5,26	5 x 10	16,8	399,0	610,0
62868	5,26	7 x 10	18,2	505,0	851,0
62869	5,26	9 x 10	20,9	704,0	1132,0
62870	5,26	12 x 10	24,4	940,0	1523,0
62871	5,26	19 x 10	27,5	1210,0	1952,0
62872	8,37	4 x 8	19,9	535,0	852,0
62873	13,3	4 x 6	23,3	740,0	1202,0
62874	21,2	4 x 4	28,6	1140,0	1971,0
62875	33,6	4 x 2	33,2	1576,0	2887,0

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-600 UL/CSA

flexible, number coded, 1000 V, meter marking



## Technical data

- Special PVC control cables adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, with insulation thickness for 1 kV and to UL Std.758 Style 21179
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 1000 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std. 1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 and class 43 acc. to UL Std. 1581
- Sheath colour: black (RAL 9005) or grey (RAL 7001)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- UV resistant (building with black sheath)
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Screened analogue type:  
**JZ-600-Y-CY UL/CSA**

## Application

Wiring cable for measuring and controlling purposes in tool machinery, conveyor belts and production lines, for plant installations, air conditioning and in steel production plants and rolling mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation, building with black sheath). Is not suitable to be used as direct burial- or as underwater cable. The cores have been numbered in such a way that the numbers are easily identifiable, even if the cable has only been stripped back a few cm. The core numbers have been underlined to avoid confusion. The earth core is located in the outer layer. The black, special PVC outer sheath is resistant to the ultra violet radiation. Mainly used in South-European, Eastern and Arabian countries.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no. Sheath colour	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
black					
11815	2 x 0,5	20	6,4	9,6	56,0
11816	3 G 0,5	20	6,8	14,4	68,0
11817	4 G 0,5	20	7,6	19,0	100,0
11818	5 G 0,5	20	8,2	24,0	117,0
11819	7 G 0,5	20	9,8	33,6	138,0
11820	12 G 0,5	20	12,2	58,0	200,0
11821	18 G 0,5	20	14,4	86,0	276,0
11822	25 G 0,5	20	17,2	120,0	335,0
11823	2 x 0,75	19	6,8	14,4	66,0
11824	3 G 0,75	19	7,2	21,6	74,0
11825	4 G 0,75	19	8,0	29,0	126,0
11826	5 G 0,75	19	8,8	36,0	140,0
11827	7 G 0,75	19	10,7	50,0	190,0
11828	12 G 0,75	19	13,1	86,0	257,0
11829	18 G 0,75	19	15,6	130,0	362,0
11830	25 G 0,75	19	18,9	180,0	486,0
11831	2 x 1	18	7,4	19,2	80,0
11832	3 G 1	18	8,0	29,2	96,0
11833	4 G 1	18	8,8	38,4	100,0
11834	5 G 1	18	9,8	48,0	130,0
11835	7 G 1	18	11,7	67,0	170,0
11836	12 G 1	18	14,5	115,0	290,0
11837	18 G 1	18	17,3	173,0	405,0
11838	25 G 1	18	21,1	240,0	570,0
11839	2 x 1,5	16	8,4	29,0	95,0
11840	3 G 1,5	16	9,1	43,0	112,0
11841	4 G 1,5	16	9,9	58,0	139,0
11842	5 G 1,5	16	11,0	72,0	170,0
11843	7 G 1,5	16	13,3	101,0	225,0
11844	12 G 1,5	16	16,6	173,0	370,0
11845	18 G 1,5	16	19,7	259,0	520,0
11846	25 G 1,5	16	23,9	360,0	730,0

Part no. Sheath colour	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
grey					
11880	2 x 0,5	20	6,4	9,6	56,0
11881	3 G 0,5	20	6,8	14,4	68,0
11882	4 G 0,5	20	7,6	19,0	100,0
11883	5 G 0,5	20	8,2	24,0	117,0
11884	7 G 0,5	20	9,8	33,6	138,0
11885	12 G 0,5	20	12,2	58,0	200,0
11886	18 G 0,5	20	14,4	86,0	276,0
11887	25 G 0,5	20	17,2	120,0	335,0
11888	2 x 0,75	19	6,8	14,4	66,0
11889	3 G 0,75	19	7,2	21,6	74,0
11890	4 G 0,75	19	8,0	29,0	126,0
11891	5 G 0,75	19	8,8	36,0	140,0
11892	7 G 0,75	19	10,7	50,0	190,0
11893	12 G 0,75	19	13,1	86,0	257,0
11894	18 G 0,75	19	15,6	130,0	362,0
11895	25 G 0,75	19	18,9	180,0	486,0
11896	2 x 1	18	7,4	19,2	80,0
11897	3 G 1	18	8,0	29,2	96,0
11898	4 G 1	18	8,8	38,4	100,0
11899	5 G 1	18	9,8	48,0	130,0
11900	7 G 1	18	11,7	67,0	170,0
11901	12 G 1	18	14,5	115,0	290,0
11902	18 G 1	18	17,3	173,0	405,0
11903	25 G 1	18	21,1	240,0	570,0
11904	2 x 1,5	16	8,4	29,0	95,0
11905	3 G 1,5	16	9,1	43,0	112,0
11906	4 G 1,5	16	9,9	58,0	139,0
11907	5 G 1,5	16	11,0	72,0	170,0
11908	7 G 1,5	16	13,3	101,0	225,0
11909	12 G 1,5	16	16,6	173,0	370,0
11910	18 G 1,5	16	19,7	259,0	520,0
11911	25 G 1,5	16	23,9	360,0	730,0

# JZ-600 UL/CSA

flexible, number coded, 1000 V, meter marking



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
<b>black</b>					
11847	2 x 2,5	14	9,4	48,0	160,0
11848	3 G 2,5	14	9,9	72,0	175,0
11849	4 G 2,5	14	11,1	96,0	203,0
11850	5 G 2,5	14	12,4	120,0	251,0
11851	7 G 2,5	14	15,0	168,0	330,0
11852	12 G 2,5	14	18,4	288,0	553,0
11853	18 G 2,5	14	22,0	432,0	795,0
11854	25 G 2,5	14	26,9	600,0	1110,0
11855	2 x 4	12	11,4	77,0	180,0
11856	3 G 4	12	12,3	115,0	230,0
11857	4 G 4	12	13,8	154,0	310,0
11858	5 G 4	12	15,3	192,0	410,0
11859	7 G 4	12	16,8	269,0	540,0
11860	12 G 4	12	22,9	461,0	860,0
11861	3 G 6	10	14,1	173,0	370,0
11862	4 G 6	10	15,6	230,0	430,0
11863	5 G 6	10	17,3	288,0	650,0
11864	7 G 6	10	19,3	403,0	860,0
11865	3 G 10	8	16,5	288,0	660,0
11866	4 G 10	8	18,1	384,0	790,0
11867	5 G 10	8	20,5	480,0	960,0
11868	7 G 10	8	22,5	672,0	1300,0
11869	3 G 16	6	19,6	461,0	760,0
11870	4 G 16	6	21,7	614,0	1100,0
11871	5 G 16	6	24,2	768,0	1600,0
11872	7 G 16	6	25,7	1075,0	1890,0
11873	3 G 25	4	24,0	720,0	1450,0
11874	4 G 25	4	26,9	960,0	1600,0
11875	5 G 25	4	29,4	1200,0	2050,0
11876	7 G 25	4	32,8	1680,0	2900,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
<b>grey</b>					
11912	2 x 2,5	14	9,4	48,0	160,0
11913	3 G 2,5	14	9,9	72,0	175,0
11914	4 G 2,5	14	11,1	96,0	203,0
11915	5 G 2,5	14	12,4	120,0	251,0
11916	7 G 2,5	14	15,0	168,0	330,0
11917	12 G 2,5	14	18,4	288,0	553,0
11918	18 G 2,5	14	22,0	432,0	795,0
11919	25 G 2,5	14	26,9	600,0	1110,0
11920	2 x 4	12	11,4	77,0	180,0
11921	3 G 4	12	12,3	115,0	230,0
11922	4 G 4	12	13,8	154,0	310,0
11923	5 G 4	12	15,3	192,0	410,0
11924	7 G 4	12	16,8	269,0	540,0
11925	12 G 4	12	22,9	461,0	860,0
11926	3 G 6	10	14,1	173,0	370,0
11927	4 G 6	10	15,6	230,0	430,0
11928	5 G 6	10	17,3	288,0	650,0
11929	7 G 6	10	19,3	403,0	860,0
11930	3 G 10	8	16,5	288,0	660,0
11931	4 G 10	8	18,4	384,0	790,0
11932	5 G 10	8	20,5	480,0	960,0
11933	7 G 10	8	22,5	672,0	1300,0
11934	3 G 16	6	19,6	461,0	760,0
11935	4 G 16	6	21,7	614,0	1100,0
11936	5 G 16	6	24,2	768,0	1600,0
11937	7 G 16	6	25,7	1075,0	1890,0
11938	3 G 25	4	24,0	720,0	1450,0
11939	4 G 25	4	26,9	960,0	1600,0
11940	5 G 25	4	29,3	1200,0	2050,0
11941	7 G 25	4	32,6	1680,0	2900,0

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-600-Y-CY UL/CSA

EMC-preferred type, number coded, 1000 V, Cu-screened, flexible, meter marking



## Technical data

- Special PVC control cables adapted to DIN VDE 0276 part 627, DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, with insulation thickness for 1 kV and to UL Std.758 Style 21179
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 1000 V
- **Test voltage**  
4000 V
- **Breakdown voltage**  
min. 8000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper, fine wire conductors, acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and class 43 acc. to UL Std.1581
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC-insulated inner sheath TM2, to DIN VDE 0207-363-4-1/DIN EN 50363-4-1, class 43 acc. to UL Std.1581
- Braided screen of tinned Cu wires, coverage approx. 85%
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1 and class 43 acc. to UL Std.1581
- Sheath colour: black (RAL 9005) or grey (RAL 7001)
- With meter marking

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Informations"
- UV resistant (building with black sheath)
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2 (equivalent DIN VDE 0472 part 804 test method B), UL VW-1, CSA FT1

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**JZ-600 UL/CSA**

## Application

PVC control cable for measuring, monitoring and control purposes in tool machinery, conveyor belts and production lines in machinery, in air conditioning, in foundries and steel mills. Suitable for installation for flexible use for medium mechanical stresses with free movement without tensile stress or forced movements in dry, moist and wet rooms as well as outside (fixed installation, building with black sheath). Is not suitable to be used as direct burrial- or as underwater cable. Interference-free transmission of signals and pulses is assured by the high degree of screening.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no. Sheath colour	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12345	2 x 0,5	20	8,3	41,0	129,0
12346	3 G 0,5	20	8,6	45,0	150,0
12347	4 G 0,5	20	9,4	54,0	170,0
12348	5 G 0,5	20	10,1	66,0	199,0
12349	7 G 0,5	20	12,1	79,0	235,0
12350	12 G 0,5	20	14,7	137,0	320,0
12351	18 G 0,5	20	17,3	156,0	428,0
12352	25 G 0,5	20	20,6	250,0	503,0
12353	2 x 0,75	19	8,7	46,0	143,0
12354	3 G 0,75	19	9,0	57,0	155,0
12355	4 G 0,75	19	9,9	63,0	190,0
12356	5 G 0,75	19	10,8	76,0	228,0
12357	7 G 0,75	19	13,0	100,0	323,0
12358	12 G 0,75	19	15,8	175,0	410,0
12359	18 G 0,75	19	17,9	240,0	560,0
12360	25 G 0,75	19	22,8	306,0	730,0

Part no. Sheath colour	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12410	2 x 0,5	20	8,3	41,0	129,0
12411	3 G 0,5	20	8,6	45,0	150,0
12412	4 G 0,5	20	9,4	54,0	170,0
12413	5 G 0,5	20	10,1	66,0	199,0
12414	7 G 0,5	20	12,1	79,0	235,0
12415	12 G 0,5	20	14,7	137,0	320,0
12416	18 G 0,5	20	17,3	156,0	428,0
12417	25 G 0,5	20	20,6	250,0	503,0
12418	2 x 0,75	19	8,7	46,0	143,0
12419	3 G 0,75	19	9,0	57,0	155,0
12420	4 G 0,75	19	9,9	63,0	190,0
12421	5 G 0,75	19	10,8	76,0	228,0
12422	7 G 0,75	19	13,0	100,0	323,0
12423	12 G 0,75	19	15,8	175,0	410,0
12424	18 G 0,75	19	17,9	240,0	560,0
12425	25 G 0,75	19	22,8	306,0	730,0



# JZ-600-Y-CY UL/CSA

EMC-preferred type, number coded, 1000 V, Cu-screened, flexible, meter marking



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
<b>black</b>						<b>grey</b>					
12361	2 x 1	18	9,4	54,0	150,0	12426	2 x 1	18	9,4	54,0	150,0
12362	3 G 1	18	9,8	64,0	163,0	12427	3 G 1	18	9,8	64,0	163,0
12363	4 G 1	18	10,8	76,0	200,0	12428	4 G 1	18	10,8	76,0	200,0
12364	5 G 1	18	12,1	89,0	239,0	12429	5 G 1	18	12,1	89,0	239,0
12365	7 G 1	18	14,5	114,0	289,0	12430	7 G 1	18	14,5	114,0	289,0
12366	12 G 1	18	17,4	186,0	464,0	12431	12 G 1	18	17,4	186,0	464,0
12367	18 G 1	18	20,7	284,0	628,0	12432	18 G 1	18	20,7	284,0	628,0
12368	25 G 1	18	24,8	387,0	855,0	12433	25 G 1	18	24,8	387,0	855,0
12369	2 x 1,5	16	10,2	64,0	162,0	12434	2 x 1,5	16	10,2	64,0	162,0
12370	3 G 1,5	16	10,9	82,0	187,0	12435	3 G 1,5	16	10,9	82,0	187,0
12371	4 G 1,5	16	12,2	99,0	240,0	12436	4 G 1,5	16	12,2	99,0	240,0
12372	5 G 1,5	16	13,3	123,0	289,0	12437	5 G 1,5	16	13,3	123,0	289,0
12373	7 G 1,5	16	16,0	148,0	383,0	12438	7 G 1,5	16	16,0	148,0	383,0
12374	12 G 1,5	16	19,6	274,0	592,0	12439	12 G 1,5	16	19,6	274,0	592,0
12375	18 G 1,5	16	23,4	386,0	806,0	12440	18 G 1,5	16	23,4	386,0	806,0
12376	25 G 1,5	16	28,2	531,0	1241,0	12441	25 G 1,5	16	28,2	531,0	1241,0
12377	2 x 2,5	14	11,5	110,0	272,0	12442	2 x 2,5	14	11,5	110,0	272,0
12378	3 G 2,5	14	12,2	148,0	298,0	12443	3 G 2,5	14	12,2	148,0	298,0
12379	4 G 2,5	14	13,4	169,0	345,0	12444	4 G 2,5	14	13,4	169,0	345,0
12380	5 G 2,5	14	14,9	220,0	427,0	12445	5 G 2,5	14	14,9	220,0	427,0
12381	7 G 2,5	14	17,9	284,0	561,0	12446	7 G 2,5	14	17,9	284,0	561,0
12382	12 G 2,5	14	21,9	470,0	857,0	12447	12 G 2,5	14	21,9	470,0	857,0
12383	18 G 2,5	14	26,1	572,0	1355,0	12448	18 G 2,5	14	26,1	572,0	1355,0
12384	25 G 2,5	14	31,9	740,0	1995,0	12449	25 G 2,5	14	31,9	740,0	1995,0
12385	2 x 4	12	14,3	124,0	306,0	12450	2 x 4	12	14,3	124,0	306,0
12386	3 G 4	12	15,1	178,0	391,0	12451	3 G 4	12	15,1	178,0	391,0
12387	4 G 4	12	16,7	234,0	527,0	12452	4 G 4	12	16,7	234,0	527,0
12388	5 G 4	12	18,6	284,0	700,0	12453	5 G 4	12	18,6	284,0	700,0
12389	7 G 4	12	20,0	321,0	920,0	12454	7 G 4	12	20,0	321,0	920,0
12390	3 G 6	10	17,0	245,0	629,0	12455	3 G 6	10	17,0	245,0	629,0
12391	4 G 6	10	18,7	316,0	731,0	12456	4 G 6	10	18,7	316,0	731,0
12392	5 G 6	10	20,7	442,0	1105,0	12457	5 G 6	10	20,7	442,0	1105,0
12393	7 G 6	10	23,0	530,0	1465,0	12458	7 G 6	10	23,0	530,0	1465,0
12394	3 G 10	8	19,6	367,0	1125,0	12459	3 G 10	8	19,6	367,0	1125,0
12395	4 G 10	8	21,9	549,0	1345,0	12460	4 G 10	8	21,9	549,0	1345,0
12396	5 G 10	8	24,1	604,0	1635,0	12461	5 G 10	8	24,1	604,0	1635,0
12397	7 G 10	8	26,8	820,0	2210,0	12462	7 G 10	8	26,8	820,0	2210,0
12398	3 G 16	6	23,5	653,0	1395,0	12463	3 G 16	6	23,5	653,0	1395,0
12399	4 G 16	6	26,4	807,0	1870,0	12464	4 G 16	6	26,4	807,0	1870,0
12400	5 G 16	6	28,8	940,0	2720,0	12465	5 G 16	6	28,8	940,0	2720,0
12401	7 G 16	6	31,9	1345,0	3213,0	12466	7 G 16	6	31,9	1345,0	3213,0
12402	3 G 25	4	28,0	920,0	2465,0	12467	3 G 25	4	28,0	920,0	2465,0
12403	4 G 25	4	32,5	1169,0	2750,0	12468	4 G 25	4	32,5	1169,0	2750,0
12404	5 G 25	4	35,7	1420,0	3490,0	12469	5 G 25	4	35,7	1420,0	3490,0
12405	7 G 25	4	39,0	1921,0	4980,0	12470	7 G 25	4	39,0	1921,0	4980,0

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-604 TC TRAY CABLE / OZ-604 TC TRAY CABLE



TC-ER (exposed run), NFPA 79, +90°C



## TECHNICAL DATA

PVC control and connection cable acc. to UL-Std. 1277 (TC), UL-Std. 1063 (MTW), UL-Std. 2277 (WTTC), UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V UL (TC) AC 600 V UL (WTTC) AC 1000 V UL (MTW) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to UL-Std. 1277 (TC) Sec. 9
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer (JZ), x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- for outdoor use
- direct burial (DIR BUR)
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to CSA FT4
- oil-resistant acc. to UL Oil Res I, UL Oil Res II
- 90°C DRY/ 75°C WET acc. to UL Std. 1277 No. 9
- Cold Bend Test acc. to UL Std. 1277 No. 17
- Impact Test (-ER) acc. to UL Std. 1277 No. 23
- Crushing Test (-ER) acc. to UL Std. 1277 No. 24
- certifications and approvals: EAC  
Part numbers with protective conductor (GN-YE): for Class 1 Div. 2 explosive environments acc. to NEC Art. 501

## APPLICATION

NFPA 79 compliant, flexible control and connection cable for machinery in tool and plant construction; suitable for installation in dry, damp and wet environments as well as outdoors. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69661	2 x 1	18	7.9	19.2	91.0
69662	3 G 1	18	8.3	29.0	105.0
69663	4 G 1	18	9.0	39.0	126.0
69664	5 G 1	18	9.9	48.0	149.0
69665	7 G 1	18	11.5	67.0	198.0
69666	9 G 1	18	14.0	84.0	245.0
69667	10 G 1	18	14.3	96.0	255.0
69668	12 G 1	18	14.7	115.0	309.0
69669	18 G 1	18	17.1	173.0	433.0
69670	25 G 1	18	20.3	240.0	576.0
69671	34 G 1	18	23.7	326.0	794.0
69672	50 G 1	18	27.6	480.0	1081.0
69673	2 x 1.5	16	8.3	29.0	106.0
69674	3 G 1.5	16	8.8	43.0	123.0
69675	4 G 1.5	16	9.5	58.0	148.0
69676	5 G 1.5	16	10.4	72.0	178.0
69677	7 G 1.5	16	12.2	101.0	236.0
69678	8 G 1.5	16	13.9	115.0	248.0
69679	9 G 1.5	16	14.8	130.0	300.0
69680	10 G 1.5	16	15.1	144.0	313.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69681	12 G 1.5	16	15.5	173.0	377.0
69682	16 G 1.5	16	17.2	230.0	478.0
69683	18 G 1.5	16	18.1	259.0	534.0
69684	25 G 1.5	16	22.6	360.0	772.0
69685	34 G 1.5	16	25.1	489.0	988.0
69686	41 G 1.5	16	27.0	590.0	1158.0
69687	50 G 1.5	16	29.3	720.0	1352.0
69688	61 G 1.5	16	32.0	878.0	1728.0
69689	2 x 2.5	14	9.3	48.0	140.0
69690	3 G 2.5	14	9.8	72.0	165.0
69691	4 G 2.5	14	10.7	96.0	203.0
69692	5 G 2.5	14	11.8	120.0	241.0
69693	7 G 2.5	14	14.6	168.0	350.0
69694	8 G 2.5	14	15.7	192.0	421.0
69695	9 G 2.5	14	16.8	216.0	455.0
69696	10 G 2.5	14	17.1	240.0	451.0
69697	12 G 2.5	14	17.6	288.0	531.0
69698	18 G 2.5	14	21.6	432.0	751.0
69699	25 G 2.5	14	25.9	600.0	1076.0
69700	3 G 4	12	10.9	115.0	220.0

# JZ-604 TC TRAY CABLE / OZ-604 TC TRAY CABLE



TC-ER (exposed run), NFPA 79, +90°C



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69701	4 G 4	12	11.9	154.0	272.0
69702	5 G 4	12	13.9	192.0	328.0
69703	7 G 4	12	16.3	269.0	495.0
69704	9 G 4	12	18.8	346.0	636.0
69705	12 G 4	12	19.8	461.0	726.0
69706	18 G 4	12	24.1	691.0	1086.0
69707	3 G 6	10	12.4	173.0	290.0
69708	4 G 6	10	14.3	230.0	382.0
69709	5 G 6	10	15.8	288.0	470.0
69710	7 G 6	10	18.6	403.0	609.0
69711	3 G 10	8	16.8	288.0	544.0
69712	4 G 10	8	18.4	384.0	678.0
69713	5 G 10	8	20.3	480.0	817.0
69714	7 G 10	8	25.2	672.0	1110.0
69715	3 G 16	6	20.7	461.0	823.0
69716	4 G 16	6	23.8	614.0	1041.0
69717	5 G 16	6	26.2	768.0	1317.0
69718	7 G 16	6	31.2	1075.0	1676.0
69719	3 G 25	4	25.0	720.0	1192.0
69720	4 G 25	4	27.4	960.0	1499.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69721	5 G 25	4	30.3	1200.0	1846.0
69722	7 G 25	4	36.1	1680.0	2580.0
69723	3 G 35	2	27.1	1008.0	1536.0
69724	4 G 35	2	29.8	1344.0	1932.0
69725	5 G 35	2	33.0	1680.0	2386.0
69726	3 G 50	1	33.1	1440.0	2238.0
69727	4 G 50	1	36.5	1920.0	2844.0
69728	5 G 50	1	41.5	2400.0	3579.0
69729	3 G 70	2/0	37.6	2016.0	2969.0
69730	4 G 70	2/0	41.8	2688.0	3837.0
69731	5 G 70	2/0	47.7	3360.0	4882.0
69732	3 G 95	3/0	41.8	2736.0	3811.0
69733	4 G 95	3/0	46.6	3648.0	4921.0
69734	5 G 95	3/0	52.2	4560.0	6140.0
69735	3 G 120	4/0	45.8	3456.0	4821.0
69736	4 G 120	4/0	50.9	4608.0	6243.0
69737	5 G 120	4/0	56.5	5760.0	7599.0
59378	4 G 150	250 kcmil	57.7	5760.0	8050.0
59379	4 G 185	350 kcmil	62.3	7104.0	9250.0

# JZ-604-FCY TC TRAY CABLE / OZ-604-FCY TC TRAY CABLE

TC-ER (exposed run), NFPA 79, +90°C, EMC-preferred type



## TECHNICAL DATA

PVC control and connection cable acc. to UL-Std. 1277 (TC), UL-Std. 1063 (MTW), UL-Std. 2277 (WTTC), UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V UL (TC) AC 600 V UL (WTTC) AC 1000 V UL (MTW) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to UL-Std. 1277 (TC) Sec. 9
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer (JZ), x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Fleece wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- for outdoor use
- direct burial (DIR BUR)
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to CSA FT4
- oil-resistant acc. to UL Oil Res I, UL Oil Res II
- 90°C DRY/ 75°C WET acc. to UL Std. 1277 No. 9
- Cold Bend Test acc. to UL Std. 1277 No. 17
- Impact Test (-ER) acc. to UL Std. 1277 No. 23
- Crushing Test (-ER) acc. to UL Std. 1277 No. 24
- certifications and approvals:  
EAC  
Part numbers with protective conductor (GN-YE): for Class 1 Div. 2 explosive environments acc. to NEC Art. 501

## APPLICATION

NFPA 79 compliant, flexible control and connection cable for machinery in tool and plant construction; suitable for installation in dry, damp and wet environments as well as outdoors. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and allround large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69750	2 x 1	18	8.6	50.0	103.0
69751	3 G 1	18	9.0	60.0	119.0
69752	4 G 1	18	9.7	71.0	139.0
69753	5 G 1	18	10.6	88.0	165.0
69754	7 G 1	18	12.3	111.0	216.0
69755	9 G 1	18	15.0	139.0	285.0
69756	10 G 1	18	15.2	150.0	311.0
69757	12 G 1	18	15.6	184.0	349.0
69758	18 G 1	18	18.0	260.0	472.0
69759	25 G 1	18	22.4	349.0	665.0
69760	34 G 1	18	24.8	486.0	886.0
69761	50 G 1	18	29.0	625.0	1164.0
69762	2 x 1.5	16	9.0	63.0	115.0
69763	3 G 1.5	16	9.5	80.0	140.0
69764	4 G 1.5	16	10.2	97.0	164.0
69765	5 G 1.5	16	11.1	119.0	195.0
69766	7 G 1.5	16	12.9	147.0	260.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69767	8 G 1.5	16	14.8	170.0	297.0
69768	9 G 1.5	16	15.8	182.0	351.0
69769	10 G 1.5	16	16.0	193.0	360.0
69770	12 G 1.5	16	16.4	267.0	408.0
69771	16 G 1.5	16	18.1	315.0	526.0
69772	18 G 1.5	16	19.2	374.0	571.0
69773	25 G 1.5	16	23.7	526.0	862.0
69774	34 G 1.5	16	26.4	629.0	1050.0
69775	41 G 1.5	16	28.3	801.0	1215.0
69776	50 G 1.5	16	30.7	885.0	1418.0
69777	61 G 1.5	16	33.3	1100.0	1815.0
69778	2 x 2.5	14	10.0	96.0	148.0
69779	3 G 2.5	14	10.5	144.0	180.0
69780	4 G 2.5	14	11.4	148.0	220.0
69781	5 G 2.5	14	12.5	181.0	259.0
69782	7 G 2.5	14	15.5	255.0	379.0
69783	8 G 2.5	14	16.7	285.0	432.0

# JZ-604-FCY TC TRAY CABLE / OZ-604-FCY TC TRAY CABLE

TC-ER (exposed run), NFPA 79, +90°C, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69784	9 G 2.5	14	17.7	309.0	493.0
69785	10 G 2.5	14	18.0	340.0	503.0
69786	12 G 2.5	14	18.5	441.0	560.0
69787	18 G 2.5	14	22.7	570.0	839.0
69788	25 G 2.5	14	26.9	738.0	1157.0
69789	3 G 4	12	11.6	174.0	233.0
69790	4 G 4	12	12.6	230.0	290.0
69791	5 G 4	12	14.8	273.0	362.0
69792	7 G 4	12	17.2	316.0	501.0
69793	9 G 4	12	19.9	402.0	625.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69794	12 G 4	12	20.8	507.0	753.0
69795	18 G 4	12	25.4	751.0	1161.0
69796	3 G 6	10	14.1	240.0	327.0
69797	4 G 6	10	15.3	305.0	414.0
69798	5 G 6	10	16.7	439.0	482.0
69799	7 G 6	10	19.7	505.0	684.0
69800	3 G 10	8	17.7	350.0	549.0
69801	4 G 10	8	19.5	535.0	693.0
69802	5 G 10	8	22.5	592.0	872.0
69803	7 G 10	8	26.5	810.0	1116.0

# JZ-604-YCY TC TRAY CABLE

TC-ER (exposed run), NFPA 79, +90°C, EMC-preferred type



HELUKABEL® JZ-604 YCY 4G16 QMM: (UL) TC-ER 600V 90°C DRY 75°C WET SUN RES OIL RES I OIL RES II DIR BUR FT4 / WTTC 1000V 90°C / MTW 600V 90°C / AWM STYLE 2587 600C 90°C / CSA LL113926 AWM I/II A/B 90°C 600V C E

## TECHNICAL DATA

PVC connection cable acc. to UL-Std. 1277 (TC), UL-Std. 1063 (MTW), UL-Std. 2277 (WTTC), UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V UL (TC) AC 600 V UL (WTTC) AC 1000 V UL (MTW) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to UL-Std. 1277 (TC) Sec. 9
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE (JZ)
- Cores stranded with optimal lay lengths
- Inner sheath: PVC acc. to UL-Std. 1581
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182
- Sheath colour: black (RAL 9005)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69804	3 G 16	6	25.7	653.0	1060.0
69805	4 G 16	6	28.2	807.0	1572.0
69806	5 G 16	6	31.8	940.0	2002.0
69807	7 G 16	6	37.9	1345.0	2604.0
69808	3 G 25	4	29.9	920.0	1955.0
69809	4 G 25	4	33.3	1169.0	2218.0
69810	5 G 25	4	36.8	1420.0	2757.0
69811	7 G 25	4	44.5	1921.0	3523.0
69812	3 G 35	2	33.0	1250.0	2289.0
69813	4 G 35	2	36.7	1680.0	2926.0
69814	5 G 35	2	40.7	2020.0	3545.0
69815	3 G 50	1	40.9	1887.0	3379.0

## PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- for outdoor use
- direct burial (DIR BUR)
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to CSA FT4
- oil-resistant acc. to UL Oil Res I, UL Oil Res II
- 90°C DRY/ 75°C WET acc. to UL Std. 1277 No. 9
- Cold Bend Test acc. to UL Std. 1277 No. 17
- Impact Test (-ER) acc. to UL Std. 1277 No. 23
- Crushing Test (-ER) acc. to UL Std. 1277 No. 24
- certifications and approvals:  
EAC  
for Class 1 Div. 2 explosive environments acc. to NEC Art. 501

## APPLICATION

NFPA 79 compliant, flexible connection cable for machinery in tool and plant construction; suitable for installation in dry, damp and wet environments as well as outdoors. For underground installation and for open, unprotected installation from the cable rack to machines and industrial plants. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
69816	4 G 50	1	45.6	2370.0	4439.0
69817	5 G 50	1	50.1	2880.0	5312.0
69818	3 G 70	2/0	47.2	2516.0	4557.0
69819	4 G 70	2/0	51.1	3257.0	5632.0
69820	5 G 70	2/0	56.2	4032.0	6681.0
69821	3 G 95	3/0	50.4	3086.0	5612.0
69822	4 G 95	3/0	55.1	4060.0	6820.0
69823	5 G 95	3/0	60.6	5244.0	8172.0
69824	3 G 120	4/0	54.2	4176.0	6711.0
69825	4 G 120	4/0	59.3	5231.0	8256.0
69826	5 G 120	4/0	64.9	6624.0	10233.0

# TRAYCONTROL® 600

flexible, oil resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



## Technical data

- PVC power cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
UL/CSA TC -40°C to +90°C  
UL/AWM -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
5x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), UL Type WTTC, UL Type MTW, NFPA 79, Oil Res I (Oil Res II also available), 90° C dry / 75° C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- TC-ER, Tray Cable Exposed Run
- Simple installation
- Outstanding flexibility

## Application

NFPA 79 conformant flexible power cable up to 600 V (WTTC 1000 V), for all machinery in plant construction. Suitable for installation in dry, humid and damp environments, outdoors and pipes. For underground installation and for open, unprotected installation from the cable rack to machines in industrial plants.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm <sup>2</sup>	No.cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62020	0,507	2 x 20	6,6	9,8	60,0
62021	0,507	3 x 20	7,0	14,6	64,0
62022	0,507	4 x 20	7,5	19,5	79,0
62023	0,507	5 x 20	8,1	24,4	92,0
62024	0,507	7 x 20	8,7	34,1	124,0
62025	0,507	9 x 20	9,8	43,8	210,0
62026	0,507	12 x 20	10,1	58,4	263,0
62027	0,507	18 x 20	12,9	87,6	305,0
62028	0,507	25 x 20	15,7	121,7	371,0
62902	0,963	2 x 18	7,3	18,5	68,0
62903	0,963	3 x 18	7,6	27,8	68,0
62904	0,963	4 x 18	8,2	37,0	97,0
62905	0,963	5 x 18	8,9	46,3	116,0
62906	0,963	7 x 18	9,6	64,8	147,0
62907	0,963	9 x 18	11,0	83,2	186,0
62908	0,963	10 x 18	11,6	92,5	199,0
62909	0,963	12 x 18	12,2	111,0	250,0
62910	0,963	15 x 18	13,5	138,7	292,0
62911	0,963	16 x 18	13,6	147,9	306,0
62912	0,963	18 x 18	15,0	166,4	365,0
62913	0,963	19 x 18	15,1	175,7	384,0
62914	0,963	25 x 18	17,4	231,2	480,0
62915	0,963	27 x 18	17,7	249,6	521,0
62916	0,963	34 x 18	19,7	314,4	625,0
62917	0,963	37 x 18	20,1	342,0	684,0
62918	0,963	41 x 18	21,0	379,0	744,0
62919	0,963	50 x 18	24,0	462,3	933,0
62920	0,963	61 x 18	25,2	564,0	1095,0
62921	1,31	2 x 16	7,8	25,2	80,0
62922	1,31	3 x 16	8,2	37,8	86,0

Part no.	Cross-section mm <sup>2</sup>	No.cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62923	1,31	4 x 16	8,8	50,3	120,0
62924	1,31	5 x 16	9,6	62,9	130,0
62925	1,31	6 x 16	10,2	75,5	164,0
62926	1,31	7 x 16	10,5	88,0	188,0
62927	1,31	8 x 16	11,1	100,7	201,0
62928	1,31	9 x 16	12,0	113,2	238,0
62929	1,31	10 x 16	12,4	125,8	259,0
62930	1,31	12 x 16	13,6	151,0	301,0
62931	1,31	14 x 16	14,5	176,1	356,0
62932	1,31	15 x 16	15,2	188,7	379,0
62933	1,31	16 x 16	16,0	201,3	405,0
62934	1,31	18 x 16	16,4	226,4	430,0
62935	1,31	19 x 16	16,6	239,0	450,0
62936	1,31	20 x 16	17,2	251,6	481,0
62937	1,31	25 x 16	18,9	314,5	564,0
62938	1,31	27 x 16	19,3	339,6	629,0
62939	1,31	30 x 16	20,0	377,3	701,0
62940	1,31	34 x 16	22,5	427,6	775,0
62941	1,31	40 x 16	23,5	503,1	946,0
62942	1,31	41 x 16	24,0	515,7	967,0
62943	1,31	50 x 16	26,1	628,8	1137,0
62944	1,31	61 x 16	27,5	767,2	1345,0
62945	2,08	2 x 14	8,9	40,0	100,0
62946	2,08	3 x 14	9,2	60,0	117,0
62947	2,08	4 x 14	10,1	80,0	141,0
62948	2,08	5 x 14	10,9	100,0	152,0
62949	2,08	6 x 14	11,5	120,0	216,0
62950	2,08	7 x 14	12,0	140,0	255,0
62951	2,08	9 x 14	14,7	180,0	312,0
62952	2,08	10 x 14	15,8	200,0	378,0

# TRAYCONTROL® 600

flexible, oil resistant, open installation TC-ER, PLTC-ER, ITC-ER, NFPA 79



Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62953	2,08	12 x 14	16,4	240,0	434,0
62954	2,08	16 x 14	18,0	320,0	550,0
62955	2,08	18 x 14	18,9	359,0	616,0
62956	2,08	19 x 14	19,0	380,0	634,0
62957	2,08	25 x 14	23,0	500,0	817,0
62958	3,31	2 x 12	9,7	63,0	132,0
62959	3,31	3 x 12	10,2	95,0	177,0
62960	3,31	4 x 12	11,2	127,0	201,0
62961	3,31	5 x 12	12,3	159,0	274,0
62962	3,31	6 x 12	13,6	191,0	315,0
62963	3,31	7 x 12	13,9	222,0	353,0
62964	3,31	9 x 12	16,4	286,0	476,0
62965	3,31	12 x 12	18,3	381,0	613,0
62966	3,31	16 x 12	19,8	508,0	783,0
62967	3,31	19 x 12	22,3	604,0	918,0
62968	3,31	20 x 12	23,1	636,0	916,0
62969	3,31	25 x 12	25,8	794,0	1286,0
62970	5,26	2 x 10	12,2	101,0	213,0
62971	5,26	3 x 10	12,9	151,5	283,0
62972	5,26	4 x 10	15,0	202,0	387,0
62973	5,26	5 x 10	16,3	252,5	473,0
62974	5,26	7 x 10	17,7	353,5	607,0

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62975	5,26	9 x 10	20,6	454,5	771,0
62976	5,26	12 x 10	24,1	606,0	1061,0
62977	5,26	19 x 10	27,2	959,5	1528,0
62978	8,37	4 x 8	19,2	321,4	615,0
62979	8,37	5 x 8	21,0	401,8	768,0
62980	13,3	3 x 6	19,5	383,1	700,0
62981	13,3	4 x 6	22,4	510,7	907,0
62982	13,3	5 x 6	24,5	638,4	1100,0
62983	21,2	3 x 4	24,4	610,6	1061,0
62984	21,2	4 x 4	27,0	814,1	1366,0
62985	21,2	5 x 4	29,9	1017,6	1631,0
62986	33,6	3 x 2	28,2	967,7	1480,0
62987	33,6	4 x 2	31,4	1290,3	1922,0
62988	33,6	5 x 2	34,6	1612,8	2360,0
62989	42,3	4 x 1	35,6	1624,0	2397,0
62990	52,9	4 x 1/0	38,7	2031,0	2938,0
62991	67,3	4 x 2/0	42,1	2584,0	3569,0
62992	84,4	4 x 3/0	49,4	3256,0	4181,0
62993	106,7	4 x 4/0	52,0	4097,0	5747,0
62994	128,4	4 x 250 kcmil	55,8	4931,0	7591,0
62995	181,9	4 x 350 kcmil	64,3	6985,0	8299,0
62996	257,6	4 x 500 kcmil	74,1	9892,0	11549,0

Dimensions and specifications may be changed without prior notice. (RN01)



# TRAYCONTROL® 600-C

flexible, oil resistant, screened, open installation (TC-ER), NFPA 79, EMC-preferred type



## Technical data

- PVC power cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
UL/CSA TC -40°C to +90°C  
AWM -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
AWM 1000 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
6x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), UL Type WTTC, UL Type MTW NFPA 79, Oil Res I (Oil Res II also available), 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c (UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- TC-ER, Tray Cable Exposed Run
- Simple installation
- Outstanding flexibility

## Application

USA NFPA 79 compliant, screened, flexible power cable to 600 V (WTTC 1000 V), for all tool and plant construction machinery, suitable for installation in dry, damp and wet environments, outdoors and in pipes. For underground installation and for open, unprotected installation from the cable tray to the machine and industrial plants.

EMC = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm <sup>2</sup>	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63049	0,963	3 x 18	8,2	31,0	118,0
63050	0,963	4 x 18	8,8	52,0	136,0
63051	0,963	5 x 18	9,4	62,0	149,0
63052	0,963	7 x 18	10,1	83,0	193,0
63053	0,963	12 x 18	12,9	143,0	328,0
63054	0,963	18 x 18	15,7	207,0	431,0
63055	0,963	25 x 18	17,7	284,0	569,0
62997	1,31	3 x 16	8,9	57,0	144,0
63056	1,31	4 x 16	9,6	72,0	172,0
63057	1,31	5 x 16	10,3	84,0	186,0
63058	1,31	7 x 16	11,3	124,0	243,0
63059	1,31	12 x 16	15,1	199,0	421,0
63060	1,31	18 x 16	17,3	290,0	510,0
63061	1,31	25 x 16	19,6	384,0	704,0
63062	2,08	3 x 14	9,8	85,0	178,0
63063	2,08	4 x 14	10,7	115,0	220,0

Part no.	Cross-section mm <sup>2</sup>	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63064	2,08	5 x 14	11,6	139,0	264,0
63065	2,08	7 x 14	12,5	185,0	325,0
63066	2,08	12 x 14	16,9	309,0	591,0
63067	2,08	18 x 14	19,5	448,0	780,0
63068	2,08	25 x 14	23,3	632,0	1041,0
63069	3,31	4 x 12	12,2	179,0	313,0
63070	3,31	5 x 12	13,4	223,0	384,0
63071	3,31	7 x 12	15,5	298,0	492,0
63072	5,26	4 x 10	15,5	256,0	547,0
63073	5,26	5 x 10	16,8	312,0	608,0
63074	5,26	7 x 10	18,2	430,0	850,0
63075	8,37	4 x 8	19,9	426,0	851,0
63076	13,3	4 x 6	23,3	657,0	1197,0
63077	21,2	4 x 4	28,6	1026,0	1970,0
63078	33,6	4 x 2	33,2	1412,0	2874,0

Dimensions and specifications may be changed without prior notice. (RN01)

# TRAYCONTROL® 670 HDP / 670-C HDP flexible,

oil-resistant, open installation (TC-ER), NFPA 79 Edition 2012



## Technical data

- TPE motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range** flexing -40°C bis +105°C
- **Nominal voltage** TC 600 V AWM 1000 V TC Wind Turbine (WTTC) 1000 V
- **Test voltage** 4000 V
- **Minimum bending radius** 7,5 cable Ø
- **Coupling resistance (-C-type)** max. 250 Ohm/km

## Cable structure

- Bare copper-conductor, fine-wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-length
- Separator
- Outer sheath of special TPE
- Sheath colour orange (RAL 2003)
- with length marking in feet
- **C-Type** Screening with braid of tinned copper wires, optimal coverage, approx. 85%

## Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

### Tests

- **UL:** TC-ER, WTTC, MTW, NFPA 79 2012, UL AWM 105°C, OIL RES I & II, 75° C wet Bus Drop Cable, Class 1 Div. 2 per NEC Art. 336, 318, 501
- **CSA:** c (UL) CIC-TC FT4, AWM I/II A/B FT4

### Note

- HDP = Heavy Duty Power

## Application

HELUKABEL® TRAYCONTROL® 670 HDP / 670-C-HDP are multi-conductor severe duty motor supply cables with Bus Drop, TC-ER and CIC/TC approval. Superior oil performance for long cable life and permitted to be used in hazardous (classified) locations Class I Div 2 per NEC 336, 318 and 501. Special extruded sheath and fine copper stranding approved for exposed run, pipes and burial installation. Excellent flexibility and easier to pull than standard tray cables. Suitable for installation in the open unprotected installation on cable tray and from cable tray to machines according to NFPA 79 edition 2012.

Recommended Applications: Motor connections in industrial and automation environments, machine tool, automotive and renewable energies.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### TRAYCONTROL® 670 HDP

Part no.	No. cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
66820	4 x 1	18	8,4	39,0	103,0
66821	4 G 1,32	16	9,2	51,0	133,0
66822	4 G 2,08	14	10,0	80,0	170,0
66823	4 G 3,31	12	11,2	127,0	229,0
66824	4 G 6	10	15,2	230,0	393,0
66825	4 G 10	8	19,3	384,0	626,0
66826	4 G 16	6	22,4	614,0	885,0
66827	4 G 25	4	26,7	960,0	1301,0
66828	4 G 35	2	31,5	1344,0	1983,0

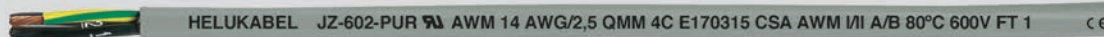
### TRAYCONTROL® 670-C HDP

Part no.	No. cores x cross-sec. mm²	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
66829	4 x 1	18	9,8	52,0	133,0
66830	4 G 1,32	16	10,5	72,0	159,0
66831	4 G 2,08	14	11,7	115,0	222,0
66832	4 G 3,31	12	12,8	179,0	283,0
66833	4 G 6	10	16,9	256,0	460,0
66834	4 G 10	8	22,1	426,0	741,0
66835	4 G 16	6	26,2	657,0	1059,0
66836	4 G 25	4	30,8	1026,0	1497,0
66837	4 G 35	2	35,0	1412,0	2058,0

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-602-PUR

80°C, 600 V, two approval control cable, meter marking



## Technical data

- Control cable of special-PUR to UL CSA AWM I/II A/B Style 20939 (sheath insulation) and CSA
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / BS 6360 cl.5 / IEC 60228 cl.55
- Core insulation of PVC compound type TI3 to DIN VDE 0207-363-3 / DIN EN 50363-3 and UL Style 10012
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Outer sheath of special **full-polyurethane**
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Resistant to mineral oils, synthetic oils, coolant, UV-radiation, oxygene, ozon, hydrolysis and microbes
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type: **JZ-602-C-PUR**

## Application

UL and CSA approved flexible control cable rated at 600 V, primarily designed for exporters to the US or Canadian market. Used in machine tools, control systems, connection between control panels and machines, assembly lines and other industrial equipment. Suitable for installation in dry, moist, wet and outdoor environment and moderate flexing applications.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12471	2 x 0,5	20	5,8	9,6	52,0
12472	3 G 0,5	20	6,1	14,0	64,0
12473	4 G 0,5	20	6,6	19,0	72,0
12474	5 G 0,5	20	7,3	24,0	88,0
12475	7 G 0,5	20	7,9	34,0	130,0
12476	8 G 0,5	20	8,8	38,4	145,0
12477	9 G 0,5	20	9,4	43,2	180,0
12478	12 G 0,5	20	10,6	58,0	196,0
12479	18 G 0,5	20	12,7	86,0	260,0
12480	25 G 0,5	20	15,0	120,0	368,0
12481	34 G 0,5	20	17,5	163,0	502,0
12482	41 G 0,5	20	18,8	197,0	594,0
12483	2 x 1	18	6,6	19,2	57,0
12484	3 G 1	18	7,0	27,0	68,0
12485	4 G 1	18	7,6	38,4	79,0
12486	5 G 1	18	8,4	48,0	97,0
12487	7 G 1	18	9,3	67,0	141,0
12488	8 G 1	18	10,1	76,8	152,0
12489	9 G 1	18	11,1	86,4	190,0
12490	12 G 1	18	12,5	115,2	211,0
12491	18 G 1	18	14,9	173,0	284,0
12492	25 G 1	18	17,8	240,0	394,0
12493	34 G 1	18	20,5	326,0	521,0
12494	41 G 1	18	22,3	394,0	609,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12495	2 x 1,5	16	7,2	28,8	75,0
12496	3 G 1,5	16	7,6	44,0	96,0
12497	4 G 1,5	16	8,3	58,0	117,0
12498	5 G 1,5	16	9,4	72,0	140,0
12499	7 G 1,5	16	10,2	101,0	186,0
12500	9 G 1,5	16	12,3	129,7	244,0
12501	12 G 1,5	16	13,7	173,0	319,0
12502	18 G 1,5	16	16,6	260,0	451,0
12503	25 G 1,5	16	19,8	360,0	625,0
12504	34 G 1,5	16	23,0	490,0	850,0
12505	41 G 1,5	16	24,9	590,0	1041,0
12506	2 x 2,5	14	8,0	48,0	115,0
12507	3 G 2,5	14	8,5	72,0	143,0
12508	4 G 2,5	14	9,5	96,0	185,0
12509	5 G 2,5	14	10,6	120,0	221,0
12510	7 G 2,5	14	11,6	168,0	293,0
12511	9 G 2,5	14	14,0	216,0	429,0
12512	12 G 2,5	14	15,7	288,0	563,0
12513	18 G 2,5	14	18,8	432,0	854,0
12514	19 G 2,5	14	18,8	456,0	914,0
12515	25 G 2,5	14	22,4	600,0	1188,0

# JZ-602-PUR

80°C, 600 V, two approval control cable, meter marking



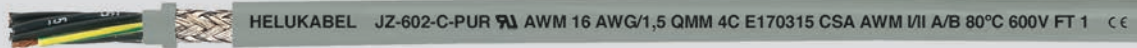
Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12516	3 G 4	12	10,0	115,0	232,0
12517	4 G 4	12	11,1	154,0	298,0
12518	5 G 4	12	12,5	192,0	358,0
12519	7 G 4	12	13,6	269,0	460,0
12520	3 G 6	10	11,5	173,0	360,0
12521	4 G 6	10	12,8	231,0	402,0
12522	5 G 6	10	14,3	288,0	484,0
12523	7 G 6	10	15,8	403,0	630,0
12524	3 G 10	8	14,9	288,0	535,0
12525	4 G 10	8	16,5	384,0	653,0
12526	5 G 10	8	18,5	480,0	786,0
12527	7 G 10	8	20,4	672,0	1100,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12528	2 x 16	6	19,4	307,0	640,0
12529	3 G 16	6	20,5	461,0	810,0
12530	4 G 16	6	22,8	615,0	1045,0
12531	5 G 16	6	25,3	768,0	1260,0
12532	7 G 16	6	28,0	1075,0	1760,0
12533	3 G 25	4	24,0	720,0	1180,0
12534	4 G 25	4	26,6	960,0	1507,0
12535	5 G 25	4	29,7	1200,0	1858,0
12536	7 G 25	4	32,6	1680,0	2830,0
12537	3 G 35	2	26,5	1008,0	1590,0
12538	4 G 35	2	29,2	1344,0	2123,0
12539	5 G 35	2	32,6	1680,0	2612,0
12540	4 G 50	1	35,5	1920,0	3058,0
12541	4 G 70	2/0	40,2	2688,0	4254,0

Dimensions and specifications may be changed without prior notice. (RN01)

# JZ-602-C-PUR

screened two approval control cable, 80°C, 600 V, EMC-preferred type, meter marking



## Technical data

- Special PUR-insulated to UL CSA AWM I/II A/B, Style 20939 and CSA
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
UL/CSA 600 V
- **Test voltage**  
3000 V
- **Breakdown voltage**  
min. 6000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper conductor, fine wire acc. to DIN VDE 0295 cl.5, BS 6360 cl.5 and IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3 and UL Style 10012
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- PVC-insulated inner sheath YM5 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Braided screen of tinned Cu wires, approx. 85% coverage
- Outer sheath of **full-polyurethane**
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Resistant to mineral oils, synthetic oils, coolant, UV-radiation, oxygene, ozon, hydrolysis and microbes
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:

### JZ-602 PUR

## Application

UL and CSA approved flexible control cables up to 600 V, for all machinery in tooling and plant construction, suitable for installation in dry, moist, wet and outdoor environments for medium mechanical loads. Designed for the export-orientated machinery manufacturer, specifically for USA and Canada.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12550	2 x 0,5	20	7,6	41,0	93,0
12551	3 G 0,5	20	8,0	45,0	124,0
12552	4 G 0,5	20	8,5	54,0	133,0
12553	5 G 0,5	20	9,3	66,0	153,0
12554	7 G 0,5	20	10,1	79,0	191,0
12555	9 G 0,5	20	11,6	94,0	243,0
12556	12 G 0,5	20	13,1	137,0	322,0
12557	18 G 0,5	20	15,3	156,0	374,0
12558	25 G 0,5	20	18,0	250,0	436,0
12559	34 G 0,5	20	20,9	316,0	560,0
12560	41 G 0,5	20	22,2	348,0	663,0
12561	2 x 1	18	8,4	54,0	107,0
12562	3 G 1	18	9,0	64,0	130,0
12563	4 G 1	18	9,6	76,0	155,0
12564	5 G 1	18	10,8	89,0	181,0
12565	7 G 1	18	11,5	114,0	209,0
12566	9 G 1	18	13,7	144,0	321,0
12567	12 G 1	18	15,1	186,0	341,0
12568	18 G 1	18	17,9	284,0	473,0
12569	25 G 1	18	21,1	387,0	650,0
12570	34 G 1	18	24,1	500,0	781,0
12571	41 G 1	18	26,5	578,0	892,0
12572	2 x 1,5	16	9,2	64,0	136,0
12573	3 G 1,5	16	9,7	82,0	165,0
12574	4 G 1,5	16	10,8	99,0	192,0
12575	5 G 1,5	16	11,6	123,0	224,0
12576	7 G 1,5	16	12,6	148,0	273,0
12577	9 G 1,5	16	15,0	187,0	340,0
12578	12 G 1,5	16	16,7	274,0	461,0
12579	18 G 1,5	16	20,0	386,0	674,0
12580	25 G 1,5	16	23,4	531,0	950,0
12581	34 G 1,5	16	27,0	671,0	1203,0
12582	41 G 1,5	16	29,2	840,0	1588,0
12583	2 x 2,5	14	10,2	110,0	173,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
12584	3 G 2,5	14	10,9	148,0	220,0
12585	4 G 2,5	14	11,7	169,0	270,0
12586	5 G 2,5	14	13,1	220,0	329,0
12587	7 G 2,5	14	14,4	284,0	428,0
12588	9 G 2,5	14	16,8	349,0	580,0
12589	12 G 2,5	14	18,6	470,0	761,0
12590	18 G 2,5	14	22,2	572,0	1140,0
12591	25 G 2,5	14	26,6	740,0	1551,0
12592	2 x 4	12	11,6	124,0	209,0
12593	3 G 4	12	12,4	178,0	310,0
12594	4 G 4	12	14,0	234,0	456,0
12595	5 G 4	12	15,1	284,0	532,0
12596	7 G 4	12	16,6	321,0	737,0
12597	2 x 6	10	13,4	176,0	318,0
12598	3 G 6	10	14,3	245,0	411,0
12599	4 G 6	10	15,4	316,0	572,0
12600	5 G 6	10	17,1	442,0	732,0
12601	7 G 6	10	18,6	530,0	961,0
12602	3 G 10	8	17,9	367,0	741,0
12603	4 G 10	8	20,0	549,0	988,0
12604	5 G 10	8	21,9	604,0	1202,0
12605	7 G 10	8	24,0	820,0	1743,0
12606	3 G 16	6	24,4	653,0	1088,0
12607	4 G 16	6	26,9	807,0	1662,0
12608	5 G 16	6	29,8	940,0	2021,0
12609	7 G 16	6	32,4	1345,0	2720,0
12610	3 G 25	4	28,2	920,0	1947,0
12611	4 G 25	4	30,8	1169,0	2591,0
12612	5 G 25	4	34,1	1420,0	3197,0
12613	7 G 25	4	37,4	1921,0	4530,0
12614	3 G 35	2	30,7	1250,0	2701,0
12615	4 G 35	2	33,8	1680,0	3277,0
12616	5 G 35	2	37,4	2020,0	4530,0
12617	4 G 50	1	40,6	2370,0	3370,0



## Technical data

- Special rubber cable adapted to DIN VDE 0250
- **Temperature range**  
flexing -25°C to +60°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
for continuous bending without forced guiding operation 12,5x cable Ø  
for flexing with forced guiding operation 20x cable Ø

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.6 col.4, extra fine wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of rubber
- Core identification to DIN VDE 0293-308  
- up to 5 cores coloured  
- from 6 cores, black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay length
- Support organ (hemp or sisal-string etc.) and/or taping with load carrying thread as construction permits
- Outer sheath of special rubber
- Sheath colour: black

## Properties

- Extensively oil, flat and alkali resistant
- Flame retardant

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Not suitable for a winding up and an unwinding on spring or motor cable reels.
- Break resistance must be taken into consideration.
- By the assembly the cables must be installed without torsion.
- The mobility of the stranded core is not be affected by using of clamps.
- The occurring pulling forces are to be carried by the support organ.

## Application

As robust and weather resistant cable for machines, equipment and appliances, which are constantly exposed to the outdoor weather conditions (e.g. building machinery, conveyor and hoist systems, dry docks etc.). They are ideal for use as control cable in trailing cables. They are also suitable in dry, damp and wet rooms and in open air for wall- and push-button panels and as power cable.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Tensile strength of susp. strand in N	Cu factor per km	Weight app. kg / km	AWG-No.
25001	2 x 1	7,2	-	19,0	90,0	18
25002	3 G 1	8,1	-	29,0	111,0	18
25003	4 G 1	9,2	-	38,0	141,0	18
25004	5 G 1	10,3	-	48,0	170,0	18
25005	6 G 1	11,1	-	58,0	187,0	18
25006	7 G 1	12,0	850	67,0	198,0	18
25007	9 G 1	14,4	300	86,0	274,0	18
25008	12 G 1	17,4	3750	115,0	369,0	18
25009	16 G 1	17,7	200	154,0	412,0	18
25010	18 G 1	17,7	425	173,0	435,0	18
25011	19 G 1	18,9	-	182,0	444,0	18
25012	20 G 1	19,5	-	192,0	472,0	18
25013	24 G 1	21,2	1850	230,0	552,0	18
25074	30 G 1	22,4	-	290,0	680,0	18
25014	36 G 1	23,8	550	346,0	784,0	18
25015	37 G 1	24,6	-	355,0	801,0	18
25016	48 G 1	28,7	1250	461,0	1098,0	18
25017	50 G 1	29,5	-	480,0	1296,0	18
25018	54 G 1	32,9	-	518,0	1399,0	18
25019	61 G 1	37,2	-	586,0	1495,0	18
25020	2 x 1,5	8,0	300	29,0	104,0	16
25021	3 G 1,5	8,7	200	43,0	124,0	16
25022	4 G 1,5	10,5	200	58,0	150,0	16
25023	5 G 1,5	11,0	400	72,0	180,0	16
25024	6 G 1,5	12,1	-	86,0	224,0	16
25025	7 G 1,5	13,4	1000	101,0	242,0	16
25026	8 G 1,5	14,2	1550	115,0	286,0	16
25027	9 G 1,5	14,7	1250	130,0	301,0	16
25028	10 G 1,5	16,1	-	144,0	360,0	16
25029	11 G 1,5	17,2	-	158,0	410,0	16
25030	12 G 1,5	19,3	4500	173,0	478,0	16
25031	13 G 1,5	19,4	-	187,0	515,0	16
25032	15 G 1,5	19,5	-	216,0	535,0	16
25033	18 G 1,5	19,7	555	259,0	570,0	16
25034	19 G 1,5	20,9	-	274,0	635,0	16
25035	24 G 1,5	22,2	2250	346,0	731,0	16
25036	37 G 1,5	26,3	-	533,0	988,0	16
25037	42 G 1,5	34,5	1700	605,0	1244,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Tensile strength of susp. strand in N	Cu factor per km	Weight app. kg / km	AWG-No.
25038	48 G 1,5	34,9	-	691,0	1510,0	16
25039	50 G 1,5	36,7	-	720,0	1642,0	16
25040	61 G 1,5	41,8	-	878,0	1950,0	16
25041	2 x 2,5	9,2	-	48,0	142,0	14
25042	3 G 2,5	10,2	200	72,0	172,0	14
25043	4 G 2,5	12,0	200	96,0	210,0	14
25044	5 G 2,5	14,0	860	120,0	310,0	14
25045	6 G 2,5	14,5	-	144,0	318,0	14
25046	7 G 2,5	14,9	1550	168,0	357,0	14
25075	8 G 2,5	16,8	-	192,0	450,0	14
25047	9 G 2,5	18,9	675	216,0	541,0	14
25048	11 G 2,5	22,3	-	264,0	638,0	14
25049	12 G 2,5	23,2	3250	288,0	748,0	14
25050	16 G 2,5	23,3	-	383,0	788,0	14
25051	18 G 2,5	23,3	700	432,0	827,0	14
25052	19 G 2,5	25,8	-	456,0	946,0	14
25053	24 G 2,5	27,1	2650	576,0	1097,0	14
25054	36 G 2,5	32,0	2700	864,0	1463,0	14
25055	37 G 2,5	40,8	-	888,0	1784,0	14
25056	48 G 2,5	41,9	-	1152,0	2500,0	14
25057	50 G 2,5	43,3	-	1200,0	2630,0	14
25058	61 G 2,5	49,3	-	1464,0	8100,0	14
25059	3 G 4	13,6	-	115,0	304,0	12
25060	4 G 4	14,0	480	154,0	336,0	12
25061	5 G 4	16,8	600	192,0	403,0	12
25062	7 G 4	19,2	-	269,0	495,0	12
25063	3 G 6	13,9	-	173,0	380,0	10
25064	4 G 6	17,0	720	230,0	422,0	10
25065	5 G 6	19,2	900	288,0	538,0	10
25066	7 G 6	21,1	-	403,0	702,0	10
25067	3 G 10	18,1	-	288,0	530,0	8
25068	4 G 10	21,8	1200	384,0	716,0	8
25069	5 G 10	22,6	-	480,0	923,0	8
25070	7 G 10	27,4	-	672,0	1288,0	8
25071	3 G 16	21,3	-	461,0	865,0	6
25072	4 G 16	25,2	-	614,0	1028,0	6
25073	5 G 16	26,5	-	768,0	1260,0	6

Dimensions and specifications may be changed without prior notice. (RF01)



### Technical data

- Rubber sheath cable acc. to DIN VDE 0250-812
- **Temperature range**  
flexing -25°C to +80°C  
fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- Max. permissible **operating voltage**  
- 3-Phase and single phase operation 700/1200 V  
- DC operation 900/1800 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
fixed installation 4x outer Ø  
flexing 5x outer Ø  
without forced operation 7,5x outer Ø

### Cable structure

- Tinned copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of rubber (EPR) compound type 3GI3 acc. to DIN VDE 0207-20
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay length
- Inner sheath of rubber compound type GM1b acc. to DIN VDE 0207-21
- Outer sheath of rubber compound type 5GM5 acc. to DIN VDE 0207-21
- Sheath colour: yellow

### Properties

- Resistant against hot penetration
- Abrasion resistant
- Notch resistant

### Resistant against

- Oils, ozone
- Fats and chemicals

### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Oil resistant to DIN EN 60811-404

### Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

### Application

Are suited as a connecting cable for very high mechanical stress in underground mining and tools for use in industries and outdoor use. They are also used for mining industry, surface mining, stone-pits, on building sites, outdoors as well as indoors. Suitable for fixed installation on plaster in dry, damp and wet areas. Not suitable for drumming and use in all types of machinery, such as robots, handling units and energy transfer units, where constant mobility is essential.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
38001	1 x 16	13,5	154,0	336,0	6
38002	1 x 25	16,5	240,0	473,0	4
38003	1 x 35	18,0	336,0	635,0	2
38004	1 x 50	20,0	480,0	866,0	1
38005	1 x 70	22,0	672,0	1145,0	2/0
38006	1 x 95	25,0	912,0	1475,0	3/0
38007	1 x 120	27,5	1152,0	1832,0	4/0
38008	1 x 150	30,0	1440,0	2000,0	300 kcmil
38009	1 x 185	34,0	1776,0	2450,0	350 kcmil
38010	1 x 240	37,0	2304,0	3190,0	500 kcmil
38011	2 x 2,5	16,0	48,0	205,0	14
38012	3 G 1,5	15,0	43,0	173,0	16
38013	3 G 2,5	16,5	72,0	247,0	14
38014	3 G 4	20,0	115,0	336,0	12
38015	3 G 6	22,0	173,0	520,0	10
38016	4 G 1,5	16,0	58,0	210,0	16
38017	4 G 2,5	19,0	96,0	305,0	14
38018	4 G 4	21,5	154,0	415,0	12
38019	4 G 6	23,0	230,0	641,0	10
38020	4 G 10	27,5	384,0	1113,0	8
38021	4 G 16	37,0	614,0	1412,0	6
38022	4 G 25	39,0	960,0	2095,0	4
38023	4 G 35	42,5	1344,0	2777,0	2
38024	4 G 50	49,0	1920,0	3817,0	1
38025	4 G 70	53,5	2688,0	5071,0	2/0
38026	4 G 95	61,5	3648,0	6636,0	3/0
38027	4 G 120	68,0	4608,0	7000,0	4/0

Dimensions and specifications may be changed without prior notice. (RF01)

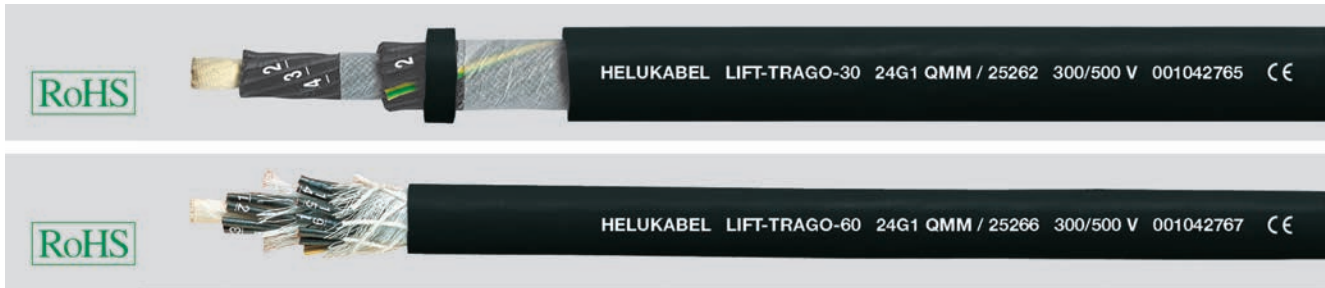
Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
38028	5 G 1,5	17,0	72,0	252,0	16
38029	5 G 2,5	20,0	120,0	362,0	14
38030	5 G 4	23,0	192,0	509,0	12
38031	5 G 6	26,5	288,0	798,0	10
38035	5 G 10	30,0	480,0	1120,0	8
38036	5 G 16	34,0	768,0	1680,0	6
38037	5 G 25	42,0	1200,0	2430,0	4
38038	7 G 1,5	19,5	101,0	470,0	16
38032	7 G 2,5	21,5	168,0	546,0	14
38039	10 G 1,5	22,0	144,0	560,0	16
38033	12 G 2,5	28,0	288,0	851,0	14
38040	18 G 2,5	33,0	432,0	1230,0	14
40129	19 G 1,5	28,5	274,0	871,0	16
38034	19 G 2,5	33,5	466,0	1260,0	14

### 3 + 1/2 conductor (GN-YE)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
40130	3 x 70/35	53,5	2352,0	3958,0	2/0
40131	3 x 95/50	61,5	3216,0	5116,0	3/0
40132	3 x 120/70	68,0	4128,0	6388,0	4/0
40133	3 x 150/70	73,0	4992,0	7040,0	300 kcmil



# LIFT-TRAGO®-30 / -60 lift hoist control cable, pendal length 30m resp. 60m



## Technical data

- Lift hoist control cables with strain bearing element to IEC 60227-6 edition 2001-06 and adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- **Max. conductor temperature**  
under load +70°C  
circuit conditions +150°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage**  
min. 6000 V
- **Minimum bending radius**  
20x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded with optimal lay-length acc. to the number of cores in one or two layers, over a central Suspension strand of textile.  
LIFT-TRAGO®-30 - Fleece wrapping  
LIFT-TRAGO®-60 - Support braiding of textile suspension strands
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1
- Colour black (RAL 9005)

## Properties

- Extensively oil resistant  
Chemical Resistance - see table Technical Informations
  - The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Tests**
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- Cable for pendal length 60 m and above available on request.

## Application

These cables are used as control or feeder cables in lifts and hoists.

- 30 m pendal length - LIFT-TRAGO®-30
- 60 m pendal length - LIFT-TRAGO®-60

Suspension height for medium mechanical stresses in dry and moist rooms.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### LIFT-TRAGO®-30

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Support core	Pendal length max. m	AWG-No.
25259	7 G 1	11,5	67,0	170,0	Textile	30	18
25260	12 G 1	15,7	115,0	325,0	Textile	30	18
25261	18 G 1	16,1	173,0	390,0	Textile	30	18
25262	24 G 1	19,2	230,0	530,0	Textile	30	18

### LIFT-TRAGO®-60

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Support core	Pendal length max. m	AWG-No.
25263	7 G 1	12,3	67,0	185,0	Textile	60	18
25264	12 G 1	16,2	115,0	335,0	Textile	60	18
25265	18 G 1	16,7	173,0	400,0	Textile	60	18
25266	24 G 1	19,8	230,0	540,0	Textile	60	18
25267	30 G 1	22,5	288,0	690,0	Textile	60	18
25268	36 G 1	28,2	346,0	930,0	Steel	60	18

Dimensions and specifications may be changed without prior notice. (RF01)





## Technical data

- Lift hoist control cables with strain bearing element Special PVC-compound for core and sheath, adapted to DIN VDE 0250
- **Temperature range**  
flexing -15°C to +70°C  
fixed installation -40°C to +70°C
- **Max. conductor temperature**  
under load +70°C  
circuit conditions +150°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage** 3000 V
- **Breakdown voltage**  
min. 6000 V
- **Minimum bending radius**  
20x cable Ø

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special PVC, T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN VDE 0293
- GN-YE conductor
- Special hemp support braid for **Trago** type with central support core of hemp for **Lift-2S** type with 2 outer steel support wires
- Cores stranded in layers with optimal lay-length
- Multi-layer wrapping functioning as a support braid
- Outer sheath of special PVC TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour black (RAL 9005)

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

These cables are used as control or feeder cables in lifts and hoists. The special attention given to both production and material quality for these cables has made them ideal even for use under extreme conditions. HELUKABEL®-Lift-2S has also proven itself to be ideally suited for installation in conveyor systems and manual control units. The external steel support wires can be dismantled without damaging the cable insulation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### TRAGO with central support

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Support core	Pendal length max. m	AWG-No.
25080	7 G 0,75	15,4	50,0	290,0	Hemp	250	19
25081	12 G 0,75	19,2	86,0	360,0	Hemp	220	19
25082	18 G 0,75	21,0	130,0	455,0	Hemp	110	19
25083	24 G 0,75	23,0	173,0	535,0	Hemp	90	19
25084	7 G 1	14,9	67,0	222,0	Hemp	80	18
25085	12 G 1	20,0	115,0	415,0	Hemp	80	18
25086	18 G 1	21,4	173,0	450,0	Hemp	70	18
25087	20 G 1	21,6	192,0	490,0	Hemp	70	18
25088	24 G 1	23,2	230,0	605,0	Hemp	60	18
25089	36 G 1	26,1	346,0	950,0	Hemp	90	18

### Lift-2S with 2 external support cores

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Support core	Pendal length max. m	AWG-No.
25091	12 G 1	13,5	115,2	446,0	Steel	50	18
25092	18 G 1	16,2	172,8	528,0	Steel	50	18
25093	25 G 1	19,0	240,0	660,0	Steel	50	18
25094	30 G 1	21,9	288,0	760,0	Steel	50	18
25095	8 G 1,5	14,7	115,0	425,0	Steel	50	16
25096	12 G 1,5	16,0	172,8	505,0	Steel	50	16
25097	15 G 1,5	19,5	230,0	575,0	Steel	50	16
25098	18 G 1,5	19,3	259,0	640,0	Steel	50	16
25099	20 G 1,5	19,5	288,0	715,0	Steel	50	16
25100	24 G 1,5	22,5	346,0	820,0	Steel	50	16

Dimensions and specifications may be changed without prior notice. (RF01)

# HELUPOWER® AQUATIC-750-BLUE

Drinking and salt water cable



## Technical data

- Special cable in reference to DIN VDE 0250 / DIN VDE 0285-525-1 / DIN EN 50525-1
- **Temperature range**  
flexing -25°C to +50°C  
fixed installation -40°C to +80°C
- **Temperature in water** +60°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  
 $U_0/U$  450/750 V
- **Test voltage**  
2,5 kV
- **Minimum bending radius**  
fixed installation 5x outer Ø

## Cable structure

- Bare copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of PVC
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
≤ 5 cores: coloured
- GN-YE conductor, 3 cores and above
- Cores stranded with optimal lay length
- Outer sheath of cross-linked special compound
- Sheath colour: blue (RAL 5015)

## Properties

- Specially developed and tested for the absence of microbial growth and the emission of toxic substances.
- Resistant to chlorine up to 0,6 mg/l
- Resistant to salt water up to 6 %

## Approvals:

- DVGW: KTW BWGL
- WRAS
- DM 174
- PZH: Certificate  
B.BK.60110.0936.2022 NIZP PZH -  
PIB valid until 07.09.2025

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Useful for average mechanical stresses in continuously submerging pump lines for drinking and utility water, with a maximum immersion depth of 600 m. Useful as a connection cable in processing plants in the food and beverage industry, as well as fishponds and aquariums.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11018127	1 x 1	4,1	9,6	22,0	18
11018128	1 x 1,5	4,3	14,4	27,0	16
11018129	1 x 2,5	5,4	24,0	44,0	14
11018130	1 x 4	5,8	38,0	59,0	12
11018131	1 x 6	6,8	58,0	83,0	10
11018132	1 x 10	7,8	96,0	127,0	8
11018133	1 x 16	8,7	154,0	185,0	6
11018134	1 x 25	10,3	240,0	277,0	4
11018135	2 x 1	6,8	19,0	55,0	18
11018136	2 x 1,5	7,3	29,0	68,0	16
11018137	2 x 2,5	8,7	48,0	103,0	14
11018138	2 x 4	10,1	77,0	148,0	12
11018139	2 x 6	11,4	115,0	203,0	10
11018140	2 x 10	14,0	192,0	317,0	8
11018141	2 x 16	15,7	307,0	451,0	6
11018142	2 x 25	19,0	480,0	681,0	4
11018143	3 G 1	7,2	29,0	68,0	18
11018144	3 G 1,5	7,7	43,0	84,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11018145	3 G 2,5	9,2	72,0	129,0	14
11018146	3 G 4	10,8	115,0	191,0	12
11018147	3 G 6	12,2	173,0	265,0	10
11018148	3 G 10	15,0	288,0	417,0	8
11018149	3 G 16	16,8	461,0	603,0	6
11018150	3 G 25	20,4	720,0	915,0	4
11018151	4 G 1	7,8	38,0	83,0	18
11018152	4 G 1,5	8,4	58,0	104,0	16
11018153	4 G 2,5	10,1	96,0	161,0	14
11018154	4 G 4	11,9	154,0	241,0	12
11018155	4 G 6	13,4	230,0	335,0	10
11018156	4 G 10	16,6	384,0	530,0	8
11018157	4 G 16	18,6	614,0	771,0	6
11018158	4 G 25	22,8	960,0	1179,0	4
11020233	4 G 35	28,3	1344,0	1710,0	2
11020231	5 G 1	8,5	48,0	102,0	18
11020234	5 G 1,5	10,2	72,0	140,0	16
11020232	5 G 2,5	11,2	120,0	200,0	14

Dimensions and specifications may be changed without prior notice. (R101)



## Technical data

- Special cables corresponding adapted to DIN VDE 0250/DIN VDE 0285-525-2-21/DIN EN 50525-2-21
- **Temperature range** (max. temperature for the outer surface) -40°C to +80°C
- **Temperature limit in water:** max. +40°C, max. +60°C with limited duration of life
- **Temperature limit in air:** flexible -25°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  450/750 V
- **Operating voltage** at alternating and three-phase currents  $U_0/U$  413/825 V at direct currents  $U_0/U$  619/1238 V
- **Test voltage** 2,5 kV, 15 min
- Max. permitted **tensile stress** per mm<sup>2</sup> conductor 15 N
- **Minimum bending radius flexing** up to 8 mm cable Ø: 3x cable Ø > 8-12 mm cable Ø: 4x cable Ø > 12 mm cable Ø: 5x cable Ø
- **fixed installation** up to 12 mm cable Ø: 3x cable Ø > 12 mm cable Ø: 4x cable Ø

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation to EPR
- Core identification to DIN VDE 0293
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of special EPR
- Sheath colour blue

## Properties

- Good insulation properties when submerged in water
- Minimal weight gain under water
- The mechanical stability of the insulation materials remains constant even when submerged
- As rotor-connection cable for motors up to 1000 V with protected fixed installation in tubes.

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Tauchflex-R is a special cable for use as a connecting and control cable for submersible motor pumps, underwater floodlights, floating switch and has proven its worth for constant use in drinking water, process water and service water up to an immersion depth of 300 m.

Tauchflex-R can also be installed for use in dry, damp and humid areas as well as in the open air. Not suitable for the installation in hazardous areas.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
37100	1 x 1,5	6,0	14,0	54,0	16
37101	1 x 2,5	6,7	24,0	76,0	14
37102	1 x 4	7,2	38,0	105,0	12
37103	1 x 6	7,9	58,0	135,0	10
37104	1 x 10	9,5	96,0	200,0	8
37105	1 x 16	11,5	154,0	290,0	6
37106	1 x 25	13,5	240,0	400,0	4
37107	1 x 35	15,0	336,0	560,0	2
37108	1 x 50	17,5	480,0	730,0	1
37109	1 x 70	20,0	672,0	1000,0	2/0
37110	1 x 95	22,5	912,0	1250,0	3/0
37111	1 x 120	24,0	1152,0	1650,0	4/0
37112	1 x 150	25,2	1440,0	2000,0	300 kcmil
37113	1 x 185	27,6	1776,0	2460,0	350 kcmil
37114	1 x 240	30,6	2304,0	3050,0	500 kcmil
37115	1 x 300	33,5	2880,0	3700,0	600 kcmil
37116	2 x 1,5	8,5	29,0	130,0	16
37117	2 x 2,5	10,2	48,0	190,0	14
37118	2 x 4	11,8	77,0	260,0	12
37119	2 x 6	13,1	115,0	350,0	10
37120	2 x 10	17,7	192,0	550,0	8
37121	2 x 16	20,2	307,0	900,0	6
37122	2 x 25	24,3	480,0	1300,0	4
37123	3 G 1,5	9,5	43,0	150,0	16
37124	3 G 2,5	11,0	72,0	205,0	14
37125	3 G 4	13,0	115,0	330,0	12
37126	3 G 6	14,5	173,0	470,0	10

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
37127	3 G 10	19,0	288,0	750,0	8
37128	3 G 16	23,5	461,0	1110,0	6
37129	3 G 25	28,5	720,0	1450,0	4
37130	3 G 35	32,0	1008,0	2150,0	2
37131	3 G 50	37,0	1440,0	2800,0	1
37132	3 G 70	42,0	2016,0	3750,0	2/0
37133	3 G 95	43,3	2736,0	4590,0	3/0
37134	3 G 120	49,0	3456,0	5400,0	4/0
37135	4 G 1,5	10,7	58,0	190,0	16
37136	4 G 2,5	12,3	96,0	270,0	14
37137	4 G 4	14,0	154,0	380,0	12
37138	4 G 6	15,5	230,0	520,0	10
37139	4 G 10	21,0	384,0	955,0	8
37140	4 G 16	25,5	614,0	1400,0	6
37141	4 G 25	31,0	960,0	1950,0	4
37142	4 G 35	35,0	1344,0	2650,0	2
37143	4 G 50	41,0	1920,0	3600,0	1
37144	4 G 70	46,5	2688,0	4890,0	2/0
37145	4 G 95	51,6	3648,0	6180,0	3/0
37146	4 G 120	56,1	4608,0	7200,0	4/0
37147	5 G 1,5	11,2	72,0	225,0	16
37148	5 G 2,5	13,3	120,0	335,0	14
37149	5 G 4	15,6	192,0	470,0	12
37150	5 G 6	17,5	288,0	645,0	10
37151	5 G 10	22,9	480,0	1150,0	8
37152	5 G 16	26,4	768,0	1690,0	6
37153	5 G 25	32,0	1200,0	2400,0	4

Dimensions and specifications may be changed without prior notice. (RI01)



## Technical data

- Special cables corresponding adapted to DIN VDE 0250/DIN VDE 0285-525-2-21/DIN EN 50525-2-21
- **Temperature range** (max. temperature for the outer surface) -40°C to +80°C
- **Temperature limit in water:** max. +40°C, max. +60°C with limited duration of life
- **Temperature limit in air:** flexible -25°C to +80°C fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  450/750 V
- **Operating voltage** at alternating and three-phase currents  $U_0/U$  413/825 V at direct currents  $U_0/U$  619/1238 V
- **Test voltage** 2,5 kV, 15 min.
- Max. permitted **tensile stress** per mm<sup>2</sup> conductor 15 N
- **Minimum bending radius** flexing 5x cable thickness fixed installation 4x cable thickness

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of EPR
- Core identification to DIN VDE 0293
- GN-YE conductor, 3 cores and above
- Cores laying parallel
- Outer sheath of special ERP
- Sheath colour blue

## Properties

- Good insulation properties when submerged in water
- Minimal weight gain under water
- The mechanical stability of the insulation materials remains constant even when submerged
- As rotor-connection cable for motors up to 1000 V with protected fixed installation in tubes.

## Note

- G = with green-yellow conductor
- x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

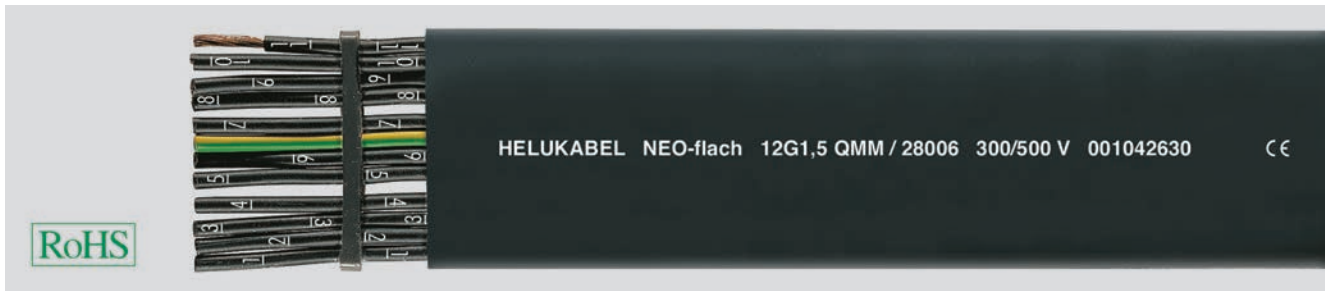
## Application

Tauchflex-FL is a special cable for use as a connecting and control cable for submersible motor pumps, underwater floodlights, floating switch and has proven its worth for constant use in drinking water, process water and service water up to an immersion depth of 300 m. Tauchflex-FL can also be installed for use in dry, damp and humid areas as well as in the open air. Not suitable for the installation in hazardous areas. CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
37155	3 x 1,5	7,0 x 13,0	43,0	125,0	16
37156	3 x 2,5	8,0 x 16,0	72,0	185,0	14
37157	3 x 4	9,0 x 19,0	115,0	290,0	12
37158	3 x 6	10,0 x 23,0	173,0	400,0	10
37159	3 x 10	12,0 x 28,0	288,0	615,0	8
37160	3 x 16	14,0 x 31,0	461,0	890,0	6
37161	3 x 25	17,0 x 37,0	720,0	1155,0	4
37162	3 x 35	17,0 x 38,0	1008,0	1540,0	2
37163	3 x 50	20,0 x 45,0	1440,0	2190,0	1
37164	3 x 70	22,0 x 52,0	2016,0	2890,0	2/0
37165	3 x 95	25,0 x 58,0	2736,0	3800,0	3/0
37166	3 x 120	27,0 x 64,0	3456,0	4700,0	4/0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
37167	4 G 1,5	7,0 x 17,0	58,0	160,0	16
37168	4 G 2,5	8,0 x 20,0	96,0	245,0	14
37169	4 G 4	9,0 x 24,0	154,0	330,0	12
37170	4 G 6	10,0 x 26,0	230,0	450,0	10
37171	4 G 10	11,0 x 31,0	384,0	850,0	8
37172	4 G 16	13,0 x 36,0	614,0	1200,0	6
37173	4 G 25	15,0 x 45,0	960,0	1590,0	4
37174	4 G 35	17,0 x 48,0	1344,0	2085,0	2
37175	4 G 50	20,0 x 59,0	1920,0	2890,0	1

Dimensions and specifications may be changed without prior notice. (R101)



## Technical data

- Special Neoprene-flat cable adapted to DIN VDE 0250 part 809
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**  
10x cable thickness
- **Radiation resistance**  
up to  $50 \times 10^6$  cJ/kg (up to 50 Mrad)

## Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295, BS 6360, IEC 60228
- Conductor construction  
35-120 mm<sup>2</sup> class 5: fine-wire  
1,5-25 mm<sup>2</sup> class 6 col.4: extra-fine-wire
- Special rubber core insulation
- Core identification to DIN VDE 0293  
- up to 5 cores coloured  
- from 7 cores, black with continuous white numbering
- Cores laying parallel
- GN-YE conductor
- Outer sheath of special rubber 5GM3, to DIN VDE 0207 part 21
- Sheath colour black

## Properties

- Special rubber outer sheath, cold-resistant
  - Extensively oil resistant, oil-/chemical resistance  
see table Technical Informations
  - Extremely small bending radius
  - High flexibility
  - Minimum waste of space
  - Packaging possibility
  - Outdoor application
- Tests**
- Behaviour in fire to DIN VDE 0482-332-1-2  
DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- Part no. 28007 and 28013 (6x4).
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Neoprene type of flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. These cables are also available for export with UL-approval on request.

### Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolley on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trolleys must be wider than the double thickness of a cable-packet.
- During the packaging performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm<sup>2</sup>, is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

CE The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28001	4 G 1,5	5,9 x 16,2	58,0	234,0	16
28002	5 G 1,5	5,9 x 23,7	72,0	304,0	16
28003	7 G 1,5	5,9 x 30,5	101,0	391,0	16
28004	8 G 1,5	5,9 x 34,0	115,0	441,0	16
28005	10 G 1,5	5,9 x 43,5	144,0	460,0	16
28006	12 G 1,5	6,5 x 50,4	173,0	646,0	16
28007	24 G 1,5 (6 x 4)	13,0 x 56,0	346,0	1290,0	16
28008	4 G 2,5	7,2 x 19,6	96,0	316,0	14
28009	5 G 2,5	7,2 x 27,8	120,0	391,0	14
28010	7 G 2,5	7,2 x 36,1	168,0	533,0	14
28011	8 G 2,5	7,2 x 40,2	192,0	602,0	14
28012	12 G 2,5	7,8 x 59,4	288,0	890,0	14
28013	24 G 2,5 (6 x 4)	15,5 x 66,8	576,0	1480,0	14
28014	4 G 4	8,8 x 24,2	154,0	506,0	12
28015	5 G 4	8,8 x 33,4	192,0	621,0	12
28016	7 G 4	8,8 x 42,5	269,0	851,0	12
28017	4 G 6	9,6 x 27,4	230,0	661,0	10
28018	5 G 6	9,6 x 37,4	288,0	740,0	10
28019	7 G 6	9,6 x 47,2	403,0	1004,0	10
28020	4 G 10	10,4 x 30,8	384,0	1027,0	8
28021	5 G 10	10,4 x 41,6	480,0	1171,0	8

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28022	4 G 16	11,6 x 35,6	614,0	1430,0	6
28023	5 G 16	12,2 x 48,2	768,0	1590,0	6
28024	4 G 25	14,1 x 45,8	960,0	1890,0	4
28025	5 G 25	14,7 x 58,3	1200,0	2215,0	4
28026	7 G 25	15,3 x 78,7	1680,0	3000,0	4
28027	4 G 35	15,8 x 50,8	1344,0	2460,0	2
28028	5 G 35	16,4 x 64,4	1680,0	2880,0	2
28029	7 G 35	16,4 x 86,4	2352,0	4100,0	2
28030	4 G 50	18,6 x 60,2	1920,0	3385,0	1
28031	4 G 70	21,0 x 68,0	2688,0	4480,0	2/0
28032	4 G 95	24,1 x 78,6	3648,0	5990,0	3/0
28033	4 G 120	25,5 x 84,2	4608,0	7240,0	4/0

Dimensions and specifications may be changed without prior notice. (RJ01)



## Technical data

- Special-Neoprene-flat cable, screened, adapted to DIN VDE 0250 part 809
- **Temperature range**  
flexing -30°C bis +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**  
15x cable thickness
- **Radiation resistance**  
up to  $50 \times 10^6$  cJ/kg (up to 50 Mrad)

## Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special rubber
- Core identification to DIN VDE 0293  
- up to 5 cores coloured  
- from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores screened individually
- Cores laying parallel
- Copper screened braiding, approx. 85% coverage
- Outer sheath of special Neoprene
- Outer sheath color black (RAL 9005)

## Properties

- Outer sheath cold resistant
- Extensively oil resistant
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packeting possibility
- The high degree of screening density assures disturbance-free transmission of all signal and impulses
- Outdoor application

## Tests

- Behaviour in fire to DIN VDE 0482-332-1-2  
DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Neoprene screened flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. These cables are also available for export with UL-approval on request.

## Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolley on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trolleys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm<sup>2</sup>, is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu. factor per km	Weight app. kg / km	AWG-No.
28100	8 G 1,5	7,9 x 42,0	231,0	520,0	16	28103	6 G 2,5	8,5 x 34,5	247,0	540,0	14
28101	12 G 1,5	7,9 x 61,0	346,0	790,0	16	28104	12 G 2,5	8,9 x 68,0	494,0	1000,0	14
28102	4 G 2,5	8,5 x 25,5	164,0	420,0	14	28302	4 G 25	16,0 x 51,0	1116,0	1650,0	4

Dimensions and specifications may be changed without prior notice. (RJ01)



HELUKABEL® HELUTHERM® 120 3G1 QMM / 24021 300/500 V CE

### TECHNICAL DATA

**PVC control and connection cable in alignment with DIN VDE 0285-525-2-11 / DIN EN 50525-2-11**

<b>Temperature range</b>	flexible -5°C to +105°C fixed -30°C to +105°C
<b>Nominal voltage</b>	0.5 - 1 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 1.5 - 4 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V
<b>Test voltage core/core</b>	2000 V
<b>Breakdown voltage</b>	4000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T13)
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black  
2 - 5 core(s): colour coded  
6 - 25 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24002	2 x 0.5	20	4.8	9.6	40.0
24003	3 G 0.5	20	5.1	14.4	50.0
24004	4 G 0.5	20	5.5	19.2	60.0
24005	5 G 0.5	20	6.2	24.0	70.0
24006	7 G 0.5	20	6.7	33.6	90.0
24007	12 G 0.5	20	9.0	58.0	140.0
24008	18 G 0.5	20	10.7	86.0	170.0
24009	25 G 0.5	20	12.6	101.0	250.0
24011	2 x 0.75	19	5.3	14.4	52.0
24012	3 G 0.75	19	5.6	21.6	61.0
24013	4 G 0.75	19	6.3	29.0	75.0
24014	5 G 0.75	19	6.9	36.0	94.0
24015	7 G 0.75	19	7.7	50.0	112.0
24016	12 G 0.75	19	10.0	86.0	180.0
24017	18 G 0.75	19	12.2	130.0	270.0
24018	25 G 0.75	19	14.3	180.0	380.0
24019	1 x 1	18	3.5	9.6	50.0
24020	2 x 1	18	5.6	19.2	60.0
24021	3 G 1	18	6.1	29.0	73.0
24022	4 G 1	18	6.6	38.0	88.0
24023	5 G 1	18	7.5	48.0	110.0
24024	6 G 1	18	8.1	58.0	121.0

- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM3)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

### ■ PROPERTIES

- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### ■ APPLICATION

For flexible application with medium mechanical stress and free movement without tensile stress and without forced movement guidance in dry, damp and wet rooms as well as outdoors; as control and connection cable for machines, devices, systems, motors or transformers in whose immediate vicinity increased temperatures occur (e.g. painting and drying lines).

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24025	7 G 1	18	8.1	67.0	130.0
24026	12 G 1	18	10.8	115.0	223.0
24027	18 G 1	18	12.9	173.0	350.0
24028	25 G 1	18	15.4	240.0	485.0
24030	2 x 1.5	16	7.2	29.0	77.0
24031	3 G 1.5	16	7.8	43.0	97.0
24032	4 G 1.5	16	8.5	58.0	122.0
24033	5 G 1.5	16	9.6	72.0	143.0
24034	7 G 1.5	16	10.6	101.0	179.0
24035	12 G 1.5	16	14.1	173.0	310.0
24036	18 G 1.5	16	17.0	259.0	460.0
24037	25 G 1.5	16	20.2	360.0	650.0
24039	2 x 2.5	14	8.6	48.0	120.0
24046	3 G 2.5	14	9.3	72.0	150.0
24040	4 G 2.5	14	10.4	96.0	200.0
24041	5 G 2.5	14	11.4	120.0	250.0
24042	7 G 2.5	14	12.6	168.0	310.0
24044	2 x 4	12	10.0	77.0	180.0
24291	3 G 4	12	10.8	115.0	220.0
24045	4 G 4	12	12.0	154.0	300.0
24292	5 G 4	12	13.4	192.0	360.0



# HELUTHERM® 145 MULTI

temperature-resistant, cross-linked, improved behaviour in case of fire



HELUKABEL® HELUTHERM® 145 MULTI 4G1,5 QMM / 53454 450/750 V CE

## TECHNICAL DATA

### Control and connection cable

<b>Temperature range</b>	flexible -35°C to +120°C fixed -55°C to +145°C
<b>Short circuit temperature at the conductor</b>	+200°C
<b>Nominal voltage</b>	0.25 - 1 mm <sup>2</sup> : AC U <sub>0</sub> /U 300/500 V 1.5 - 95 mm <sup>2</sup> : AC U <sub>0</sub> /U 450/750 V 1.5 - 95 mm <sup>2</sup> : fixed and protected installation AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: cross-linked polyolefin
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black or green-yellow  
2 - 5 core(s): colour coded  
6 - 37 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Fleece wrapping
- Outer sheath: cross-linked polyolefin
- Sheath colour: black
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, weathering effects
- abrasion-resistant, notch-resistant
- for outdoor use
- halogen-free

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52630	1 G 0.25	24	2.9	2.0	11.0
53376	1 x 0.25	24	2.9	2.0	11.0
53377	2 x 0.25	24	4.6	5.0	29.0
53378	3 G 0.25	24	4.9	7.0	34.0
53379	4 G 0.25	24	5.5	10.0	42.0
53380	5 G 0.25	24	5.8	12.0	47.0
53381	6 G 0.25	24	6.5	14.4	58.0
53382	7 G 0.25	24	6.9	16.8	64.0
53383	8 G 0.25	24	7.3	19.2	71.0
53384	10 G 0.25	24	8.1	24.0	84.0
53385	12 G 0.25	24	8.1	28.8	90.0
53386	14 G 0.25	24	8.6	33.6	102.0
53387	16 G 0.25	24	8.9	38.4	114.0

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- no fire propagation, no release of corrosive and toxic gases

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404, IRM 902 4h at +70°C
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- Certifications:  
0.5 - 95 mm<sup>2</sup>: DNV GL

## ■ APPLICATION

Cross-linked, temperature-resistant and halogen-free control and connection cable with enhanced behavior in case of fire; to connect lighting fixtures, heaters, electrical machinery, switching systems and distributors. Excellent high-temperature stability allows for a long service life. Resistant to weathering effects, moisture, ozone and UV radiation and therefore suitable for outdoor applications, e.g. traffic control systems. Low smoke development and no emission of corrosive gases in case of fire. Low fire load reduces risk of toxic fumes. The extent of damage to costly control and monitoring systems and the concrete and steel structures of buildings and plants due to fire can be reduced.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
53388	19 G 0.25	24	10.1	45.6	132.0
53389	21 G 0.25	24	10.5	50.4	145.0
52631	1 G 0.5	20	3.2	4.8	15.7
53391	1 x 0.5	20	3.2	4.8	15.7
53392	2 x 0.5	20	5.3	10.0	39.6
53393	3 G 0.5	20	5.5	14.4	48.1
53394	4 G 0.5	20	5.9	19.2	51.0
53395	5 G 0.5	20	7.0	24.0	64.0
53396	6 G 0.5	20	7.4	29.0	74.0
53397	7 G 0.5	20	8.1	34.0	88.0
53398	8 G 0.5	20	8.6	38.4	102.0
53399	10 G 0.5	20	9.4	48.0	123.0
53400	12 G 0.5	20	10.0	58.0	135.0



# HELUTHERM® 145 MULTI

temperature-resistant, cross-linked, improved behaviour in case of fire



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
53401	14 G 0.5	20	10.0	67.0	153.0
53402	16 G 0.5	20	10.7	76.8	176.0
53403	19 G 0.5	20	12.4	91.2	213.0
53404	21 G 0.5	20	13.0	100.8	234.0
53405	24 G 0.5	20	14.0	115.2	263.0
53406	25 G 0.5	20	14.0	120.0	269.0
53407	27 G 0.5	20	14.0	129.6	280.0
53408	30 G 0.5	20	14.6	144.0	311.0
53409	33 G 0.5	20	15.0	158.4	343.0
53410	37 G 0.5	20	17.0	177.6	392.0
52632	1 G 0.75	19	3.5	7.2	19.8
53411	1 x 0.75	19	3.5	7.2	19.8
53412	2 x 0.75	19	6.0	14.0	40.0
53413	3 G 0.75	19	6.4	22.0	53.0
53414	4 G 0.75	19	7.0	29.0	69.0
53415	5 G 0.75	19	7.7	36.0	86.0
53416	6 G 0.75	19	8.3	43.2	101.0
53417	7 G 0.75	19	9.1	50.4	117.0
53418	8 G 0.75	19	10.2	57.6	140.0
53419	10 G 0.75	19	11.1	72.0	167.0
53420	12 G 0.75	19	11.1	86.4	183.0
53421	14 G 0.75	19	11.7	100.8	212.0
53422	16 G 0.75	19	12.5	115.2	239.0
53423	19 G 0.75	19	14.0	136.8	290.0
53424	21 G 0.75	19	15.0	151.2	323.0
53425	24 G 0.75	19	16.0	172.8	364.0
53426	25 G 0.75	19	16.0	180.0	371.0
53427	27 G 0.75	19	16.0	194.4	387.0
53428	30 G 0.75	19	17.0	216.0	429.0
53429	33 G 0.75	19	18.0	237.6	468.0
53430	37 G 0.75	19	19.0	266.4	550.0
52633	1 G 1	18	3.9	9.6	25.2
53431	1 x 1	18	3.9	9.6	25.2
53432	2 x 1	18	6.6	19.0	50.0
53433	3 G 1	18	7.0	29.0	66.0
53434	4 G 1	18	7.7	38.0	86.0
53435	5 G 1	18	8.4	48.0	106.0
53436	6 G 1	18	8.9	57.6	127.0
53437	7 G 1	18	10.2	67.0	155.0
53438	8 G 1	18	11.0	76.8	187.0
53439	10 G 1	18	12.5	96.0	214.0
53440	12 G 1	18	12.5	115.0	230.0
53441	14 G 1	18	12.7	134.4	266.0
53442	16 G 1	18	13.6	153.6	301.0
53443	19 G 1	18	15.7	182.0	377.0
53444	21 G 1	18	16.5	202.0	419.0
53445	24 G 1	18	17.1	230.4	464.0
53446	25 G 1	18	17.1	240.0	472.0
53447	27 G 1	18	17.1	259.2	488.0
53448	30 G 1	18	17.7	288.0	536.0
53449	33 G 1	18	18.9	316.8	605.0
53450	37 G 1	18	20.3	355.2	690.0
52634	1 G 1.5	16	4.3	14.4	32.3
53451	1 x 1.5	16	4.3	14.4	32.3
53452	2 x 1.5	16	7.8	29.0	69.0
53453	3 G 1.5	16	8.3	43.0	93.0
53454	4 G 1.5	16	9.1	58.0	120.0
53455	5 G 1.5	16	10.1	72.0	152.0
53456	6 G 1.5	16	10.9	86.4	187.0
53457	7 G 1.5	16	12.1	101.0	222.0
53458	8 G 1.5	16	14.0	115.2	263.0
53459	10 G 1.5	16	14.6	144.0	308.0
53460	12 G 1.5	16	15.0	172.8	330.0
53461	14 G 1.5	16	15.4	201.6	383.0
53462	16 G 1.5	16	16.2	230.4	438.0
53463	19 G 1.5	16	18.3	273.6	554.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
53464	21 G 1.5	16	19.7	302.4	614.0
53465	24 G 1.5	16	21.1	345.6	791.0
53466	25 G 1.5	16	21.7	360.0	701.0
53467	27 G 1.5	16	21.7	389.0	723.0
53468	30 G 1.5	16	21.8	432.0	796.0
53469	33 G 1.5	16	22.6	475.2	880.0
53470	37 G 1.5	16	24.8	532.8	1026.0
52635	1 G 2.5	14	5.0	24.0	46.9
53471	1 x 2.5	14	5.0	24.0	46.9
53472	2 x 2.5	14	9.0	48.0	99.0
53473	3 G 2.5	14	9.9	72.0	140.0
53474	4 G 2.5	14	10.9	96.0	183.0
53475	5 G 2.5	14	12.2	120.0	231.0
53476	6 G 2.5	14	13.2	144.0	280.0
53477	7 G 2.5	14	14.6	168.0	336.0
53478	8 G 2.5	14	15.7	192.0	397.0
53479	10 G 2.5	14	17.9	240.0	460.0
53480	12 G 2.5	14	17.9	288.0	500.0
53481	14 G 2.5	14	19.2	336.0	593.0
53482	16 G 2.5	14	20.1	384.0	675.0
53483	19 G 2.5	14	22.8	456.0	835.0
53484	21 G 2.5	14	23.7	504.0	939.0
53485	24 G 2.5	14	25.8	576.0	1047.0
53486	25 G 2.5	14	25.8	600.0	1067.0
53487	27 G 2.5	14	25.8	648.0	1107.0
53488	30 G 2.5	14	26.7	720.0	1219.0
53489	33 G 2.5	14	28.0	792.0	1349.0
53490	37 G 2.5	14	30.6	888.0	1565.0
52636	1 G 4	12	5.6	38.4	96.0
53491	1 x 4	12	5.6	38.4	96.0
53492	2 x 4	12	10.7	77.0	159.0
53493	3 G 4	12	11.5	115.0	197.0
53494	4 G 4	12	12.8	154.0	260.0
53495	5 G 4	12	14.2	192.0	329.0
53496	6 G 4	12	14.9	230.4	398.0
53497	7 G 4	12	17.0	269.0	478.0
53498	8 G 4	12	17.6	307.2	553.0
53499	10 G 4	12	20.1	384.0	663.0
53500	12 G 4	12	20.1	460.8	725.0
53501	14 G 4	12	21.5	537.6	797.0
52637	1 G 6	10	6.1	57.6	108.0
53502	1 x 6	10	6.1	57.6	108.0
53503	2 x 6	10	11.6	115.2	216.0
53504	3 G 6	10	12.9	173.0	285.0
53505	4 G 6	10	14.4	230.0	375.0
53506	5 G 6	10	15.8	288.0	465.0
53507	6 G 6	10	16.7	345.6	544.0
53508	7 G 6	10	19.4	403.0	664.0
52638	1 G 10	8	7.7	96.0	144.0
53509	1 x 10	8	7.7	96.0	144.0
53510	2 x 10	8	14.7	192.0	351.0
53511	3 G 10	8	16.8	288.0	475.0
53512	4 G 10	8	18.6	384.0	630.0
53513	5 G 10	8	19.6	480.0	782.0
53514	6 G 10	8	21.7	576.0	914.0
53515	7 G 10	8	24.7	672.0	1092.0
52639	1 G 16	6	8.9	153.6	205.0
53516	1 x 16	6	8.9	153.6	205.0
53517	2 x 16	6	17.7	307.2	495.0
53518	3 G 16	6	19.3	460.8	691.0
53519	4 G 16	6	21.2	614.0	905.0
53520	5 G 16	6	23.6	768.0	1129.0
53521	6 G 16	6	26.2	921.6	1327.0
53522	7 G 16	6	28.6	1075.0	1590.0
52640	1 G 25	4	10.9	240.0	336.0
53523	1 x 25	4	10.9	240.0	336.0

# HELUTHERM® 145 MULTI

temperature-resistant, cross-linked, improved behaviour in case of fire



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
53524	2 x 25	4	21.3	480.0	833.0
53525	3 G 25	4	22.7	720.0	1139.0
53526	4 G 25	4	25.4	960.0	1489.0
53527	5 G 25	4	28.1	1200.0	1863.0
53528	6 G 25	4	31.1	1440.0	2275.0
53529	7 G 25	4	34.5	1680.0	2633.0
52641	1 G 35	2	12.8	336.0	454.0
53530	1 x 35	2	12.8	336.0	454.0
53531	2 x 35	2	23.7	672.0	1104.0
53532	3 G 35	2	25.5	1008.0	1513.0
53533	4 G 35	2	28.4	1344.0	1992.0
53534	5 G 35	2	33.5	1680.0	2488.0
52642	1 G 50	1	14.9	480.0	638.0
53535	1 x 50	1	14.9	480.0	638.0
53536	2 x 50	1	29.3	960.0	1573.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
53537	3 G 50	1	31.5	1440.0	2154.0
53538	4 G 50	1	35.3	1920.0	2819.0
53539	5 G 50	1	39.1	2400.0	3505.0
52643	1 G 70	2/0	17.3	672.0	875.0
53540	1 x 70	2/0	17.3	672.0	875.0
53541	2 x 70	2/0	33.7	1344.0	2157.0
53542	3 G 70	2/0	36.4	2016.0	2946.0
53543	4 G 70	2/0	41.7	2688.0	3888.0
53544	5 G 70	2/0	44.5	3360.0	4864.0
52644	1 G 95	3/0	20.1	912.0	1149.0
53545	1 x 95	3/0	20.1	912.0	1149.0
53546	2 x 95	3/0	37.5	1824.0	2763.0
53547	3 G 95	3/0	40.0	2736.0	3835.0
53548	4 G 95	3/0	47.7	3648.0	5052.0
53549	5 G 95	3/0	50.7	4560.0	6307.0

# HELUTHERM® 145 MULTI-C

flexible, cross-linked, halogen-free, screened, EMC-preferred type



## Technical data

- Temperature-resistant and halogen-free connection and control cable
- **Temperature range**  
flexing -35°C to +120°C  
fixed installation -55°C to +145°C  
in short-circuit +200°C
- **Nominal voltage**  
up to 1 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 450/750 V  
with protected fixed installation  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 600/1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Caloric load values**  
see "Technical Information"
- **Current rating**  
see "Technical Information"
- **Approval**  
DNV GL

## Cable structure

- Tinned copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation: cross-linked polyolefin-copolymer
- Core identification black cores with continuous white numbering
- Cores stranded in layers with optimal lay length
- Foil wrapping
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath: cross-linked polyolefin-copolymer
- Sheath colour: black
- With meter marking

## Note

- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type:  
**HELUTHERM® 145 MULTI**

## Properties

- No flame propagation
- Good abrasion and notch resistance
- Good resistance to weathering
- Resistant to ozone
- Resistant to melting, even when in contact with a soldering iron with temperatures from 300°C to 380°C
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22
- Flame test acc. to  
DIN VDE 0482-332-1-2 /  
DIN EN 60332-1-2 / IEC 60332-1-2
- Halogen-free acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1+2 /  
DIN EN 61034-1+2 / IEC 61034-1+2
- Fire protection on railway vehicles acc. to EN 45545-2
- UV-resistant acc. to DIN EN ISO 4892-2

## Application

These cross-linked and temperature resistant wiring and control cables with enhanced fire-behaviour properties are used for wiring up the lighting fixtures, heaters, electric machines, switching systems and distribution switchboards. A very long service life is also given on account of their excellent high-temperature stability. These cables exhibit good resistance to weathering as well as being very stable to temperature, moisture, ozone and UV radiation. These cables are therefore mainly used for traffic control systems and diverse outdoor applications. The development of smoke is low and no corrosive gases are liberated during combustion of these halogen-free cables in case of fire. The risk of toxic fumes is considerably less in the event of fire because the caloric load values is lower. Precious time can thus be won for a disciplined evacuation, and unnecessary loss of life can be prevented. The extent of the damage to costly control and monitoring systems and the concrete and steel structures of buildings and plant due to fire is reduced by this. Injuries to persons and damage to materials can be prevented. A lower conductor cross section is possible in certain circumstances because of the high thermal load and thus savings in the space and weight required can be made.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52194	2 x 0,25	5,0	16,0	36,0	24
52195	3 x 0,25	5,5	21,0	44,0	24

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52196	5 x 0,25	6,4	29,0	68,0	24
52197	7 x 0,25	7,5	37,0	95,0	24

Continuation ►

# HELUTHERM® 145 MULTI-C

flexible, cross-linked, halogen-free, screened, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52198	1 x 0,5	3,7	15,0	24,0	20
52199	2 x 0,5	6,0	29,0	55,0	20
52200	3 x 0,5	6,3	38,0	64,0	20
52201	4 x 0,5	6,9	45,0	78,0	20
52202	5 x 0,5	7,7	51,0	95,0	20
52203	6 x 0,5	8,1	66,0	106,0	20
52204	7 x 0,5	8,4	68,0	122,0	20
52205	8 x 0,5	9,0	80,0	138,0	20
52206	10 x 0,5	10,4	93,0	161,0	20
52207	12 x 0,5	10,4	107,0	170,0	20
52208	14 x 0,5	11,0	122,0	193,0	20
52209	16 x 0,5	11,7	129,0	216,0	20
52210	19 x 0,5	12,8	158,0	253,0	20
52211	21 x 0,5	13,5	167,0	281,0	20
52212	1 x 0,75	4,0	18,0	29,0	19
52213	2 x 0,75	6,7	38,0	71,0	19
52214	3 x 0,75	7,1	50,0	82,0	19
52215	4 x 0,75	7,7	58,0	100,0	19
52216	5 x 0,75	8,5	70,0	117,0	19
52217	6 x 0,75	9,1	85,0	135,0	18
52218	7 x 0,75	9,9	90,0	158,0	19
52219	8 x 0,75	10,8	110,0	178,0	19
52220	10 x 0,75	11,5	140,0	207,0	19
52221	12 x 0,75	11,7	148,0	220,0	19
52222	14 x 0,75	12,2	167,0	250,0	19
52223	16 x 0,75	13,2	183,0	282,0	19
52224	19 x 0,75	14,5	212,0	335,0	19
52225	21 x 0,75	15,3	230,0	370,0	19
52226	1 x 1	4,2	20,0	33,0	18
52227	2 x 1	7,2	46,0	78,0	18
52228	3 x 1	7,7	56,0	92,0	18
52229	4 x 1	8,3	66,0	112,0	18
52230	5 x 1	9,0	95,0	134,0	18
52231	6 x 1	9,5	105,0	164,0	18
52232	7 x 1	10,8	109,0	192,0	18
52233	8 x 1	11,4	130,0	219,0	18
52234	10 x 1	12,8	138,0	254,0	18
52235	12 x 1	12,8	164,0	270,0	18
52236	14 x 1	13,5	198,0	308,0	18
52237	16 x 1	14,3	203,0	350,0	18
52238	19 x 1	16,2	235,0	447,0	18
52239	21 x 1	17,0	257,0	492,0	18
52240	1 x 1,5	4,8	22,0	42,0	16
52241	2 x 1,5	8,4	58,0	105,0	16
52242	3 x 1,5	8,9	71,0	121,0	16
52243	4 x 1,5	9,9	86,0	156,0	16
52244	5 x 1,5	10,7	104,0	188,0	16
52245	6 x 1,5	11,5	118,0	225,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52246	7 x 1,5	12,7	136,0	264,0	16
52247	8 x 1,5	13,7	172,0	308,0	16
52248	10 x 1,5	15,4	193,0	361,0	16
52249	12 x 1,5	15,4	222,0	383,0	16
52250	14 x 1,5	16,0	272,0	458,0	16
52251	16 x 1,5	17,0	285,0	515,0	16
52252	19 x 1,5	19,3	331,0	639,0	16
52253	21 x 1,5	20,3	367,0	705,0	16
51000	25 x 1,5	21,7	526,0	841,0	16
52254	1 x 2,5	5,6	28,0	59,0	14
52255	2 x 2,5	9,9	96,0	148,0	14
52256	3 x 2,5	10,5	146,0	183,0	14
52257	4 x 2,5	11,5	150,0	221,0	14
52258	5 x 2,5	12,8	200,0	273,0	14
52259	6 x 2,5	13,8	227,0	326,0	14
52260	7 x 2,5	14,3	235,0	397,0	14
52261	8 x 2,5	16,8	265,0	475,0	14
52262	10 x 2,5	18,3	326,0	542,0	14
52263	12 x 2,5	18,4	376,0	582,0	14
52264	14 x 2,5	19,6	428,0	681,0	14
52265	16 x 2,5	20,7	480,0	778,0	14
52266	19 x 2,5	23,5	557,0	948,0	14
52267	21 x 2,5	24,4	606,0	1042,0	14
52268	1 x 4	6,3	56,0	86,0	12
52269	2 x 4	10,9	135,0	196,0	12
52270	3 x 4	11,5	178,0	248,0	12
52271	4 x 4	13,2	220,0	316,0	12
52272	5 x 4	14,5	259,0	376,0	12
52273	6 x 4	15,6	302,0	452,0	12
52274	7 x 4	16,1	355,0	555,0	12
52275	8 x 4	18,3	392,0	655,0	12
52276	10 x 4	20,7	480,0	767,0	12
52277	12 x 4	20,7	557,0	829,0	12
52278	14 x 4	22,1	636,0	948,0	12
52279	1 x 6	6,9	81,0	108,0	10
52280	2 x 6	12,4	175,0	255,0	10
52281	3 x 6	12,8	240,0	330,0	10
52282	4 x 6	14,9	305,0	429,0	10
52283	5 x 6	16,0	441,0	536,0	10
52284	6 x 6	17,4	473,0	624,0	10
52285	7 x 6	19,3	505,0	751,0	10
52286	1 x 10	8,6	124,0	170,0	8
52287	2 x 10	15,1	265,0	409,0	8
52288	3 x 10	17,0	370,0	550,0	8
52289	4 x 10	18,1	485,0	715,0	8
52290	5 x 10	20,2	610,0	882,0	8
52291	6 x 10	23,3	715,0	1026,0	8
52292	7 x 10	24,3	820,0	1195,0	8

Dimensions and specifications may be changed without prior notice. (RE01)



HELUKABEL® SiHF 3G1 QMM / 23008 300/500 V CE

## TECHNICAL DATA

Silicone control and connection cable in alignment with DIN VDE 0250-1, DIN VDE 0285-525-2-83 / DIN EN 50525-2-83

**Temperature range** flexible -25°C to +180°C  
fixed -60°C to +180°C

**Permissible operating temperature of the conductor** +180°C

**Nominal voltage** AC U<sub>0</sub>/U 300/500 V

**Test voltage core/core** 2000 V

**Breakdown voltage** 4000 V

**Minimum bending radius** flexible 7.5x Outer-Ø  
fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308,  
2 - 5 core(s): colour coded  
6 - 25 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: silicone
- Sheath colour: redbrown
- Length marking: in metres

## ■ PROPERTIES

- resistant to: ozone, oxygen, weathering effects, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater

- halogen-free
- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Silicone cables were evolved for use wherever insulation is subjected to extreme temperature changes. The good performance of the environmental resistant properties means that silicone cables can be used at temperatures down to -60°C. Silicone cables are halogen-free cables and are especially suited for installation in power stations. They have also found their uses in the steel producing industries, aviation industry, ship building as well as in ceramic, glass and cement factories. Due to elastical characteristic of core insulations, these are used as flexible connection cable

## ■ NOTES

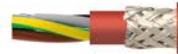
- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22989	2 x 0.5	20	5.6	9.6	42.0
22990	3 G 0.5	20	5.9	14.5	44.0
22940	3 x 0.5	20	5.9	14.5	44.0
22991	4 G 0.5	20	6.5	19.3	58.0
22941	4 x 0.5	20	6.5	19.3	58.0
22992	5 G 0.5	20	7.3	24.0	62.0
22942	5 x 0.5	20	7.3	24.0	62.0
22993	6 G 0.5	20	8.3	28.9	79.0
22994	7 G 0.5	20	8.3	33.7	85.0
22995	8 G 0.5	20	9.0	38.4	99.0
22996	10 G 0.5	20	10.1	48.1	124.0
22997	12 G 0.5	20	10.7	57.6	141.0
22998	16 G 0.5	20	12.1	76.7	186.0
22999	18 G 0.5	20	12.7	86.5	211.0
23000	25 G 0.5	20	15.3	120.0	271.0
23001	2 x 0.75	19	6.4	14.4	53.0
23002	3 G 0.75	19	6.8	21.6	63.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23104	3 x 0.75	19	6.8	21.6	63.0
23003	4 G 0.75	19	7.6	29.0	83.0
23105	4 x 0.75	19	7.6	29.0	83.0
23004	5 G 0.75	19	8.5	36.0	101.0
22943	5 x 0.75	19	8.5	36.0	101.0
23005	6 G 0.75	19	9.2	43.0	115.0
23006	7 G 0.75	19	9.2	50.0	124.0
23127	8 G 0.75	19	9.9	57.7	138.0
23128	10 G 0.75	19	11.1	72.1	156.0
23129	12 G 0.75	19	12.2	86.5	185.0
23130	16 G 0.75	19	13.7	115.2	218.0
23131	18 G 0.75	19	14.6	129.7	260.0
23132	25 G 0.75	19	17.8	180.0	370.0
23007	2 x 1	18	6.6	19.0	59.0
23008	3 G 1	18	7.0	29.0	77.0
22944	3 x 1	18	7.0	29.0	77.0
23009	4 G 1	18	7.9	38.0	94.0

## increased temperature resistance, tinned wire

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22945	4 x 1	18	7.9	38.0	94.0	23032	7 G 2.5	14	12.6	168.0	320.0
23010	5 G 1	18	8.8	48.0	115.0	23140	8 G 2.5	14	13.7	192.2	373.0
22946	5 x 1	18	8.8	48.0	115.0	23141	10 G 2.5	14	15.5	240.1	450.0
23011	6 G 1	18	9.5	58.0	134.0	23033	12 G 2.5	14	17.1	288.0	502.0
23012	7 G 1	18	9.5	67.0	144.0	23142	16 G 2.5	14	19.6	384.0	659.0
23133	8 G 1	18	10.3	76.7	175.0	23143	18 G 2.5	14	20.6	432.2	761.0
24000	9 G 1	18	11.5	86.0	196.0	23144	25 G 2.5	14	24.9	600.0	1007.0
23134	10 G 1	18	11.5	96.1	216.0	23034	2 x 4	12	10.8	77.0	180.0
23135	12 G 1	18	12.6	115.2	231.0	23035	3 G 4	12	11.5	115.0	224.0
23136	16 G 1	18	14.2	153.5	302.0	23036	4 G 4	12	12.6	154.0	295.0
23137	18 G 1	18	15.1	172.9	340.0	23037	5 G 4	12	14.0	192.0	359.0
23138	25 G 1	18	18.4	240.0	431.0	23039	7 G 4	12	15.6	269.0	479.0
23013	2 x 1.5	16	7.6	29.0	81.0	23040	2 x 6	10	12.4	115.0	210.0
23014	3 G 1.5	16	8.0	43.0	98.0	23041	3 G 6	10	13.2	173.0	270.0
22947	3 x 1.5	16	8.0	43.0	98.0	23042	4 G 6	10	14.7	230.0	341.0
23015	4 G 1.5	16	8.8	58.0	122.0	23043	5 G 6	10	16.6	288.0	432.0
22948	4 x 1.5	16	8.8	58.0	122.0	23045	7 G 6	10	18.6	403.0	552.0
23016	5 G 1.5	16	9.6	72.0	147.0	23046	2 x 10	8	16.2	192.0	400.0
22949	5 x 1.5	16	9.6	72.0	147.0	23047	3 G 10	8	17.3	288.0	507.0
23017	6 G 1.5	16	10.4	86.0	173.0	23048	4 G 10	8	19.4	384.0	644.0
23018	7 G 1.5	16	10.4	101.0	187.0	23049	5 G 10	8	21.6	480.0	788.0
23019	8 G 1.5	16	11.3	114.0	213.0	23145	7 G 10	8	23.4	672.2	1151.0
23020	10 G 1.5	16	13.0	116.0	263.0	23050	2 x 16	6	18.0	308.0	591.0
23021	12 G 1.5	16	14.0	173.0	314.0	23051	3 G 16	6	19.4	462.0	749.0
23022	14 G 1.5	16	14.7	202.0	379.0	23052	4 G 16	6	21.4	616.0	950.0
23023	16 G 1.5	16	16.2	231.0	445.0	23053	5 G 16	6	24.0	770.0	1204.0
23024	18 G 1.5	16	17.0	260.0	506.0	23146	7 G 16	6	26.4	1075.3	1682.0
23025	20 G 1.5	16	17.5	288.0	566.0	23054	2 x 25	4	22.0	480.0	700.0
23026	24 G 1.5	16	19.8	346.0	722.0	23055	3 G 25	4	23.5	720.0	1100.0
23027	2 x 2.5	14	8.8	48.0	134.0	23056	4 G 25	4	26.4	960.0	1500.0
23028	3 G 2.5	14	9.7	72.0	152.0	23057	2 x 35	2	24.6	672.0	1100.0
23029	4 G 2.5	14	10.6	96.0	188.0	23058	3 G 35	2	26.4	1008.0	1500.0
23030	5 G 2.5	14	11.6	120.0	228.0	23059	4 G 35	2	29.2	1344.0	2100.0
23139	6 G 2.5	14	12.6	144.0	304.0						



HELUKABEL® SiHF-C-Si 4G1,5 QMM / 23180 300/500 V CE

## TECHNICAL DATA

Silicone control and connection cable in alignment with DIN VDE 0250-1, DIN VDE 0285-525-2-83 / DIN EN 50525-2-83

<b>Temperature range</b>	flexible -25°C to +180°C fixed -60°C to +180°C
<b>Permissible operating temperature of the conductor</b>	+180°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Breakdown voltage</b>	4000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308, 2 - 5 core(s): colour coded  
7 - 25 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Inner sheath: silicone
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Foil wrapping
- Outer sheath: silicone
- Sheath colour: redbrown
- Length marking: in metres

## PROPERTIES

- resistant to: ozone, oxygen, weathering effects, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater

- halogen-free
- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Silicone-rubber-insulated cables are used for all applications where the cable insulation is subjected to high temperature fluctuations. Can also be used at low temperatures down to -60°C because of the excellent weathering resistance of the material. These cables are halogen-free and hence are particularly suitable for applications in iron and steel works, rolling mills, foundries, in aircraft construction and ship building, as well as in cement, glass and ceramic plants. Silicone-rubber-insulated cables have demonstrated proven applications in projector and high-power lighting fixtures as well as all types of heating equipment. An interference-free transmission of signals and pulse is assured by the high screening density. The ideal interference-protected silicone multicore flexible cable for such applications as given above. EMC = Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23151	2 x 0.5	20	8.1	55.5	101.0
23152	3 G 0.5	20	8.4	60.8	118.0
23153	4 G 0.5	20	9.2	66.5	131.0
23154	5 G 0.5	20	10.0	81.6	153.0
23155	7 G 0.5	20	11.0	92.2	173.0
23156	10 G 0.5	20	12.9	124.0	242.0
23157	12 G 0.5	20	13.6	134.4	263.0
23158	16 G 0.5	20	15.2	170.2	326.0
23159	18 G 0.5	20	15.8	181.0	351.0
23291	25 G 0.5	20	18.8	230.1	348.0
23160	2 x 0.75	19	9.1	61.4	124.0
23161	3 G 0.75	19	9.5	69.1	136.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23162	4 G 0.75	19	10.5	86.7	159.0
23163	5 G 0.75	19	11.4	95.2	180.0
23164	7 G 0.75	19	12.1	113.3	212.0
23165	10 G 0.75	19	14.0	165.2	306.0
23166	12 G 0.75	19	15.3	180.3	333.0
23167	16 G 0.75	19	17.0	212.2	418.0
23168	18 G 0.75	19	18.1	282.1	453.0
23292	25 G 0.75	19	21.5	297.4	468.0
23169	2 x 1	18	9.5	66.7	132.0
23170	3 G 1	18	9.9	86.2	153.0
23171	4 G 1	18	11.2	96.8	173.0
23172	5 G 1	18	12.1	108.3	202.0

# SiHF-C-Si



increased temperature resistance, tinned wire, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23173	7 G 1	18	12.8	141.2	243.0	23294	25 G 1.5	16	25.1	488.2	791.0
23174	10 G 1	18	14.8	190.0	238.0	23187	2 x 2.5	14	12.1	122.3	230.0
23175	12 G 1	18	15.9	209.8	371.0	23188	3 G 2.5	14	13.0	147.7	275.0
23176	16 G 1	18	17.5	251.8	468.0	23189	4 G 2.5	14	13.9	188.6	340.0
23177	18 G 1	18	18.6	297.4	526.0	23190	5 G 2.5	14	14.9	214.9	394.0
23293	25 G 1	18	22.3	329.0	559.0	23191	7 G 2.5	14	15.9	265.7	488.0
23178	2 x 1.5	16	10.9	87.7	172.0	23192	4 G 4	12	16.1	294.0	520.0
23179	3 G 1.5	16	11.3	103.5	198.0	23193	5 G 4	12	17.4	374.0	653.0
23180	4 G 1.5	16	12.1	131.7	235.0	23150	2 x 6	10	15.9	171.0	350.0
23181	5 G 1.5	16	12.9	148.5	281.0	23194	4 G 6	10	18.2	449.0	781.0
23182	7 G 1.5	16	13.7	193.4	345.0	23195	5 G 6	10	20.1	563.0	982.0
23183	10 G 1.5	16	16.3	268.5	482.0	23196	4 G 10	8	23.3	759.0	1294.0
23184	12 G 1.5	16	17.3	298.4	531.0	23197	4 G 16	6	25.7	1180.0	1988.0
23185	16 G 1.5	16	20.1	362.3	662.0	23198	4 G 25	4	31.1	1276.0	2995.0
23186	18 G 1.5	16	20.9	394.0	720.0	23199	4 G 35	2	33.9	1680.0	4173.0





## TECHNICAL DATA

Silicone control and connection cable in alignment with DIN VDE 0250-1, DIN VDE 0285-525-2-83 / DIN EN 50525-2-83

**Temperature range** flexible +5°C to +180°C  
fixed -60°C to +180°C

**Permissible operating temperature of the conductor** +180°C

**Nominal voltage** AC U<sub>0</sub>/U 300/500 V

**Test voltage core/core** 2000 V

**Breakdown voltage** 4000 V

**Minimum bending radius** flexible 10x Outer-Ø  
fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308,  
2 - 5 core(s): colour coded  
6 - 24 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: silicone
- Sheath colour: redbrown
- Glass silk tape wrapping
- Steel wire braid, galvanised

## ■ PROPERTIES

- halogen-free

- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Silicone cables screened with steel braiding were evolved for use whenever insulation is subjected to extreme temperature changes. The good performance of the environmental resistant properties means that silicone cables can be used at temperatures down to -60°C. Silicone cables are halogen-free cables and are especially suited for installation in power stations. They have also found their uses in the steel producing industries, aviation industry, ship building as well as in ceramic, glass and cement factories. Only suitable for use in dry conditions.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23062	2 x 0.75	19	7.5	14.4	90.0
23063	3 G 0.75	19	7.9	21.6	101.0
23064	4 G 0.75	19	8.7	29.0	129.0
23065	5 G 0.75	19	9.6	36.0	157.0
23067	7 G 0.75	19	10.3	50.0	177.0
23068	2 x 1	18	7.7	19.0	97.0
23069	3 G 1	18	8.1	29.0	122.0
23070	4 G 1	18	9.0	38.0	141.0
23071	5 G 1	18	9.9	48.0	166.0
23073	7 G 1	18	10.6	67.0	197.0
23074	2 x 1.5	16	8.7	29.0	127.0
23075	3 G 1.5	16	9.1	43.0	145.0
23076	4 G 1.5	16	9.9	58.0	173.0
23077	5 G 1.5	16	10.7	72.0	202.0
23078	6 G 1.5	16	11.5	86.0	240.0
23079	7 G 1.5	16	11.5	101.0	244.0
23080	8 G 1.5	16	12.4	115.0	261.0
23081	12 G 1.5	16	15.3	173.0	327.0
23082	14 G 1.5	16	16.0	202.0	382.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23083	18 G 1.5	16	18.3	259.0	440.0
23084	24 G 1.5	16	21.1	346.0	600.0
23085	2 x 2.5	14	9.9	48.0	187.0
23086	3 G 2.5	14	10.8	72.0	205.0
23087	4 G 2.5	14	11.7	96.0	278.0
23088	5 G 2.5	14	12.7	120.0	322.0
23089	6 G 2.5	14	13.7	144.0	351.0
23090	7 G 2.5	14	13.7	168.0	380.0
23091	2 x 4	12	11.9	77.0	240.0
23092	3 G 4	12	12.6	115.0	311.0
23093	4 G 4	12	13.7	154.0	384.0
23094	5 G 4	12	15.2	192.0	454.0
23095	7 G 4	12	16.9	269.0	633.0
23096	2 x 6	10	13.5	115.0	321.0
23097	3 G 6	10	14.5	173.0	432.0
23098	4 G 6	10	16.0	230.0	544.0
23099	5 G 6	10	17.9	288.0	656.0
23100	7 G 6	10	19.9	403.0	768.0
23101	4 G 10	8	20.7	384.0	925.0

# SiHF/GL-P



increased temperature resistance, tinned wire, galvanised steel wire braid

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23102	4 G 16	6	22.7	614.0	1235.0	23103	4 G 25	4	27.7	960.0	1700.0



HELUKABEL® SiHF UL/CSA 3G1,5 QMM E170315 UL STYLE 4476 600V AWM II A/B CE

### TECHNICAL DATA

**Silicone control and connection cable acc. to UL-Std. 758 (AWM) Style 4476, CSA-Std. C22.2 No. 210 - AWM I/II A/B**

<b>Temperature range</b>	VDE -60°C to +180°C UL (AWM) -50°C to +150°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
<b>Test voltage core/core</b>	2000 V
<b>Breakdown voltage</b>	5000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

### CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308,  
2 - 5 core(s): colour coded  
6 - 41 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: silicone
- Sheath colour: black

### PROPERTIES

- resistant to: ozone, oxygen, weathering effects, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater

- halogen-free
- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

### TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1

### APPLICATION

UL-/CSA-approved silicone cable, developed for export-oriented machine builders, particularly for USA and Canada. Silicone cables are halogen-free and are especially suited for installation in power stations, iron, steel and rolling mills, in solariums, sauna facilities, foundries, in the aviation industry, ship building, in ceramic, glass and cement factories as well as in high-power luminaires and heating devices. Due to the elastic properties of the core insulation, this silicone cable is ideally suitable as a flexible connection cable.

### NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23214	2 x 0.5	20	7.4	10.8	73.0
23215	3 G 0.5	20	7.8	16.1	82.0
23216	4 G 0.5	20	8.5	21.5	98.0
23217	5 G 0.5	20	9.2	26.9	120.0
23218	6 G 0.5	20	9.9	32.3	131.0
23219	7 G 0.5	20	9.9	37.6	140.0
23220	8 G 0.5	20	10.7	43.0	183.0
23221	10 G 0.5	20	11.9	53.8	201.0
23222	12 G 0.5	20	13.2	64.5	241.0
23223	16 G 0.5	20	14.6	86.0	269.0
23224	18 G 0.5	20	15.3	96.8	311.0
23225	25 G 0.5	20	18.6	134.4	401.0
23226	2 x 1	18	8.2	19.2	88.0
23227	3 G 1	18	8.6	28.8	111.0
23228	4 G 1	18	9.4	38.4	130.0
23229	5 G 1	18	10.3	48.0	161.0
23230	6 G 1	18	11.1	57.6	182.0
23231	7 G 1	18	11.1	67.2	198.0
23232	8 G 1	18	12.0	76.8	251.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24010	9 G 1	18	13.0	86.4	277.0
23233	10 G 1	18	13.4	96.0	304.0
23234	12 G 1	18	14.9	115.2	343.0
23235	16 G 1	18	16.4	153.6	441.0
23236	18 G 1	18	17.3	172.8	492.0
23237	25 G 1	18	21.1	240.0	617.0
23238	2 x 1.5	16	8.8	28.8	117.0
23239	3 G 1.5	16	9.3	43.2	131.0
23240	4 G 1.5	16	10.1	57.6	166.0
23241	5 G 1.5	16	11.1	72.0	198.0
23242	6 G 1.5	16	12.0	86.4	240.0
23243	7 G 1.5	16	12.0	100.8	261.0
23244	8 G 1.5	16	13.0	115.2	298.0
23245	10 G 1.5	16	15.0	144.0	359.0
23246	12 G 1.5	16	16.1	172.8	431.0
23247	14 G 1.5	16	16.9	201.6	520.0
23248	16 G 1.5	16	17.8	230.4	569.0
23249	18 G 1.5	16	18.8	259.2	652.0
23250	20 G 1.5	16	19.8	288.0	724.0

# SiHF UL/CSA

increased temperature resistance, tinned wire



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23251	25 G 1.5	16	22.9	360.0	925.0
23252	41 G 1.5	16	29.2	590.4	1440.0
23253	2 x 2.5	14	9.6	48.0	141.0
23254	3 G 2.5	14	10.2	72.0	174.0
23255	4 G 2.5	14	11.1	96.0	217.0
23256	5 G 2.5	14	12.2	120.0	271.0
23257	6 G 2.5	14	13.2	144.0	314.0
23258	7 G 2.5	14	13.2	168.0	331.0
23259	8 G 2.5	14	14.7	192.0	404.0
23260	10 G 2.5	14	16.5	240.0	495.0
23261	12 G 2.5	14	16.5	288.0	554.0
23262	16 G 2.5	14	20.1	384.0	725.0
23263	18 G 2.5	14	21.2	432.0	838.0
23264	25 G 2.5	14	25.4	600.0	1108.0
23265	2 x 4	12	10.8	76.8	190.0
23266	3 G 4	12	11.5	115.2	241.0
23267	4 G 4	12	12.6	153.6	304.0
23268	5 G 4	12	14.2	192.0	384.0
23269	7 G 4	12	15.4	268.8	527.0
23270	2 x 6	10	14.0	115.2	284.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
23271	3 G 6	10	14.9	172.8	392.0
23272	4 G 6	10	16.4	230.4	492.0
23273	5 G 6	10	18.0	288.0	610.0
23274	7 G 6	10	19.6	403.2	681.0
23275	2 x 10	8	18.4	192.0	405.0
23276	3 G 10	8	20.1	288.0	620.0
23277	4 G 10	8	22.0	384.0	741.0
23278	5 G 10	8	24.4	480.0	914.0
23279	7 G 10	8	26.6	672.0	1164.0
23280	2 x 16	6	20.4	307.2	441.0
23281	3 G 16	6	21.8	460.8	501.0
23282	4 G 16	6	23.9	614.4	623.0
23283	5 G 16	6	26.8	768.0	971.0
23284	7 G 16	6	29.4	1075.3	1690.0
23285	2 x 25	4	23.2	480.0	711.0
23286	3 G 25	4	24.8	720.0	1210.0
23287	4 G 25	4	28.3	960.0	1524.0
23288	2 x 35	2	25.4	672.0	1140.0
23289	3 G 35	2	27.5	1008.0	1523.0
23290	4 G 35	2	31.0	1344.0	2217.0

# SiHF-C-Si UL/CSA

increased temperature resistance, tinned wire, EMC-preferred type



HELUKABEL® SiHF-C-Si UL/CSA 3G1,5 QMM E170315 UL STYLE 4476 600V AWM II A/B CE

## TECHNICAL DATA

Silicone control and connection cable acc. to UL-Std. 758 (AWM) Style 4476, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	VDE -60°C to +180°C UL (AWM) -50°C to +150°C
Nominal voltage	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
Test voltage core/core	2000 V
Breakdown voltage	5000 V
Coupling resistance	at 30 MHz, approx. 250 Ohm/km
Minimum bending radius	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308, 2 - 5 core(s): colour coded  
7 - 12 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: silicone
- Sheath colour: black

## PROPERTIES

- resistant to: ozone, oxygen, weathering effects, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater

- halogen-free
- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1

## APPLICATION

UL-/CSA-approved silicone cable, developed for export-oriented machine builders, particularly for USA and Canada. Silicone cables are halogen-free and are especially suited for installation in power stations, iron, steel and rolling mills, in solariums, sauna facilities, foundries, in the aviation industry, ship building, as well as in ceramic, glass and cement factories. Due to the elastic properties of the core insulation, this silicone cable is ideally suitable as a flexible connection cable. An interference-free transmission of signals and pulse is assured by the high screening density. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22637	2 x 0.5	20	8.2	39.7	90.0
22638	3 G 0.5	20	8.6	45.1	100.0
22639	4 G 0.5	20	9.3	57.7	125.0
22640	5 G 0.5	20	10.0	63.1	140.0
22641	7 G 0.5	20	10.7	81.0	168.0
22642	10 G 0.5	20	12.7	111.6	215.0
22643	12 G 0.5	20	13.6	122.4	255.0
22644	2 x 1	18	9.0	55.4	110.0
22645	3 G 1	18	9.5	65.0	130.0
22646	4 G 1	18	10.2	74.6	150.0
22647	5 G 1	18	11.0	91.4	180.0
22648	7 G 1	18	11.9	110.6	215.0
22649	10 G 1	18	15.2	161.1	290.0
22650	12 G 1	18	15.2	180.3	335.0
22651	2 x 1.5	16	9.6	65.0	125.0
22652	3 G 1.5	16	10.1	79.4	150.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22653	4 G 1.5	16	10.9	101.0	185.0
22654	5 G 1.5	16	11.8	115.4	210.0
22655	7 G 1.5	16	12.8	151.4	265.0
22656	10 G 1.5	16	15.8	220.0	355.0
22657	12 G 1.5	16	16.9	248.8	435.0
22658	2 x 2.5	14	10.4	84.2	150.0
22659	3 G 2.5	14	11.0	115.4	195.0
22660	4 G 2.5	14	11.9	139.4	230.0
22661	5 G 2.5	14	12.9	170.6	275.0
22662	7 G 2.5	14	14.4	158.7	345.0
22663	4 G 4	12	13.4	204.2	320.0
22664	5 G 4	12	14.9	249.9	385.0
22665	4 G 6	10	17.2	306.4	490.0
22666	5 G 6	10	18.7	374.8	570.0
22667	4 G 10	8	22.8	481.7	785.0

# THERMFLEX® 180 EWKF



Silicone cable, temperature-resistant, increased mechanical strength



HELUKABEL® THERMFLEX® 180 EWKF 3G1,5 QMM / 75001 300/500 V CE

## TECHNICAL DATA

Silicone control and connection cable in alignment with DIN VDE 0285-525-2-83 / DIN EN 50525-2-83

Temperature range	flexible -25°C to +180°C fixed -60°C to +180°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage core/core	2000 V
Minimum bending radius	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308, 2 - 5 core(s): colour coded  
7 - 20 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: special silicone
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: ozone, oxygen, weathering effects, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater
- abrasion-resistant, notch-resistant, tear-resistant

- higher mechanical resilience, increased abrasion resistance and longer service life than conventional silicone cables due to EWKF quality (EWKF stands for Einreiß-, Weiterreiß- and KerbFestigkeit, meaning tear, tear propagation and notch resistance)
- for outdoor use
- halogen-free
- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## APPLICATION

Halogen-free silicone cable for applications that require an increased mechanical strength as well as a higher temperature resistance. For use in dry, damp and wet rooms as well as outdoors. Suitable for use in air conditioning and heating systems, in saunas and solariums, in foundries, in steel, cement and ceramic plants as well as in furnaces and lighting fixtures.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	AWG, approx.
74992	2 x 0.75	6.4	15.0	53.0	19
74993	3 G 0.75	6.8	22.0	64.0	19
74994	4 G 0.75	7.6	29.0	84.0	19
74995	5 G 0.75	8.5	36.0	101.0	19
74996	2 x 1	6.6	20.0	60.0	18
74997	3 G 1	7.0	29.0	78.0	18
74998	4 G 1	7.9	39.0	95.0	18
74999	5 G 1	8.8	48.0	116.0	18
75000	2 x 1.5	7.6	29.0	82.0	16
75001	3 G 1.5	8.0	43.0	98.0	16
75002	4 G 1.5	8.8	58.0	122.0	16
75003	5 G 1.5	9.6	72.0	148.0	16
75004	7 G 1.5	10.4	101.0	187.0	16
75005	12 G 1.5	14.0	173.0	315.0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	AWG, approx.
75006	16 G 1.5	16.2	231.0	446.0	16
75007	20 G 1.5	17.5	288.0	566.0	16
75008	2 x 2.5	8.8	48.0	135.0	14
75009	3 G 2.5	9.7	72.0	152.0	14
75010	4 G 2.5	10.6	96.0	189.0	14
75011	5 G 2.5	11.6	120.0	229.0	14
75012	2 x 4	10.8	77.0	180.0	12
75013	3 G 4	11.5	115.0	230.0	12
75014	4 G 4	12.6	154.0	300.0	12
75015	5 G 4	13.9	192.0	380.0	12
75016	2 x 6	12.4	115.0	321.0	10
75017	3 G 6	13.2	173.0	330.0	10
75018	4 G 6	14.7	230.0	430.0	10
75019	5 G 6	16.6	288.0	550.0	10

# THERMFLEX® 180 EWKF-C



Silicone cable, temperature-resistant, increased mechanical strength, EMC-preferred type



## TECHNICAL DATA

Silicone control and connection cable in alignment with DIN VDE 0285-525-2-83 / DIN EN 50525-2-83

<b>Temperature range</b>	flexible -25°C to +180°C fixed -60°C to +180°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	2000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/ km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: silicone
- Core identification acc. to DIN VDE 0293-308,  
2 - 5 core(s): colour coded  
7 - 20 core(s): black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Inner sheath: silicone
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Foil wrapping
- Outer sheath: special silicone
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: ozone, oxygen, weathering effects, alcohols, dilute acids, alkalis, saline solutions, oxidising agents, high molecular weight oils, vegetable and animal fats, plasticisers and clophen, seawater
- abrasion-resistant, notch-resistant, tear-resistant

- higher mechanical resilience, increased abrasion resistance and longer service life than conventional silicone cables due to EWKF quality (EWKF stands for Einreiß-, Weiterreiß- and KerbFestigkeit, meaning tear, tear propagation and notch resistance)
- for outdoor use
- halogen-free
- high flash point
- leaves an insulating layer of SiO<sub>2</sub> when exposed to flames
- no significant changes in dielectric strength and insulation resistance even at higher temperatures

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Halogen-free silicone cable for applications that require an increased mechanical strength as well as a higher temperature resistance. For use in dry, damp and wet rooms as well as outdoors. Suitable for use in air conditioning and heating systems, in saunas and solariums, in foundries, in steel, cement and ceramic plants as well as in furnaces and lighting fixtures. An interference-free transmission of signals and pulse is assured by the high screening density. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	AWG, approx.
79804	2 x 0.75	9.1	61.4	124.0	19
79805	3 G 0.75	9.5	69.1	136.0	19
79806	4 G 0.75	10.5	86.7	160.0	19
79807	5 G 0.75	11.4	95.2	180.0	19
79808	2 x 1	9.5	66.7	132.0	18
79809	3 G 1	9.9	86.2	154.0	18
79810	4 G 1	11.2	96.8	176.0	18
79811	5 G 1	12.1	108.3	207.0	18
79812	2 x 1.5	10.9	87.7	170.0	16
79813	3 G 1.5	11.3	103.5	190.0	16
79814	4 G 1.5	12.1	131.7	231.0	16
79815	5 G 1.5	12.9	148.5	282.0	16
79816	7 G 1.5	13.7	193.4	342.0	16
701219	12 G 1.5	17.3	298.4	531.0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	AWG, approx.
79817	16 G 1.5	20.1	362.3	660.0	16
79818	20 G 1.5	21.4	405.1	766.0	16
79819	2 x 2.5	12.1	122.3	230.0	14
79820	3 G 2.5	13.0	147.7	275.0	14
79821	4 G 2.5	13.9	188.6	340.0	14
79822	5 G 2.5	14.9	214.9	395.0	14
79823	2 x 4	14.3	137.0	308.0	12
79824	3 G 4	15.0	178.1	364.0	12
79825	4 G 4	16.1	294.0	511.0	12
79826	5 G 4	17.4	374.0	630.0	12
79827	2 x 6	15.9	185.0	418.0	10
79828	3 G 6	16.7	241.1	612.0	10
79829	4 G 6	18.2	449.0	781.0	10
79830	5 G 6	20.1	563.0	980.0	10



## Technical data

- Heat-resistant multicore cable to DIN VDE 0285-525-2-83 / DIN EN 50525-2-83
- **Temperature range**  
fixed installation -60°C to + 180°C (for short time +250°C)
- Permissible **operating temperature** at conductor +180°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 2000 V
- **Specific volume resistivity**  
min. 200 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to  $20 \times 10^6$  cJ/kg (up to 20 Mrad)

## Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of cross-linked rubber (SiR) compound type EI2 to DIN VDE 0207-363-1 / DIN EN 50363-1
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of cross-linked rubber compound type EM9 to DIN VDE 0207-363-2-1/DIN EN 50363-2-1
- Sheath colour black (RAL 9005) also available in other colours on request

## H05SST-F

- Construction as per H05SS-F
- Polyester braiding

## Properties

- Advantages Hardly changes of dielectric strength and the insulation resistance also at high temperatures
- These cables may be damaged by pulling over sharp-edges or by abrasion during the installation and application. To avoid this, it should be treated with great care during the installation and application of the cable.

## Tests

- Behavior in fire  
Test of vertical flame-propagation to VDE 0482-332-1-2, DIN EN 60332-1-2, not valid for the cables with outer polyesterbraiding (Type H05SST-F)

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Multicore cables insulated and sheathed with heat resistant silicone rubber without strain relieving elements are used in high temperatures or with contact to hot-surfaces. These cables are installed for fixed installation, mechanical protected, for internal wiring of lighting fixtures in industrial application. It is recommended for the application of the apparatus which are moving during the operation with less mechanical stress.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

## H05SS-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22290	2 x 0,75	5,7 - 7,4	14,4	59,0	19
22291	3 G 0,75	6,2 - 8,1	21,6	71,0	19
22292	4 G 0,75	6,8 - 8,8	28,8	93,0	19
22293	5 G 0,75	7,6 - 9,9	36,0	113,0	19
22294	2 x 1	6,1 - 8,0	19,2	67,0	18
22295	3 G 1	6,5 - 8,5	29,0	86,0	18
22296	4 G 1	7,1 - 9,3	38,4	105,0	18
22297	5 G 1	8,0 - 10,3	48,0	129,0	18
22298	2 x 1,5	7,6 - 9,8	29,0	91,0	16
22299	3 G 1,5	8,0 - 10,4	43,0	110,0	16
22300	4 G 1,5	9,0 - 11,6	58,0	137,0	16
22301	5 G 1,5	9,8 - 12,7	72,0	165,0	16
22302	2 x 2,5	9,0 - 11,6	48,0	150,0	14
22303	3 G 2,5	9,6 - 12,4	72,0	170,0	14
22304	4 G 2,5	10,7 - 13,8	96,0	211,0	14
22305	5 G 2,5	11,9 - 15,3	120,0	255,0	14
22306	3 G 4	11,3 - 14,5	115,0	251,0	12
22307	4 G 4	12,7 - 16,2	154,0	330,0	12
22308	3 G 6	12,8 - 16,3	173,0	379,0	10
22309	4 G 6	14,2 - 18,1	230,0	494,0	10

## H05SST-F

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22343	2 x 0,75	6,7 - 8,4	14,4	63,0	19
22344	3 G 0,75	7,2 - 9,1	21,6	75,0	19
22345	4 G 0,75	7,8 - 9,8	28,8	99,0	19
22346	5 G 0,75	8,6 - 10,9	36,0	120,0	19
22347	2 x 1	7,1 - 9,0	19,2	71,0	18
22348	3 G 1	7,5 - 9,5	29,0	91,0	18
22349	4 G 1	8,1 - 10,3	38,4	111,0	18
22350	5 G 1	9,0 - 11,3	48,0	137,0	18
22351	2 x 1,5	8,6 - 10,8	29,0	97,0	16
22352	3 G 1,5	9,0 - 11,4	43,0	117,0	16
22353	4 G 1,5	10,0 - 12,6	58,0	145,0	16
22354	5 G 1,5	10,8 - 13,7	72,0	175,0	16
22355	2 x 2,5	10,0 - 12,6	48,0	159,0	14
22356	3 G 2,5	10,6 - 13,4	72,0	180,0	14
22357	4 G 2,5	11,7 - 14,8	96,0	224,0	14
22358	5 G 2,5	12,9 - 16,3	120,0	270,0	14
22359	3 G 4	12,3 - 15,5	115,0	266,0	12
22360	4 G 4	13,7 - 17,2	154,0	350,0	12
22361	3 G 6	13,8 - 17,3	173,0	402,0	10
22362	4 G 6	15,2 - 19,1	230,0	524,0	10

Dimensions and specifications may be changed without prior notice. (RE01)



# HELUFLO<sup>®</sup>-FEP-6Y multi core, fluorinated polymeric materials,

-100°C up to +205°C



## Technical data

- Fluorinated polymeric insulation FEP (Fluorethylenpropylene)
- **Temperature range**  
-100°C to +205°C  
(for short time +230°C)
- **Conductor temperature range**  
bare copper +130°C  
tinned copper +180°C  
silver pl. copper +200°C
- **Nominal voltage** 600 V
- **Test voltage** 2500 V
- **Insulation resistance**  
min. 2 GOhm x km
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 4x cable Ø
- **Radiation resistance**  
up to 1x10<sup>6</sup> cJ/kg (up to 1 Mrad)

## Cable structure

- Copper-conductor, bare, tinned, silver to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of FEP-HELUFLO<sup>®</sup>
- Core identification to DIN VDE 0293-308  
- up to 0,25 mm<sup>2</sup> cores coloured  
- from 0,5 mm<sup>2</sup> black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layers with optimal lay-length
- Outer sheath of FEP-HELUFLO<sup>®</sup>
- Sheath colour black (RAL 9005)

## Properties

- Higher insulation resistance
- Low dielectric loss
- Not flammable
- Resistant to micro-cultures
- Do not permit any fungus-formation
- Absolute ozone resistant
- Absolute weather resistant
- Water absorption <0,01%
- Minimal water vapour permeability (approx. 0,18 mgr/cm<sup>2</sup> in 24 hours)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- x = without green-yellow conductor (OZ)
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

This cables are predominantly used for installing in control cabinets subjected to high thermal effects as well as in brickworks, heaters, kitchen fitments and measuring appliances as well as in the chemical industry. These cables are non-flammable and resistant to acids, alkalis, solvents, oil and petrol.

CE The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### copper wire, tinned

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
24547	2 x 0,25	2,7	5,0	17,0	24
24548	3 G 0,25	2,9	7,5	22,0	24
24549	4 G 0,25	3,2	10,0	27,0	24
24550	5 G 0,25	3,5	12,5	34,0	24
24551	7 G 0,25	3,9	17,5	46,0	24
24552	2 x 0,5	3,3	9,8	21,0	20
24553	3 G 0,5	3,5	14,7	32,0	20
24554	4 G 0,5	3,9	19,6	44,0	20
24555	5 G 0,5	4,3	24,5	55,0	20
24556	7 G 0,5	4,8	34,3	70,0	20
24557	2 x 0,75	3,6	14,4	31,0	19
24558	3 G 0,75	3,9	21,6	46,0	19
24559	4 G 0,75	4,3	29,0	58,0	19
24560	5 G 0,75	4,7	36,0	69,0	19
24561	7 G 0,75	4,8	50,0	92,0	19
24562	2 x 1	4,1	19,0	41,0	18
24563	3 G 1	4,4	29,0	55,0	18
24564	4 G 1	4,9	38,0	71,0	18
24565	5 G 1	5,5	48,0	88,0	18

### copper wire, tinned

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
24566	7 G 1	6,0	67,0	113,0	18
24273	12 G 1	8,0	115,2	220,0	18
24274	18 G 1	9,5	173,0	321,0	18
24275	25 G 1	11,2	240,0	458,0	18
24501	2 x 1,5	4,9	29,0	45,0	16
24502	3 G 1,5	5,3	43,0	70,0	16
24503	4 G 1,5	5,8	58,0	98,0	16
24504	5 G 1,5	6,5	72,0	117,0	16
24505	7 G 1,5	7,2	101,0	184,0	16
24276	12 G 1,5	10,2	173,0	326,0	16
24277	18 G 1,5	12,3	260,0	504,0	16
24278	25 G 1,5	14,0	360,0	682,0	16
24279	3 G 2,5	6,4	72,0	121,0	14
24280	4 G 2,5	7,0	96,0	182,0	14
24281	5 G 2,5	7,9	120,0	240,0	14
24282	7 G 2,5	8,7	168,0	316,0	14
24283	3 G 4	7,5	115,0	212,0	12
24284	4 G 4	8,3	154,0	304,0	12
24285	5 G 4	9,2	192,0	386,0	12

Continuation ▶

# HELUFLO<sup>®</sup>-FEP-6Y multi core, fluorinated polymeric materials,



-100°C up to +205°C

## Copper wire, bare

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
25914	2 x 0,25	2,7	5,0	17,0	24
25915	3 G 0,25	2,9	7,5	22,0	24
25916	4 G 0,25	3,2	10,0	27,0	24
25917	5 G 0,25	3,5	12,5	34,0	24
25918	7 G 0,25	3,9	17,5	46,0	24
25919	2 x 0,5	3,3	9,8	21,0	20
25920	3 G 0,5	3,5	14,7	32,0	20
25921	4 G 0,5	3,9	19,6	44,0	20
25922	5 G 0,5	4,3	24,5	55,0	20
25923	7 G 0,5	4,8	34,3	70,0	20
25924	2 x 0,75	3,6	14,4	31,0	19
25925	3 G 0,75	3,9	21,6	46,0	19
25926	4 G 0,75	4,3	29,0	58,0	19
25927	5 G 0,75	4,7	36,0	69,0	19
25928	7 G 0,75	5,4	50,0	92,0	19
25929	2 x 1	4,1	19,0	41,0	18
25930	3 G 1	4,4	29,0	55,0	18
25931	4 G 1	4,9	38,0	71,0	18
25932	5 G 1	5,5	48,0	88,0	18
25933	7 G 1	6,0	67,0	113,0	18
25934	12 G 1	8,0	115,2	220,0	18
25935	18 G 1	9,5	173,0	321,0	18
25936	25 G 1	11,2	240,0	458,0	18
25937	2 x 1,5	4,9	29,0	45,0	16
25938	3 G 1,5	5,3	43,0	70,0	16
25939	4 G 1,5	5,8	58,0	98,0	16
25940	5 G 1,5	6,5	72,0	117,0	16
25941	7 G 1,5	7,2	101,0	184,0	16
25942	12 G 1,5	10,2	173,0	326,0	16
25943	18 G 1,5	12,3	260,0	504,0	16
25944	25 G 1,5	14,0	360,0	682,0	16
25945	3 G 2,5	6,4	72,0	121,0	14
25946	4 G 2,5	7,0	96,0	182,0	14
25947	5 G 2,5	7,9	120,0	240,0	14
25948	7 G 2,5	8,7	168,0	316,0	14
25949	3 G 4	7,5	115,0	212,0	12
25950	4 G 4	8,3	154,0	304,0	12
25951	5 G 4	9,2	192,0	386,0	12

## copper wire, silvered

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Silv. weight kg / km	Weight app. kg / km	AWG-No.
25952	2 x 0,25	2,7	5,0	0,26	17,0	24
25953	3 G 0,25	2,9	7,5	0,39	22,0	24
25954	4 G 0,25	3,2	10,0	0,52	27,0	24
25955	5 G 0,25	3,5	12,5	0,65	34,0	24
25956	7 G 0,25	3,9	17,5	0,91	46,0	24
25957	2 x 0,5	3,3	9,8	0,34	21,0	20
25958	3 G 0,5	3,5	14,7	0,51	32,0	20
25959	4 G 0,5	3,9	19,6	0,68	44,0	20
25960	5 G 0,5	4,3	24,5	0,85	55,0	20
25961	7 G 0,5	4,8	34,3	1,19	70,0	20
25962	2 x 0,75	3,6	14,4	0,40	31,0	19
25963	3 G 0,75	3,9	21,6	0,60	46,0	19
25964	4 G 0,75	4,3	29,0	0,80	58,0	19
25965	5 G 0,75	4,7	36,0	1,00	69,0	19
25966	7 G 0,75	5,4	50,0	1,40	92,0	19
25967	2 x 1	4,1	19,0	0,52	41,0	18
25968	3 G 1	4,4	29,0	0,78	55,0	18
25969	4 G 1	4,9	38,0	1,04	71,0	18
25970	5 G 1	5,5	48,0	1,30	88,0	18
25971	7 G 1	6,0	67,0	1,82	113,0	18
25972	12 G 1	8,0	115,2	3,12	220,0	18
25973	18 G 1	9,5	173,0	4,68	321,0	18
25974	25 G 1	11,2	240,0	6,50	458,0	18
25975	2 x 1,5	4,9	29,0	0,70	45,0	16
25976	3 G 1,5	5,3	43,0	1,05	70,0	16
25977	4 G 1,5	5,8	58,0	1,40	98,0	16
25978	5 G 1,5	6,5	72,0	1,75	117,0	16
25979	7 G 1,5	7,2	101,0	2,45	184,0	16
25980	12 G 1,5	10,2	173,0	4,20	326,0	16
25981	18 G 1,5	12,3	260,0	6,30	504,0	16
25982	25 G 1,5	14,0	360,0	8,75	682,0	16
25983	3 G 2,5	6,4	72,0	2,10	121,0	14
25984	4 G 2,5	7,0	96,0	2,80	182,0	14
25985	5 G 2,5	7,9	120,0	3,50	240,0	14
25986	7 G 2,5	8,7	168,0	4,90	316,0	14
25987	3 G 4	7,5	115,0	3,60	212,0	12
25989	4 G 4	8,3	154,0	4,80	304,0	12
25990	5 G 4	9,2	192,0	6,00	386,0	12

Dimensions and specifications may be changed without prior notice. (RE01)

# MULTITHERM 400

for high temperature applications



## TECHNICAL DATA

Control and connection cable acc. to company specifications

Temperature range	fixed -60°C to +400°C
Nominal voltage	AC U <sub>0</sub> /U 300/500 V
Test voltage (spark test)	2000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire nickel plated, finely stranded
- Core insulation: glass silk braid with heat-resistant impregnation, 2 layers
- Core identification: see table; identification by coloured helix
- Cores stranded
- Outer sheath: glass silk braid with heat-resistant impregnation
- Sheath colour: white

## PROPERTIES

- low adhesion
- halogen-free

- asbestos-free
- cadmium-free

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- certifications and approvals: EAC

## APPLICATION

For applications with extremely high connection and ambient temperatures, e.g. in metallurgical, steel and rolling mills, foundries, glass and ceramics factories, furnace and power plant construction, thermoplastic forming; use only in dry environments.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- At temperatures above 200°C during the first commissioning, the impregnating varnish may degrade and leave only pure glass fibers remaining as insulation. This can be observed as evaporation.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.	Core identification
51741	2 x 0.5	20	5.1 - 5.9	3.3	10.0	47.0	BU, BN
51742	3 G 0.5	20	5.4 - 6.2	3.1	15.0	50.0	GN-YE, BU, BN
11024199	3 x 0.5	20	5.4 - 6.2	3.1	15.0	50.0	BK, BU, BN
51743	4 G 0.5	20	6.2 - 7.0	3.0	19.0	70.0	GN-YE, BK, BU, BN
11024200	4 x 0.5	20	6.2 - 7.0	3.0	19.0	70.0	BK, BU, BN, WH
51744	5 G 0.5	20	7.0 - 7.8	2.9	25.0	81.0	GN-YE, BK, BU, BN, WH
11024201	5 x 0.5	20	7.0 - 7.8	2.9	25.0	81.0	BK, BU, BN, WH, RD
51745	6 G 0.5	20	7.2 - 8.0	2.8	30.0	97.0	GN-YE, BK, BU, BN, WH, RD
11024202	6 x 0.5	20	7.2 - 8.0	2.8	30.0	97.0	BK, BU, BN, WH, RD, GY
51746	7 G 0.5	20	7.7 - 8.5	2.7	34.0	105.0	GN-YE, BK, BU, BN, WH, RD, GY
11024203	7 x 0.5	20	7.7 - 8.5	2.7	34.0	105.0	BK, BU, BN, WH, RD, GY, GN
51747	2 x 0.75	19	5.7 - 6.5	5.1	14.4	55.0	BU, BN
51748	3 G 0.75	19	6.1 - 6.9	5.1	21.6	66.0	GN-YE, BU, BN
11024204	3 x 0.75	19	6.1 - 6.9	5.1	21.6	66.0	BK, BU, BN
51749	4 G 0.75	19	6.8 - 7.6	4.9	29.0	86.0	GN-YE, BK, BU, BN
11024205	4 x 0.75	19	6.8 - 7.6	4.9	29.0	86.0	BK, BU, BN, WH
51750	5 G 0.75	19	7.6 - 8.4	4.7	36.0	103.0	GN-YE, BK, BU, BN, WH
11024206	5 x 0.75	19	7.6 - 8.4	4.7	36.0	103.0	BK, BU, BN, WH, RD
51751	6 G 0.75	19	7.9 - 8.7	4.5	43.0	119.0	GN-YE, BK, BU, BN, WH, RD
11024207	6 x 0.75	19	7.9 - 8.7	4.5	43.0	119.0	BK, BU, BN, WH, RD, GY
51752	7 G 0.75	19	8.5 - 9.3	4.4	50.0	130.0	GN-YE, BK, BU, BN, WH, RD, GY
11024208	7 x 0.75	19	8.5 - 9.3	4.4	50.0	130.0	BK, BU, BN, WH, RD, GY, GN
51753	2 x 1	18	5.7 - 6.5	7.0	19.0	63.0	BU, BN
51754	3 G 1	18	6.2 - 7.0	6.7	29.0	82.0	GN-YE, BU, BN
11024209	3 x 1	18	6.2 - 7.0	6.7	29.0	82.0	BK, BU, BN
51755	4 G 1	18	6.9 - 7.7	6.4	38.0	98.0	GN-YE, BK, BU, BN
11024210	4 x 1	18	6.9 - 7.7	6.4	38.0	98.0	BK, BU, BN, WH
51756	5 G 1	18	7.8 - 8.6	6.2	48.0	119.0	GN-YE, BK, BU, BN, WH

# MULTITHERM 400

for high temperature applications

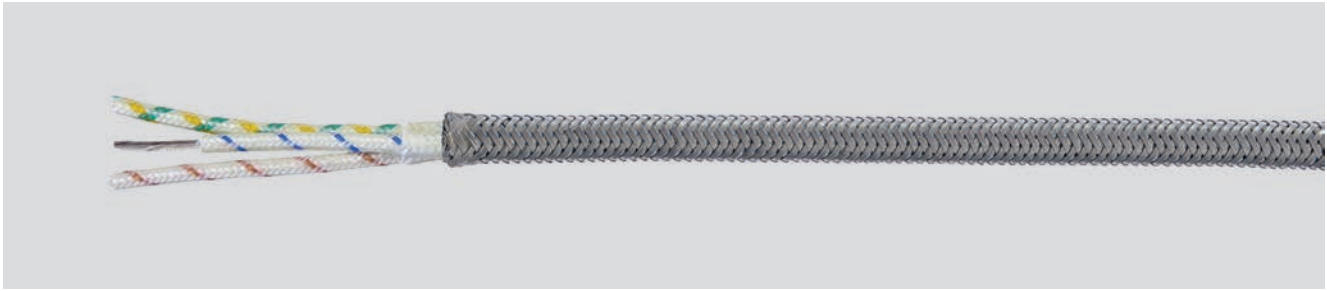


Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.	Core identification
11024211	5 x 1	18	7.8 - 8.6	6.2	48.0	119.0	BK, BU, BN, WH, RD
51757	6 G 1	18	8.0 - 8.8	6.0	58.0	138.0	GN-YE, BK, BU, BN, WH, RD
11024212	6 x 1	18	8.0 - 8.8	6.0	58.0	138.0	BK, BU, BN, WH, RD, GY
51758	7 G 1	18	8.6 - 9.4	5.8	67.0	150.0	GN-YE, BK, BU, BN, WH, RD, GY
11024213	7 x 1	18	8.6 - 9.4	5.8	67.0	150.0	BK, BU, BN, WH, RD, GY, GN
51759	2 x 1.5	16	6.7 - 7.5	9.4	29.0	87.0	BU, BN
51760	3 G 1.5	16	6.9 - 7.7	9.0	43.0	103.0	GN-YE, BU, BN
11024214	3 x 1.5	16	6.9 - 7.7	9.0	43.0	103.0	BK, BU, BN
51761	4 G 1.5	16	7.7 - 8.5	8.6	58.0	128.0	GN-YE, BK, BU, BN
11024215	4 x 1.5	16	7.7 - 8.5	8.6	58.0	128.0	BK, BU, BN, WH
51762	5 G 1.5	16	9.0 - 9.8	8.3	72.0	150.0	GN-YE, BK, BU, BN, WH
11024216	5 x 1.5	16	9.0 - 9.8	8.3	72.0	150.0	BK, BU, BN, WH, RD
51763	6 G 1.5	16	9.3 - 10.1	8.0	88.0	175.0	GN-YE, BK, BU, BN, WH, RD
11024217	6 x 1.5	16	9.3 - 10.1	8.0	88.0	175.0	BK, BU, BN, WH, RD, GY
51764	7 G 1.5	16	10.0 - 10.8	7.8	101.0	190.0	GN-YE, BK, BU, BN, WH, RD, GY
11024218	7 x 1.5	16	10.0 - 10.8	7.8	101.0	190.0	BK, BU, BN, WH, RD, GY, GN
51765	2 x 2.5	14	7.4 - 8.2	12.2	48.0	135.0	BU, BN
51766	3 G 2.5	14	7.9 - 8.7	11.6	72.0	153.0	GN-YE, BU, BN
11024219	3 x 2.5	14	7.9 - 8.7	11.6	72.0	153.0	BK, BU, BN
51767	4 G 2.5	14	8.8 - 9.6	11.2	96.0	190.0	GN-YE, BK, BU, BN
11024220	4 x 2.5	14	8.8 - 9.6	11.2	96.0	190.0	BK, BU, BN, WH
50060	5 G 2.5	14	9.9 - 10.7	10.8	120.0	230.0	GN-YE, BK, BU, BN, WH
11024221	5 x 2.5	14	9.9 - 10.7	10.8	120.0	230.0	BK, BU, BN, WH, RD
50061	6 G 2.5	14	10.3 - 11.1	10.4	144.0	270.0	GN-YE, BK, BU, BN, WH, RD
11024222	6 x 2.5	14	10.3 - 11.1	10.4	144.0	270.0	BK, BU, BN, WH, RD, GY
50062	7 G 2.5	14	11.0 - 11.8	10.1	168.0	295.0	GN-YE, BK, BU, BN, WH, RD, GY
11024223	7 x 2.5	14	11.0 - 11.8	10.1	168.0	295.0	BK, BU, BN, WH, RD, GY, GN
50063	2 x 4	12	9.1 - 9.9	16.0	77.0	191.0	BU, BN
50064	3 G 4	12	9.7 - 10.5	15.3	115.0	224.0	GN-YE, BU, BN
11024224	3 x 4	12	9.7 - 10.5	15.3	115.0	224.0	BK, BU, BN
50065	4 G 4	12	10.9 - 11.7	14.6	154.0	285.0	GN-YE, BK, BU, BN
11024225	4 x 4	12	10.9 - 11.7	14.6	154.0	285.0	BK, BU, BN, WH
50066	5 G 4	12	12.2 - 13.0	14.1	192.0	360.0	GN-YE, BK, BU, BN, WH
11024226	5 x 4	12	12.2 - 13.0	14.1	192.0	360.0	BK, BU, BN, WH, RD
50067	7 G 4	12	13.5 - 14.7	13.3	270.0	485.0	GN-YE, BK, BU, BN, WH, RD, GY
11024227	7 x 4	12	13.5 - 14.7	13.3	270.0	485.0	BK, BU, BN, WH, RD, GY, GN
50068	3 G 6	10	11.5 - 12.3	20.0	173.0	340.0	GN-YE, BU, BN
11024228	3 x 6	10	11.5 - 12.3	20.0	173.0	340.0	BK, BU, BN
50069	4 G 6	10	12.8 - 13.8	19.0	230.0	442.0	GN-YE, BK, BU, BN
11024229	4 x 6	10	12.8 - 13.8	19.0	230.0	442.0	BK, BU, BN, WH
50070	5 G 6	10	14.3 - 15.4	18.0	288.0	535.0	GN-YE, BK, BU, BN, WH
11024230	5 x 6	10	14.3 - 15.4	18.0	288.0	535.0	BK, BU, BN, WH, RD
50071	4 G 10	8	14.2 - 15.3	26.0	384.0	710.0	GN-YE, BK, BU, BN
11024231	4 x 10	8	14.2 - 15.3	26.0	384.0	710.0	BK, BU, BN, WH

\*) Current carrying capacity in amperes at +340°C

# MULTITHERM 400-ES

halogen-free, high-grade steel braiding



## Technical data

- Special core insulation for high temperatures
- **Temperature range** -60°C to +400°C (for short time +500°C)
- **Nominal voltage** 500 V
- **Test voltage** 2500 V
- **Minimum bending radius** 5x cable Ø

## Cable structure

- Copper-conductor nickel plated, fine wire (ASTM B 355)
- 1. Core insulation of braided glass-fibre impregnated with silicone
- 2. Core insulation of braided glass-fibre impregnated with silicone
- Core identification
  - No. of cores with GN-YE conductor
    - 3 = GN-YE, BU, BN
    - 4 = GN-YE, BK, BU, BN
    - 5 = GN-YE, BK, BU, BN, WH
    - 6 = GN-YE, BK, BU, BN, WH, RD
    - 7 = GN-YE, BK, BU, BN, WH, RD, GY
  - No. of cores without GN-YE conductor
    - 2 = BU, BN
    - 3 = BK, BU, BN
    - 4 = BK, BU, BN, WH
    - 5 = BK, BU, BN, WH, RD
    - 6 = BK, BU, BN, WH, RD, GY
    - 7 = BK, BU, BN, WH, RD, GY, GN
- Overall lay up of cores
- Outer sheath of braided glass-fibre impregnated with silicone
- Braided high-grade steel, coverage approx. 80%

## Properties

- Asbestos and cadmium-free

## Note

- Further sizes are available on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- Unscreened analogue type: **MULTITHERM 400**
- At temperatures above 200°C during the first commissioning, the impregnating varnish may degrade and leave only pure glass fibers remaining as insulation. This can be observed as evaporation.

## Application

Where extremely high connecting and ambient temperatures occur, e. g. in iron and steel works, rolling mills, foundries, glass and ceramic plants, in power plant construction, in the chemical industry, nuclear technology, crude oil engineering, in technical applications in medicine, as well as for wiring resistances in electrical heating equipment, furnaces and machinery in thermoplastic forming. Due to the special construction of the cable, a maximum temperature of approx. 220°C is recommended for use in damp environments. Applications at temperatures above this should be used in dry environments only. The robust braiding of high-grade steel protects the cable from aggressive atmospheres and mechanical stresses. The braided screen can also be used for earthing purposes.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Max. perm. current carrying capacity at +340°C (A)	Weight app. kg / km	AWG-No.
52018	2 x 0,5	7,1	10,0	3,3	84,0	20
52019	3 x 0,5	7,3	15,0	3,1	89,0	20
52020	4 x 0,5	8,4	19,0	3,0	111,0	20
52021	5 x 0,5	8,9	25,0	2,9	126,0	20
52022	6 x 0,5	9,5	30,0	2,8	146,0	20
52023	7 x 0,5	9,6	34,0	2,7	158,0	20
52024	2 x 0,75	7,6	14,4	5,1	95,0	19
52025	3 x 0,75	7,9	21,6	5,1	109,0	19
52026	4 x 0,75	8,9	29,0	4,9	131,0	19
52027	5 x 0,75	9,7	36,0	4,7	157,0	19
52028	6 x 0,75	10,4	43,0	4,5	177,0	19
52029	7 x 0,75	10,6	50,0	4,4	190,0	19
52030	2 x 1	7,8	19,0	7,0	105,0	18
52031	3 x 1	8,7	29,0	6,7	126,0	18
52032	4 x 1	9,2	38,0	6,4	148,0	18
52033	5 x 1	10,0	48,0	6,2	174,0	18
52034	6 x 1	10,7	58,0	6,0	198,0	18
52035	7 x 1	10,9	67,0	5,8	212,0	18
52036	2 x 1,5	8,9	29,0	9,4	132,0	16
52037	3 x 1,5	9,2	43,0	9,0	153,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Max. perm. current carrying capacity at +340°C (A)	Weight app. kg / km	AWG-No.
52038	4 x 1,5	10,0	58,0	8,6	183,0	16
52039	5 x 1,5	10,9	72,0	8,3	212,0	16
52040	6 x 1,5	11,6	88,0	8,0	241,0	16
52041	7 x 1,5	11,9	101,0	7,8	259,0	16
52042	2 x 2,5	10,1	48,0	12,2	191,0	14
52043	3 x 2,5	10,6	72,0	11,6	213,0	14
52044	4 x 2,5	11,5	96,0	11,2	256,0	14
52045	5 x 2,5	12,7	120,0	10,8	307,0	14
52046	6 x 2,5	14,9	144,0	10,4	359,0	14
52047	7 x 2,5	15,1	168,0	10,1	388,0	14
52048	2 x 4	11,9	77,0	16,0	260,0	12
52049	3 x 4	12,3	115,0	15,3	303,0	12
52050	4 x 4	15,1	154,0	14,6	378,0	12
52051	5 x 4	15,6	192,0	14,1	458,0	12
52052	7 x 4	16,6	270,0	13,3	593,0	12
52053	3 x 6	16,3	173,0	20,0	442,0	10
52054	4 x 6	18,3	230,0	19,0	567,0	10
52055	5 x 6	19,8	288,0	18,0	671,0	10
52056	4 x 10	22,1	384,0	26,0	866,0	8
52057	4 x 16	26,6	615,0	34,0	1203,0	6

Dimensions and specifications may be changed without prior notice. (RE01)

# HELUTHERM® FIRE RES 120

high temperature, halogen-free, fire resistant, LPCB certified



## Technical data

- LSOH fire resistant cable acc. to BS 7629-1 / BS 6387 CWZ / BS EN 50200 PH30 / PH120
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +80°C
- **Permissible operating temperature of the conductor** -40°C to +180°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V
- **Breakdown voltage**  
4000 V
- **Insulation resistance**  
> 200 MΩxkm @ +20°C
- **Minimum bending radius**  
8x Outer-Ø

## Cable structure

- Copper wire bare, acc. to BS EN 60228  
class 1: single-wire  
class 2: multi-wire
- Core insulation: silicon rubber mix
- Core identification acc. to DIN VDE 0293-308  
2 cores: bn, bu  
3 cores: bn, bk, gy  
4 cores: bu, bn, bk, gy
- Overall screen: AL/PET tape over tinned copper drain wire (solid)
- Outer sheath: LSOH type LTS3
- Outer sheath colour: red
- Length marking: in metres

## Properties

- LPCB certified acc. to BS 7629-1  
BS 6387 (CWZ)  
BS 5839-1 (Clause 26.2d Standard)  
EN 50200 (cl. PH30 / PH120)  
EN 50200 Annex E (30 min.)
- halogen-free
- extremely fire resistant
- screen earthing through drain wire positioning
- UV-resistant
- oil-resistant

## Tests

- Only fire acc. to BS 6387 cat.C (3 h @ +950°C)
- Fire and water acc. to BS 6387 cat.W (15 min. @ +650°C)
- Fire and mech. shock acc. to BS 6387 cat.Z (30 min. @ +950°C)
- Fire and mech. shock acc. to EN 50200 cl. PH120 (60 min. @ +830°C)
- Fire, mech. shock and short water acc. to EN 50200 cl. PH120 Annex E (30 min. @ +830°C + 15 min. with water)
- Fire resistant acc. to IEC 60331-2-1
- Flame-retardant acc. to IEC 60332-1-2
- Flame test on bunched wires acc. to IEC 60332-3-24 (cat.C, 20 min.)
- Accid gas emission acc. to BS EN 50267-2-1 + 2
- Smoke density acc. to BS EN 61034-2

## Application

Fire alarm cable for fire detection systems or emergency lighting systems in public buildings and offices where human safety is of primary concern or where expensive or sensitive equipment may be damaged by exposure to acid forming gases.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

### class 1: single-wire

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Conductor type
11007300	2 x 1	7,8	28,0	67	class 1
11007301	3 x 1	8,1	37,0	84	class 1
11007302	4 x 1	8,7	46,0	101	class 1
11007310	2 x 1,5	8,7	39,0	87	class 1
11007311	3 x 1,5	9,1	52,0	114	class 1
11007312	4 x 1,5	9,8	66,0	139	class 1
11007320	2 x 2,5	9,8	65,0	131	class 1
11007321	3 x 2,5	10,3	87,0	168	class 1
11007322	4 x 2,5	11,2	109,0	211	class 1

### class 2: multi-wire

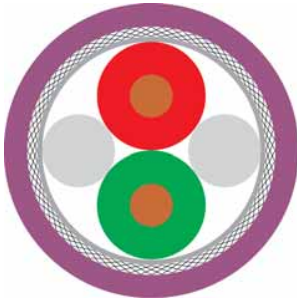
Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Conductor type
11007358	2 x 1	8,0	28,0	69	class 2
11007359	3 x 1	8,4	37,0	87	class 2
11007360	4 x 1	9,1	47,0	109	class 2
11007368	2 x 1,5	9,0	41,0	96	class 2
11007369	3 x 1,5	9,5	55,0	121	class 2
11007370	4 x 1,5	10,2	69,0	147	class 2
11007378	2 x 2,5	10,3	68,0	138	class 2
11007379	3 x 2,5	10,8	90,0	176	class 2
11007380	4 x 2,5	11,8	113,0	222	class 2
11007388	2 x 4	11,3	108,0	192	class 2
11007389	3 x 4	11,9	145,0	247	class 2
11007390	4 x 4	13,0	181,0	304	class 2

Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus fixed installed High Temperature +105°C or +200°C

PVC + FRNC PH120



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,8 mm ± 0,2 mm  
Violet similar to RAL 4001

## High temperature areas 1x2xAWG23/1

Copper, bare (AWG 23/1)  
Rubber compound  
rd, gn  
2 cores + 2 fillers stranded together  
-  
-  
AL-Foil + braid  
FRNC  
app. 8,3 mm ± 0,3 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
5 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
Frequency at +20°C  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
74,5 Ohm/km  
2 GOhm x km  
149 Ohm/km max.  
36 nF/km nom.  
1,5 kV  
Frequency at +20°C at +200°C  
9,6 kHz < 3,0 dB/km < 8,0 dB/km  
38,4 kHz < 5,0 dB/km < 12,0 dB/km  
4 MHz < 22,0 dB/km < 41,0 dB/km  
16 MHz < 42,0 dB/km < 90,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 69 kg/km  
120 mm  
-40°C  
+105°C  
0,99 MJ/m  
24,00 kg/km

app. 88 kg/km  
130 mm  
-50°C  
+200°C  
1,46 MJ/m  
28,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® Profibus L2 105°C is for fixed installation indoor and enhanced temperature resistance.

The version Profibus L2 SR 200°C Fire Resistant has additional circuit integrity for 120 minutes (EN50200 PH120) and the temperature range up to +200°C for fix indoor installation.

## Part no.

**805705**, Profibus high temperature

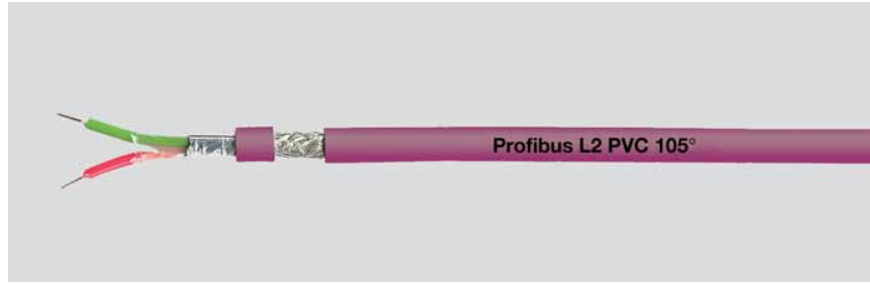
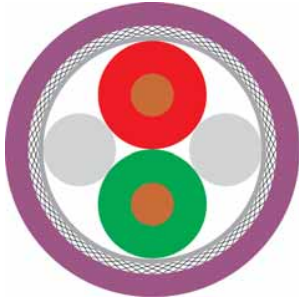
**805706**, Profibus high temperature with circuit integrity

Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus fixed installed High Temperature +105°C or +200°C

PVC + FRNC PH120



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,8 mm ± 0,2 mm  
Violet similar to RAL 4001

## High temperature areas 1x2xAWG23/1

Copper, bare (AWG 23/1)  
Rubber compound  
rd, gn  
2 cores + 2 fillers stranded together  
-  
-  
AL-Foil + braid  
FRNC  
app. 8,3 mm ± 0,3 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
5 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
Frequency at +20°C  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
74,5 Ohm/km  
2 GOhm x km  
149 Ohm/km max.  
36 nF/km nom.  
1,5 kV  
Frequency at +20°C at +200°C  
9,6 kHz < 3,0 dB/km < 8,0 dB/km  
38,4 kHz < 5,0 dB/km < 12,0 dB/km  
4 MHz < 22,0 dB/km < 41,0 dB/km  
16 MHz < 42,0 dB/km < 90,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 69 kg/km  
120 mm  
-40°C  
+105°C  
0,99 MJ/m  
24,00 kg/km

app. 88 kg/km  
130 mm  
-50°C  
+200°C  
1,46 MJ/m  
28,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® Profibus L2 105°C is for fixed installation indoor and enhanced temperature resistance.

The version Profibus L2 SR 200°C Fire Resistant has additional circuit integrity for 120 minutes (EN50200 PH120) and the temperature range up to +200°C for fix indoor installation.

## Part no.

**805705**, Profibus high temperature

**805706**, Profibus high temperature with circuit integrity

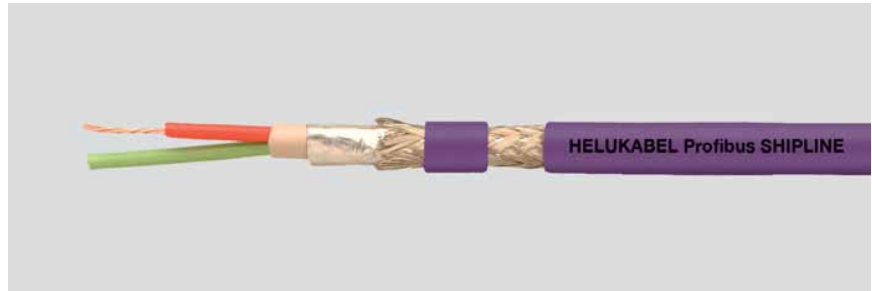
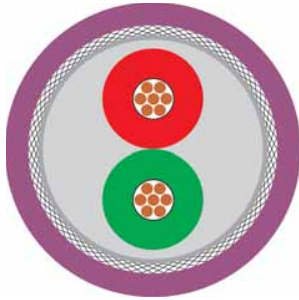
Dimensions and specifications may be changed without prior notice.



# BUS Cables

Profibus fixed installed SHIPLINE + High Temperature 180°C

X-FRNC + FEP



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Marine and Offshore 1x2x0.75 mm (stranded)

Copper, bare (AWG 22/7)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Al-Foil  
Cu braid, tinned  
X-FRNC  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## High temperature areas 1x2x0.64 mm

Copper, bare (AWG 22/1)  
FEP  
rd, gn  
2 cores + 2 fillers stranded together  
-  
Al-Foil  
Cu braid, tinned  
FEP  
app. 7,2 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1,6 GOhm x km  
110 Ohm/km max.  
29 nF/km nom.  
60 V  
1 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1,6 GOhm x km  
110 Ohm/km max.  
28 nF/km nom.  
250 V  
3,6 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 84 kg/km  
80 mm  
-25°C  
+80°C  
1,26 MJ/m  
35,00 kg/km

app. 64 kg/km  
52 mm  
-50°C  
+180°C  
0,30 MJ/m  
24,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-3

## Application

HELUKABEL® Profibus Shipline is designed for marine/offshore applications and **certified by German Lloyd**. Thanks to use of stranded conductors, this cable can be moved occasionally. The High-Temperature version is used in fixed installations with demanding temperature requirements, e.g. in the vicinity of a hot furnace or near welding activities.

## Part no.

**802178**, Profibus SHIPLINE

**802179**, Profibus high temperature

Dimensions and specifications may be changed without prior notice.



HELUKABEL® <VDE-REG 7032> OZ-BL 5x0,75 QMM / 14004 300/500 V CE

## TECHNICAL DATA

PVC control cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 120 pF/m
<b>Inductance</b>	approx. 0.68 mH/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: blue (RAL 5015)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation, weathering effects
- largely resistant to: oil, for details, see "Technical Information"

- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals:  
EAC  
VDE-Reg.-No. 7032, valid for temperature range up to +70°C

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control. For explosion-endangered areas marked as intrinsically safe (blue) (ignition protection type -i-) flexible control or measurement cable for intrinsically safe systems in measurement and control technology. These systems are not earthed and have a separate power circuit. These cables are not suitable for burial in the ground.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- with blue sheathing for the installation of intrinsically safe systems (ignition protection type -i-) in explosion-endangered areas according to DIN VDE 0165-1 / DIN EN 60079-14 / IEC 60079-14, Section 16.2.2

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14001	2 x 0.75	19	5.3	14.4	46.0
14002	3 x 0.75	19	5.6	21.6	54.0
14003	4 x 0.75	19	6.3	29.0	66.0
14004	5 x 0.75	19	6.9	36.0	80.0
14075	7 x 0.75	19	7.7	52.0	110.0
14005	8 x 0.75	19	8.3	58.0	130.0
14076	12 x 0.75	19	10.1	88.0	179.0
14006	18 x 0.75	19	12.2	130.0	257.0
14007	25 x 0.75	19	14.3	180.0	365.0
14008	30 x 0.75	19	15.3	215.0	448.0
14009	34 x 0.75	19	16.7	245.0	510.0
14010	41 x 0.75	19	18.1	298.0	607.0
14011	2 x 1	18	5.6	19.0	60.0
14012	3 x 1	18	6.1	29.0	72.0
14013	4 x 1	18	6.6	38.0	86.0
14014	5 x 1	18	7.5	48.0	104.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14015	7 x 1	18	8.1	67.0	141.0
14016	12 x 1	18	10.9	115.0	230.0
14017	18 x 1	18	12.9	173.0	343.0
14018	25 x 1	18	15.4	240.0	485.0
14019	2 x 1.5	16	6.4	29.0	70.0
14020	3 x 1.5	16	6.8	43.0	90.0
14021	4 x 1.5	16	7.6	58.0	109.0
14022	5 x 1.5	16	8.3	72.0	131.0
14023	7 x 1.5	16	9.2	101.0	184.0
14024	12 x 1.5	16	12.4	173.0	309.0
14025	18 x 1.5	16	14.8	259.0	440.0
14026	25 x 1.5	16	17.6	360.0	620.0
14027	30 x 1.5	16	18.6	440.0	842.0
14100	3 x 2.5	14	8.3	72.0	148.0
14101	4 x 2.5	14	9.2	96.0	178.0
14102	5 x 2.5	14	10.1	120.0	221.0



HELUKABEL® <VDE-REG 7034> OZ-BL-CY 5x0,75 QMM / 14031 300/500 V CE

## TECHNICAL DATA

PVC control cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Breakdown voltage</b>	6000 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 140 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz, approx. 187 pF/m
<b>Inductance</b>	approx. 0.68 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- x = without protective conductor (OZ)
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: blue (RAL 5015)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation, weathering effects

- largely resistant to: oil, for details, see "Technical Information"
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals: EAC VDE-Reg.-No. 7034, valid for temperature range up to +70°C

## ■ APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control. For explosion-endangered areas marked as intrinsically safe (blue) (ignition protection type -i-) flexible control or measurement cable for intrinsically safe systems in measurement and control technology. These systems are not earthed and have a separate power circuit. These cables are not suitable for burial in the ground. The screening guarantees an exact data transmission. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- with blue sheathing for the installation of intrinsically safe systems (ignition protection type -i-) in explosion-endangered areas according to DIN VDE 0165-1 / DIN EN 60079-14 / IEC 60079-14, Section 16.2.2

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14028	2 x 0.75	19	6.2	40.0	59.0
14029	3 x 0.75	19	6.6	52.0	66.0
14030	4 x 0.75	19	7.1	60.0	77.0
14031	5 x 0.75	19	7.8	71.0	93.0
14088	7 x 0.75	19	8.4	91.0	130.0
14032	8 x 0.75	19	9.2	110.0	145.0
14033	10 x 0.75	19	10.7	137.0	180.0
14034	12 x 0.75	19	11.1	142.0	202.0
14035	18 x 0.75	19	12.9	212.0	292.0
14036	20 x 0.75	19	13.9	238.0	362.0
14037	25 x 0.75	19	15.4	281.0	415.0
14038	30 x 0.75	19	16.4	320.0	486.0
14039	34 x 0.75	19	17.8	345.0	523.0
14040	41 x 0.75	19	19.3	400.0	680.0
14041	2 x 1	18	6.5	50.0	65.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14042	3 x 1	18	6.9	60.0	81.0
14043	4 x 1	18	7.6	71.0	98.0
14044	5 x 1	18	8.2	88.0	127.0
14045	7 x 1	18	9.0	111.0	158.0
14046	12 x 1	18	11.9	184.0	260.0
14047	18 x 1	18	14.0	260.0	380.0
14048	25 x 1	18	16.5	349.0	534.0
14049	34 x 1	18	19.0	486.0	741.0
14050	2 x 1.5	16	7.1	63.0	88.0
14051	3 x 1.5	16	7.7	80.0	100.0
14052	4 x 1.5	16	8.3	97.0	126.0
14053	5 x 1.5	16	9.2	119.0	160.0
14054	7 x 1.5	16	9.9	147.0	208.0
14055	12 x 1.5	16	13.5	267.0	338.0
14056	18 x 1.5	16	15.7	374.0	479.0

# OZ-BL-CY



for intrinsically safe systems in explosion-endangered areas, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14057	25 x 1.5	16	18.5	526.0	705.0
14058	30 x 1.5	16	19.7	555.0	830.0
14059	34 x 1.5	16	21.3	629.0	900.0
14060	3 x 2.5	14	9.2	144.0	167.0
14061	4 x 2.5	14	10.0	148.0	195.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14062	5 x 2.5	14	11.0	181.0	223.0
14063	7 x 2.5	14	12.1	255.0	344.0
14064	12 x 2.5	14	16.4	441.0	570.0
14065	18 x 2.5	14	19.3	570.0	681.0

# OB-BL-PAAR-CY

for intrinsically safe systems in explosion-endangered areas, EMC-preferred type



HELUKABEL® OB-BL-PAAR-CY 4x2x0,5 QMM / 14079 900 V CE

## TECHNICAL DATA

PVC control cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -30°C to +80°C
<b>Peak operating voltage</b>	900 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	1000 V
<b>Breakdown voltage</b>	4000 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 105 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz, approx. 145 pF/m
<b>Characteristic impedance</b>	80 Ohm, (approx. value)
<b>Inductance</b>	approx. 0.68 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14077	2 x 2 x 0.5	20	7.6	47.0	89.0
14078	3 x 2 x 0.5	20	8.2	67.0	104.0
14079	4 x 2 x 0.5	20	9.0	80.0	126.0
14080	6 x 2 x 0.5	20	10.9	108.0	171.0
14081	8 x 2 x 0.5	20	12.3	129.0	251.0
14082	10 x 2 x 0.5	20	14.2	172.0	282.0
14083	12 x 2 x 0.5	20	14.7	235.0	361.0
14084	16 x 2 x 0.5	20	16.3	301.0	445.0
14085	20 x 2 x 0.5	20	17.7	343.0	525.0
14086	24 x 2 x 0.5	20	20.2	394.0	590.0
14087	25 x 2 x 0.5	20	20.6	406.0	622.0

- Sheath colour: blue (RAL 5015)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Used for flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control. For explosion-endangered areas marked as intrinsically safe (blue) (ignition protection type -i-) flexible control or measurement cable for intrinsically safe systems in measurement and control technology. These systems are not earthed and have a separate power circuit. These cables are not suitable for burial in the ground. The screening guarantees an exact data transmission. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- with blue sheathing for the installation of intrinsically safe systems (ignition protection type -i-) in explosion-endangered areas according to DIN VDE 0165-1 / DIN EN 60079-14 / IEC 60079-14, Section 16.2.2

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
14089	2 x 2 x 0.75	19	8.6	60.0	105.0
14090	3 x 2 x 0.75	19	9.1	80.0	128.0
14091	4 x 2 x 0.75	19	10.1	110.0	156.0
14092	6 x 2 x 0.75	19	12.4	142.0	216.0
14093	8 x 2 x 0.75	19	14.2	200.0	309.0
14094	10 x 2 x 0.75	19	16.0	238.0	355.0
14095	12 x 2 x 0.75	19	16.8	270.0	405.0
14096	16 x 2 x 0.75	19	18.6	342.0	560.0
14097	20 x 2 x 0.75	19	21.2	369.0	671.0
14098	24 x 2 x 0.75	19	22.8	451.0	795.0
14099	25 x 2 x 0.75	19	23.2	461.0	803.0

# Feedback cables PVC EMC-preferred type, meter marking



HELUKABEL TOPFLEX-PVC ((3x(2x0,14) + 2x(0,5)) QMM / 22800 350 V 001042942

CE



## Technical data

- Special core and sheath compound of PVC
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -30°C to +80°C
- **Nominal voltage** 350 V
- **Test voltage**  
core/core 2000 V  
core/screen 1000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
10x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper, fine and/or ultra-fine wire conductors acc. to DIN VDE 0295 cl.5 and/or IEC 60228
- Core insulation of PVC
- Part No. 22800 Cu-screen of single pairs and PVC sheath
- Core identification see table below
- Single cores or pairs stranded in layer with optimal lay-length
- Core wrapping with film
- Tinned copper braided screen, approx. 85% coverage
- Outer sheath of special PVC
- Colour grey (RAL 7001)
- with meter marking

## Properties

- Largely oil-resistant, for oil- / chemical Resistance see Technical Information table
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

These feedback cables are used in machinery and control construction as well as in plant engineering as these enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### TOPFLEX®-PVC

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Core marking 0,14 mm <sup>2</sup>	Core marking 0,5 mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22800	( 3 x ( 2 x 0,14 ) + ( 2 x 0,5 ) )	GN+YE, GY+PK, BU+RD	WH, BN	Grey	8,5	78,0	112,0	26
22806	( 4 x 2 x 0,14 + 4 x 0,5 )	RD+BK, BN+GN, YE+VT, GN+PK	WH, BU, WH/GN, BN/GN	Grey	8,5	68,0	111,0	26
22845	( 10 x 0,14 + 2 x 0,5 )	DIN 47100	WH, BN	Grey	8,0	46,2	70,0	26
22846	( 10 x 0,14 + 4 x 0,5 )	DIN 47100	WH, BN, GN, YE	Grey	8,2	56,3	86,0	26

### Incremental feedback-cable

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Core marking 0,25 mm <sup>2</sup>	Core marking 1 mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22825	( 4 x 2 x 0,25 + 2 x 1,0 )	BN+GN, RD+BK, VT+BU, GY+PK	WH, BN	Grey	8,8	66,0	110,0	24

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPGEBER 511 PVC Feedback cables according to Siemens-,

Lenze- or Bosch Rexroth Standard with PVC-sheath for fixed or not constantly movements



## Technical data

- Special PVC feedback cable acc. to UL AWM style 20233 and CSA
- **Temperature range**  
flexing -0°C to +60°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
acc. to Siemens 30 V  
acc. to Bosch Rexroth and Lenze 300 V
- **A.c. test voltage**, 50 Hz  
core/core 1500 V  
core/screen 1000 V
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 6x cable Ø  
min. 100.000 cycles

## Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295 cl.6, extra fine-wire, IEC 60228 cl.6
- Core insulation of special polypropylene
- Core colours on request
- Overall screening of tinned copper wire braid with tinned drain wire, coverage approx. 85%
- Polyester foil
- Outer sheath of PVC
- Sheath colour green (RAL 6018) acc. to DESINA® or orange

## Properties

- Outer sheath of PVC, oilresistant
- Optimum compliance with requirements for elect romagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA®-standard
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC sheath flame retardant acc. to DIN EN 60332-1-1 bis -1-3 (VDE 0482-332-1-1 bis -1-3)

## Note

- For a corresponding motor- and servocables please check chapter **TOPSERV® PVC**
- For drag chain capable encoder cables please check chapter **TOPGEBER 512 PUR**
- Brackets ( ) indicate screen.
- SIEMENS product designations 6FX 5008-... are registered trademarks of Siemens AG and are to be used only for purposes of comparison.
- INDRAMAT product designations INK- are registered trademarks of Bosch-Rexroth AG and are to be used only for purposes of comparison.
- LENZE product designations are registered trademarks of LENZE AG, and are to be used only for purposes of comparison.
- DESINA®: Explanation: see introduction.

## Application

Low cost alternativ to Motorcables with PUR Sheath for fix instalation or occasional moving applications. These low-capacitance incremental encoder cables or position feedback cables transmit the control pulses for positioning and operating characteristics of servomotors. These cables are used as connecting cables for tachos, brakes and pulse generators in industrial equipment, machine tools, control and automation equipment.

**EMC** = Electromagnetic compatibillity

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
707417	( 4 x 2 x 0,34 + 4 x 0,5)	Siemens	6FX 5008-1BD21	Green	8,9	70,3	117,8	-
707389	( 3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5)	Siemens	6FX 5008-1BD41	Green	8,8	58,0	118,9	-
707390	(3 x (2 x 0,14) + 4 x 0,14 + 4 x 0,25 + 2 x 0,5)	Siemens	6FX 5008-1BD51	Green	9,6	70,7	137,7	-
803672	(2 x 2 x 0,22 + 1 x 2 x 0,34)	Siemens	6FX 5008-2DC00	Green	6,9	38,0	61,0	-
802471	(2 x 2 x 0,22)	Siemens	6FX 5008-1DC00	Green	6,9	35,0	71,0	-
705461	( 4 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0448	Orange	8,4	50,0	99,0	-
707392	( 4 x 2 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0209	Orange	8,8	64,0	119,0	-
707394	(4 x 2 x 0,14 + 4 x 1,0 + (4 x 0,14))	Bosch Rexroth	INK-0532	Orange	9,7	86,0	149,0	-
707077	3 x (2 x 0,14) + (2 x 0,5)	Lenze	-	Green	9,3	54,0	95,0	-
707397	4 x (2 x 0,14) + (2 x 1,0)	Lenze	-	Green	11,0	70,0	145,0	-
707398	3 x (2 x 0,14) + (3 x 0,14)	Lenze	-	Green	9,2	41,0	102,0	-

Dimensions and specifications may be changed without prior notice. (RN07)



HELUKABEL® TOPFLEX® 600-PVC 4G2,5 QMM / 22861 0,6/1 kV CE

## TECHNICAL DATA

PVC motor supply cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7,5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PVC
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- Outer sheath: Special-PVC
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22860	4 G 1.5	16	9.6	58.0	130.0
22861	4 G 2.5	14	11.2	96.0	220.0
22862	4 G 4	12	13.0	154.0	330.0
22863	4 G 6	10	14.5	231.0	445.0
22864	4 G 10	8	18.2	384.0	660.0
22865	4 G 16	6	22.3	615.0	1060.0

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Used as a supply line for electronically controlled servo motors and for connection to DNC motors. The cable is suitable for fixed and flexible installation with medium mechanical loads, in dry, damp and wet rooms.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22866	4 G 25	4	27.4	960.0	1805.0
22867	4 G 35	2	30.0	1344.0	2060.0
22868	4 G 50	1	35.8	1920.0	2900.0
22869	4 G 70	2/0	40.9	2640.0	4050.0
22854	4 G 95	3/0	46.2	3648.0	5540.0
22855	4 G 120	4/0	51.6	4608.0	7000.0



# TOPFLEX® 600-C-PVC

EMC-preferred type, with inner sheath



## TECHNICAL DATA

PVC motor supply cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7,5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PVC
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- Inner sheath: PVC
- Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22960	4 G 1.5	16	11.8	99.0	250.0
22961	4 G 2.5	14	13.8	169.0	360.0
22962	4 G 4	12	15.7	234.0	530.0
22963	4 G 6	10	17.3	316.0	620.0
22964	4 G 10	8	21.5	549.0	1050.0
22965	4 G 16	6	26.1	807.0	1465.0

- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Used as a supply line for electronically controlled servo motors and for connection to DNC motors. The cable is suitable for fixed and flexible installation with medium mechanical loads, in dry, damp or wet rooms. EMC = Electromagnetic compatibility; in order to optimise the EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22966	4 G 25	4	31.7	1169.0	1920.0
22967	4 G 35	2	34.5	1680.0	2515.0
22856	4 G 50	1	40.7	2370.0	3315.0
22857	4 G 70	2/0	46.0	3257.0	4600.0
22858	4 G 95	3/0	51.3	4060.0	6060.0
22859	4 G 120	4/0	56.4	5231.0	7315.0

# TOPFLEX®-EMV-2YSLCY-J

double screened, EMC-preferred type



## TECHNICAL DATA

Motor connection cable for frequency converters in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible +5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	4000 V
<b>Mutual capacitance</b>	see table
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø flexible > 12 mm: 15x Outer-ø fixed 4x Outer-ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PE
- Core identification: brown, black, grey, green-yellow
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated Aluminium foil (St)
- 2. Screen: braided screen of tinned copper, approx. coverage 85%

- Outer sheath: Special-PVC
- Sheath colour: transparent
- Length marking: in metres

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to PE core insulation and low screen capacity, enable low-loss power transmission

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

## ■ APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, however, not suitable for outdoor use. Used in automotive, food, packaging and chemical industries, as well as in the environmental technology sector. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m, approx.	Mutual capacitance core/screen in pF/m, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22084	4 G 1.5	16	10.1	70	110		18	95.0	161.0
22085	4 G 2.5	14	11.9	80	130	210	26	150.0	241.0
22086	4 G 4	12	13.6	90	150	210	34	235.0	343.0
22087	4 G 6	10	15.3	90	150	150	44	320.0	458.0
22088	4 G 10	8	19.4	120	200	180	61	533.0	707.0
22089	4 G 16	6	22.4	120	210	190	82	789.0	1112.0
22090	4 G 25	4	26.7	140	230	95	108	1236.0	1540.0
22091	4 G 35	2	29.3	150	260	85	135	1662.0	1957.0
22092	4 G 50	1	34.1	190	320	40	168	2345.0	2676.0
22093	4 G 70	2/0	39.0	190	320	45	207	3196.0	3740.0
22094	4 G 95	3/0	44.0	250	410	50	250	4316.0	4921.0
22095	4 G 120	4/0	48.7	270	430		292	5435.0	6171.0
22096	4 G 150	300 kcmil	54.2	280	450		335	6394.0	7585.0
22097	4 G 185	350 kcmil	60.6	290	470		382	7639.0	9449.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-3-PLUS-2YSLCY-J

double screened, EMC-preferred type



## TECHNICAL DATA

Motor connection cable for frequency converters in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible +5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	4000 V
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø flexible > 12 mm: 15x Outer-ø fixed 4x Outer-ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PE
- Core identification: brown, black, grey, green-yellow (divided into thirds)
- Protective conductor: GN-YE divided into thirds (3+3-core structure)
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated Aluminium foil (St)
- 2. Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: transparent

- Length marking: in metres

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- symmetrical 3-PLUS-composition (protective conductor divided into thirds and stranded uniformly in the interstices) with improved EMC properties in comparison to 4-core-composition
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to PE core insulation and low screen capacity, enable low-loss power transmission

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011
- minimum cross-section of 0.75 mm<sup>2</sup> meets requirements acc. to DIN EN 60204-1

## APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, however, not suitable for outdoor use. Used in automotive, food, packaging and chemical industries, as well as in the environmental technology sector. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22368	3 x 1.5 + 3 G 0.25	16	9.2		18	86.0	152.0
22369	3 x 2.5 + 3 G 0.5	14	10.8	210	26	144.0	216.0
22370	3 x 4 + 3 G 0.75	12	12.3	210	34	224.0	307.0
22371	3 x 6 + 3 G 1	10	14.0	150	44	298.0	436.0
22372	3 x 10 + 3 G 1.5	8	17.6	180	61	491.0	624.0
22373	3 x 16 + 3 G 2.5	6	21.2	190	82	723.0	920.0
22374	3 x 25 + 3 G 4	4	24.5	95	108	1138.0	1330.0
22375	3 x 35 + 3 G 6	2	26.9	85	135	1535.0	1743.0
22376	3 x 50 + 3 G 10	1	32.5	40	168	2208.0	2483.0
22377	3 x 70 + 3 G 10	2/0	35.5	45	207	2871.0	3203.0
22378	3 x 95 + 3 G 16	3/0	40.1	50	250	3953.0	4114.0
22379	3 x 120 + 3 G 16	4/0	44.4		292	4836.0	4924.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-3-PLUS-2YSLCY-J



double screened, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22380	3 x 150 + 3 G 25	300 kcmil	49.3		335	5412.0	6705.0
22381	3 x 185 + 3 G 35	350 kcmil	55.1		382	6969.0	7818.0
22382	3 x 240 + 3 G 42.5	500 kcmil	60.0		453	8540.0	9938.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-2YSLCYK-J

double screened, EMC-preferred type



HELUKABEL® TOPFLEX®-EMV-UV-2YSLCYK-J 4G50 QMM / 22242 0,6/1 kV CE

## TECHNICAL DATA

Motor connection cable for frequency converters in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	4000 V
<b>Mutual capacitance</b>	see table
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø flexible > 12 mm: 15x Outer-ø fixed 4x Outer-ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 class 5 / IEC 60228 class 5
- Core insulation: PE
- Core identification: brown, black, grey, green-yellow
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated Aluminium foil (St)
- 2. Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to PE core insulation and low screen capacity, enable low-loss power transmission

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

## APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, as well as outdoors; direct burial installation is possible beginning with 4G16 mm<sup>2</sup>. Used in automotive, food, packaging and chemical industries, as well as in the environmental technology sector. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m, approx.	Mutual capacitance core/screen in pF/m, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22234	4 G 1.5	16	10.1	70	110		18	95.0	166.0
22235	4 G 2.5	14	11.9	80	130	210	26	150.0	243.0
22236	4 G 4	12	13.6	90	150	210	34	235.0	362.0
22237	4 G 6	10	15.3	90	150	150	44	320.0	457.0
22238	4 G 10	8	19.4	120	200	180	61	533.0	732.0
22239	4 G 16	6	22.4	120	210	190	82	789.0	1116.0
22240	4 G 25	4	26.7	140	230	95	108	1236.0	1597.0
22241	4 G 35	2	29.3	150	260	85	135	1662.0	2019.0
22242	4 G 50	1	34.1	190	320	40	168	2345.0	2898.0
22243	4 G 70	2/0	39.0	190	320	45	207	3196.0	3839.0
22244	4 G 95	3/0	44.0	250	410	50	250	4316.0	5023.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-2YSLCYK-J

double screened, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m, approx.	Mutual capacitance core/screen in pF/m, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22245	4 G 120	4/0	48.7	270	430		292	5435.0	6096.0
22246	4 G 150	300 kcmil	54.2	280	450		335	6394.0	7483.0
22247	4 G 185	350 kcmil	60.6	290	470		382	7639.0	9561.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-3-PLUS-2YSLCYK-J

double screened, EMC-preferred type



## TECHNICAL DATA

**Motor connection cable for frequency converters in alignment with DIN VDE 0250**

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	4000 V
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø flexible > 12 mm: 15x Outer-ø fixed 4x Outer-ø

- resistant to: UV radiation, weathering effects
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- symmetrical 3-PLUS-composition (protective conductor divided into thirds and stranded uniformly in the interstices) with improved EMC properties in comparison to 4-core-composition
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to PE core insulation and low screen capacity, enable low-loss power transmission

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011
- minimum cross-section of 0.75 mm<sup>2</sup> meets requirements acc. to DIN EN 60204-1

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PE
- Core identification: brown, black, grey, green-yellow (divided into thirds)
- Protective conductor: GN-YE divided into thirds (3+3-core structure)
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated Aluminium foil (St)
- 2. Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, as well as outdoors; direct burial installation is possible beginning with 3x16+3G2.5 mm<sup>2</sup>. Used in automotive, food, packaging and chemical industries, as well as in the environmental technology sector. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22673	3 x 1.5 + 3 G 0.25	16	9.2		18	86.0	135.0
22674	3 x 2.5 + 3 G 0.5	14	10.8	210	26	144.0	198.0
22675	3 x 4 + 3 G 0.75	12	12.3	210	34	224.0	323.0
22676	3 x 6 + 3 G 1	10	14.0	150	44	298.0	430.0
22677	3 x 10 + 3 G 1.5	8	17.6	180	61	491.0	615.0
22678	3 x 16 + 3 G 2.5	6	21.2	190	82	723.0	956.0
22679	3 x 25 + 3 G 4	4	24.5	95	108	1138.0	1381.0
22680	3 x 35 + 3 G 6	2	26.9	85	135	1535.0	1759.0
22681	3 x 50 + 3 G 10	1	32.5	40	168	2208.0	2526.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-3-PLUS-2YSLCYK-J



double screened, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22682	3 x 70 + 3 G 10	2/0	35.5	45	207	2871.0	3457.0
22683	3 x 95 + 3 G 16	3/0	40.1	50	250	3953.0	4188.0
22684	3 x 120 + 3 G 16	4/0	44.4		292	4836.0	5051.0
22685	3 x 150 + 3 G 25	300 kcmil	49.3		335	5412.0	6582.0
22686	3 x 185 + 3 G 35	350 kcmil	55.1		382	6969.0	8165.0
22687	3 x 240 + 3 G 42.5	500 kcmil	60.0		453	8540.0	10317.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.



# TOPFLEX®-EMV-UV-2XSLCYK-J

EMC-preferred type, double screened, enhanced current carrying capacity



## TECHNICAL DATA

Motor connection cable for frequency converters in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	4000 V
<b>Mutual capacitance</b>	see table
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø flexible > 12 mm: 15x Outer-ø fixed 4x Outer-ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE
- Core identification: brown, black, grey, green-yellow
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated Aluminium foil (St)
- 2. Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to XLPE core insulation and low screen capacity, enable low-loss power transmission

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

## ■ APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, as well as outdoors; direct burial installation is possible beginning with 4G16 mm<sup>2</sup>. As a result of the permissible operating temperature of +90°C at the conductor, an enhanced current carrying capacity compared to PE insulated motor connection cables is permissible. Used in automotive, food, packaging and chemical industries, as well as in the environmental technology sector. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m, approx.	Mutual capacitance core/screen in pF/m, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24489	4 G 1.5	16	10.1	70	110		23	95.0	230.0
24490	4 G 2.5	14	11.2	80	130	210	32	150.0	300.0
24491	4 G 4	12	12.8	90	150	210	42	235.0	485.0
24492	4 G 6	10	14.9	90	150	150	54	320.0	630.0
24493	4 G 10	8	17.7	120	200	180	75	533.0	860.0
24494	4 G 16	6	20.9	120	210	190	100	789.0	1290.0
24495	4 G 25	4	25.3	140	230	95	127	1236.0	1860.0
24496	4 G 35	2	28.0	150	260	85	158	1662.0	2610.0
24497	4 G 50	1	32.3	190	320	40	192	2345.0	2950.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-2XSLCYK-J



EMC-preferred type, double screened, enhanced current carrying capacity

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m, approx.	Mutual capacitance core/screen in pF/m, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24498	4 G 70	2/0	37.6	190	320	45	246	3196.0	3950.0
24499	4 G 95	3/0	41.6	250	410	50	298	4316.0	4552.0
24500	4 G 120	4/0	44.8	270	430		346	5435.0	6600.0
24506	4 G 150	300 kcmil	52.3	280	450		399	6394.0	7040.0
24507	4 G 185	350 kcmil	58.7	290	470		456	7639.0	8380.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-3-PLUS-2XSLCYK-J

EMC-preferred type, double screened, enhanced current carrying capacity



HELUKABEL® TOPFLEX®-EMV-UV-3 PLUS 2XSLCYK-J 3x50 + 3G10 QMM / 24516  
VFD XLPE 90°C 0,6/1 kV CE

## TECHNICAL DATA

Motor connection cable for frequency converters in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible -5°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	4000 V
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø flexible > 12 mm: 15x Outer-ø fixed 4x Outer-ø

- resistant to: UV radiation
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- symmetrical 3-PLUS-composition (protective conductor divided into thirds and stranded uniformly in the interstices) with improved EMC properties in comparison to 4-core-composition
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to XLPE core insulation and low screen capacity, enable low-loss power transmission

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011
- minimum cross-section of 0.75 mm<sup>2</sup> meets requirements acc. to DIN EN 60204-1

## APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, as well as outdoors; direct burial installation is possible beginning with 3x16+3G2.5 mm<sup>2</sup>. As a result of the permissible operating temperature of +90°C at the conductor, an enhanced current carrying capacity compared to PE insulated motor connection cables is permissible. Used in automotive, food, packaging and chemical industries, as well as in the environmental technology sector. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE
- Core identification: brown, black, grey, green-yellow (divided into thirds)
- Protective conductor: GN-YE divided into thirds (3+3-core structure)
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated Aluminium foil (St)
- 2. Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24508	3 x 1.5 + 3 G 0.25	16	9.2		23	86.0	143.0
24509	3 x 2.5 + 3 G 0.5	14	10.8	210	32	144.0	206.0
24510	3 x 4 + 3 G 0.75	12	12.3	210	42	224.0	270.0
24511	3 x 6 + 3 G 1	10	14.0	150	54	298.0	367.0
24512	3 x 10 + 3 G 1.5	8	17.6	180	75	491.0	634.0
24513	3 x 16 + 3 G 2.5	6	20.4	190	100	723.0	922.0
24514	3 x 25 + 3 G 4	4	23.2	95	127	1138.0	1309.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-3-PLUS-2XSLCYK-J



EMC-preferred type, double screened, enhanced current carrying capacity

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24515	3 x 35 + 3 G 6	2	26.1	85	158	1535.0	1696.0
24516	3 x 50 + 3 G 10	1	30.8	40	192	2208.0	2473.0
24517	3 x 70 + 3 G 10	2/0	34.2	45	246	2871.0	3114.0
24518	3 x 95 + 3 G 16	3/0	37.8	50	298	3953.0	4008.0
24519	3 x 120 + 3 G 16	4/0	42.6		346	4836.0	4997.0
24520	3 x 150 + 3 G 25	300 kcmil	47.5		399	5412.0	6418.0
24521	3 x 185 + 3 G 35	350 kcmil	53.4		456	6969.0	7189.0
24587	3 x 240 + 3 G 42.5	500 kcmil	58.7		538	8540.0	9540.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-2XSLCHK-J



EMC-preferred type, double screened, enhanced current carrying capacity



## TECHNICAL DATA

**Motor connection cable for frequency converters in alignment with DIN VDE 0250**

**Temperature range** flexible -15°C to +90°C  
fixed -40°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 700 V  
three-phase alternating current (AC) conductor/conductor 1200 V  
direct current (DC) conductor/earth 900 V  
direct current (DC) conductor/conductor 1800 V

**Test voltage core/core** 4000 V

**Mutual capacitance** see table

**Coupling resistance** see table

**Minimum bending radius**  
flexible  
< 12 mm: 10x Outer-ø  
12-20 mm: 15x Outer-ø  
> 20 mm: 20x Outer-ø  
fixed  
< 12 mm: 5x Outer-ø  
12-20 mm: 7,5x Outer-ø  
> 20 mm: 10x Outer-ø

- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to XLPE core insulation and low screen capacity, enable low-loss power transmission

## TESTS

- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

## APPLICATION

This TOPFLEX®-EMV-UV-2XSLCHK-J motor connection cable for frequency converters ensures EMC in systems and buildings, facilities with devices and equipment from which electromagnetic interference fields can have an inadmissible influence on the environment. As a result of the permissible operating temperature of +90°C at the conductor, an enhanced current carrying capacity compared to PE insulated motor connection cables is permissible. Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, as well as outdoors. Used in the automotive industry, food industry, environmental technology sector, packaging industry and in machine tools. Utilised as handling equipment for SIMOVERT drives in the industrial sector for pumps, fans, conveyor belts and air conditioning systems etc. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE
- Core identification: brown, black, grey, green-yellow
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special-Polyolefin
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m approx.	Mutual capacitance core/screen in pF/m approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24522	4 G 1.5	16	10.1	70	110		23	95.0	164.0
24523	4 G 2.5	14	11.2	80	130	210	32	150.0	211.0
24524	4 G 4	12	12.8	90	150	210	42	235.0	303.0
24525	4 G 6	10	14.9	90	150	150	54	320.0	428.0

# TOPFLEX®-EMV-UV-2XSLCHK-J



EMC-preferred type, double screened, enhanced current carrying capacity

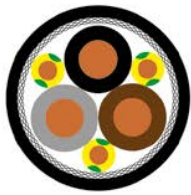
Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m approx.	Mutual capacitance core/screen in pF/m approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24526	4 G 10	8	17.7	120	200	180	75	533.0	673.0
24527	4 G 16	6	20.9	120	210	190	100	789.0	1000.0
24528	4 G 25	4	25.3	140	230	95	127	1236.0	1505.0
24529	4 G 35	2	28.0	150	260	85	168	1662.0	1934.0
24530	4 G 50	1	32.3	190	320	40	192	2345.0	2724.0
24531	4 G 70	2/0	37.6	190	320	45	246	3196.0	3674.0
24532	4 G 95	3/0	41.6	250	410	50	298	4316.0	4583.0
24533	4 G 120	4/0	44.8	270	430		346	5435.0	6061.0
24534	4 G 150	300 kcmil	52.3	280	450		399	6394.0	7443.0
24535	4 G 185	350 kcmil	58.7	290	470		456	7639.0	8727.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

# TOPFLEX®-EMV-UV-3-PLUS-2XSLCHK-J



EMC-preferred type, double screened, enhanced current carrying capacity



HELUKABEL® TOPFLEX®-EMV-UV-3 PLUS 2XSLCHK-J 3x50 + 3G10 QMM / 24544  
VFD XLPE 90°C 0,6/1 kV CE

## TECHNICAL DATA

**Motor connection cable for frequency converters in alignment with DIN VDE 0250**

**Temperature range** flexible -15°C to +90°C  
fixed -40°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
alternating current (AC) conductor/earth 700 V  
three-phase alternating current (AC) conductor/conductor 1200 V  
direct current (DC) conductor/earth 900 V  
direct current (DC) conductor/conductor 1800 V

**Test voltage core/core** 4000 V

**Coupling resistance** see table

**Minimum bending radius**  
flexible  
< 12 mm: 10x Outer-ø  
12-20 mm: 15x Outer-ø  
> 20 mm: 20x Outer-ø  
fixed  
< 12 mm: 5x Outer-ø  
12-20 mm: 7,5x Outer-ø  
> 20 mm: 10x Outer-ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE
- Core identification: brown, black, grey, green-yellow (divided into thirds)
- Protective conductor: GN-YE divided into thirds (3+3-core structure)
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special-Polyolefin
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation, weathering effects
- for outdoor use
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- symmetrical 3-PLUS-composition (protective conductor divided into thirds and stranded uniformly in the interstices) with improved EMC properties in comparison to 4-core-composition
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to XLPE core insulation and low screen capacity, enable low-loss power transmission

## ■ TESTS

- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

## ■ APPLICATION

Used as a connecting cable for medium mechanical stress with fixed installation and occasional free movement in dry, damp or wet rooms, as well as outdoors. As a result of the permissible operating temperature of +90°C at the conductor, an enhanced current carrying capacity compared to PE insulated motor connection cables is permissible. Used in the automotive industry, food industry, environmental technology sector, packaging industry and in machine tools. Utilised as handling equipment for SIMOVERT drives in the industrial sector for pumps, fans, conveyor belts and air conditioning systems etc. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24536	3 x 1.5 + 3 G 0.25	16	9.2		23	86.0	141.0
24537	3 x 2.5 + 3 G 0.5	14	10.8	210	32	144.0	213.0
24538	3 x 4 + 3 G 0.75	12	12.3	210	42	224.0	278.0

# TOPFLEX®-EMV-UV-3-PLUS-2XSLCHK-J



EMC-preferred type, double screened, enhanced current carrying capacity

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
24539	3 x 6 + 3 G 1	10	14.0	150	54	298.0	377.0
24540	3 x 10 + 3 G 1.5	8	17.6	180	75	491.0	637.0
24541	3 x 16 + 3 G 2.5	6	20.4	190	100	723.0	932.0
24542	3 x 25 + 3 G 4	4	23.2	95	127	1138.0	1330.0
24543	3 x 35 + 3 G 6	2	26.1	85	158	1535.0	1730.0
24544	3 x 50 + 3 G 10	1	30.8	40	192	2208.0	2503.0
24545	3 x 70 + 3 G 10	2/0	34.2	45	246	2871.0	3164.0
24546	3 x 95 + 3 G 16	3/0	37.8	50	298	3953.0	4097.0
24583	3 x 120 + 3 G 16	4/0	42.6		346	4836.0	5062.0
24584	3 x 150 + 3 G 25	300 kcmil	47.5		399	5412.0	6128.0
24585	3 x 185 + 3 G 35	350 kcmil	53.4		456	6969.0	7847.0
24586	3 x 240 + 3 G 42.5	500 kcmil	58.7		538	8540.0	10065.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.



# TOPFLEX® Motor 109 low capacitance power supply cable 0,6/1kV, increased ampacity, halogen-free, meter marking



## Technical data

- Special motor power supply cable for frequency converters
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  600/1000 V
- **Max. operating voltage**  
A.C. and 3-phase 700/1200 V  
DC operation 900/1800 V
- **Test voltage** 2500 V
- **Insulation resistance**  
min. 200 MOhm x km
- **Coupling resistance**  
acc. to different cross-sections  
max. 250 Ohm/km
- **Mutual capacitance**  
acc. to different cross-sections  
core/core 70 to 250 nF/km  
core/screen 110 to 410 nF/km
- **Minimum bending radius**  
free-movement for outer Ø:  
up to 12 mm: 10x cable Ø  
> 12-20 mm: 15x cable Ø  
> 20 mm: 20x cable Ø  
fixed installation for outer Ø:  
up to 12 mm: 5x cable Ø  
> 12-20 mm: 7,5x cable Ø  
> 20 mm: 10x cable Ø
- **Radiation-resistance**  
up to  $80 \times 10^6$  cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special Polymer
- Core identification to DIN VDE 0293-308  
- up to 5 cores coloured  
- from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film  
2. Tinned copper braided screen, approx. 80% coverage
- Outer sheath of special PUR
- Sheath colour orange (RAL 2003)
- with meter marking

## Properties

- Special polymerinsulation ensures low dielectric losses, a dual voltage resistance, longer service life and low - interference shield, and increased current carrying capacity
- Low coupling resistance for high electromagnetic compatibility
- UV-resistant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special Polymer core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- Design acc. to the requirements of VdS 3501:2006-04
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- Low mutual capacitance, test acc. to DIN VDE 0472 part 504, test method B
- Meets EMC requirements acc. to EN 55011 and DIN VDE 0875 part 11

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

This motor power supply cable for the frequency converters assures electromagnetic compatibility in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications.

**EMC** = Electromagnetic compatibility

The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

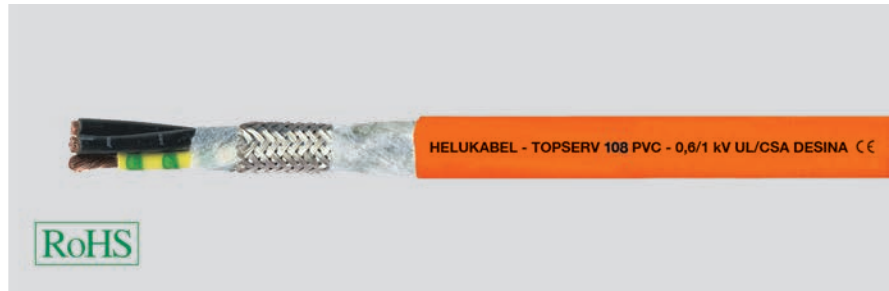
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22724	3 G 1,5	9,4	72,0	200,0	16
22707	4 G 1,5	10,4	95,0	230,0	16
22708	5 G 1,5	11,2	117,0	258,0	16
22709	7 G 1,5	13,2	148,0	281,0	16
22710	3 G 2,5	11,2	137,0	270,0	14
22711	4 G 2,5	12,5	150,0	300,0	14
22712	5 G 2,5	13,5	200,0	352,0	14
22713	7 G 2,5	16,0	230,0	473,0	14
22714	4 G 4	14,2	235,0	485,0	12

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22715	5 G 4	15,4	321,0	567,0	12
22716	7 G 4	18,2	352,0	603,0	12
22717	4 G 6	15,2	320,0	633,0	10
22718	5 G 6	16,8	439,0	679,0	10
22719	7 G 6	20,0	501,0	771,0	10
22720	4 G 10	19,5	533,0	860,0	8
22721	5 G 10	21,6	711,0	1029,0	8
22722	4 G 16	23,1	789,0	1290,0	6
22723	4 G 25	27,1	1236,0	1862,0	4

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPSERV® PVC Motor and servo cables for fixed or not constantly movements 0,6/1 kV, according to Siemens 6FX5008, Lenze, Bosch Rexroth



## Technical data

- Special PVC Motorcable acc. to UL AWM Style 2570 CSA AWM VDE-recognized
- **Temperature range**  
flexing -0°C to +60°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz  
4000 V
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 5x cable Ø  
min. 100.000 cycles

## Cable structure

- Bare copper-conductor, acc. to DIN EN 60228 class 5: fine-wire class 6: extra fine-wire
- Core insulation to 6 mm<sup>2</sup> of halogen-free PP from 10 mm<sup>2</sup> of PVC
- Core identification
- **power supply cores**  
core 1: black with imprint U/L1/C/L+  
core 2: black with imprint V/L2  
core 3: black with imprint W/L3/D/L-
- **control cores**  
**TOPSERV® 108 PVC** without control cores  
**TOPSERV® 112 PVC** with **1** control cores  
[acc. to Siemens](#)  
core 1: black with imprint BR1  
core 2: white with imprint BR2  
[acc. to Lenze](#)  
core 1: brown with imprint BR1  
core 2: white with imprint BR2  
**TOPSERV® 119 PVC** with **2** control cores  
pair 1: black with number no. 5+6  
pair 2: black with number no. 7+8
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Fleece wrapping facilitates sliding
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PVC
- Sheath colour orange (RAL 2003)

## Properties

- low capacitance until 6mm<sup>2</sup> (included)
- oilresistant PVC outer sheath
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA®-standard
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC sheath flame retardant acc. to DIN EN 60332-1-1 to -1-3 (VDE 0482-332-1-1 to -1-3)

## Note

- For a corresponding encoder cables please check chapter **TOPGEBER 511 PVC**
- For highly flexible, drag chain capable servo cables please check chapter **TOPSERV® PUR**
- Brackets ( ) indicate screen
- DESINA® explanation see introduction
- SIEMENS product designations 6FX 5008-plus are registered trademarks of Siemens AG and are to be used only for purposes of comparison
- Lenze product designations are registered trademarks of Lenze AG and are to be used only for purposes of comparison
- Bosch Rexroth product designations INK are registered trademarks of Bosch Rexroth AG and are to be used only for purposes of comparison

## Application

The combination of supply cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree by these cables. The cables have an additional overall screen to ensure EMC compatibility, i.e. for protection against electromagnetic interference. Production is based on the specifications of established manufacturers of servo-drives and controls, as well as on various VDE, UL and CSA standards.

Applications include machine, plant and robot construction, automation, drive, control and production engineering. Attractive for export-oriented mechanical and system engineering.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

# TOPSERV® PVC Motor and servo cables for fixed or not constantly

movements 0,6/1 kV, according to Siemens 6FX5008, Lenze, Bosch Rexroth



## TOPSERV® 108 PVC, acc.to Siemens 6FX5008

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
707250	(4 G 1,5)	Siemens	6FX5008-1BB11	Orange RAL 2003	8,0	78,0	118,0	16
707251	(4 G 2,5)	Siemens	6FX5008-1BB21	Orange RAL 2003	9,6	130,0	180,0	14
707252	(4 G 4)	Siemens	6FX5008-1BB31	Orange RAL 2003	11,0	198,0	264,0	12
707253	(4 G 6)	Siemens	6FX5008-1BB41	Orange RAL 2003	13,1	288,0	382,0	10
707254	(4 G 10)	Siemens	6FX5008-1BB51	Orange RAL 2003	19,3	463,0	764,0	8
707255	(4 G 16)	Siemens	6FX5008-1BB61	Orange RAL 2003	23,3	701,0	1218,0	6
707256	(4 G 25)	Siemens	6FX5008-1BB25	Orange RAL 2003	26,9	1068,0	1670,0	4
707257	(4 G 35)	Siemens	6FX5008-1BB35	Orange RAL 2003	30,3	1449,0	2139,0	2
707258	(4 G 50)	Siemens	6FX5008-1BB50	Orange RAL 2003	34,5	2096,0	2991,0	1

## TOPSERV® 112 PVC, acc.to Siemens 6FX5008

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
707280	(4 G 1,5 + (2 x 1,5))	Siemens	6FX5008-1BA11	Orange RAL 2003	10,4	140,0	206,0	16
707281	(4 G 2,5 + (2 x 1,5))	Siemens	6FX5008-1BA21	Orange RAL 2003	12,0	185,0	269,0	14
707282	(4 G 4 + (2 x 1,5))	Siemens	6FX5008-1BA31	Orange RAL 2003	13,6	257,0	377,0	12
707283	(4 G 6 + (2 x 1,5))	Siemens	6FX5008-1BA41	Orange RAL 2003	15,6	348,0	485,0	10
707284	(4 G 10 + (2 x 1,5))	Siemens	6FX5008-1BA51	Orange RAL 2003	21,0	502,0	887,0	8
707285	(4 G 16 + (2 x 1,5))	Siemens	6FX5008-1BA61	Orange RAL 2003	24,1	741,0	1276,0	6
707286	(4 G 25 + (2 x 1,5))	Siemens	6FX5008-1BA25	Orange RAL 2003	28,3	1100,0	1716,0	4
707287	(4 G 35 + (2 x 1,5))	Siemens	6FX5008-1BA35	Orange RAL 2003	31,4	1498,0	2290,0	2
707288	(4 G 50 + (2 x 1,5))	Siemens	6FX5008-1BA50	Orange RAL 2003	34,5	2500,0	2934,0	1

## TOPSERV® 112 PVC, acc.to Lenze

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
707221	(4 G 1 + (2 x 0,5))	Lenze	-	Orange RAL 2003	9,5	88,0	143,0	17
707222	(4 G 1,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	11,0	106,0	187,0	16
707223	(4 G 2,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	12,3	152,0	233,0	14
707224	(4 G 4 + (2 x 1,0))	Lenze	-	Orange RAL 2003	14,6	229,0	382,0	12
707225	(4 G 6 + (2 x 1,0))	Lenze	-	Orange RAL 2003	16,7	312,0	491,0	10
710054	(4 G 10 + (2 x 1,0))	Lenze	-	Orange RAL 2003	19,8	484,0	731,0	8
710055	(4 G 16 + (2 x 1,0))	Lenze	-	Orange RAL 2003	23,3	729,0	1033,0	6

## TOPSERV® 119 PVC, acc.to Bosch Rexroth

Part no.	No.cores x cross-sec. mm²	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
707290	(4 G 1 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0653	Orange RAL 2003	11,2	130,0	208,0	-
707291	(4 G 1,5 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0650	Orange RAL 2003	11,5	155,0	229,0	-
707292	(4 G 2,5 + 2 x (2 x 1,0))	Bosch Rexroth	INK-0602	Orange RAL 2003	13,5	216,0	321,0	-
707293	(4 G 4 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0603	Orange RAL 2003	15,5	297,0	432,0	-
707294	(4 G 6 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0604	Orange RAL 2003	17,3	374,0	587,0	-
707295	(4 G 10 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0605	Orange RAL 2003	21,2	545,0	910,0	-
707296	(4 G 16 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0606	Orange RAL 2003	25,0	804,0	1334,0	-

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPFLEX® 600 VFD

EMC-preferred type, flexible motor power supply cable,  
oil resistant, NFPA 79



## Technical data

- PVC motor supply cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range**  
-25°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTTC 1000 V
- **Test voltage**  
4000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Special PVC core insulation with transparent nylon skin
- Black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay length
- Fleece
- 1. Screening with special aluminium foil
- 2. Screening with braid of tinned copper wires, optimal coverage approx. 85%
- Separator
- Special PVC outer sheath
- Sheath colour: black (RAL 9005) or orange (RAL 2003)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, WTTTC 1000 V, MTW, NFPA 79, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, -40°C Cold Bend Test, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c (UL) CIC-TC FT4, AWM I/II A/B FT4

## Note

- VFD = Variable Frequency Drive

## Application

Flexible, extremely oil resistant motor supply cable for modern servomotors; the double screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. NFPA 79 approved for open, unprotected installation on cable trays and from cable trays to the machine. The special PVC sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the ground.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

## Sheath colour black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63139	4 x 0,963	18	9,9	52,0	164,0
63140	4 x 1,31	16	11,4	72,0	183,0
63137	4 x 2,08	14	12,5	118,0	197,0
63141	4 x 3,31	12	14,0	182,0	267,0
63142	4 x 5,26	10	17,1	256,0	402,0
63143	4 x 8,37	8	22,3	417,0	668,0
63144	4 x 13,31	6	25,4	651,0	918,0
63145	4 x 21,21	4	30,1	910,0	1363,0
63146	4 x 33,6	2	35,3	1411,0	1994,0

## Sheath colour orange

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63147	4 x 0,963	18	9,9	52,0	164,0
63148	4 x 1,31	16	11,4	72,0	183,0
63149	4 x 2,08	14	12,5	118,0	197,0
63150	4 x 3,31	12	14,0	182,0	267,0
63151	4 x 5,26	10	17,1	182,0	267,0
63152	4 x 8,37	8	22,3	417,0	668,0
63153	4 x 13,31	6	25,4	651,0	918,0
63154	4 x 21,21	4	30,1	910,0	1363,0
63155	4 x 33,6	2	35,3	1411,0	1994,0

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPFLEX® 650 VFD

EMC-preferred type, flexible motor power supply cable with control cores, oil resistant, NFPA 79



## Technical data

- TPE motor supply cable acc. to UL Std.1277 and UL Std.2277
- **Temperature range** flexing -25°C to +105°C
- **Nominal voltage** TC 600 V WTTTC 1000 V
- **Test voltage** power supply cores 4000 V control cores 2000 V
- **Minimum bending radius** flexing 6x cable Ø
- **Coupling resistance** max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Special PVC core insulation with transparent nylon skin
- Black supply cores with continuous white numbering
- 2 black control cores numbered 5+6
- GN-YE conductor in the outer layer
- Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
- Control cores stranded in pairs and laid up in layers with optimal lay length with the power supply cores
- 1. Screening with plastic-coated aluminium foil
- 2. Screening from tinned copper braid, optimal coverage approx. 85%
- Separator
- Special TPE outer sheath
- Sheath colour: black (RAL 9005) or orange (RAL 2003)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:** TC-ER, WTTTC 1000 V, MTW, NFPA 79, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, -40°C Cold Bend Test, Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:** c (UL) CIC-TC FT4, AWM I/II A/B FT4

## Note

- VFD = Variable Frequency Drive

## Application

Flexible, extremely oil resistant motor supply cable for modern servomotors; the double screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. NFPA 79 approved= for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the ground.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

### Sheath colour: black

Part no.	No. cores x AWG-No.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
63156	4x AWG 16 +2x AWG 18	1,31 / 0,963	13,0	88,0	259,0
63157	4x AWG 14 +2x AWG 18	2,08 / 0,963	14,0	133,0	370,0
63138	4x AWG 14 +2x AWG 14	2,08 / 2,08	14,0	159,0	399,0
63158	4x AWG 12 +2x AWG 18	3,31 / 0,963	15,3	197,0	435,0
63159	4x AWG 12 +2x AWG 14	3,31 / 2,08	15,7	224,0	466,0
63160	4x AWG 10 +2x AWG 14	5,26 / 2,08	18,2	301,0	703,0
63161	4x AWG 8 +2x AWG 14	8,37 / 2,08	24,1	457,0	901,0
63162	4x AWG 6 +2x AWG 14	13,31 / 2,08	27,4	615,0	1275,0
63163	4x AWG 4 +2x AWG 14	21,21 / 2,08	33,4	1450,0	1861,0

### Sheath colour: orange

Part no.	No. cores x AWG-No.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62876	4x AWG 16 +2x AWG 18	1,31 / 0,963	13,0	88,0	259,0
62877	4x AWG 14 +2x AWG 18	2,08 / 0,963	14,0	133,0	370,0
62878	4x AWG 14 +2x AWG 14	2,08 / 2,08	14,0	159,0	399,0
62879	4x AWG 12 +2x AWG 18	3,31 / 0,963	15,3	197,0	435,0
62880	4x AWG 12 +2x AWG 14	3,31 / 2,08	15,7	224,0	466,0
62881	4x AWG 10 +2x AWG 14	5,26 / 2,08	18,2	301,0	703,0
62882	4x AWG 8 +2x AWG 14	8,37 / 2,08	24,1	457,0	901,0
62883	4x AWG 6 +2x AWG 14	13,31 / 2,08	27,4	615,0	1275,0
62884	4x AWG 4 +2x AWG 14	21,21 / 2,08	33,4	1450,0	1861,0

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPFLEX® 1000 VFD

EMC-preferred type, motor power supply cable, NFPA 79



HELUKABEL TOPFLEX 1000 VFD P/N 59406 4/0 AWG (107,2mm<sup>2</sup>) /3C + 6 AWG (13,3 mm<sup>2</sup>) /3C (UL) TC-ER 90 DRY 75C WET 600V SUN RES OIL RES I / II E330430 OR WTTC 1000V FLEXIBLE MOTOR SUPPLY CABLE 1000V OR c(UL) CIC-TC FT4 CE

## Technical data

- Motor power supply cable for VFDs acc. to UL Std. 1277 and 2277
- **Temperature range**  
flexing +5°C to +50°C  
fixed installation -25°C to +90°C
- **Nominal voltage**  
UL 1277 - TC 600 V  
UL 2277 - WTTC 1000 V
- **Test voltage**  
2500 V
- **Minimum bending radius**  
flexing 15x cable Ø  
fixed installation 7,5x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC with clear nylon coating
- Core identification black cores with continuous white numbering
- GN-YE conductor (divided into 3)
- Cores stranded in concentric layers
- 3 power + 3 ground conductor design
- 1. Screen with special aluminium film  
2. Tinned copper braided screen, coverage approx. 80%
- Outer sheath of special TPE
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- Resistant to oil and sunlight
- Due to the optimal screening an interference-free operation of frequency converter is obtained
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- 90°C Dry/Wet  
UL Type TC-ER (1277)  
UL Type WTTC (2277)  
Flexible Motor Supply Cable (8 - 4/0 AWG)  
UL Type MTW  
C(UL) CIC-TC FT4 (8 - 4/0 AWG)  
AWM 21270 (250 kcmil - 500 kcmil)  
CSA AWM I/II A/B FT4  
Oil Res I/II  
SUN RES, DIR BUR  
Class 1 Div 2 per NEC Art. 501  
NEC Articles 336 & 392

## Note

- VFD = Variable Frequency Drive

## Application

It is used as a power supply cable under average mechanical stress for fixed installation and occasional free movement in dry, moist and wet areas and outside installations. It is used in the automotive industry, food processing industry, transfer streets, packaging industry, machine tools, handling equipment. Other industrial uses include pumps, fans, conveyor belts and air conditioning systems.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. power cores x AWG-No.	No. ground cores x AWG-No.	No. cores x cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
59398	3x AWG 8 +	3x AWG 14	(3x 8,37 + 3x 2,08)	18,3	447,0	649,0
59399	3x AWG 6 +	3x AWG 12	(3x 13,3 + 3x 3,3)	19,3	666,0	872,0
59400	3x AWG 4 +	3x AWG 12	(3x 21,2 + 3x 3,3)	25,4	998,0	1354,0
59401	3x AWG 2 +	3x AWG 10	(3x 33,6 + 3x 5,26)	30,5	1512,0	1908,0
59402	3x AWG 1 +	3x AWG 8	(3x 42,4 + 3x 8,37)	33,0	1940,0	2473,0
59403	3x AWG 1/0 +	3x AWG 8	(3x 53,4 + 3x 8,37)	35,6	2328,0	2866,0
59404	3x AWG 2/0 +	3x AWG 8	(3x 67,5 + 3x 8,37)	38,1	2816,0	3391,0
59405	3x AWG 3/0 +	3x AWG 6	(3x 85 + 3x 13,3)	40,6	3598,0	4110,0
59406	3x AWG 4/0 +	3x AWG 6	(3x 107,2 + 3x 13,3)	45,7	4313,0	4960,0
59407	3x AWG 250 kcmil +	3x AWG 6	(3x 127 + 3x 13,3)	50,8	5019,0	5759,0
59408	3x AWG 300 kcmil +	3x AWG 4	(3x 152 + 3x 21,2)	61,0	6131,0	6607,0
59409	3x AWG 350 kcmil +	3x AWG 2	(3x 178 + 3x 33,6)	63,5	7472,0	8272,0
59410	3x AWG 400 kcmil +	3x AWG 2	(3x 203 + 3x 33,6)	66,0	8261,0	9487,0
59411	3x AWG 500 kcmil +	3x AWG 2	(3x 254 + 3x 33,6)	68,6	9976,0	10543,0

Dimensions and specifications may be changed without prior notice. (RN07)



# TOPFLEX®-EMV-UV-2YSLCYK-J UL/CSA

double screened, EMC-preferred type



HELUKABEL® TOPFLEX®-EMV-UV-2YSLCYK-J UL/CSA 4G50 QMM  
E170315 AWM STYLE 2570 AWM III A/B 80°C 1000V FT1 CE

## TECHNICAL DATA

Motor connection cable for frequency converters acc. to UL-Std. 758 (AWM) Style 2570, in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	4000 V
<b>Mutual capacitance</b>	see table
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø 12-20 mm: 15x Outer-ø > 20 mm: 20x Outer-ø fixed < 12 mm: 5x Outer-ø 12-20 mm: 7,5x Outer-ø > 20 mm: 10x Outer-ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PE
- Core identification: brown, black, grey, green-yellow
- G = with protective conductor GN-YE
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Mutual capacitance core/core in pF/m approx.	Mutual capacitance core/screen in pF/m approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22320	4 G 1.5	16	10.4	70	110		18	95.0	140.0
22321	4 G 2.5	14	11.9	80	130	210	26	150.0	300.0
22322	4 G 4	12	13.6	90	150	210	34	235.0	485.0
22323	4 G 6	10	15.3	90	150	150	44	320.0	630.0
22324	4 G 10	8	19.5	120	200	180	61	533.0	860.0
22325	4 G 16	6	22.9	120	210	190	82	789.0	1290.0
22326	4 G 25	4	27.1	140	230	95	108	1236.0	1860.0
22327	4 G 35	2	29.3	150	260	85	135	1662.0	2610.0
22328	4 G 50	1	35.5	190	320	40	168	2345.0	2950.0
22329	4 G 70	2/0	41.4	190	320	45	207	3196.0	3950.0
22330	4 G 95	3/0	46.0	250	410	50	250	4316.0	5300.0
22331	4 G 120	4/0	50.3	270	430		292	5435.0	6600.0
22332	4 G 150	300 kcmil	58.3	280	450		335	6394.0	7040.0
22333	4 G 185	350 kcmil	65.5	290	470		382	7639.0	8380.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.

- resistant to: UV radiation
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to PE core insulation and low screen capacity, enable low-loss power transmission

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

## APPLICATION

Motor connection cable for frequency converters; secures EMC in systems and buildings with devices and machineries, which can emit electromagnetic interference fields that can impact the environment in an illegal manner. To be used as a connection cable involving medium mechanical stress for fixed installations and applications with occasional free movement in dry, moist and wet rooms and outside. For use in the automotive, food processing and packaging industry, in machine tools, handling equipment, pumps, fans, and transport belts. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

# TOPFLEX®-EMV-UV-3-PLUS-2YSLCYK-J UL/



## CSA

double screened, EMC-preferred type



HELUKABEL® TOPFLEX®-EMV-UV-3-PLUS-2YSLCYK-J UL/CSA 3x50 + 3G10 QMM  
E170315 AWM STYLE 2570 AWM III A/B 80°C 1000V FT1 CE

### TECHNICAL DATA

Motor connection cable for frequency converters acc. to UL-Std. 758 (AWM) Style 2570, in alignment with DIN VDE 0250

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	4000 V
<b>Coupling resistance</b>	see table
<b>Minimum bending radius</b>	flexible < 12 mm: 10x Outer-ø 12-20 mm: 15x Outer-ø > 20 mm: 20x Outer-ø fixed < 12 mm: 5x Outer-ø 12-20 mm: 7,5x Outer-ø > 20 mm: 10x Outer-ø

### CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PE
- Core identification: brown, black, grey, green-yellow (divided into thirds)
- Protective conductor: GN-YE divided into thirds (3+3-core structure)
- Cores stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

### PROPERTIES

- resistant to: UV radiation
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- symmetrical 3-PLUS-composition (protective conductor divided into thirds and stranded uniformly in the interstices) with improved EMC properties in comparison to 4-core-composition
- optimal screening enables interference-free operation of frequency converters
- low coupling resistance ensures good electromagnetic compatibility
- low mutual capacitance of the individual cores due to PE core insulation and low screen capacity, enable low-loss power transmission

### TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1
- electromagnetic compatibility acc. to DIN VDE 0875-11 / DIN EN 55011

### APPLICATION

Motor connection cable for fixed installations and applications with occasional free movement involving medium mechanical stress in dry, damp and wet rooms as well as outdoors. For use in the automotive, food processing and packaging industry, in transport belts, machine tools, handling equipment, pumps, as well as in fans and air condition systems. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

### NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Coupling resistance at 30 MHz in Ohm/km	Current carrying capacity*	Cu factor per km	Weight kg/km, approx.
22193	3 x 1.5 + 3 G 0.25	16	9.2		18	86.0	140.0
22194	3 x 2.5 + 3 G 0.5	14	10.8	210	26	144.0	220.0
22195	3 x 4 + 3 G 0.75	12	12.3	210	34	224.0	323.0
22196	3 x 6 + 3 G 1	10	14.0	150	44	298.0	420.0
22197	3 x 10 + 3 G 1.5	8	17.6	180	61	491.0	615.0
22198	3 x 16 + 3 G 2.5	6	21.2	190	82	723.0	819.0
22199	3 x 25 + 3 G 4	4	24.5	95	108	1138.0	1325.0
22223	3 x 35 + 3 G 6	2	26.9	85	135	1535.0	1718.0
22224	3 x 50 + 3 G 10	1	32.5	40	168	2208.0	2399.0
22225	3 x 70 + 3 G 10	2/0	35.5	45	207	2871.0	3056.0
22226	3 x 95 + 3 G 16	3/0	39.9	50	250	3953.0	4162.0
22227	3 x 120 + 3 G 16	4/0	44.4		292	4836.0	5075.0
22228	3 x 150 + 3 G 25	300 kcmil	49.3		335	5412.0	6128.0
22229	3 x 185 + 3 G 35	350 kcmil	55.6		382	6969.0	7189.0
22230	3 x 240 + 3 G 42.5	500 kcmil	60.0		453	8540.0	9540.0

\*) Current carrying capacity with 3 loaded cores in amperes for permanent operation up to 30°C ambient temperature. For deviating ambient temperatures, the conversion factors and specifications from DIN VDE 0298-4 apply.



# TOPFLEX®-MOTOR-EMV 103 low capacitance power

supply cable 1000 V, increased ampacity, meter marking



## Technical data

- Special motor power supply cable for frequency converters acc. to UL-AWM style 21179
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL 1000 V
- **Test voltage** 2500 V
- **Insulation resistance**  
min. 200 MΩm x km
- **Coupling resistance**  
acc. to different cross-sections  
max. 250 Ωm/km
- **Mutual capacitance**  
acc. to different cross-sections  
core/core 70 to 250 nF/km  
core/screen 110 to 410 nF/km
- **Minimum bending radius**  
fixed installation for outer Ø:  
up to 12 mm: 5x cable Ø  
> 12-20 mm: 7,5x cable Ø  
> 20 mm: 10x cable Ø  
free-movement for outer Ø:  
up to 12 mm: 10x cable Ø  
> 12-20 mm: 15x cable Ø  
> 20 mm: 20x cable Ø
- **Radiation-resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl.5, BS 6360 cl.5 or IEC 60228 cl.5
- Core insulation of special-polymer
- Core identification to DIN VDE 0293-308  
- up to 5 cores coloured  
- from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded in concentric layers
- 1. Screen with special aluminium film  
2. Tinned copper braided screen, coverage approx. 80%
- Outer sheath of special PVC
- Sheath colour orange (RAL 2003)
- with meter marking

## Properties

### Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Features Special-Polymer-insulation secures a lower dielectric loss, double potential strength, high longevity and low screen-interference currents to include increased current carrying capacity
- Meets EMC requirements according to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- This screened motor supply cable with low mutual capacitance of the single cores because of the special Polymer core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- Design acc. to the requirements of VdS 3501:2006-04
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

### Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

This UL/CSA motor power supply cable for the frequency converters assures electromagnetic compatibility in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas.

**EMC** = Electromagnetic compatibility

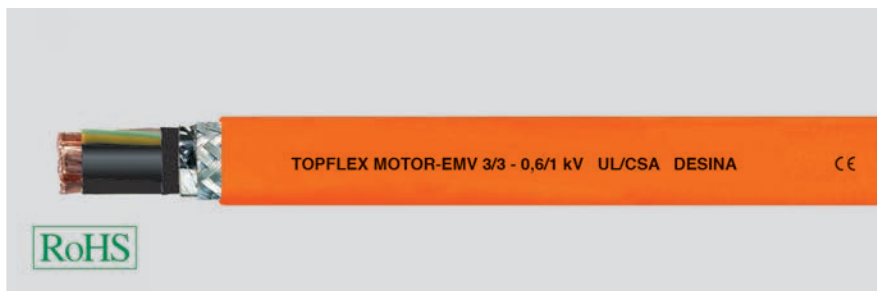
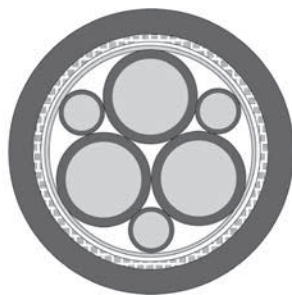
The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

**CE** = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22689	3 G 1,5	9,4	72,0	200,0	16	22698	5 G 4	15,4	321,0	567,0	12
22690	4 G 1,5	10,4	95,0	230,0	16	22699	7 G 4	18,2	352,0	603,0	12
22691	5 G 1,5	11,2	117,0	258,0	16	22700	4 G 6	15,2	320,0	633,0	10
22692	7 G 1,5	13,2	148,0	281,0	16	22701	5 G 6	16,8	439,0	679,0	10
22693	3 G 2,5	11,2	137,0	270,0	14	22702	7 G 6	20,0	501,0	771,0	10
22694	4 G 2,5	12,5	150,0	300,0	14	22703	4 G 10	19,5	533,0	860,0	8
22695	5 G 2,5	13,5	200,0	352,0	14	22704	5 G 10	21,6	711,0	1029,0	8
22696	7 G 2,5	16,0	230,0	473,0	14	22705	4 G 16	23,1	789,0	1290,0	6
22697	4 G 4	14,2	235,0	485,0	12	22706	4 G 25	27,1	1236,0	1862,0	4

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPFLEX®-MOTOR-EMV 3/3 triple-screened, low capacitance, 80°C, 1000 V, PUR flexible motor supply cable, meter marking



## Technical data

- Special PUR motor power supply cable for frequency converter to UL AWM Style 20234 and CSA AWM adapted to DIN VDE 0250
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL 1000 V
- **Test voltage** 3000 V
- **Mutual capacitance** at 4 kHz  
acc. to different cross-section core/core 70-250 nF/km  
core/screen 110-410 nF/km
- **Insulation resistance**  
min. 200 MOhm x km
- **Minimum bending radius**  
fixed installation for outside Ø:  
up to 12 mm: 5x cable Ø  
> 12-20 mm: 7,5x cable Ø  
> 20 mm: 10x cable Ø  
free-movement for outside Ø:  
up to 12 mm: 10x cable Ø  
> 12-20 mm: 15x cable Ø  
> 20 mm: 20x cable Ø
- **Coupling resistance**  
acc. to different cross-section  
max. 250 Ohm/km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special polyethylene (PE)
- Core identification black cores with imprint U1, V1, W3
- GN-YE conductor (divided into 3)
- Cores stranded in layers
- 1. Screen of semi-conductive fleece
- 2. Aluminium-coated polyester film
- 3. Tinned copper braided screen, coverage approx. 80%
- Outer sheath of PUR
- Sheath colour orange (RAL 2003)  
acc. to DESINA®
- with meter marking

## Properties

- PUR outer sheath: low adhesion, flame retardant, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- This screened motor power supply cable, with low mutual capacitance because of the special PE core insulation, enables low-loss transmission of power compared to PVC-sheathed power supply cables
- The optimal triple screening enables interference-free operation of frequency converters
- Optimum compliance with requirements for electromagnetic compatibility (EMC) due to the triple screening
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Special features

Here the earth core cross-section is divided into thirds, which lie in the interstices between the power supply cores. Due to this symmetrical construction, the PE insulation and the triple screening, very low capacitance and inductance are achieved. EMC compatibility is considerably enhanced.

## Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- All cables are also available in JB with coloured cores acc. to DIN VDE 0295
- \*\*) The current carrying capacity for permanent operation at ambient temperature of 30°C. For deviating ambient temperatures the conversion factors should be used and for further see the indication in DIN VDE 0298 part 4.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

This TOPFLEX® MOTOR EMV 3/3 two-approvals, triple-screened motor power supply cable for frequency converters provides outstanding EMC in machines and systems. Suitable as a supply and connecting cable for high mechanical stresses, in fixed installations and occasional free movements in dry, moist and wet environments, as well as outdoors. Areas of application include machine tools, processing and manufacturing machinery, machining centres, industrial robots, transfer lines, handling equipment, etc. By dividing the earth core into thirds and dividing it evenly in the interstices between the power supply cores, a symmetrical structure has been achieved. This results in improved EMC, capacitance and inductance compared to the 4-core version.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

# TOPFLEX®-MOTOR-EMV 3/3 triple-screened, low capacitance, 80°C, 1000 V, PUR flexible motor supply cable, meter marking



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Coupling resistance		Power ratings **) with 3 loaded cores in Amperes	Cu factor per km	Weight app. kg / km	AWG-No.
			at 1 MHz Ohm/km	at 30 MHz Ohm/km				
78614	3 x 1,5 + 3 G 0,25	10,4			18	86,0	150,0	16
78615	3 x 2,5 + 3 G 0,5	12,1	18	210	26	144,0	240,0	14
78616	3 x 4 + 3 G 0,75	13,9	11	210	34	224,0	345,0	12
78617	3 x 6 + 3 G 1,0	15,5	6	150	44	298,0	460,0	10
78618	3 x 10 + 3 G 1,5	19,5	7	180	61	491,0	840,0	8
78619	3 x 16 + 3 G 2,5	22,5	9	190	82	723,0	930,0	6
78620	3 x 25 + 3 G 4,0	28,6	4	95	108	1138,0	1425,0	4
78621	3 x 35 + 3 G 6,0	29,6	3	85	135	1535,0	1900,0	2
708613	3 x 50 + 3 G 10,0	35,7	2	40	168	2208,0	2812,0	1
708371	3 x 70 + 3 G 10,0	43,0	2	45	207	2871,0	3370,0	2/0
708372	3 x 95 + 3 G 16,0	47,0	1	50	250	3953,0	4320,0	3/0
708373	3 x 120 + 3 G 25,0	52,0			292	4836,0	6160,0	4/0
78626	3 x 150 + 3 G 25,0	58,0			335	5412,0	7200,0	300 kcmil

Dimensions and specifications may be changed without prior notice.

# TOPSERV® Hybrid

Hybrid cable for SICK Hiperface DSL® motorfeedbacksystems



## Technical data

- **TOPSERV® PUR**
- Special PUR drag chain cable acc. to UL AWM Style 21223 CSA AWM
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
VDE  
power supply cores  $U_0/U$  600/1000 V  
control cores  $U_0/U$  300/500 V  
UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz  
power supply cores 4000 V  
control cores 1000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø  
min. 5 mio. cycles

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.6, extra fine wire, IEC 60228 cl.6
- Core insulation halogen-free PP
- Core identification
- **power supply cores**  
core 1: black with imprint U/L1/C/L+  
core 2: black with imprint V/L2  
core 3: black with imprint W/L3/D/L-
- **control cores**  
pair 1: black with number no. 5+6  
pair 2: white and blue
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PVC or PUR
- Sheath colour: orange (RAL 2003)  
acc. to DESINA®

## Properties

- Low capacitance
- PUR outer sheath: low adhesion, extremely abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA® standard.
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- PUR outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Note

- The technical data for **TOPSERV® Hybrid PVC** cables are available on request.

## Application

The supply conductors for these cables are ideally combined with the control conductors for the brake function and the transmission of the Sick Hiperface DSL protocols. Applications include machine, plant and robot construction. Please observe applicable installation regulations for use in energy supply chains.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

### TOPSERV® Hybrid PVC for fixed or not constantly movements

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
709930	(4G0,5 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,3	72,0	123,0	26
709931	(4G0,75 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,9	88,0	153,0	26
709932	(4G1 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	11,6	130,0	208,0	22
709933	(4G1,5 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	12,2	152,0	248,0	22
709934	(4G2,5 + (2x1) + (2x22 AWG))	Orange RAL 2003	13,8	207,0	326,0	22
709935	(4G4 + (2x1) + (2x22 AWG))	Orange RAL 2003	15,3	273,0	415,0	22
709936	(4G6 + (2x1) + (2x22 AWG))	Orange RAL 2003	17,2	357,0	538,0	22
709937	(4G10 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	20,3	530,0	752,0	22
709938	(4G16 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	22,6	768,0	1005,0	22

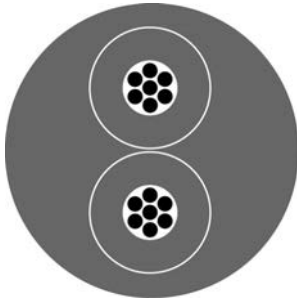
### TOPSERV® Hybrid PUR, high flexible for drag chain

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
709703	(4G0,5 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,3	76,0	127,0	26
709704	(4G0,75 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,9	88,0	153,0	26
708543	(4G1 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	11,6	133,0	212,0	22
710081	(4G1,5 + (2x0,75) + (2x24 AWG))	Orange RAL 2003	11,7	146,0	229,0	24
708544	(4G1,5 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	12,7	155,0	269,0	22
708545	(4G2,5 + (2x1) + (2x22 AWG))	Orange RAL 2003	13,9	205,0	310,0	22
708546	(4G4 + (2x1) + (2x22 AWG))	Orange RAL 2003	15,7	280,0	420,0	22
708547	(4G6 + (2x1) + (2x22 AWG))	Orange RAL 2003	18,0	363,0	540,0	22
708548	(4G10 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	21,0	538,0	760,0	22
709705	(4G16 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	23,4	775,0	1020,0	22

Dimensions and specifications may be changed without prior notice.

# HELUSOUND® 400 PVC

Speaker cables, round



## Type

### Cable structure

Conductor material:  
Core insulation:  
Core colours:  
Sheath material:  
Cable external diameter:  
Sheath colour:

## Speaker cable HELUSOUND® 400 2x1,5

Copper, bare  
PVC  
rd, bk  
PVC  
approx. 6,6 mm  
black

## Electrical data

Conductor resistance, max.: 12,7 Ohm/km

## Technical data

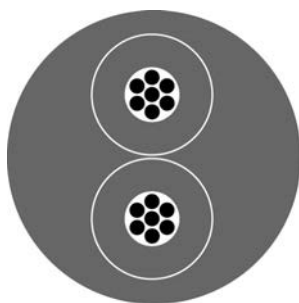
Weight: approx. 73,4 kg/km  
Min. bending radius for laying: 33 mm  
Operating temperature range min.: -10°C  
Operating temperature range max.: +70°C  
Copper weight: 28,8 kg/km

Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cu factor per km	Weight approx. kg / km
400089	2x1,5	< 12,7	6,6	28,8	73,4
400090	2x2,5	< 7,9	7,5	48,0	106,9
400091	2x4,0	< 4,9	9,4	76,8	163,7
400092	4x2,5	< 7,9	8,8	96,0	169,3
400093	4x4,0	< 4,9	11,6	153,6	272,4
400060	8x2,5	< 7,9	13,5	192,0	349,0
400094	8x4,0	< 4,9	16,8	307,2	541,6

Dimensions and specifications may be changed without prior notice.

## Application

All products of the HELUSOUND® 400 LOUDSPEAKER series impress with their extremely high flexibility. 0,15 stranded wires and a very soft PVC outer sheath make this possible. These cables are particularly used in mobile applications on stages, in studios or in the conference industry.



## Type

### Cable structure

Conductor material:  
Core insulation:  
Core colours:  
Stranding element:  
Sheath material:  
Cable external diameter:  
Sheath colour:

### Speaker cable HELUSOUND® 500 PUR 2x1,5

Copper, bare  
PVC  
rd, bk  
pairs stranded  
PUR  
approx. 6,6 mm  
black

### Electrical data

Conductor resistance, max.: 12,7 Ohm/km

### Technical data

Weight: approx. 66,9 kg/km  
Min. bending radius for laying: 33 mm  
Operating temperature range min.: -25°C  
Operating temperature range max.: +80°C  
Copper weight: 28,8 kg/km

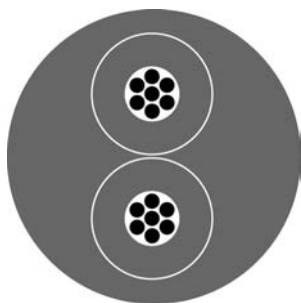
Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cu factor per km	Weight approx. kg / km
400109	2x1,5	< 12,7	6,6	28,8	66,9
400110	2x2,5	< 7,9	7,5	48,0	98,5
400111	2x4,0	< 4,9	9,4	76,8	150,2
400112	4x2,5	< 7,9	8,8	96,0	159,1
400113	4x4,0	< 4,9	11,6	153,6	253,0
400114	8x2,5	< 7,9	13,5	192,0	332,1
400115	8x4,0	< 4,9	16,8	307,2	499,5

Dimensions and specifications may be changed without prior notice.

### Application

The robust solution for medium and high mechanical stresses, as robust, abrasion-resistant and cut resistant. Also suitable for outdoor use.

# HELUSOUND® 600 FRNC, halogen-free



## Type

### Cable structure

Conductor material:  
Core insulation:  
Core colours:  
Stranding element:  
Sheath material:  
Cable external diameter:  
Sheath colour:

## Speaker cable HELUSOUND® 600 FRNC 2x1,5

Copper, bare  
FRNC  
rd, bk  
pairs stranded  
FRNC  
approx. 6,6 mm  
black

## Electrical data

Conductor resistance, max.: 12,7 Ohm/km

## Technical data

Weight: approx. 77 kg/km  
Min. bending radius for laying: 33 mm  
Operating temperature range min.: -5°C  
Operating temperature range max.: +70°C  
Copper weight: 28,8 kg/km

## Norms

Corrosiveness acc. to EN50267-2-3

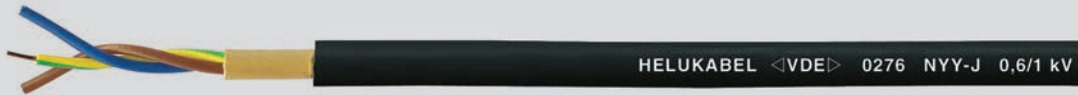
Part no.	Cable structure	Conductor resistance Ohm / km	Outer diameter approx. mm	Cu factor per km	Weight approx. kg / km
400116	2x1,5	< 12,7	6,6	28,8	77,0
400117	2x2,5	< 7,9	7,5	48,0	105,6
400118	2x4,0	< 4,9	9,4	76,8	166,9
400119	4x2,5	< 7,9	8,8	96,0	161,5
400120	4x4,0	< 4,9	11,6	153,6	271,6
400121	8x2,5	< 7,9	13,5	192,0	338,6
400122	8x4,0	< 4,9	16,8	307,2	531,5

Dimensions and specifications may be changed without prior notice.

## Application

The safe solution for increasing demands on the security in case of fire, as flame retardant, low smoke, halogen-free, no corrosion damage by released gases and fumes, no flame propagation provide for local flame propagation for the integrity of important systems.





### Technical data

- Power and control cable acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502  
7 core and above acc. to DIN VDE 0276-627 / HD 627 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s)  
≤ 300 mm<sup>2</sup> +160°C  
> 300 mm<sup>2</sup> +140°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø
- **Caloric load values**  
see "Technical Information"

### Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Core colour for 3+½ conductor  
J-version: GN-YE (½), BN, BK, GY  
O-version: BU (½), BN, BK, GY
- Cores stranded in concentric layers
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour: black

### Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### Highest permissible voltage

- Direct current systems  
- Conductor/conductor 1,8 kV  
- Conductor/earth 0,9 kV
- Alternating current systems  
- Single phase systems  
both outer conductors insulated 1,4 kV  
- Single phase systems  
one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

### Note

- re = round conductor, single wire  
rm = round conductor, multi wire  
sm = sectional conductor, multi wire
- J-version = with GN-YE conductor  
O-version = without GN-YE conductor
- In respect to 3+½ conductors  
Whereby only one conductor is allowed to contain a smaller cross section (as per DIN VDE 0276-603) and permitted to place as insulated core (green-yellow and blue as ½-conductor), stranded in layer.
- Part no. 33297, 33298, 11017729 in reference to VDE designation (N)YY-O
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

### Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not to be expected.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>		Outer Ø app. mm	Cu factor per km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
1 x 4	re	8,1	38,0	115,0	32001	12	-	32089	12	-
1 x 6	re	8,6	58,0	135,0	32002	10	-	32090	10	-
1 x 10	re	10,0	96,0	179,0	32003	8	-	32091	8	-
1 x 16	re	11,0	154,0	245,0	32004	6	-	32092	6	-
1 x 25	rm	13,7	240,0	360,0	32005	4	-	32093	4	-
1 x 35	rm	14,5	336,0	470,0	32006	2	-	32094	2	-
1 x 50	rm	16,0	480,0	620,0	32007	1	-	32095	1	-
1 x 70	rm	17,5	672,0	810,0	32008	2/0	-	32096	2/0	-
1 x 95	rm	19,0	912,0	1110,0	32009	3/0	-	32097	3/0	-
1 x 120	rm	20,5	1152,0	1360,0	32010	4/0	-	32098	4/0	-
1 x 150	rm	22,5	1440,0	1670,0	32011	300 kcmil	-	32099	300 kcmil	-
1 x 185	rm	25,0	1776,0	2050,0	32012	350 kcmil	-	32100	350 kcmil	-
1 x 240	rm	28,0	2304,0	2630,0	32013	500 kcmil	-	32101	500 kcmil	-
1 x 300	rm	30,0	2880,0	3200,0	32014	600 kcmil	-	32102	600 kcmil	-
1 x 400	rm	34,0	3840,0	4150,0	32015	750 kcmil	-	32103	750 kcmil	-
1 x 500	rm	38,0	4800,0	5200,0	32556	1000 kcmil	-	32558	1000 kcmil	-
1 x 630	rm	43,0	6048,0	6650,0	32557	1250 kcmil	-	32559	1250 kcmil	-



No.cores x cross-sec. mm²		Outer Ø app. mm	Cu factor per km	Weight app. kg / km	J type Part no.	AWG-No.	O type Part no.	AWG-No.		
2 x 1,5	re	11,0	29,0	175,0	32016	16	-	32104	16	-
2 x 2,5	re	12,0	48,0	215,0	32017	14	-	32105	14	-
2 x 4	re	14,0	77,0	295,0	32018	12	-	32106	12	-
2 x 6	re	15,0	115,0	370,0	32019	10	-	32107	10	-
2 x 10	re	16,5	192,0	495,0	32020	8	-	32108	8	-
2 x 16	re	18,5	307,0	670,0	32021	6	-	32109	6	-
2 x 25	rm	20,5	480,0	960,0	32022	4	-	32110	4	-
2 x 35	rm	24,1	672,0	1248,0	34128	2	-	34129	2	-
3 x 1,5	re	11,5	43,0	195,0	32023	16	-	32111	16	-
3 x 2,5	re	12,5	72,0	250,0	32024	14	-	32112	14	-
3 x 4	re	14,0	115,0	340,0	32025	12	-	32113	12	-
3 x 6	re	15,0	173,0	430,0	32026	10	-	32114	10	-
3 x 10	re	17,0	288,0	590,0	32027	8	-	32115	8	-
3 x 16	re	19,0	461,0	820,0	32028	6	-	32116	6	-
3 x 25	rm	24,0	720,0	1320,0	32029	4	-	32117	4	-
3 x 35	sm	25,0	1008,0	1450,0	32030	2	-	32118	2	-
3 x 50	sm	28,4	1440,0	1850,0	32031	1	-	32119	1	-
3 x 70	sm	30,0	2016,0	2450,0	32032	2/0	-	32120	2/0	-
3 x 95	sm	34,5	2736,0	3300,0	32033	3/0	-	32121	3/0	-
3 x 120	sm	37,0	3456,0	4100,0	32034	4/0	-	32122	4/0	-
3 x 150	sm	36,5	4320,0	4900,0	32293	300 kcmil	-	32296	300 kcmil	-
3 x 185	sm	41,5	5328,0	6500,0	32294	350 kcmil	-	32297	350 kcmil	-
3 x 240	sm	51,0	6912,0	8300,0	32295	500 kcmil	-	32298	500 kcmil	-
4 x 1,5	re	12,0	58,0	230,0	32044	16	-	32132	16	-
4 x 2,5	re	13,5	96,0	300,0	32045	14	-	32133	14	-
4 x 4	re	16,0	154,0	410,0	32046	12	-	32134	12	-
4 x 6	re	16,5	230,0	520,0	32047	10	-	32135	10	-
4 x 10	re	18,5	384,0	730,0	32048	8	-	32136	8	-
4 x 16	re	20,3	614,0	1045,0	32049	6	-	32137	6	-
4 x 25	rm	24,5	960,0	1640,0	32050	4	-	32138	4	-
4 x 35	sm	23,5	1344,0	1760,0	32051	2	-	32139	2	-
4 x 50	sm	27,0	1920,0	2350,0	32052	1	-	32140	1	-
4 x 70	sm	34,0	2688,0	3100,0	32053	2/0	-	32141	2/0	-
4 x 95	sm	35,5	3648,0	4250,0	32054	3/0	-	32142	3/0	-
4 x 120	sm	39,0	4608,0	5300,0	32055	4/0	-	32143	4/0	-
4 x 150	sm	42,5	5760,0	6400,0	32056	300 kcmil	-	32144	300 kcmil	-
4 x 185	sm	48,5	7104,0	8500,0	32057	350 kcmil	-	32145	350 kcmil	-
4 x 240	sm	53,5	9216,0	11000,0	32058	500 kcmil	-	32146	500 kcmil	-
5 x 1,5	re	13,0	72,0	270,0	32059	16	-	32147	16	-
5 x 2,5	re	14,5	120,0	360,0	32060	14	-	32148	14	-
5 x 4	re	16,5	192,0	490,0	32061	12	-	32149	12	-
5 x 6	re	19,5	288,0	600,0	32062	10	-	32150	10	-
5 x 10	re	20,0	480,0	890,0	32063	8	-	32151	8	-
5 x 16	re	22,5	768,0	1255,0	32064	6	-	32152	6	-
5 x 25	rm	28,0	1200,0	1960,0	32065	4	-	-	-	-
5 x 35	rm	34,0	1680,0	2400,0	32300	2	-	-	-	-
5 x 50	rm	35,3	2400,0	3500,0	32257	1	-	-	-	-
5 x 70	rm	39,0	3360,0	4470,0	79608	2/0	-	-	-	-
5 x 95	rm	47,0	4560,0	6149,0	700939	3/0	-	-	-	-
5 x 120	rm	51,5	5760,0	7483,0	79607	4/0	-	-	-	-
5 x 120	sm	47,0	5760,0	6856,0	33291	4/0	-	-	-	-
5 x 150	rm	57,8	7200,0	8948,0	700940	300 kcmil	-	-	-	-
5 x 150	sm	53,0	7200,0	8380,0	33292	300 kcmil	-	-	-	-
5 x 185	sm	58,0	8880,0	10390,0	33293	350 kcmil	-	-	-	-
5 x 240	sm	64,5	11520,0	13221,0	33294	500 kcmil	-	-	-	-
5 x 300	sm	71,0	14400,0	16370,0	33295	600 kcmil	-	-	-	-
7 x 1,5	re	14,5	101,0	310,0	32066	16	-	32153	16	-
7 x 2,5	re	15,5	168,0	450,0	32076	14	-	32163	14	-
7 x 4	re	18,5	269,0	640,0	32086	12	-	32173	12	-
7 x 6	re	20,0	403,0	850,0	32087	10	-	32174	10	-
7 x 10	re	23,5	672,0	1200,0	32088	8	-	32175	8	-
10 x 1,5	re	18,0	144,0	380,0	32067	16	-	32154	16	-
10 x 2,5	re	19,5	240,0	520,0	32077	14	-	32164	14	-
10 x 4	re	21,0	384,0	900,0	79900	12	-	-	-	-
12 x 1,5	re	19,0	173,0	420,0	32068	16	-	32155	16	-
12 x 2,5	re	20,5	288,0	600,0	32078	14	-	32165	14	-
12 x 4	re	23,0	461,0	960,0	-	-	-	33296	12	-
14 x 1,5	re	19,0	202,0	470,0	32069	16	-	32156	16	-
14 x 2,5	re	21,0	336,0	680,0	32079	14	-	32166	14	-
14 x 4	re	26,0	538,0	1130,0	700044	12	-	75864	12	-
16 x 1,5	re	19,0	230,0	520,0	32070	16	-	32157	16	-
16 x 2,5	re	22,0	384,0	750,0	32080	14	-	32167	14	-
19 x 1,5	re	22,0	274,0	570,0	32071	16	-	32158	16	-
19 x 2,5	re	23,0	456,0	850,0	32081	14	-	32168	14	-
21 x 1,5	re	21,0	302,0	650,0	32072	16	-	32159	16	-
21 x 2,5	re	23,0	504,0	980,0	32082	14	-	-	-	-
24 x 1,5	re	25,0	346,0	750,0	32073	16	-	32160	16	-
24 x 2,5	re	27,0	576,0	1100,0	32083	14	-	32170	14	-
24 x 4	re	30,6	922,0	1724,0	-	-	-	33297	12	-
30 x 1,5	re	26,0	432,0	860,0	32074	16	-	32161	16	-
30 x 2,5	re	28,0	720,0	1280,0	32084	14	-	32171	14	-
30 x 4	re	32,5	1152,0	1991,0	-	-	-	11017729	12	-
40 x 1,5	re	29,0	576,0	1070,0	32075	16	-	32162	16	-
40 x 2,5	re	31,5	960,0	1700,0	32085	14	-	32172	14	-
40 x 4	re	37,0	1536,0	2604,0	-	-	-	33298	12	-
52 x 2,5	re	35,0	1248,0	2150,0	32169	14	-	-	-	-
61 x 1,5	re	32,0	878,0	1680,0	32176	16	-	-	-	-

### 3+1/2 conductors

No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	J type Part no.	AWG-No.	O type Part no.	AWG-No.	
3 x 25 / 16	rm/re 27,5	874,0	1530,0	32035	4	-	32123	4
3 x 35 / 16	sm/re 28,0	1162,0	1750,0	32036	2	-	32124	2
3 x 50 / 25	sm/rm 31,5	1680,0	2350,0	32037	1	-	32125	1
3 x 70 / 35	sm/sm 35,0	2352,0	2850,0	32038	2/0	-	32126	2/0
3 x 95 / 50	sm/sm 38,0	3216,0	3850,0	32039	3/0	-	32127	3/0
3 x 120 / 70	sm/sm 41,0	4128,0	4780,0	32040	4/0	-	32128	4/0
3 x 150 / 70	sm/sm 46,0	4992,0	5800,0	32041	300 kcmil	-	32129	300 kcmil
3 x 185 / 95	sm/sm 51,0	6240,0	7600,0	32042	350 kcmil	-	32130	350 kcmil
3 x 240 / 120	sm/sm 58,0	8064,0	9800,0	32043	500 kcmil	-	32131	500 kcmil
3 x 300 / 150	sm/sm 56,5	10080,0	11500,0	32256	600 kcmil	-	-	-

Dimensions and specifications may be changed without prior notice. (RQ01)



## Technical data

- Power and control cable to DIN VDE 0276 part 603, HD 603 S1 and IEC 60502  
7 cores and above to DIN VDE 0276 part 627, HD 627 S1 and IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm<sup>2</sup>
- **Minimum bending radius**  
single-core 15x cable Ø  
multi-core 12x cable Ø
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC compound type DIV4 to HD 603 S1
- Core identification to DIN VDE 0293-308
- Cores stranded in concentric layers
- Filling compound
- Concentric conductor in inner layer of round copper wires, outer layer with copper tape
- Outer sheath of PVC compound type DMV5 to HD 603 S1
- Sheath colour black

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Highest permissible voltage

- Direct current systems 1,8 kV
- Alternating current systems
  - Single-phase systems 1,4 kV both outer conductors insulated
  - Single-phase systems 0,7 kV one outer conductor earthed
- Three-phase systems 1,2 kV with concentric conductor and a cross-section of 240 mm<sup>2</sup> and above 3,6 kV

## Note

- re = round conductor, single-wire
- Available with outer sheath in alternative colours on request.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

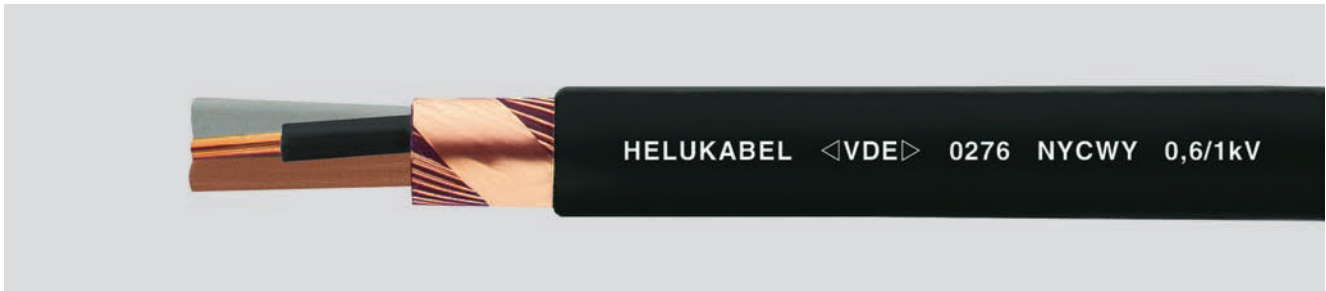
Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test datas. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, in concrete, indoors and in cable ducts. The concentric conductor (C) is allowed to use as PE-, PEN-conductor or as screen.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
32200	1 x 10 re / 10	11,0	216,0	280,0	8
32201	1 x 16 re / 16	12,0	336,0	440,0	6
32202	2 x 1,5 re / 1,5	13,0	52,0	205,0	16
32203	2 x 2,5 re / 2,5	13,5	80,0	270,0	14
32204	2 x 4 re / 4	15,5	123,0	360,0	12
32205	2 x 6 re / 6	17,0	182,0	435,0	10
32206	2 x 10 re / 10	19,5	312,0	590,0	8
32207	2 x 16 re / 16	20,5	489,0	820,0	6
32208	3 x 1,5 re / 1,5	13,5	66,0	225,0	16
32209	3 x 2,5 re / 2,5	14,5	104,0	290,0	14
32210	3 x 4 re / 4	16,5	161,0	400,0	12
32211	3 x 6 re / 6	17,5	240,0	510,0	10
32212	3 x 10 re / 10	20,0	408,0	850,0	8
32213	3 x 16 re / 16	23,0	643,0	1080,0	6
32214	4 x 1,5 re / 1,5	14,5	81,0	260,0	16
32215	4 x 2,5 re / 2,5	15,5	128,0	350,0	14
32216	4 x 4 re / 4	17,0	200,0	470,0	12
32217	4 x 6 re / 6	18,5	297,0	590,0	10
32218	4 x 10 re / 10	21,0	504,0	900,0	8
32219	4 x 16 re / 16	23,0	796,0	1250,0	6
32220	5 x 1,5 re / 1,5	15,0	95,0	330,0	16
32221	5 x 2,5 re / 2,5	16,0	152,0	400,0	14
32222	5 x 4 re / 4	19,0	238,0	560,0	12
32223	5 x 6 re / 6	21,0	355,0	710,0	10

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
32224	5 x 10 re / 10	23,0	600,0	1000,0	8
32226	7 x 1,5 re / 1,5	16,0	124,0	320,0	16
32227	7 x 1,5 re / 2,5	16,0	133,0	350,0	16
32241	7 x 2,5 re / 2,5	17,5	200,0	450,0	14
32225	7 x 4 re / 4	21,0	315,0	670,0	12
32255	7 x 6 re / 6	24,0	470,0	790,0	10
32228	8 x 1,5 re / 1,5	17,0	138,0	380,0	16
32229	8 x 1,5 re / 2,5	17,0	147,0	400,0	16
32242	8 x 2,5 re / 2,5	18,0	224,0	510,0	14
32230	10 x 1,5 re / 2,5	19,0	176,0	440,0	16
32243	10 x 2,5 re / 4	20,5	286,0	600,0	14
32231	12 x 1,5 re / 2,5	20,0	205,0	500,0	16
32244	12 x 2,5 re / 4	21,0	334,0	660,0	14
32232	14 x 1,5 re / 2,5	20,5	234,0	540,0	16
32245	14 x 2,5 re / 4	22,0	382,0	760,0	14
32246	14 x 2,5 re / 6	22,5	403,0	800,0	14
32233	16 x 1,5 re / 4	22,0	276,0	600,0	16
32247	16 x 2,5 re / 6	23,0	451,0	910,0	14
32234	19 x 1,5 re / 4	23,0	320,0	690,0	16
32248	19 x 2,5 re / 6	23,5	523,0	950,0	14
32235	21 x 1,5 re / 6	24,0	369,0	810,0	16
32249	21 x 2,5 re / 10	26,0	571,0	1100,0	14
32236	24 x 1,5 re / 6	26,0	413,0	860,0	16
32250	24 x 2,5 re / 10	28,0	696,0	1300,0	14
32237	30 x 1,5 re / 6	27,0	499,0	1230,0	16
32251	30 x 2,5 re / 10	30,0	840,0	1610,0	14
32238	40 x 1,5 re / 10	30,0	696,0	1590,0	16
32252	40 x 2,5 re / 10	35,0	1080,0	2100,0	14
32239	52 x 1,5 re / 10	32,0	869,0	1820,0	16
32253	52 x 2,5 re / 10	38,0	1368,0	2500,0	14
32240	61 x 1,5 re / 10	33,0	998,0	2000,0	16
32254	61 x 2,5 re / 10	40,0	1584,0	2850,0	14

Dimensions and specifications may be changed without prior notice. (RQ01)



## Technical data

- Power distribution cable acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
12x outer Ø
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308
- Cores concentrically stranded
- Filling compound
- Concentric conductor (Ceander), inner layer of corrugated copper wires, outer layer with copper tape
- Outer sheath of PVC compound type DMV5 acc. to HD 603 S1
- Sheath colour. black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### Highest permissible voltage

- Direct current systems
  - Conductor/conductor 1,8 kV
  - Conductor/earth 0,9 kV
- Alternating current systems
  - Single phase systems both outer conductors insulated 1,4 kV
  - Single phase systems one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV; with concentric conductor and a cross section of 240 mm<sup>2</sup> and above 3,6 kV

## Note

- re = round conductor, single wire
- rm = round conductor, multi wire
- sm = sectional conductor, multi wire
- Part no. 11020520, 11020521 in reference to VDE Designation (N)YCWY
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Power cables for energy supply are used for industry and distribution boards, power stations, house connecting boxes and street lighting as well as control cable for the transmission of control impulses and test datas. Overall, where increased electrical and also mechanical protection are required. Those cables are installed in open air, in underground, in water, in concrete, indoors and in cable ducts. The concentric conductor (C) may be used as PE, PEN conductor or as a shield according to national regulations. The corrugated design (Ceander) of the concentric conductor permits any number of cable junctions during assembly, without any conductors having to be cut. This ensures a optimal reliability.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11019913	1 x 240 rm / 120	33,0	3456,0	4021,0	500 kcmil
32260	2 x 10 re / 10	19,0	312,0	650,0	8
32261	2 x 16 re / 16	21,0	489,0	850,0	6
32262	2 x 25 rm / 25	24,0	763,0	1210,0	4
11020520	2 x 120 rm / 70	43,2	3084,0	4591,0	4/0
11020521	2 x 240 rm / 120	59,3	5938,0	8799,0	500 kcmil

Continuation ►

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
32263	3 x 10 re / 10	21,0	408,0	730,0	8
32264	3 x 16 re / 16	22,0	643,0	1000,0	6
11017477	3 x 16 rm / 16	22,9	643,0	1050,0	6
32265	3 x 25 rm / 16	28,0	902,0	1550,0	4
32274	3 x 25 rm / 25	28,0	1003,0	1600,0	4
32266	3 x 35 sm / 16	28,5	1190,0	1750,0	2
32275	3 x 35 sm / 35	28,5	1402,0	1850,0	2
32267	3 x 50 sm / 25	31,5	1723,0	2250,0	1
32276	3 x 50 sm / 50	31,5	2000,0	2450,0	1
32268	3 x 70 sm / 35	35,5	2410,0	2950,0	2/0
32277	3 x 70 sm / 70	36,5	2796,0	3350,0	2/0
32269	3 x 95 sm / 50	40,5	3296,0	4100,0	3/0
32278	3 x 95 sm / 95	40,5	3791,0	4550,0	3/0
32270	3 x 120 sm / 70	43,5	4236,0	5050,0	4/0
32279	3 x 120 sm / 120	44,5	4786,0	5550,0	4/0
32271	3 x 150 sm / 70	47,5	5100,0	6000,0	300 kcmil
32280	3 x 150 sm / 150	48,5	5970,0	6900,0	300 kcmil
32272	3 x 185 sm / 95	50,0	6383,0	7550,0	350 kcmil
32281	3 x 185 sm / 185	51,0	7363,0	8500,0	350 kcmil
32273	3 x 240 sm / 120	57,0	8242,0	9950,0	500 kcmil
72343	3 x 300 sm / 150	61,0	10360,0	11768,0	600 kcmil
32282	4 x 10 re / 10	22,0	504,0	890,0	8
32283	4 x 16 re / 16	25,0	796,0	1250,0	6
32284	4 x 25 rm / 16	30,5	1142,0	1800,0	4
32285	4 x 35 sm / 16	31,5	1526,0	2050,0	2
32286	4 x 50 sm / 25	35,5	2203,0	2700,0	1
32287	4 x 70 sm / 35	39,5	3082,0	3750,0	2/0
32289	4 x 120 sm / 70	49,5	5388,0	6350,0	4/0
32288	4 x 95 sm / 50	43,5	4208,0	5000,0	3/0
32290	4 x 150 sm / 70	51,0	6540,0	7650,0	300 kcmil
32291	4 x 185 sm / 95	56,0	8159,0	9350,0	350 kcmil
32292	4 x 240 sm / 120	62,5	10546,0	11600,0	500 kcmil
11008493	4 x 300 sm / 150	69,0	13170,0	15100,0	600 kcmil

Dimensions and specifications may be changed without prior notice. (RQ01)



### Technical data

- Power distribution cables acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- Permissible conductor **operating temperature** +70°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s)  
≤ 300 mm<sup>2</sup> +160°C  
> 300 mm<sup>2</sup> +140°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4 kV
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø
- **Caloric load values**  
see "Technical Information"

### Cable structure

- Aluminium conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of PVC compound type DIV4 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Cores concentrically stranded
- Common core sheath
- Outer sheath of PVC compound type DMV5 acc. to HD 603 S1
- Sheath colour: black

### Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### Highest permissible voltage

- Direct current systems
  - Conductor/conductor 1,8 kV
  - Conductor/earth 0,9 kV
- Alternating current systems
  - Single phase systems both outer conductors insulated 1,4 kV
  - Single phase systems one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

### Note

- re = round conductor, single wire  
rm = round conductor, multi wire  
se = sectional conductor, single wire  
sm = sectional conductor, multi wire
- J-version = with GN-YE conductor  
O-version = without GN-YE conductor
- Part no. 32182, 32183, 32199, 32258, 34047 in reference to VDE Designation (N)AYY
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

### Application

Power cables for energy supply are installed in open air, in underground, in water, in concrete, indoors, in cable ducts, power stations, for industry and distribution boards as well as in subscriber networks, where mechanical damages are not be expected.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.	O type Part no.	AWG-No.
1 x 35	re 13,0	102,0	240,0	32328	2	-	32311 2
1 x 50	re 15,0	145,0	360,0	32329	1	-	32312 1
1 x 70	rm 16,5	203,0	410,0	32390	2/0	-	32313 2/0
1 x 95	rm 19,0	276,0	570,0	32391	3/0	-	32314 3/0
1 x 120	rm 20,5	348,0	691,0	32392	4/0	-	32315 4/0
1 x 150	rm 22,5	435,0	804,0	32393	300 kcmil	-	32321 300 kcmil
1 x 185	rm 25,0	537,0	979,0	32394	350 kcmil	-	32322 350 kcmil
1 x 240	rm 26,5	696,0	1253,0	32395	500 kcmil	-	32323 500 kcmil
1 x 300	rm 30,0	870,0	1395,0	32396	600 kcmil	-	32324 600 kcmil
1 x 400	rm 34,0	1160,0	1890,0	32397	750 kcmil	-	32325 750 kcmil
1 x 500	rm 38,0	1450,0	2600,0	32398	1000 kcmil	-	32326 1000 kcmil
1 x 630	rm 39,5	1827,0	2780,0	32399	1250 kcmil	-	32327 1250 kcmil

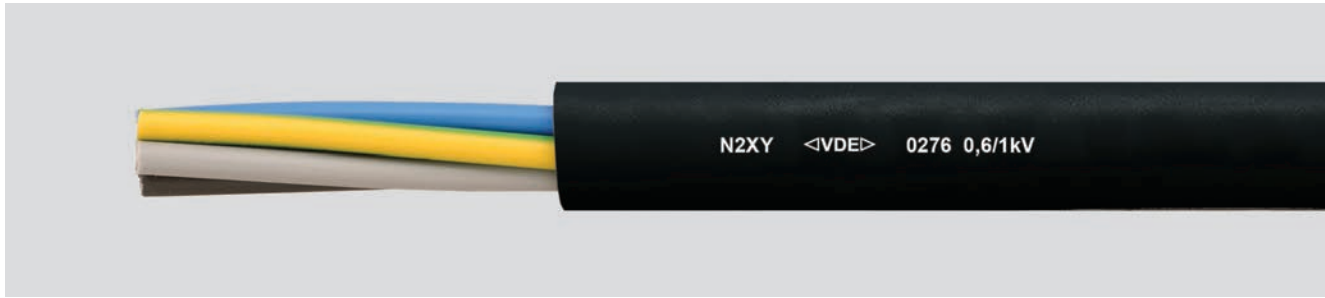
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No. cores x cross-sec. mm <sup>2</sup>		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
4 x 16	re	20,0	186,0	750,0	32301	6	-	32184	6	-
4 x 25	re	26,0	290,0	950,0	32302	4	-	32185	4	-
4 x 35	re	28,5	406,0	1120,0	32303	2	-	32186	2	-
4 x 50	se	30,0	580,0	1151,0	32304	1	-	32187	1	-
4 x 70	se	35,0	812,0	1549,0	32305	2/0	-	32188	2/0	-
4 x 95	se	39,5	1102,0	2030,0	32306	3/0	-	32189	3/0	-
4 x 95	sm	39,5	1102,0	2030,0	32177	3/0	-	32190	3/0	-
4 x 120	se	44,0	1392,0	2400,0	32307	4/0	-	32191	4/0	-
4 x 120	sm	44,0	1392,0	2400,0	32178	4/0	-	32192	4/0	-
4 x 150	se	46,0	1740,0	3030,0	32308	300 kcmil	-	32193	300 kcmil	-
4 x 150	sm	46,0	1740,0	3030,0	32179	300 kcmil	-	32194	300 kcmil	-
4 x 185	se	51,0	2146,0	3650,0	32309	350 kcmil	-	32195	350 kcmil	-
4 x 185	sm	51,0	2146,0	3650,0	32180	350 kcmil	-	32196	350 kcmil	-
4 x 240	se	56,0	2784,0	4800,0	32310	500 kcmil	-	32197	500 kcmil	-
4 x 240	sm	56,0	2784,0	4800,0	32181	500 kcmil	-	32198	500 kcmil	-
4 x 300	se	56,0	3480,0	5596,0	32182	600 kcmil	-	32199	600 kcmil	-
4 x 300	sm	64,0	3480,0	5596,0	32183	600 kcmil	-	32258	600 kcmil	-

No. cores x cross-sec. mm <sup>2</sup>		Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.	
5 x 10	re	19,5	145,0	637,0	33275	8	-	33283	8	-
5 x 16	re	21,5	232,0	832,0	33276	6	-	33284	6	-
5 x 25	re	28,0	363,0	1175,0	33277	4	-	33285	4	-
5 x 35	re	31,0	508,0	1399,0	33278	2	-	33286	2	-
5 x 50	rm	35,0	725,0	1855,0	33279	1	-	33287	1	-
5 x 70	rm	40,0	1015,0	2351,0	33280	2/0	-	33288	2/0	-
5 x 95	rm	49,6	1378,0	3071,0	33281	3/0	-	33289	3/0	-
5 x 120	rm	49,0	1740,0	3631,0	33282	4/0	-	33290	4/0	-
5 x 150	rm	57,8	2175,0	4405,0	34041	300 kcmil	-	34042	300 kcmil	-
5 x 185	rm	61,5	2683,0	5420,0	34043	350 kcmil	-	34044	350 kcmil	-
5 x 240	rm	70,0	3480,0	6860,0	34045	500 kcmil	-	34046	500 kcmil	-
5 x 300	sm	69,0	4350,0	7240,0	34047	600 kcmil	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RQ01)





## Technical data

- Power distribution cables acc. to DIN VDE 0276-603 / HD 603 S1 / IEC 60502
- **Temperature range** flexing -5°C to +50°C fixed installation -40°C to +70°C
- Permissible **operating temperature** at conductor +90°C
- Permissible **short circuit temperature** (short circuit duration max. 5 s) +250°C
- **Nominal voltage** U<sub>0</sub>/U 0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** single core 15x outer Ø multi core 12x outer Ø

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type DIX3 acc. to HD 603 S1
- Core identification acc. to DIN VDE 0293-308 / 0276-603
- Cores concentrically stranded
- Outer sheath of PVC compound type DMV6 acc. to HD 603 S1
- Sheath colour: black

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Highest permissible voltage

- Direct current systems
  - Conductor/conductor 1,8 kV
  - Conductor/earth 0,9 kV
- Alternating current systems
  - Single phase systems both outer conductors insulated 1,4 kV
  - Single phase systems one outer conductor earthed 0,7 kV
- Three phase systems 1,2 kV

## Note

- re = round conductor, single wire
- rm = round conductor, multi wire
- sm = sectional conductor, multi wire
- J-version = with GN-YE conductor
- O-version = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Power distribution cables for use in underground, in water, outdoors, in concrete, indoors, in cable ducts, for power stations, industrial applications and switching systems, as well as in local networks if no mechanical damage is expected. Respecting the permissible operating temperature at the conductor of +90°C permits a higher current carrying capacity than PVC insulated power distribution cables.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

No. cores x cross-sec. mm <sup>2</sup>		Outer Ø app. mm	Cu factor per km	Weight app. kg / km	J type Part no.	AWG-No.		O type Part no.	AWG-No.
1 x 16	re	11,5	154,0	242,0	32850	6	-	32862	6
1 x 25	rm	12,5	240,0	362,0	32851	4	-	32863	4
1 x 35	rm	13,5	336,0	470,0	32852	2	-	32864	2
1 x 50	rm	15,5	480,0	620,0	32853	1	-	32865	1
1 x 70	rm	17,0	672,0	805,0	32854	2/0	-	32866	2/0
1 x 95	rm	19,0	912,0	1108,0	32855	3/0	-	32867	3/0
1 x 120	rm	20,5	1152,0	1360,0	32856	4/0	-	32868	4/0
1 x 150	rm	23,0	1440,0	1670,0	32857	300 kcmil	-	32869	300 kcmil
1 x 185	rm	25,5	1776,0	2050,0	32858	350 kcmil	-	32870	350 kcmil
1 x 240	rm	28,5	2304,0	2635,0	32859	500 kcmil	-	32871	500 kcmil
1 x 300	rm	30,0	2880,0	3200,0	32860	600 kcmil	-	32872	600 kcmil
1 x 400	rm	34,0	3840,0	4150,0	32861	750 kcmil	-	32873	750 kcmil
4 x 16	rm	21,5	614,0	1042,0	32874	6	-	32884	6
4 x 25	rm	28,0	960,0	1640,0	32875	4	-	32885	4
4 x 35	rm	27,5	1344,0	1760,0	32876	2	-	32886	2
4 x 50	sm	30,0	1920,0	2350,0	32877	1	-	32887	1
4 x 70	sm	34,0	2688,0	3100,0	32878	2/0	-	32888	2/0
4 x 95	sm	39,0	3648,0	4250,0	32879	3/0	-	32889	3/0
4 x 120	sm	42,5	4608,0	5300,0	32880	4/0	-	32890	4/0
4 x 150	sm	47,5	5760,0	6400,0	32881	300 kcmil	-	32891	300 kcmil
4 x 185	sm	52,0	7104,0	8500,0	32882	350 kcmil	-	32892	350 kcmil
4 x 240	sm	58,0	9216,0	11000,0	32883	500 kcmil	-	32893	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ02)

# Petrol Station Cables

(N)YYÖ-J 0,6/1 kV



## Technical data

- Power and data transmission cable adapted to DIN VDE 0271
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- Permissible **operating temperature** at conductor +70°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- Max. permissible **tensile stress** with cable grip at conductor 50 N/mm<sup>2</sup>
- **Minimum bending radius** 12x cable Ø

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.1, single-wire, BS 6360 cl.1, IEC 60228 cl.1
- Core insulation of PVC
- Core identification to DIN VDE 0293-308
- Concentric lay-up of cores
- Outer sheath of PVC
- Sheath colour: black <sup>1)</sup>

## Properties

### Tests

- Oil and fuel-resistant acc. to DIN ISO 6722
- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- DIN VDE 0298 part 1 it shall be observed.

### Note

- <sup>1)</sup> Version with blue outer sheath on request.
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

Energy and data transmission cables for outdoor use, in the soil, water and concrete, where mechanical damage is excluded. For installations in applications such as gas stations and refineries, where resistance to oils and fuels is required.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
32592	2 x 1,5	11,0	29,0	180,0	16
32593	3 x 1,5	11,5	43,0	225,0	16
32594	4 x 1,5	12,0	58,0	260,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
32595	5 x 1,5	13,0	72,0	280,0	16
32596	7 x 1,5	15,5	101,0	370,0	16

Dimensions and specifications may be changed without prior notice. (RQ01)

# HELUPOWER® 1000 RV-K

direct burial, XLPE core insulation / 90°C



HELUKABEL® HELUPOWER® 1000 RV-K 0,6/1 kV CE

## TECHNICAL DATA

PVC connection cable acc. to UNE 21123-2; articles with 3+1/2 conductors: in alignment with UNE 21123-2

**Temperature range** fixed -15°C to +90°C

**Permissible operating temperature of the conductor** +90°C

**Short circuit temperature at the conductor** +250°C (Short circuit temperature max. 5 s)

**Nominal voltage** AC U<sub>0</sub>/U 600/1000 V

**Max. permissible operating voltage**  
 alternating current (AC) conductor/earth 700 V  
 three-phase alternating current (AC) conductor/conductor 1200 V  
 direct current (DC) conductor/earth 900 V  
 direct current (DC) conductor/conductor 1800 V

**Test voltage core/core** 3500 V

**Minimum bending radius**  
 <25 mm: 4x Outer- $\phi$   
 25-50 mm: 5x Outer- $\phi$   
 >50 mm: 6x Outer- $\phi$

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE acc. to UNE-HD 603-1 (compound type DIX 3)
- Core identification: see table
- G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to UNE HD 603-1 (compound type DMV 18)

- Sheath colour: black
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation
- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN VDE 0276-605 / HD 605 S2

## ■ APPLICATION

Suitable for use in dry, moist and wet rooms as well as outdoors. Also suitable for direct burial, laying in tubes and underground installation areas. Typical application areas range from general production machinery, to machine tool applications, conveyor belt systems, air-conditioning units, steel plants installations and factory automation. Ideal as power or control cable especially if increased temperature and/or voltage is required. UV resistant due to its special PVC outer sheath compound and therefore also ideal as power connection cable for outdoor devices and machinery. Alternatively also for use as power connection cable in the stage and lighting industry or renewable energy sector.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### Core identification acc. to DIN VDE 0293-308, black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer- $\phi$ min - max mm	Cu factor per km	Weight kg/km, approx.
11003798	1 x 1.5	16	4.6 - 5.5	14.4	50.0
11003822	1 x 2.5	14	5.1 - 6.0	24.0	65.0
11003846	1 x 4	12	5.7 - 6.5	38.4	80.0
11003854	1 x 6	10	6.2 - 7.1	57.6	105.0
11003862	1 x 10	8	7.2 - 8.0	96.0	155.0
11003870	1 x 16	6	8.1 - 8.9	153.6	220.0
11003878	1 x 25	4	10.0 - 10.6	240.0	320.0
11003886	1 x 35	2	11.1 - 11.8	336.0	420.0
11003894	1 x 50	1	12.9 - 13.7	480.0	560.0
11003902	1 x 70	2/0	14.3 - 15.7	672.0	785.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer- $\phi$ min - max mm	Cu factor per km	Weight kg/km, approx.
11003910	1 x 95	3/0	16.2 - 17.3	912.0	1050.0
11003918	1 x 120	4/0	18.1 - 19.2	1152.0	1305.0
11003924	1 x 150	300 kcmil	19.9 - 21.4	1440.0	1610.0
11003930	1 x 185	350 kcmil	22.3 - 23.4	1776.0	1985.0
11003936	1 x 240	500 kcmil	25.2 - 26.8	2304.0	2610.0
11003942	1 x 300	600 kcmil	27.6 - 30.4	2880.0	3225.0
11003948	1 x 400	750 kcmil	32.0 - 34.0	3840.0	3500.0
11003949	1 x 500	1000 kcmil	38.4 - 40.0	4800.0	5060.0
11003950	1 x 630	1250 kcmil	43.6 - 45.2	6048.0	6760.0

# HELUPOWER® 1000 RV-K

direct burial, XLPE core insulation / 90°C



## Core identification acc. to DIN VDE 0293-308, colour coded

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11003799	2 x 1.5	16	8.3 - 8.9	28.8	145.0
11003823	2 x 2.5	14	9.3 - 9.9	48.0	195.0
11003847	2 x 4	12	10.4 - 11.0	76.8	235.0
11003855	2 x 6	10	11.4 - 12.2	115.2	300.0
11003863	2 x 10	8	13.7 - 14.8	192.0	460.0
11003871	2 x 16	6	15.9 - 17.1	307.2	635.0
11003879	2 x 25	4	19.1 - 20.9	480.0	930.0
11003887	2 x 35	2	21.4 - 23.1	672.0	1220.0
11003895	2 x 50	1	25.2 - 27.4	960.0	1665.0
11003903	2 x 70	2/0	29.0 - 30.4	1344.0	2320.0
11003911	2 x 95	3/0	32.0 - 34.3	1824.0	3025.0
11003919	2 x 120	4/0	36.5 - 38.6	2304.0	3845.0
11003925	2 x 150	300 kcmil	40.5 - 42.5	2880.0	4720.0
11003931	2 x 185	350 kcmil	45.2 - 47.8	3552.0	5910.0
11003937	2 x 240	500 kcmil	49.9 - 55.4	4608.0	7665.0
11003800	3 G 1.5	16	8.8 - 9.3	43.2	165.0
11003824	3 G 2.5	14	9.8 - 10.5	72.0	210.0
11003848	3 G 4	12	11.0 - 11.6	115.2	275.0
11003856	3 G 6	10	12.1 - 12.9	172.8	355.0
11003864	3 G 10	8	14.5 - 15.7	288.0	560.0
11003872	3 G 16	6	16.8 - 18.1	460.8	780.0
11003880	3 G 25	4	20.2 - 22.2	720.0	1160.0
11003888	3 G 35	2	22.8 - 24.8	1008.0	1535.0
11003896	3 G 50	1	26.8 - 29.2	1440.0	2090.0
11003904	3 G 70	2/0	31.0 - 33.0	2016.0	2945.0
11003912	3 G 95	3/0	34.6 - 36.8	2736.0	3925.0
11003920	3 G 120	4/0	39.0 - 41.3	3456.0	4905.0
11003926	3 G 150	300 kcmil	43.3 - 45.8	4320.0	6055.0
11003932	3 G 185	350 kcmil	47.3 - 51.4	5328.0	7570.0
11003938	3 G 240	500 kcmil	53.5 - 59.3	6912.0	9865.0
11003944	3 G 300	600 kcmil	58.5 - 67.5	8640.0	12120.0
11003801	3 x 1.5	16	8.8 - 9.3	43.2	165.0
11003825	3 x 2.5	14	9.8 - 10.5	72.0	210.0
11003849	3 x 4	12	11.0 - 11.6	115.2	275.0
11003857	3 x 6	10	12.1 - 12.9	172.8	355.0
11003865	3 x 10	8	14.5 - 15.7	288.0	560.0
11003873	3 x 16	6	16.8 - 18.1	460.8	780.0
11003881	3 x 25	4	20.2 - 22.2	720.0	1160.0
11003889	3 x 35	2	22.8 - 24.8	1008.0	1535.0
11003897	3 x 50	1	26.8 - 29.2	1440.0	2090.0
11003905	3 x 70	2/0	31.0 - 33.0	2016.0	2945.0
11003913	3 x 95	3/0	34.6 - 36.8	2736.0	3925.0
11003921	3 x 120	4/0	39.0 - 41.3	3456.0	4905.0
11003927	3 x 150	300 kcmil	43.3 - 45.8	4320.0	6055.0
11003933	3 x 185	350 kcmil	47.3 - 51.4	5328.0	7570.0
11003939	3 x 240	500 kcmil	53.5 - 59.3	6912.0	9865.0
11003945	3 x 300	600 kcmil	58.5 - 67.5	8640.0	12120.0
11003802	4 G 1.5	16	9.5 - 10.2	57.6	190.0
11003826	4 G 2.5	14	10.7 - 11.3	96.0	250.0
11003850	4 G 4	12	12.0 - 12.7	153.6	325.0
11003858	4 G 6	10	13.2 - 14.0	230.4	445.0

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11003866	4 G 10	8	15.9 - 17.1	384.0	685.0
11003874	4 G 16	6	18.5 - 20.0	614.4	970.0
11003882	4 G 25	4	22.2 - 24.3	960.0	1450.0
11003890	4 G 35	2	25.5 - 27.2	1344.0	1960.0
11003898	4 G 50	1	29.3 - 32.7	1920.0	2640.0
11003906	4 G 70	2/0	34.5 - 36.5	2688.0	3790.0
11003914	4 G 95	3/0	38.6 - 40.7	3648.0	4985.0
11003922	4 G 120	4/0	43.4 - 46.3	4608.0	6255.0
11003928	4 G 150	300 kcmil	48.1 - 51.0	5760.0	7775.0
11003934	4 G 185	350 kcmil	53.0 - 57.8	7104.0	9640.0
11003940	4 G 240	500 kcmil	59.7 - 66.3	9216.0	12585.0
11003946	4 G 300	600 kcmil	65.4 - 69.4	11520.0	15475.0
11003803	4 x 1.5	16	9.5 - 10.2	57.6	190.0
11003827	4 x 2.5	14	10.7 - 11.3	96.0	250.0
11003851	4 x 4	12	12.0 - 12.7	153.6	325.0
11003859	4 x 6	10	13.2 - 14.0	230.4	445.0
11003867	4 x 10	8	15.9 - 17.1	384.0	685.0
11003875	4 x 16	6	18.5 - 20.0	614.4	970.0
11003883	4 x 25	4	22.2 - 24.3	960.0	1450.0
11003891	4 x 35	2	25.5 - 27.2	1344.0	1960.0
11003899	4 x 50	1	29.3 - 32.7	1920.0	2640.0
11003907	4 x 70	2/0	34.5 - 36.5	2688.0	3790.0
11003915	4 x 95	3/0	38.6 - 40.7	3648.0	4985.0
11003923	4 x 120	4/0	43.4 - 46.3	4608.0	6255.0
11003929	4 x 150	300 kcmil	48.1 - 51.0	5760.0	7775.0
11003935	4 x 185	350 kcmil	53.0 - 57.8	7104.0	9640.0
11003941	4 x 240	500 kcmil	59.7 - 66.3	9216.0	12585.0
11003947	4 x 300	600 kcmil	65.4 - 69.4	11520.0	15475.0
11003804	5 G 1.5	16	10.3 - 11.0	72.0	215.0
11003828	5 G 2.5	14	11.6 - 12.3	120.0	285.0
11003852	5 G 4	12	13.1 - 13.8	192.0	390.0
11003860	5 G 6	10	14.6 - 15.4	288.0	515.0
11003868	5 G 10	8	17.4 - 18.7	480.0	810.0
11003876	5 G 16	6	20.2 - 22.0	768.0	1150.0
11003884	5 G 25	4	19.9 - 26.9	1200.0	1760.0
11003892	5 G 35	2	28.2 - 30.1	1680.0	2345.0
11003900	5 G 50	1	32.6 - 36.2	2400.0	3175.0
11003908	5 G 70	2/0	39.0 - 41.0	3360.0	4560.0
11003916	5 G 95	3/0	43.1 - 45.1	4560.0	6035.0
11003805	5 x 1.5	16	10.3 - 11.0	72.0	215.0
11003829	5 x 2.5	14	11.6 - 12.3	120.0	285.0
11003853	5 x 4	12	13.1 - 13.8	192.0	390.0
11003861	5 x 6	10	14.6 - 15.4	288.0	515.0
11003869	5 x 10	8	17.4 - 18.7	480.0	810.0
11003877	5 x 16	6	20.2 - 22.0	768.0	1150.0
11003885	5 x 25	4	19.9 - 26.9	1200.0	1760.0
11003893	5 x 35	2	28.2 - 30.1	1680.0	2345.0
11003901	5 x 50	1	32.6 - 36.2	2400.0	3175.0
11003909	5 x 70	2/0	39.0 - 41.0	3360.0	4560.0
11003917	5 x 95	3/0	43.1 - 45.1	4560.0	6035.0

## Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11003806	7 G 1.5	16	11.9 - 12.5	100.8	300.0
11003830	7 G 2.5	14	13.2 - 13.8	168.0	390.0
11003807	7 x 1.5	16	11.9 - 12.5	100.8	300.0
11003831	7 x 2.5	14	13.2 - 13.8	168.0	390.0
11003808	10 G 1.5	16	13.7 - 14.3	144.0	390.0
11003832	10 G 2.5	14	15.2 - 16.0	240.0	520.0
11003809	10 x 1.5	16	13.7 - 14.3	144.0	390.0

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11003833	10 x 2.5	14	15.2 - 16.0	240.0	520.0
11003810	12 G 1.5	16	14.6 - 15.4	172.8	440.0
11003834	12 G 2.5	14	16.3 - 17.1	288.0	290.0
11003811	12 x 1.5	16	14.6 - 15.4	172.8	440.0
11003835	12 x 2.5	14	16.3 - 17.1	288.0	290.0
11003812	16 G 1.5	16	16.4 - 17.2	230.4	550.0
11003836	16 G 2.5	14	18.4 - 19.2	384.0	750.0

# HELUPOWER® 1000 RV-K

direct burial, XLPE core insulation / 90°C



## Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11003813	16 x 1.5	16	16.4 - 17.2	230.4	550.0
11003837	16 x 2.5	14	18.4 - 19.2	384.0	750.0
11003816	19 G 1.5	16	17.3 - 18.1	273.6	620.0
11003840	19 G 2.5	14	19.5 - 20.3	456.0	850.0
11003817	19 x 1.5	16	17.3 - 18.1	273.6	620.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11003841	19 x 2.5	14	19.5 - 20.3	456.0	850.0
11003818	24 G 1.5	16	19.2 - 20.0	345.6	760.0
11003842	24 G 2.5	14	21.5 - 22.5	576.0	1040.0
11003819	24 x 1.5	16	19.2 - 20.0	345.6	760.0
11003843	24 x 2.5	14	21.5 - 22.5	576.0	1040.0

## Core identification: green-yellow (1/2), brown, black, grey

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11007951	3 x 35 + 1 G 16	2	24.0 - 25.0	1162.0	1425.0
11007952	3 x 50 + 1 G 25	1	28.0 - 29.0	1680.0	2045.0
11007953	3 x 70 + 1 G 35	2/0	32.3 - 34.3	2352.0	2832.0
11007954	3 x 95 + 1 G 50	3/0	36.6 - 38.6	3216.0	3628.0
11007955	3 x 120 + 1 G 70	4/0	41.6 - 43.6	4128.0	4706.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11007956	3 x 150 + 1 G 70	300 kcmil	45.8 - 47.8	4992.0	5747.0
11007957	3 x 185 + 1 G 95	350 kcmil	49.5 - 53.5	6240.0	7174.0
11007958	3 x 240 + 1 G 120	500 kcmil	55.8 - 59.8	8064.0	9300.0
11007959	3 x 300 + 1 G 150	600 kcmil	61.4 - 65.4	10080.0	11945.0

# HELUPOWER® 1100-RZ1-K LSOH GREEN

flexible, direct burial, low smoke development, flame-retardant



HELUKABEL® HELUPOWER® 1100-RZ1-K (AS) LSOH GREEN CE

## TECHNICAL DATA

Connection cable acc. to UNE 21123-4

<b>Temperature range</b>	flexible 0°C to +90°C fixed -15°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Short circuit temperature at the conductor</b>	+250°C (Short circuit temperature max. 5 s)
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Max. permissible operating voltage</b>	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
<b>Test voltage core/core</b>	3500 V
<b>Minimum bending radius</b>	<25 mm: 4x Outer-ø 25-50 mm: 5x Outer-ø >50 mm: 6x Outer-ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: XLPE acc. to UNE-HD 603-1 (compound type DIX 3)
- Core identification acc. to DIN VDE 0293-308,  
1 core(s): black  
2 - 5 core(s): colour coded
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Cores stranded with optimal lay lengths
- Outer sheath: Polyolefin acc. to UNE 21123-4 (compound type DMZ-E)

- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation
- for outdoor use
- direct burial
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- reduced fire propagation, reduced release of corrosive and toxic gases

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to UNE 211605
- CPR-class: C<sub>ca</sub> s1b d1 a1

## ■ APPLICATION

Suitable for fixed power supply installations in public and commercial buildings or in power distribution networks where a high degree of safety is required. Suitable for indoor and outdoor use, for laying in tubes and pipes and suitable for direct burial.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008092	2 x 1.5	16	9.0 - 10.4	28.8	105.0
11008093	3 G 1.5	16	9.5 - 10.8	43.2	120.0
11008094	3 x 1.5	16	9.5 - 10.8	43.2	120.0
11008095	4 G 1.5	16	10.2 - 11.6	57.6	142.0
11008096	4 x 1.5	16	10.2 - 11.6	57.6	142.0
11008097	5 G 1.5	16	11.0 - 12.4	72.0	165.0
11008098	5 x 1.5	16	11.0 - 12.4	72.0	165.0
11008118	2 x 2.5	14	9.8 - 11.3	48.0	137.0
11008119	3 G 2.5	14	10.3 - 11.8	72.0	161.0
11008120	3 x 2.5	14	10.3 - 11.8	72.0	161.0
11008121	4 G 2.5	14	11.1 - 12.7	96.0	195.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008122	4 x 2.5	14	11.1 - 12.7	96.0	195.0
11008123	5 G 2.5	14	12.1 - 13.6	120.0	225.0
11008124	5 x 2.5	14	12.1 - 13.6	120.0	225.0
11008144	2 x 4	12	11.0 - 12.4	76.8	180.0
11008145	3 G 4	12	11.6 - 13.0	115.2	215.0
11008146	3 x 4	12	11.6 - 13.0	115.2	215.0
11008147	4 G 4	12	12.6 - 14.0	153.6	260.0
11008148	4 x 4	12	12.6 - 14.0	153.6	260.0
11008149	5 G 4	12	13.7 - 15.1	192.0	315.0
11008150	5 x 4	12	13.7 - 15.1	192.0	315.0
11008152	2 x 6	10	12.0 - 13.6	115.2	230.0

# HELUPOWER® 1100-RZ1-K LSOH GREEN

flexible, direct burial, low smoke development, flame-retardant

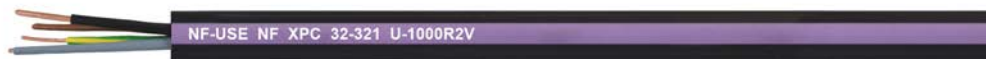


Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008153	3 G 6	10	12.6 - 14.3	172.8	280.0
11008154	3 x 6	10	12.6 - 14.3	172.8	280.0
11008155	4 G 6	10	13.8 - 15.5	230.4	350.0
11008156	4 x 6	10	13.8 - 15.5	230.4	350.0
11008157	5 G 6	10	15.1 - 16.8	288.0	420.0
11008158	5 x 6	10	15.1 - 16.8	288.0	420.0
11008159	1 x 10	8	8.1 - 9.4	96.0	140.0
11008160	2 x 10	8	14.2 - 15.7	192.0	350.0
11008161	3 G 10	8	14.9 - 16.5	288.0	435.0
11008162	3 x 10	8	14.9 - 16.5	288.0	435.0
11008163	4 G 10	8	16.3 - 17.9	384.0	615.0
11008164	4 x 10	8	16.3 - 17.9	384.0	615.0
11008165	5 G 10	8	17.8 - 19.5	480.0	725.0
11008166	5 x 10	8	17.8 - 19.5	480.0	725.0
11008167	1 x 16	6	9.1 - 10.4	153.6	195.0
11008168	2 x 16	6	16.2 - 17.5	307.2	575.0
11008169	3 G 16	6	17.2 - 18.4	460.8	700.0
11008170	3 x 16	6	17.2 - 18.4	460.8	700.0
11008171	4 G 16	6	19.0 - 20.1	614.4	880.0
11008172	4 x 16	6	19.0 - 20.1	614.4	880.0
11008173	5 G 16	6	20.8 - 22.0	768.0	1060.0
11008174	5 x 16	6	20.8 - 22.0	768.0	1060.0
11008175	1 x 25	4	10.9 - 12.0	240.0	285.0
11008176	2 x 25	4	19.7 - 20.8	480.0	880.0
11008177	3 G 25	4	20.9 - 22.0	720.0	1075.0
11008178	3 x 25	4	20.9 - 22.0	720.0	1075.0
11008179	4 G 25	4	23.0 - 24.0	960.0	1315.0
11008180	4 x 25	4	23.0 - 24.0	960.0	1315.0
11008181	5 G 25	4	25.3 - 26.6	1200.0	1590.0
11008182	5 x 25	4	25.3 - 26.6	1200.0	1590.0
11008183	1 x 35	2	12.3 - 13.2	336.0	380.0
11008184	2 x 35	2	22.2 - 23.5	672.0	1130.0
11008185	3 G 35	2	23.6 - 25.2	1008.0	1405.0
11008186	3 x 35	2	23.6 - 25.2	1008.0	1405.0
11008187	4 G 35	2	25.9 - 27.7	1344.0	1745.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-ø min - max mm	Cu factor per km	Weight kg/km, approx.
11008188	4 x 35	2	25.9 - 27.7	1344.0	1745.0
11008189	5 G 35	2	28.6 - 30.6	1680.0	2100.0
11008190	5 x 35	2	28.6 - 30.6	1680.0	2100.0
11008191	1 x 50	1	13.8 - 14.9	480.0	520.0
11008192	2 x 50	1	25.6 - 26.8	960.0	1565.0
11008193	3 G 50	1	27.2 - 28.5	1440.0	1950.0
11008194	3 x 50	1	27.2 - 28.5	1440.0	1950.0
11008195	4 G 50	1	29.7 - 31.9	1920.0	2455.0
11008196	4 x 50	1	29.7 - 31.9	1920.0	2455.0
11008197	5 G 50	1	33.0 - 35.4	2400.0	2970.0
11008198	5 x 50	1	33.0 - 35.4	2400.0	2970.0
11008199	1 x 70	2/0	15.5 - 17.1	672.0	715.0
11008201	3 G 70	2/0	31.4 - 33.4	2016.0	2675.0
11008202	3 x 70	2/0	31.4 - 33.4	2016.0	2675.0
11008203	4 G 70	2/0	35.2 - 37.5	2688.0	3340.0
11008204	4 x 70	2/0	35.2 - 37.5	2688.0	3340.0
11008207	1 x 95	3/0	17.1 - 18.7	912.0	925.0
11008209	3 G 95	3/0	35.0 - 37.1	2736.0	3390.0
11008210	3 x 95	3/0	35.0 - 37.1	2736.0	3390.0
11008211	4 G 95	3/0	38.8 - 41.1	3648.0	4315.0
11008212	4 x 95	3/0	38.8 - 41.1	3648.0	4315.0
11008215	1 x 120	4/0	19.3 - 20.7	1152.0	1160.0
11008219	4 G 120	4/0	43.6 - 46.5	4608.0	5465.0
11008220	4 x 120	4/0	43.6 - 46.5	4608.0	5465.0
11008221	1 x 150	300 kcmil	21.1 - 22.8	1440.0	1460.0
11008225	4 G 150	300 kcmil	48.1 - 51.0	5760.0	6830.0
11008226	4 x 150	300 kcmil	48.1 - 51.0	5760.0	6830.0
11008227	1 x 185	350 kcmil	23.0 - 24.8	1776.0	1780.0
11008231	4 G 185	350 kcmil	53.0 - 57.0	7104.0	8575.0
11008232	4 x 185	350 kcmil	53.0 - 57.0	7104.0	8575.0
11008233	1 x 240	500 kcmil	26.3 - 27.6	2304.0	2300.0
11008237	4 G 240	500 kcmil	59.7 - 65.1	9216.0	11085.0
11008238	4 x 240	500 kcmil	59.7 - 65.1	9216.0	11085.0
11008239	1 x 300	600 kcmil	29.0 - 31.0	2880.0	2910.0

# U1000 R2V

rigid industrial power cable, low voltage 0,6/1 kV



## Technical data

- XLPE/PVC power cable acc. to NF XP C32-321 / IEC60502-1 / NF EN 60332-1-2 Cat. C2 / NF C 15-100
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -25°C to +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000V
- **Minimum bending radius**  
fixed 6 x cable Ø

## Cable structure

- Bare copper conductor to DIN VDE 0295, BS 6360, IEC 60228  
cross section ≤ 4mm<sup>2</sup> : class 1  
cross section > 4mm<sup>2</sup> : class 2
- Core insulation XLPE
- Core colours  
single core : BK  
two cores : BL/BR  
three cores: BL/BR/BK (1,5 & 2,5 qmm)  
- BL/BR/GR or BL/BR & GN/YE (4 qmm)  
five cores : BL/BR/BL/GR & GN/YE
- Cores stranded in concentric layers
- PVC sheath / black colour
- With meter marking
- From 2 to 5 cores with coloured stripe qmm:  
1,5 PK/2,5 YE/4 VT/6 BL/10 BR/16 GR

## Properties

- UV resistant
- Good resistance against chemical agents
- Permissible short circuit temperature (max. 5 seconds) +250°C

## Tests

- Flame retardant according to DIN 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Note

- G = with GN/YE conductor  
x = without GN/YE conductor

## Application

Power distribution cables for connections in industrial facilities, for inside and outside use in buildings or high risers. Well suited for high and low operating temperatures. Good resistance to solar radiation (U.V.) and atmospheric chemical agents. Suitable for exposed installation on walls or metal structures, in underground ducts or pipes with good mechanical protection. Submersion in water for more than two months is not recommended. When mechanically protected the cables can also be installed in explosion prone areas - in this case the permitted current load has to be reduced by 15%. **CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Standard length in metres
19000700	1 x 16	10,5	154,0	206	-
19000701	1 x 25	12,5	240,0	315	-
19000702	1 x 35	13,5	336,0	400	-
19000703	1 x 50	15,0	480,0	530	-
19000704	1 x 70	17,0	672,0	725	-
19000705	1 x 95	19,0	912,0	985	-
19000706	1 x 120	21,0	1152,0	1260	-
19000707	1 x 150	23,0	1440,0	1520	-
19000708	1 x 185	25,5	1776,0	1940	-
19000709	1 x 240	28,5	2304,0	2310	-
19000710	1 x 300	31,0	2880,0	3200	-
19000712	2 x 1,5	10,5	28,8	115	1000
19000786	2 x 1,5	10,5	28,8	115	500
19000787	2 x 1,5	10,5	28,8	115	100
19000713	2 x 2,5	11,5	48,0	145	1000
19000794	2 x 2,5	11,5	48,0	145	500
19000795	2 x 2,5	11,5	48,0	145	100
19000714	2 x 4	13,0	76,8	195	-
19000715	2 x 6	14,0	115,0	265	-
19000716	2 x 10	16,0	192,0	390	-
19000717	2 x 16	18,5	307,0	560	-
19000718	2 x 25	22,0	480,0	850	-
19000719	2 x 35	24,5	672,0	1080	-
19000720	3 G 1,5	11,0	43,0	130	1000
19000788	3 G 1,5	11,0	43,0	130	500
19000789	3 G 1,5	11,0	43,0	130	100
19007895	3 G 1,5	11,0	43,0	130	50
19000721	3 x 1,5	11,0	43,0	130	-
19000722	3 G 2,5	12,5	72,0	170	1000
19000796	3 G 2,5	12,5	72,0	170	500
19000797	3 G 2,5	12,5	72,0	170	100
19007975	3 G 2,5	12,5	72,0	170	50
19000723	3 x 2,5	12,5	72,0	170	-
19000724	3 G 4	13,5	115,0	230	-
19000725	3 G 6	15,0	173,0	325	-
19000726	3 x 6	15,0	173,0	325	-
19000727	3 G 10	17,0	288,0	485	-
19000728	3 x 10	17,0	288,0	485	-
19000729	3 G 16	19,5	461,0	705	-
19000730	3 x 16	19,5	461,0	705	-
19000731	3 G 25	23,5	720,0	1080	-
19000734	4 G 1,5	12,0	58,0	150	1000
19000790	4 G 1,5	12,0	58,0	150	500
19000791	4 G 1,5	12,0	58,0	150	100

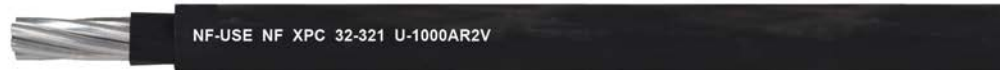
Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Standard length in metres
190007915	4 G 1,5	12,0	58,0	150	50
19000736	4 G 2,5	13,0	96,0	205	1000
19000798	4 G 2,5	13,0	96,0	205	500
19000799	4 G 2,5	13,0	96,0	205	100
19000738	4 G 4	14,5	154,0	280	-
19000739	4 x 4	14,5	154,0	280	-
19000740	4 G 6	16,0	230,0	390	-
19000741	4 x 6	16,0	230,0	390	-
19000742	4 G 10	18,5	384,0	590	-
19000743	4 x 10	18,5	384,0	590	-
19000744	4 G 16	21,0	614,0	870	-
19000745	4 x 16	21,0	614,0	870	-
19000746	4 G 25	25,5	960,0	1365	-
19000747	4 x 25	25,5	960,0	1365	-
19000748	4 G 35	28,5	1344,0	1760	-
19000749	4 x 35	28,5	1344,0	1760	-
19000750	4 G 50	32,5	1920,0	2466	-
19000751	4 x 50	32,5	1920,0	2466	-
19000752	4 G 70	37,5	2688,0	3442	-
19000753	4 x 70	37,5	2688,0	3442	-
19000757	5 G 1,5	13,0	72,0	180	1000
19000792	5 G 1,5	13,0	72,0	180	500
19000793	5 G 1,5	13,0	72,0	180	100
19007935	5 G 1,5	13,0	72,0	180	50
19000758	5 G 2,5	14,5	120,0	240	1000
19000800	5 G 2,5	14,5	120,0	240	500
19000801	5 G 2,5	14,5	120,0	240	100
19000759	5 G 4	16,0	192,0	335	-
19000760	5 G 6	17,5	288,0	475	-
19000761	5 G 10	20,0	480,0	720	-
19000762	5 G 16	23,0	768,0	1060	-
19000763	5 G 25	28,0	1200,0	1645	-
19000764	5 G 35	30,5	1680,0	2165	-
19000765	5 G 50	34,0	2300,0	2850	-
19000774	7 G 1,5	13,5	101,0	220	-
19000775	7 G 2,5	15,0	168,0	310	-
19000776	12 G 1,5	17,0	173,0	370	-
19000777	12 G 2,5	19,5	288,0	525	-
19000778	19 G 1,5	19,5	274,0	560	-
19000779	19 G 2,5	22,5	456,0	745	-
19000780	24 G 1,5	22,5	246,0	710	-
19000782	27 G 1,5	23,5	289,0	700	-
19000784	37 G 1,5	25,5	533,0	972	-

Dimensions and specifications may be changed without prior notice.



# U1000 AR2V

rigid industrial power cable, aluminium conductor, low voltage 0,6/1kV



## Technical data

- XLPE/PVC power cable acc. to NF XPC32-321 / IEC60502-1 / NF EN 60332-1-2 Cat. C2 / NF C 15-100
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -25°C to +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
fixed 8 x cable Ø

## Cable structure

- Aluminium rigid compact conductor class 2
- XLPE crosslinked polyethylene insulation
- Core colours  
single core : BK  
two cores : BL/BR  
three cores: BL/BR/BK (1,5 & 2,5 qmm)  
- BL/BR/GR or BL/BR & GN/YE (4 qmm)  
five cores : BL/BR/BL/GR & GN/YE
- Sheath PVC
- Sheath colour black
- With meter marking

## Properties

- UV resistant
- Good resistance against chemical agents
- Permissible short circuit temperature (max. 5 seconds) +250°C

## Tests

- Flame retardant according to  
DIN 0482-332-1-2 /  
DIN EN 60332-1-2 /  
IEC 60332-1-2

## Note

- G = with GN-YE earth Conductor  
x = without GN-YE conductor

## Application

Power distribution cables for connections in industrial facilities, for inside and outside use in buildings or high risers. Well suited for high and low operating temperatures. Good resistance to solar radiation (U.V.) and atmospheric chemical agents. Suitable for exposed installation on walls or metal structures, in underground ducts or pipes with good mechanical protection. Submersion in water for more than two months is not recommended. When mechanically protected the cables can also be installed in explosion prone areas - in this case the permitted current load has to be reduced by 15%.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km
19002046	1 x 25	12,5	72,5	151
19002000	1 x 35	13,5	101,5	188
19002001	1 x 50	15,0	145,0	233
19002002	1 x 70	17,0	189,0	312
19002003	1 x 95	19,0	257,0	412
19002004	1 x 120	21,0	324,0	510
19002005	1 x 150	23,0	405,0	625
19002006	1 x 185	25,5	500,0	744
19002007	1 x 240	28,5	648,0	955
19002008	1 x 300	31,0	810,0	1189

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km
19002009	1 x 400	24,5	1160,0	1533
19002027	4 x 25	25,5	290,0	710
19002028	4 x 35	28,5	378,0	890
19002029	4 x 50	32,5	540,0	1115
19002030	4 x 70	37,5	714,0	1576
19002031	4 x 95	42,5	1001,0	2039
19002049	4 G 25	25,5	290,0	710
19002036	5 G 16	23,0	232,0	577
19002047	5 G 25	28,0	362,5	850

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1000 HY-CARBO

hydrocarbon resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -20°C to +90°C  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 12 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner sheath: PVC
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to DIN VDE 482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C, 20 min.)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A, 40 min.)
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to UL 1581 sect. 1200

## Note

- Similar denomination RVFV or BS 6346
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO is a power and control cable with a reduced flame propagation and reduced emission of toxic/corrosive gases and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, = 5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001900	2 x 1,5	12,100	26,0	26,0	0,0	11,6	26,0	191
17001901	2 x 2,5	7,410	36,0	35,0	0,0	12,4	43,0	228
17001902	2 x 4	4,610	49,0	45,0	0,0	13,6	69,0	289
17001903	2 x 6	3,100	63,0	56,0	0,0	14,6	104,0	352
17001904	2 x 10	1,830	86,0	76,0	0,0	16,6	175,0	488
17001905	2 x 16	1,150	115,0	99,0	0,0	18,6	278,0	661
17001906	2 x 25	0,727	149,0	128,0	0,0	22,0	440,0	963
17001907	2 x 35	0,524	185,0	156,0	0,0	24,2	610,0	1229
17001908	2 x 50	0,387	225,0	193,0	0,0	27,2	826,0	1593

Continuation ▶

# HELUPOWER® 1000 HY-CARBO

hydrocarbon resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, = 5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001909	2 x 70	0,268	0,0	0,0	0,0	31,2	1193,0	2168
17001910	3 x 1,5	12,100	10,0	22,0	0,0	12,1	40,0	212
17001911	3 x 2,5	7,410	23,0	29,0	0,0	12,9	65,0	256
17001912	3 x 4	4,610	42,0	37,0	0,0	14,2	104,0	330
17001913	3 x 6	3,100	54,0	47,0	0,0	15,3	156,0	411
17001914	3 x 10	1,830	75,0	63,0	0,0	17,5	262,0	584
17001915	3 x 16	1,150	100,0	83,0	0,0	19,6	417,0	803
17001916	3 x 25	0,727	127,0	107,0	0,0	23,3	659,0	1187
17001917	3 x 35	0,524	158,0	131,0	0,0	25,7	915,0	1536
17001918	3 x 50	0,387	192,0	162,0	0,0	28,9	1238,0	1999
17001919	3 x 70	0,268	246,0	200,0	0,0	33,8	1790,0	2814
17001920	3 x 95	0,193	298,0	237,0	0,0	38,2	2483,0	3754
17001921	3 x 120	0,153	346,0	274,0	0,0	42,0	3114,0	4619
17001922	3 x 150	0,124	399,0	313,0	0,0	47,4	3871,0	5806
17001923	3 x 185	0,099	456,0	352,0	0,0	52,3	4835,0	7154
17001924	3 x 240	0,075	538,0	414,0	0,0	59,2	6383,0	9326
17001925	3 x 300	0,060	621,0	0,0	0,0	65,2	7971,0	11488
17001926	3 x 400	0,047	0,0	0,0	0,0	67,8	10210,0	11190
17001930	4 x 1,5	12,100	23,0	22,0	0,0	12,9	53,0	244
17001931	4 x 2,5	7,410	32,0	29,0	0,0	13,8	86,0	298
17001932	4 x 4	4,610	42,0	37,0	0,0	15,3	139,0	392
17001933	4 x 6	3,080	54,0	47,0	0,0	16,5	208,0	493
17001934	4 x 10	1,830	75,0	63,0	0,0	18,9	349,0	706
17001935	4 x 16	1,150	100,0	83,0	0,0	21,3	556,0	986
17001936	4 x 25	0,727	127,0	107,0	0,0	25,4	879,0	1465
17001937	4 x 35	0,524	158,0	131,0	0,0	28,1	1220,0	1897
17001938	4 x 50	0,387	192,0	162,0	0,0	31,9	1651,0	2497
17001939	4 x 70	0,268	246,0	200,0	0,0	37,4	2387,0	3535
17001940	4 x 95	0,193	298,0	237,0	0,0	42,2	3310,0	4719
17001941	4 x 120	0,153	346,0	274,0	0,0	47,1	4152,0	5903
17001942	4 x 150	0,124	399,0	313,0	0,0	52,4	5162,0	7306
17001943	4 x 185	0,099	456,0	352,0	0,0	58,1	6446,0	9047
17001944	4 x 240	0,075	538,0	414,0	0,0	65,7	8510,0	11796
17001945	4 x 300	0,060	621,0	0,0	0,0	72,4	10627,0	14551
17001946	4 x 400	0,047	0,0	0,0	0,0	78,6	13609,0	18514
17001997	5 x 1,5	12,100	23,0	22,0	0,0	13,7	66,0	277
17001998	5 x 2,5	7,410	32,0	29,0	0,0	14,8	108,0	347
17001999	5 x 4	4,610	42,0	37,0	0,0	16,4	173,0	457
17002056	5 x 6	3,080	54,0	47,0	0,0	17,8	259,0	584
17002057	5 x 10	1,830	75,0	63,0	0,0	20,5	437,0	846
17002058	5 x 16	1,150	100,0	83,0	0,0	23,2	694,0	1191
17002059	5 x 25	0,727	127,0	107,0	0,0	27,7	1099,0	1771
17001977	5 x 35	0,524	158,0	131,0	0,0	30,7	1524,0	2318
17001978	5 x 50	0,387	192,0	162,0	0,0	35,6	2064,0	3125
17001979	5 x 70	0,268	0,0	0,0	0,0	41,2	2983,0	4332
17002196	5 x 95	0,193	0,0	0,0	0,0	47,1	4138,0	5865
17002197	5 x 120	0,153	0,0	0,0	0,0	51,9	5190,0	7242
17002198	5 x 150	0,124	0,0	0,0	0,0	58,0	6452,0	8999
17001927	7 x 1,5	12,100	13,0	16,0	0,0	14,6	93,0	310
17001928	10 x 1,5	12,100	13,0	16,0	0,0	17,6	132,0	412
17001929	12 x 1,5	12,100	11,0	13,0	0,0	18,1	159,0	456
17001947	16 x 1,5	12,100	11,0	13,0	0,0	19,7	212,0	560
17001948	19 x 1,5	12,100	9,0	12,0	0,0	20,6	251,0	622
17001949	24 x 1,5	12,100	9,0	12,0	0,0	23,6	317,0	761
17001950	27 x 1,5	12,100	0,0	0,0	0,0	24,1	357,0	813
17001951	37 x 1,5	12,100	0,0	0,0	0,0	26,6	489,0	1032
17001952	7 x 2,5	7,410	18,0	21,0	0,0	15,8	151,0	394
17001953	10 x 2,5	7,410	18,0	21,0	0,0	19,2	216,0	531
17001954	12 x 2,5	7,410	14,0	18,0	0,0	19,7	259,0	593
17001955	16 x 2,5	7,410	14,0	18,0	0,0	21,6	345,0	742
17001956	19 x 2,5	7,410	12,0	14,0	0,0	22,6	410,0	831
17001957	24 x 2,5	7,410	12,0	14,0	0,0	26,0	518,0	1022
17001958	27 x 2,5	7,410	0,0	0,0	0,0	26,5	583,0	1100
17001959	37 x 2,5	7,410	0,0	0,0	0,0	29,4	798,0	1417

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1000 HY-CARBO SWA

Steel Wire Armoured, Hydrocarbon resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -20°C to +90°C  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 12 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner sheath: PVC
- Armour: galvanized steel wire armour with galvanized steel conterspiral tape (if necessary)  
acc. to IEC 60502-1 TAB. 9
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to DIN VDE 482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C, 20 min.)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A, 40 min.)
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to UL 1581 sect. 1200

## Note

- Denomination RVFV or BS 5467
- Galvanized steel tape armouring (GSTA) upon request
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO SWA is an armoured power and control cable with a reduced flame propagation and reduced emission of toxic/corrosive gases and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO SWA is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection. The armour provides a good mechanical protection also in heavy applications.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, = 5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17002000	2 x 1,5	12,100	26,0	26,0	8,0	13,4	26,0	356
17002001	2 x 2,5	7,410	36,0	35,0	8,8	14,2	43,0	403
17002002	2 x 4	4,610	49,0	45,0	10,0	15,4	69,0	487
17002003	2 x 6	3,100	63,0	56,0	11,0	16,4	104,0	566
17002004	2 x 10	1,830	86,0	76,0	13,0	19,7	175,0	863
17002005	2 x 16	1,150	115,0	99,0	15,0	21,7	278,0	1085
17002006	2 x 25	0,727	149,0	128,0	18,4	25,8	440,0	1627
17002007	2 x 35	0,524	185,0	156,0	20,6	28,0	610,0	1958
17002008	2 x 50	0,387	225,0	193,0	23,6	31,0	826,0	2418

Continuation ►

# HELUPOWER® 1000 HY-CARBO SWA

Steel Wire Armoured, Hydrocarbon resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, = 5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17002009	2 x 70	0,268	0,0	0,0	27,6	35,6	1193,0	3179
17002010	3 x 1,5	12,100	10,0	9,0	8,5	13,9	40,0	381
17002011	3 x 2,5	7,410	23,0	22,0	9,3	14,7	65,0	440
17002012	3 x 4	4,610	42,0	37,0	10,6	16,0	104,0	545
17002013	3 x 6	3,100	54,0	47,0	11,7	17,1	156,0	641
17002014	3 x 10	1,830	75,0	63,0	13,9	20,6	262,0	997
17002015	3 x 16	1,150	100,0	83,0	16,0	22,7	417,0	1267
17002016	3 x 25	0,727	127,0	107,0	19,7	27,1	659,0	1895
17002017	3 x 35	0,524	158,0	131,0	22,1	29,5	915,0	2325
17002018	3 x 50	0,387	192,0	162,0	25,3	32,9	1238,0	2902
17002019	3 x 70	0,268	246,0	200,0	30,0	38,8	1790,0	4160
17002020	3 x 95	0,193	298,0	237,0	34,2	43,4	2483,0	5280
17002021	3 x 120	0,153	346,0	274,0	37,8	47,2	3114,0	6304
17002022	3 x 150	0,124	399,0	313,0	42,8	53,6	3871,0	8150
17002023	3 x 185	0,099	456,0	352,0	47,5	58,5	4835,0	9743
17002024	3 x 240	0,075	538,0	414,0	54,0	65,4	6383,0	12246
17002025	3 x 300	0,060	621,0	0,0	59,6	71,4	7971,0	14735
17002026	3 x 400	0,047	0,0	0,0	66,7	78,9	10210,0	18080
17002030	4 x 1,5	12,100	23,0	22,0	9,3	14,7	53,0	428
17002031	4 x 2,5	7,410	32,0	29,0	10,2	15,6	86,0	497
17002032	4 x 4	4,610	42,0	37,0	11,7	17,1	139,0	615
17002033	4 x 6	3,080	54,0	47,0	12,9	19,6	208,0	867
17002034	4 x 10	1,830	75,0	63,0	15,3	22,0	349,0	1140
17002035	4 x 16	1,150	100,0	83,0	17,7	25,1	556,0	1617
17002036	4 x 25	0,727	127,0	107,0	21,8	29,2	879,0	2225
17002037	4 x 35	0,524	158,0	131,0	24,5	32,1	1220,0	2781
17002038	4 x 50	0,387	192,0	162,0	28,1	36,1	1651,0	3511
17002039	4 x 70	0,268	246,0	200,0	33,4	42,6	2387,0	5029
17002040	4 x 95	0,193	298,0	237,0	38,0	47,4	3310,0	6399
17002041	4 x 120	0,153	346,0	274,0	42,5	53,3	4152,0	8240
17002042	4 x 150	0,124	399,0	313,0	47,6	58,6	5162,0	9890
17002043	4 x 185	0,099	456,0	352,0	52,9	64,3	6446,0	11919
17002044	4 x 240	0,075	538,0	414,0	60,1	71,9	8510,0	15036
17002045	4 x 300	0,060	621,0	0,0	66,4	78,6	10627,0	18120
17002046	4 x 400	0,047	0,0	0,0	74,7	88,8	13610,0	23600
17001980	5 x 1,5	12,100	23,0	22,0	10,1	15,5	66,0	476
17001981	5 x 2,5	7,410	32,0	29,0	11,2	16,6	108,0	566
17001982	5 x 4	4,610	42,0	37,0	12,8	19,5	173,0	832
17001983	5 x 6	3,080	54,0	47,0	14,2	20,9	259,0	988
17001984	5 x 10	1,830	75,0	63,0	16,9	23,6	437,0	1320
17001985	5 x 16	1,150	100,0	83,0	19,6	27,0	694,0	1887
17001986	5 x 25	0,727	127,0	107,0	24,1	31,5	1099,0	2613
17001987	5 x 35	0,524	158,0	131,0	27,1	34,9	1524,0	3283
17001988	5 x 50	0,387	192,0	162,0	31,6	40,6	2064,0	4506
17001989	5 x 70	0,268	0,0	0,0	37,0	46,4	2983,0	5985
17001990	5 x 95	0,193	0,0	0,0	42,5	53,1	4138,0	8178
17001991	5 x 120	0,153	0,0	0,0	47,1	58,1	5190,0	9824
17001992	5 x 150	0,124	0,0	0,0	52,8	64,2	6452,0	11870
17001993	5 x 185	0,099	0,0	0,0	59,1	70,9	8058,0	14419
17001994	5 x 240	0,075	0,0	0,0	66,7	78,9	10638,0	18101
17001995	5 x 300	0,060	0,0	0,0	74,1	88,0	13284,0	23029
17001996	5 x 400	0,047	0,0	0,0	83,0	97,1	17011,0	28270
17002027	7 x 1,5	12,100	13,0	16,0	11,0	16,4	93,0	523
17002028	10 x 1,5	12,100	13,0	16,0	14,0	20,7	132,0	816
17002029	12 x 1,5	12,100	11,0	13,0	14,5	21,2	159,0	870
17002324	14 x 1,5	12,100	11,0	13,0	15,3	22,0	185,0	950
17002325	16 x 1,5	12,100	11,0	13,0	16,1	22,8	212,0	1023
17002047	19 x 1,5	12,100	9,0	12,0	17,0	23,7	251,0	1096
17002326	24 x 1,5	12,100	11,0	13,0	20,0	27,4	317,0	1483
17002048	27 x 1,5	12,100	0,0	0,0	20,5	27,9	357,0	1551
17002049	37 x 1,5	12,100	0,0	0,0	23,0	30,4	489,0	1852
17002050	7 x 2,5	7,410	18,0	21,0	12,2	18,3	151,0	726
17002051	10 x 2,5	7,410	18,0	21,0	15,6	22,3	216,0	975
1702052	12 x 2,5	7,410	14,0	18,0	16,1	22,8	259,0	1048
17002053	19 x 2,5	7,410	12,0	14,0	19,0	26,4	410,0	1510
17002054	27 x 2,5	7,410	0,0	0,0	22,9	30,3	583,0	1920
17002055	37 x 2,5	7,410	0,0	0,0	25,8	33,4	798,0	2335
17002249	7 x 4	7,410	0,0	0,0	14,0	20,7	242,0	941

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1000 HY-CARBO SWA EMC

Shielded & Steel Wire Armoured, Hydrocarbon resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -20°C to +90°C  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 12 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner covering: PVC
- Screen: bare copper overlapping tape (coverage 150 %)
- Inner sheath: PVC
- Armour: galvanized steel wire armour with galvanized steel conterspiral tape (if necessary)  
acc. to IEC 60502-1 TAB. 9
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to  
DIN VDE 482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24  
(Cat. C, 20 min.)
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22  
(Cat. A, 40 min.)
- Low amount of halogen acid gas acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to  
UL 1581 sect. 1200

## Note

- Denomination RVFV or BS 5467
- Galvanized steel tape armouring (GSTA) upon request
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO SWA EMC is a shielded & armoured power and control cable with a reduced flame propagation and reduced emission of toxic/corrosive gases and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO SWA EMC is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection. The armour provides a good mechanical protection also in heavy applications. CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, 1,5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17002250	2 x 1,5	12,100	26,0	26,0	10,8	16,2	56,0	531
17002251	2 x 2,5	7,410	36,0	35,0	11,6	17,7	76,0	693
17002252	2 x 4	4,610	49,0	45,0	12,8	19,5	107,0	819
17002253	2 x 6	3,100	63,0	56,0	13,8	20,5	145,0	915
17002254	2 x 10	1,830	86,0	76,0	15,8	22,5	223,0	1123
17002255	2 x 16	1,150	115,0	99,0	17,8	25,2	334,0	1522
17002256	2 x 25	0,727	149,0	128,0	21,2	28,6	509,0	1962
17002257	2 x 35	0,524	185,0	156,0	23,4	30,8	687,0	2334
17002258	2 x 50	0,387	225,0	193,0	26,4	34,4	914,0	2858

Continuation ►

# HELUPOWER® 1000 HY-CARBO SWA EMC

Shielded & Steel Wire Armoured, Hydrocarbon resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502

Part no.	No.cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, $\rho = 1,5$ K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17002259	2 x 70	0,268	0,0	0,0	30,4	39,4	1297,0	3909
17002300	3 x 1,5	12,100	23,0	22,0	11,3	16,7	72,0	568
17002301	3 x 2,5	7,410	32,0	29,0	12,1	18,2	100,0	735
17002302	3 x 4	4,610	42,0	37,0	13,4	20,1	144,0	878
17002303	3 x 6	3,100	54,0	47,0	14,5	21,2	200,0	1002
17002304	3 x 10	1,830	75,0	63,0	16,7	23,4	314,0	1260
17002305	3 x 16	1,150	100,0	83,0	18,8	26,2	477,0	1709
17002306	3 x 25	0,727	127,0	107,0	22,5	29,9	733,0	2249
17002307	3 x 35	0,524	158,0	131,0	24,9	32,5	998,0	2722
17002308	3 x 50	0,387	192,0	162,0	28,1	36,9	1333,0	3602
17002309	3 x 70	0,268	246,0	200,0	32,8	42,0	1902,0	4678
17002310	3 x 95	0,193	298,0	237,0	37,0	46,4	2611,0	5854
17002311	3 x 120	0,153	346,0	274,0	40,8	51,6	3256,0	7416
17002312	3 x 150	0,124	399,0	313,0	46,0	57,0	4032,0	8923
17002313	3 x 185	0,099	456,0	352,0	50,7	61,9	5013,0	10579
17002314	3 x 240	0,075	538,0	414,0	57,6	69,2	6585,0	13283
17002315	3 x 300	0,060	621,0	0,0	63,4	75,4	8194,0	15859
17002316	3 x 400	0,047	0,0	0,0	70,7	84,8	10457,0	20468
17002280	4 x 1,5	12,100	23,0	22,0	12,1	18,2	88,0	723
17002281	4 x 2,5	7,410	32,0	29,0	13,0	19,7	125,0	831
17002282	4 x 4	4,610	42,0	37,0	14,5	21,2	182,0	982
17002283	4 x 6	3,080	54,0	47,0	15,7	22,4	256,0	1127
17002284	4 x 10	1,830	75,0	63,0	18,1	25,5	407,0	1571
17002285	4 x 16	1,150	100,0	83,0	20,5	27,9	622,0	1960
17002286	4 x 25	0,727	127,0	107,0	24,6	32,2	961,0	2631
17002287	4 x 35	0,524	158,0	131,0	27,3	35,3	1311,0	3217
17002288	4 x 50	0,387	192,0	162,0	30,9	39,9	1757,0	4255
17002289	4 x 70	0,268	246,0	200,0	36,2	45,6	2512,0	5617
17002290	4 x 95	0,193	298,0	237,0	41,0	51,6	3453,0	7514
17002291	4 x 120	0,153	346,0	274,0	45,7	56,7	4311,0	9040
17002292	4 x 150	0,124	399,0	313,0	51,0	62,4	5340,0	10865
17002293	4 x 185	0,099	456,0	352,0	56,3	67,9	6645,0	12908
17002294	4 x 240	0,075	538,0	414,0	63,9	76,1	8736,0	16296
17002295	4 x 300	0,060	621,0	0,0	70,4	84,3	10876,0	20517
17002296	4 x 400	0,047	0,0	0,0	78,9	93,0	13889,0	25113
17002260	5 x 1,5	12,100	23,0	22,0	12,9	19,6	104,0	809
17002261	5 x 2,5	7,410	32,0	29,0	14,0	20,7	150,0	922
17002262	5 x 4	4,610	42,0	37,0	15,6	22,3	221,0	1090
17002263	5 x 6	3,080	54,0	47,0	17,0	24,4	313,0	1404
17002264	5 x 10	1,830	75,0	63,0	19,7	27,1	500,0	1778
17002265	5 x 16	1,150	100,0	86,0	22,4	29,8	768,0	2252
17002266	5 x 25	0,727	127,0	107,0	26,9	34,9	1189,0	3058
17002267	5 x 35	0,524	158,0	131,0	29,9	38,9	1626,0	4038
17002268	5 x 50	0,387	192,0	162,0	34,4	43,6	2182,0	5069
17002269	5 x 70	0,268	0,0	0,0	40,0	50,6	3122,0	7074
17002270	5 x 95	0,193	0,0	0,0	45,7	56,7	4297,0	9002
17002271	5 x 120	0,153	0,0	0,0	50,3	61,5	5367,0	10690
17002272	5 x 150	0,124	0,0	0,0	56,2	67,8	6650,0	12858
17002273	7 x 1,5	12,100	13,0	16,0	13,8	20,5	134,0	872
17002274	10 x 1,5	12,100	13,0	16,0	16,8	23,5	185,0	1088
17002275	12 x 1,5	12,100	11,0	13,0	17,3	24,7	213,0	1296
17002276	16 x 1,5	12,100	11,0	13,0	18,9	26,3	272,0	1467
17002277	19 x 1,5	12,100	9,0	12,0	19,8	27,2	315,0	1572
17002278	20 x 1,5	12,100	9,0	12,0	20,7	28,1	332,0	1630
17002279	24 x 1,5	12,100	9,0	12,0	22,8	30,2	392,0	1826
17002297	27 x 1,5	12,100	0,0	0,0	23,3	30,9	434,0	1925
17002298	37 x 1,5	12,100	0,0	0,0	25,8	33,4	576,0	2257
17002317	7 x 2,5	7,410	18,0	21,0	15,0	21,7	197,0	1000
17002318	10 x 2,5	7,410	18,0	21,0	18,4	25,8	274,0	1416
17002319	12 x 2,5	7,410	14,0	18,0	18,9	26,3	319,0	1500
17002320	16 x 2,5	7,410	14,0	18,0	20,8	28,2	413,0	1719
17002321	19 x 2,5	7,410	12,0	14,0	21,8	29,2	481,0	1852
17002322	24 x 2,5	7,410	12,0	14,0	25,2	32,8	602,0	2212
17002323	27 x 2,5	7,410	0,0	0,0	25,7	33,3	669,0	2323
17002299	37 x 2,5	7,410	0,0	0,0	28,6	37,6	895,0	3082

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1000 HY-CARBO SWA FIRE RES

Steel Wire Armoured, hydrocarbon resistant & fire resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -20°C to +90°C  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 12 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- MICA tape wrapping (fire barrier)
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner sheath: PVC
- Armour:  
for single core cables: amagnetic aluminium wires  
for multi core cables: galvanized steel wire armour with galvanized steel conterspiral tape (if necessary) acc. to IEC 60502-1 TAB. 9
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to DIN VDE 482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C, 20 min.)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A, 40 min.)
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to UL 1581 sect. 1200

## Note

- Galvanized steel tape armouring (GSTA) upon request
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO SWA FIRE RES is an armoured power and control cable. Fire resistant, suitable for systems where it is necessary to ensure their functionality also in the case of fire. The cable construction protects against flame propagation and offers reduced emission of toxic/corrosive gase and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO SWA FIRE RES is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection. The armour provides a good mechanical protection also in heavy applications. CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No.cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, □ = 1,5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001960	1 x 1,5	12,100	24,0	24,0	5,4	10,8	13,0	161
17001961	1 x 2,5	7,410	33,0	31,0	5,9	11,3	22,0	181
17001962	1 x 4	4,610	45,0	40,0	6,4	11,8	35,0	206
17001963	1 x 6	3,080	58,0	51,0	7,0	12,4	52,0	238
17001964	1 x 10	1,830	80,0	68,0	7,9	13,3	87,0	294
17001965	1 x 16	1,150	107,0	98,0	8,9	14,3	139,0	370
17001966	1 x 25	0,727	141,0	115,0	10,6	16,0	220,0	495
17001967	1 x 35	0,524	176,0	139,0	11,8	17,2	305,0	608
17001968	1 x 50	0,387	216,0	173,0	13,3	20,0	413,0	821

Continuation ►



# HELUPOWER® 1000 HY-CARBO SWA FIRE RES

Steel Wire Armoured, hydrocarbon resistant & fire resistant Power & Control cable 0.6/1 kV in acc. to IEC 60502

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Conductor resistance at 20°C	Current rating (A) in air at 30°C	Current rating (A) directly buried at 20°C, = 5 K*m/W	Diameter under armour approx. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001969	1 x 70	0,268	279,0	212,0	15,3	22,0	597,0	1063
17001970	1 x 95	0,193	342,0	250,0	17,1	23,8	828,0	1347
17001971	1 x 120	0,153	400,0	289,0	18,9	26,3	1038,0	1669
17001972	1 x 150	0,124	464,0	330,0	20,9	28,3	1290,0	1993
17001973	1 x 185	0,099	533,0	371,0	23,1	30,5	1612,0	2392
17001974	1 x 240	0,075	490,0	409,0	26,0	33,6	2127,0	3024
17001975	1 x 300	0,060	0,0	463,0	28,5	36,3	2656,0	3654
17001976	1 x 400	0,047	0,0	0,0	32,3	41,3	3402,0	4713
17002170	2 x 1,5	12,100	26,0	26,0	8,8	14,2	26,0	388
17002171	2 x 2,5	7,410	36,0	35,0	9,8	15,6	43,0	453
17002172	2 x 4	4,610	49,0	45,0	10,8	16,2	69,0	523
17002173	2 x 6	3,080	63,0	56,0	12,0	17,4	104,0	620
17002174	2 x 10	1,830	86,0	76,0	13,8	20,5	175,0	914
17002175	2 x 16	1,150	115,0	95,0	15,8	22,5	278,0	1140
17002176	2 x 25	0,727	149,0	128,0	19,2	26,6	440,0	1684
17002177	2 x 35	0,524	185,0	156,0	21,6	29,0	610,0	2045
17002178	2 x 50	0,387	225,0	193,0	24,6	32,0	826,0	2513
17002179	2 x 70	0,268	0,0	0,0	28,6	36,6	1193,0	3283
17002100	3 x 1,5	12,100	10,0	9,0	9,3	14,7	40,0	418
17002101	3 x 2,5	7,410	23,0	22,0	10,4	15,8	65,0	492
17002102	3 x 4	4,610	42,0	37,0	11,5	16,9	104,0	582
17002103	3 x 6	3,080	54,0	47,0	12,8	18,2	156,0	691
17002104	3 x 10	1,830	75,0	63,0	14,7	21,4	262,0	1038
17002105	3 x 16	1,150	100,0	83,0	16,9	23,6	417,0	1316
17002106	3 x 25	0,727	127,0	107,0	20,6	28,0	659,0	1961
17002107	3 x 35	0,524	158,0	131,0	23,2	30,6	915,0	2404
17002108	3 x 50	0,387	192,0	162,0	26,4	34,2	1238,0	2997
17002109	3 x 70	0,268	246,0	200,0	31,1	39,9	1790,0	4245
17002110	3 x 95	0,193	298,0	237,0	35,0	44,2	2483,0	5370
17002111	3 x 120	0,153	346,0	274,0	38,9	48,3	3114,0	6425
17002112	3 x 150	0,124	399,0	313,0	43,6	54,4	3871,0	8232
17002113	3 x 185	0,099	456,0	352,0	48,4	59,4	4835,0	9846
17002114	3 x 240	0,075	538,0	414,0	55,0	66,4	6383,0	12393
17002115	3 x 300	0,060	621,0	0,0	60,4	72,2	7971,0	14825
17002116	3 x 400	0,047	0,0	0,0	67,8	80,0	10207,0	18264
17002120	4 x 1,5	12,100	23,0	22,0	10,2	15,6	53,0	467
17002121	4 x 2,5	7,410	32,0	29,0	11,4	16,8	86,0	552
17002122	4 x 4	4,610	42,0	37,0	12,6	18,0	139,0	663
17002123	4 x 6	3,080	54,0	47,0	14,1	20,8	208,0	939
17002124	4 x 10	1,830	75,0	63,0	16,3	23,0	349,0	1209
17002125	4 x 16	1,150	100,0	83,0	18,7	26,1	556,0	1695
17002126	4 x 25	0,727	127,0	107,0	22,8	30,2	879,0	2311
17002127	4 x 35	0,524	158,0	131,0	25,7	33,3	1220,0	2880
17002128	4 x 50	0,387	192,0	162,0	29,3	37,3	1651,0	3619
17002129	4 x 70	0,268	246,0	200,0	34,6	43,8	2387,0	5167
17002130	4 x 95	0,193	298,0	237,0	38,9	48,3	3310,0	6523
17002131	4 x 120	0,153	346,0	274,0	43,7	54,5	4152,0	8428
17002132	4 x 150	0,124	399,0	313,0	48,5	59,5	5162,0	10053
17002133	4 x 185	0,099	456,0	352,0	53,9	65,3	6446,0	12076
17002134	4 x 240	0,075	538,0	414,0	61,3	73,1	8510,0	15262
17002135	4 x 300	0,060	621,0	0,0	67,3	79,5	10627,0	182783
17002136	4 x 400	0,047	0,0	0,0	76,0	90,1	13609,0	23803
17002140	5 x 1,5	12,100	23,0	22,0	11,2	16,6	66,0	529
17002141	5 x 2,5	7,410	32,0	29,0	12,5	17,9	108,0	625
17002142	5 x 4	4,610	42,0	37,0	13,9	20,6	173,0	900
17002143	5 x 6	3,080	54,0	47,0	15,5	22,2	259,0	1074
17002144	5 x 10	1,830	75,0	63,0	17,9	24,6	437,0	1388
17002145	5 x 16	1,150	100,0	86,0	20,6	28,0	694,0	1964
17002146	5 x 25	0,727	127,0	107,0	25,2	32,6	1099,0	2707
17002147	5 x 35	0,524	158,0	131,0	28,5	36,3	1524,0	3417
17002148	5 x 50	0,387	192,0	162,0	32,9	41,9	2064,0	4644
17002149	5 x 70	0,268	0,0	0,0	38,3	47,7	2983,0	6134
17002150	5 x 95	0,193	0,0	0,0	43,6	54,2	4138,0	8322
17002151	5 x 120	0,153	0,0	0,0	48,4	59,4	5190,0	9988
17002152	5 x 150	0,124	0,0	0,0	53,8	65,2	6452,0	12011
17002153	5 x 185	0,099	0,0	0,0	60,2	72,0	8058,0	14599
17002154	5 x 240	0,075	0,0	0,0	68,0	80,2	10638,0	18346
17002155	5 x 300	0,060	0,0	0,0	75,2	89,1	13284,0	23263
17002156	5 x 400	0,047	0,0	0,0	84,3	98,4	17011,0	28599
17002180	7 x 1,5	12,100	13,0	16,0	12,2	17,6	93,0	575
17002157	10 x 1,5	12,100	13,0	16,0	15,6	22,3	132,0	901
17002158	12 x 1,5	12,100	11,0	13,0	16,1	22,8	159,0	959
17002159	19 x 1,5	12,100	9,0	12,0	19,0	25,7	251,0	1214
17002160	27 x 1,5	12,100	0,0	0,0	22,9	30,3	357,0	1720
17002161	37 x 1,5	12,100	0,0	0,0	25,8	33,2	489,0	2046
17002162	7 x 2,5	7,410	18,0	21,0	13,7	20,4	151,0	832
17002163	10 x 2,5	7,410	18,0	21,0	17,6	24,3	216,0	1083
17002164	12 x 2,5	7,410	14,0	18,0	18,2	24,9	259,0	1162
17002165	19 x 2,5	7,410	12,0	14,0	21,5	28,9	410,0	1679
17002166	27 x 2,5	7,410	0,0	0,0	26,0	33,4	583,0	2133
17002167	37 x 2,5	7,410	0,0	0,0	29,3	37,1	798,0	2607

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1000 HY-CARBO LEAD GSTA

hydrocarbon resistant, lead sheathed, double steel tape armoured power & control cable 0.6/1 kV in acc. to IEC 60502



## Technical data

- LSLH Power & Control cable acc. to IEC 60502
- **Temperature range**  
fixed installation -20°C to +70°C  
(90°C at the conductor)  
short circuit temperature max. 250°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
3500 V AC for 5 min.  
8400 V DC for 5 min.
- **Minimum bending radius**  
fixed 20 x cable Ø
- **Insulation resistance**  
> 100 MΩxkm

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Core insulation: XLPE acc. to IEC 60502-1, BS 50290-2-29 and EN 50363-0
- Core identification acc. to HD 308 S2
- Inner covering: PVC
- Tightness sheath of lead cover
- Inner sheath: PVC
- Armour: double galvanized steel tape armour acc. to IEC 60502-1
- Outer sheath: hydrocarbon resistant PVC
- Outer sheath colour: black

## Properties

- Hydrocarbon resistant
- Oil resistant
- Rodent and termite resistant
- Flame retardant
- Low Smoke Low Halogen (LSLH)
- Suitable for direct burial
- UV resistant

## Tests

- Flame retardant acc. to DIN VDE 482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C, 20 min.)
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- UV and sunlight resistant acc. to UL 1581 sect. 1200

## Note

- Galvanized steel wire armouring (SWA) upon request
- Other core identification upon request

## Application

The HELUPOWER® 1000 HY-CARBO LEAD GSTA is an armoured and lead sheathed power and control cable with a reduced flame propagation and reduced emission of toxic/corrosive gases and opaque fumes in case of fire. The HELUPOWER® 1000 HY-CARBO LEAD GSTA is suitable for use in civil/industrial environment, in fixed lay also directly buried in ground without protection. The armour provides a good mechanical protection also in heavy-duty applications and hazardous environments and offers anti-termite and anti-rodent protection.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Diameter under lead sheath app. mm	Lead sheath thickness in mm	Outer Ø app. mm	Lead weight app. kg / km	Cu factor per km	Weight app. kg / km
17002500	2 x 1,5	8,0	1,2	17,6	432,0	33,0	779
17002501	3 x 1,5	8,5	1,2	18,0	456,0	51,0	826
17002502	4 x 1,5	9,3	1,2	19,0	494,0	62,0	904
17002503	5 x 1,5	10,1	1,2	19,8	531,0	78,0	977
17002504	7 x 1,5	11,0	1,2	20,8	574,0	108,0	1078
17002505	12 x 1,5	14,5	1,2	24,0	738,0	186,0	1419
17002506	19 x 1,5	17,0	1,3	27,2	933,0	292,0	1810
17002507	27 x 1,5	20,5	1,4	30,9	1201,0	416,0	2329
17002508	37 x 1,5	23,0	1,4	33,6	1339,0	565,0	2716

Continuation ►

# HELUPOWER® 1000 HY-CARBO LEAD GSTA

hydrocarbon resistant, lead sheathed, double steel tape armoured power & control cable 0.6/1 kV in acc. to IEC 60502

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Diameter under lead sheath app. mm	Lead sheath thickness in mm	Outer Ø app. mm	Lead weight app. kg / km	Cu factor per km	Weight app. kg / km
17002491	2 x 2,5	9,0	1,2	18,1	480,0	52,0	875
17002492	3 x 2,5	9,6	1,2	19,2	508,0	77,0	940
17002493	4 x 2,5	10,5	1,2	20,0	550,0	102,0	1028
17002494	5 x 2,5	11,5	1,2	21,2	597,0	127,0	1130
17002495	7 x 2,5	12,5	1,2	22,1	645,0	179,0	1253
17002496	12 x 2,5	16,6	1,2	26,1	837,0	305,0	1700
17002497	19 x 2,5	19,5	1,3	29,5	1059,0	482,0	2192
17002498	27 x 2,5	23,6	1,5	34,6	1475,0	685,0	2979
17002499	37 x 2,5	26,5	1,5	38,8	1646,0	937,0	3895
17002510	2 x 4	10,0	1,2	19,6	527,0	84,0	981
17002511	3 x 4	10,7	1,2	20,3	560,0	125,0	1067
17002512	4 x 4	11,7	1,2	21,3	606,0	165,0	1178
17002513	5 x 4	12,8	1,2	22,4	659,0	208,0	1296
17002489	2 x 6	11,2	1,2	20,8	583,0	125,0	1116
17002490	3 x 6	12,0	1,2	21,6	620,0	187,0	1209
17002509	4 x 6	13,1	1,2	22,7	672,0	248,0	1362
17002575	5 x 6	14,5	1,2	24,0	738,0	311,0	1523
17002514	2 x 10	13,0	1,2	22,6	668,0	208,0	1334
17002515	3 x 10	13,9	1,2	23,5	711,0	311,0	1486
17002516	4 x 10	15,3	1,2	25,0	776,0	411,0	1684
17002517	5 x 10	16,1	1,3	26,9	927,0	513,0	1981
17002518	2 x 16	15,4	1,2	25,0	781,0	333,0	1648
17002519	3 x 16	16,5	1,2	26,0	833,0	496,0	1865
17002520	4 x 16	18,2	1,3	28,2	993,0	659,0	2232
17002521	5 x 16	20,1	1,4	30,5	1179,0	825,0	2631
17002522	2 x 25	18,6	1,3	28,6	1014,0	518,0	2193
17002523	3 x 25	20,0	1,3	30,2	1085,0	778,0	2534
17002524	4 x 25	22,1	1,4	32,6	1289,0	1033,0	3029
17002525	5 x 25	24,5	1,5	36,5	1528,0	1295,0	3948
17002526	2 x 35	20,8	1,4	31,2	1218,0	719,0	2681
17002527	3 x 35	22,3	1,4	32,7	1300,0	1078,0	3103
17002528	4 x 35	24,8	1,5	37,0	1546,0	1440,0	4139
17002529	5 x 35	28,0	1,6	41,1	1856,0	1795,0	4561

Dimensions and specifications may be changed without prior notice.

# HELUPOWER® 1100 HMH BLACK

halogen-free, XLPE core insulation / 90°C, flame-retardant / cat. A, direct burial



## TECHNICAL DATA

Power-control cable base on IEC 60502-1

Temperature range	fixed -30°C to +90°C
Nominal voltage	U <sub>0</sub> /U 0,6/1 kV
Test voltage	3,5 kV
Minimum bending radius	fixed 8x Ø cable

## CABLE STRUCTURE

- Annealed copper wires, stranded class 2 or finely stranded class 5 (see table) acc. to DIN VDE0295 / IEC 60228
- Core insulation: XLPE
- Core identification acc. to HD 308
  - ≤ 5 core – color cores
  - ≥ 6 core – black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer, X = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Sheath: halogen free compound
- Color sheath: black (RAL 9005)

## WŁAŚCIWOŚCI

- resistant to: UV radiation, weathering effects
- direct burial
- for indoor and outdoor use
- halogen free

## TEST

- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- UV-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2

## APPLICATION

Used as a power and control cable for indoor and outdoor installations requiring halogen-free, flame-retardant and UV resistance. The cable can be laid in cable ducts or directly in the ground. Direct laying in the ground may take place provided that the installation will be made in accordance with good installation practice – the cable should be laid on a special cable ballast ensuring a continuous drainage of water from the installation place. The cable buried in the ground mustn't be permanently exposed to water

## NOTES

- We also offer cable glands PEPPERS UL-C
- Armored cables with similar parameters HELUPOWER® 1100 HMH SWA BLACK

Stranded wire class 2 acc. to IEC 60228

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx
18190849	1 x 70	15,2	672,0	812,0
18190821	1 x 150	20,2	1440,0	1661,0
18190822	1 x 185	22,2	1776,0	2032,0
18052142	1 x 240	25,3	2304,0	2618,0
18190824	2 x 25	19,0	480,0	821,0
18190827	2 x 35	21,0	3672,0	1078,0
18190831	2 x 95	30,9	1824,0	2628,0
18190823	3 G 16	16,9	461,0	707,0
18190825	3 G 25	20,2	720,0	1060,0
18190826	4 G 25	22,2	960,0	1348,0
18190828	4 G 35	24,7	1344,0	1799,0
18190832	4 G 95	37,0	3648,0	4561,0
18052145	5 G 16	20,2	768,0	1093,0
18190829	5 G 35	27,1	1680,0	2202,0
18190830	5 G 70	37,4	3360,0	4299,0
18052146	5 G 95	41,0	4560,0	5628,0

Finely stranded wire class 5 acc. to IEC 60228

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx
18052177	2 x 1,5	9,3	28,8	105,0
18190844	2 x 10	14,4	192,0	399,0
18190833	3 x 1,5	9,9	43,2	151,0
18052143	3 G 2,5	10,9	72,0	196,0
18052178	3 G 4	12,1	115,2	262,0
18190841	3 G 6	13,4	172,8	344,0
18190845	3 G 10	15,3	288,0	497,0
18190834	4 x 1,5	10,7	57,6	177,0
18190836	4 G 2,5	11,7	96,0	235,0
18190839	4 G 4	13,1	153,6	319,0
18190842	4 G 6	14,5	230,4	425,0
18190837	5 G 2,5	12,7	120,0	280,0
18052179	5 G 4	14,2	192,0	382,0
18052180	5 G 6	15,8	288,0	508,0
18052144	5 G 10	18,2	480,0	753,0
18190835	6 x 1,5	12,4	86,4	244,0
18052147	7 G 1,5	12,3	100,8	247,0

# HELUPOWER® 1100 HMH SWA BLACK



halogen-free, XLPE core insulation / 90°C, flame-retardant / cat. A,  
steel wire armoured /SWA, direct burial



HELUPOWER® 11000 HMH SWA BLACK C €

## TECHNICAL DATA

Power-control cable base on IEC 60502-1

Temperature range	fixed -30°C to +90°C
Nominal voltage	U <sub>0</sub> /U 0,6/1 kV
Test voltage	3,5 kV
Minimum bending radius	fixed 8x Ø cable

## ■ CABLE STRUCTURE

- Annealed copper wires, stranded class 2 or finely stranded class 5 (see table) acc. to DIN VDE0295 / IEC 60228
- Core insulation: XLPE
- Core identification acc. to HD 308
  - ≤ 5 core – color cores
  - ≥ 6 core – black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer, X = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Separator: PET foil
- Inner sheath: halogen free compound
- Color inner sheath: black (RAL 9005)
- Armour: galvanized steel wire
- Sheath: halogen free compound
- Color sheath: black (RAL 9005)

## ■ PROPERTIES

- resistant to: UV radiation, weathering effects
- direct burial
- for indoor and outdoor use
- halogen free

## ■ TEST

- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- bundle fire test acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- UV-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2 / ISO 4892-2

## ■ APPLICATION

Used as a power and control cable for indoor and outdoor installations requiring halogen-free, flame-retardant, UV resistance and protection against damage. The cable can be laid in cable ducts or directly in the ground. Direct laying in the ground may take place provided that the installation will be made in accordance with good installation practice – the cable should be laid on a special cable ballast ensuring a continuous drainage of water from the installation place. The cable buried in the ground mustn't be permanently exposed to water

## ■ NOTES

- We also offer cable glands PEPPERS UL-C
- Unarmored cables with similar parameters HELUPOWER® 1100 HMH BLACK

Continuation ►

# HELUPOWER® 1100 HMH SWA BLACK



halogen-free, XLPE core insulation / 90°C, flame-retardant / cat. A,  
steel wire armoured /SWA, direct burial

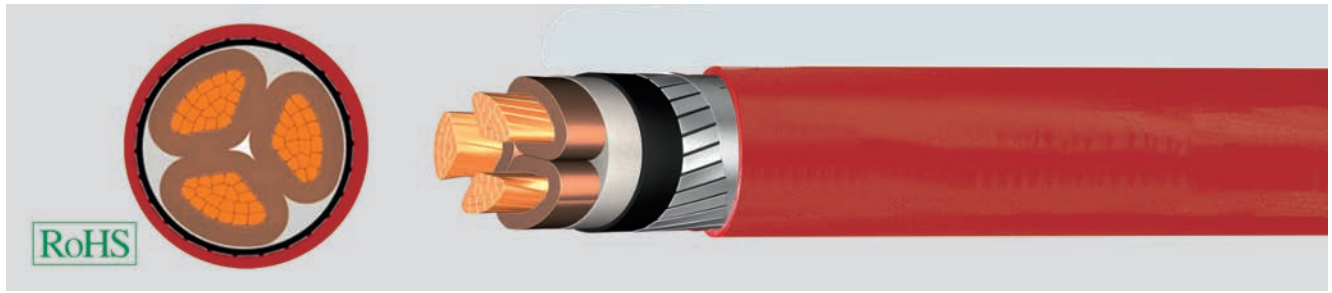
## Stranded wire class 2 acc. to IEC 60228

Part no.	No. cores x cross-sec. mm²	Outer Ø mm, approx.	Diameter under armour approx. mm	Cu factor per km	Weight kg/km, approx
18191020	1 x 35	16,3	10,8	336,0	804,0
18191021	1 x 70	20,1	14,4	672,0	1284,0
18052148	1 x 95	22,0	15,7	912,0	1684,0
18052149	1 x 120	24,4	17,8	1152,0	2051,0
18052150	1 x 150	25,9	19,1	1440,0	2416,0
18052182	1 G 150	25,9	19,1	1440,0	2416,0
18052151	1 x 185	27,9	21,1	1776,0	2859,0
18052183	1 G 185	27,9	21,1	1776,0	2859,0
18052152	1 x 240	31,0	24,0	2304,0	3550,0
18052184	1 G 240	31,0	24,0	2304,0	3550,0
18052155	3 G 16	21,5	15,4	460,8	1202,0
18052185	3 G 25	25,6	18,8	720,0	1796,0
18052186	3 G 35	27,7	20,9	1008,0	2223,0
18191018	3 G 50	30,9	23,9	1440,0	2874,0
18052187	4 G 16	23,8	17,0	614,4	1559,0
18052188	4 G 25	27,6	20,8	960,0	2158,0
18052157	4 G 35	30,2	23,2	1344,0	2707,0
18052189	4 G 70	40,7	32,3	2688,0	5040,0
18052160	5 G 16	25,5	18,7	768,0	1825,0
18052161	5 G 25	29,9	22,9	1200,0	2545,0
18052162	5 G 35	32,8	25,6	1680,0	3217,0
18052163	5 G 50	38,2	29,8	2400,0	4546,0
18052164	5 G 70	44,3	35,7	3360,0	6027,0

## Finely stranded wire class 5 acc. to IEC 60228

Part no.	No. cores x cross-sec. mm²	Outer Ø mm, approx.	Diameter under armour approx. mm	Cu factor per km	Weight kg/km, approx
18052190	2 x 1,5	13,5	7,9	28,8	329,8
18052191	3 G 1,5	13,7	8,4	43,2	359,7
18191016	4 x 2,5	15,4	10,2	96,0	478,7
18052153	3 G 2,5	14,5	9,3	72,0	423,4
18052196	3 G 4	15,8	10,6	115,2	513,9
18052154	3 G 6	17,9	11,8	172,8	734,4
18052199	3 G 10	19,9	13,8	288,0	943,6
18052192	4 G 1,5	14,4	9,2	57,6	399,7
18052193	4 G 2,5	15,4	10,2	96,0	478,7
18052197	4 G 4	17,7	11,6	153,6	707,4
18052198	4 G 6	19,1	13,0	230,4	850,3
18052156	4 G 10	21,3	15,2	384,0	1105,2
18052194	5 G 2,5	17,2	11,1	120,0	647,6
18190838	5 G 4	18,8	12,7	192,0	796,7
18052158	5 G 6	20,3	14,3	288,0	961,0
18052159	5 G 10	23,5	16,7	480,0	1564,0
18191017	7 x 2,5	18,2	12,1	168,0	747,0
18052195	10 G 2,5	21,6	15,5	240,0	962,3
18052165	24 x 2,5	29,1	22,2	576,0	1819,0

# NYFGY 3 x ... 3, 6/6kV Flat wire sheathing, PVC-sheath



RoHS

## Technical data

- Three core PVC-insulated cables to DIN VDE 0271 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +70°C
- **Short circuit temperature** (short circuit duration max. 5 s) +160°C
- **Nominal voltages**  $U_0/U$  3,6/6 kV
- **Operating voltages** max. 7,2 kV
- **Test voltages** 11 kV
- **Minimum bending radius** 15x cable  $\varnothing$

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Core insulation of PVC
- 3 cores stranded
- Wrapping
- Inner sheath of PVC
- Armour of galvanized steel wires with counter helix
- Outer sheath of PVC
- Sheath colour red

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

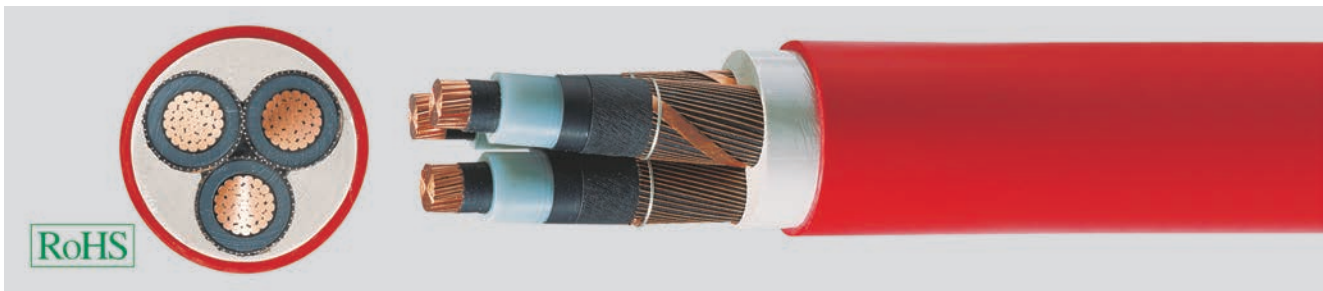
- sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Indoors and in cable ducts, outdoors with protected laying, underground for power stations, industrial systems and switchgear, whenever increased mechanical protection is required or whenever higher drag forces are expected during assembly and operation.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Insulation thickness mm	Sheath thickness Nominal value mm	Outer $\varnothing$ min. - max.	Cu factor per km	Weight app. kg / km	AWG-No.
34187	3 x 25 sm	3,4	2,0	34,0 - 42,0	720,0	2640,0	4
34188	3 x 35 sm	3,4	2,1	36,0 - 43,0	1008,0	2680,0	2
34189	3 x 50 sm	3,4	2,2	38,0 - 46,0	1440,0	3205,0	1
34190	3 x 70 sm	3,4	2,3	41,0 - 49,0	2016,0	4085,0	2/0
34191	3 x 95 sm	3,4	2,4	45,0 - 53,0	2736,0	5060,0	3/0
34192	3 x 120 sm	3,4	2,6	48,0 - 56,0	3456,0	5950,0	4/0
34193	3 x 150 sm	3,4	2,7	51,0 - 59,0	4320,0	6930,0	300 kcmil
34194	3 x 185 sm	3,4	2,8	55,0 - 64,0	5328,0	8240,0	350 kcmil
34195	3 x 240 sm	3,4	2,9	59,0 - 68,0	6912,0	10100,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



RoHS

## Technical data

- Three core XLPE-insulated power cables to DIN VDE 0276 and IEC 60502
- **Temperature range** during installation up to -5°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** core +250°C screen +350°C (duration) (short circuit duration max. 5 s)
- **Nominal voltages**  $U_0/U$  6/10 kV
- **Operating voltages** max. 12 kV
- **Test voltages** 15 kV
- **Test voltages d.c.** 48 kV
- **Minimum bending radius** 15x cable  $\varnothing$
- **Tests** acc. to DIN VDE 0276 and IEC 60502

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked polyethylene (XLPE)
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- 3 cores stranded
- Extruded sheath over three cores
- Outer sheath of PVC
- Sheath colour red

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Installation notes

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

## Note

- $rm$  = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in  $mm^2$ .
- **For laying in earth:** For ground thermal resistivity of 1 Kxm/W, laying depth 0,7 m, ground temperature 20°C, EVU load grade 0,7.
- **For laying in air:** Air temperature 30°C, EVU load grade 1,0.
- Conversion factors for laying in earth especially for laying in bundle form and other requirements are noted in DIN VDE 0298 part 2 and 0276 part 1000.
- Conversion factors for laying in air
- Air temperature/Conversion factor 15°C/1,12; 20°C/1,08; 25°C/1,04; 30°C/1,0; 35°C/0,96; 35°C/0,96; 40°C/0,91; 45°C/0,87; 50°C/0,82;

## Application

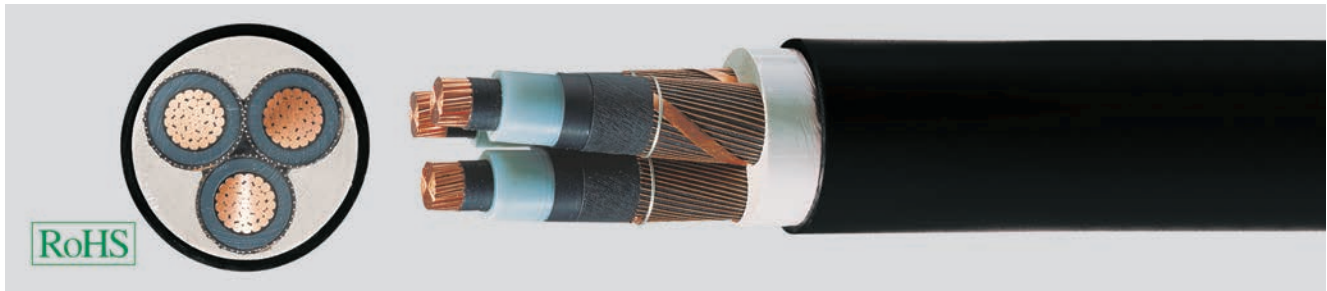
Suitable for installation in indoors and in cable ducts, outdoors with protected laying, as well as for laying on racks for industrial and switching systems and power plants. Limited use when buried in the earth if the PVC outer sheath could be damaged by high mechanical stress.

The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No. cores x cross-sec. $mm^2$	Insulation thickness mm	Screen cross-sec. $mm^2$	Sheath thickness Nominal value mm	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
34339	3 x 25 $rm / 16$	3,4	16	2,5	43,0	1046,0	2850,0	4
34340	3 x 35 $rm / 16$	3,4	16	2,5	48,0	1210,0	3300,0	2
34341	3 x 50 $rm / 16$	3,4	16	2,5	50,0	1671,0	3750,0	1
34342	3 x 70 $rm / 16$	3,4	16	2,6	54,0	2250,0	4650,0	2/0
34343	3 x 95 $rm / 16$	3,4	16	2,8	58,0	2995,0	5700,0	3/0
34344	3 x 120 $rm / 16$	3,4	16	2,9	61,0	3715,0	6700,0	4/0
34345	3 x 150 $rm / 25$	3,4	25	3,0	65,0	4638,0	7900,0	300 kcmil
34346	3 x 185 $rm / 25$	3,4	25	3,1	68,0	5645,0	9200,0	350 kcmil
34347	3 x 240 $rm / 25$	3,4	25	3,3	74,0	7274,0	11450,0	500 kcmil
34348	3 x 300 $rm / 25$	3,4	25	3,3	79,0	9160,0	14450,0	600 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)





## Technical data

- Three core XLPE-insulated power cables to DIN VDE 0276 and IEC 60502
- **Temperature range** during installation up to -20°C
- **Operating temperature** max. +90°C
- **Short circuit temperature** core +250°C screen + 350°C (short circuit duration max. 5 s)
- **Nominal voltages**  $U_0/U$  6/10 kV
- **Operating voltages** max. 12 kV
- **Test voltages** 15 kV
- **Test voltages d.c.** 48 kV
- **Minimum bending radius** 15x cable  $\varnothing$
- **Tests** acc. to DIN VDE 0276 and IEC 60502

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.2, multi-wire, BS 6360 cl.2, IEC 60228 cl.2
- Inner semi-conducting coating
- Core insulation of cross-linked Polyethylene (XLPE)
- Outer extrusion of semi-conducting coating spliced with the XLPE-insulation
- Conductive wrapping
- Screen: Braiding of copper wires with one or two tapes applied helically
- 3 cores stranded
- Extruded sheath over three cores
- outer sheath halogen-free
- Sheath colour black
- LS0H = Low Smoke Zero Halogen

## Properties

- Halogen-free, no liberation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development, Ozone resistant
- **Installation notes**

To guarantee an optimum on operating reliability the extruded semi-conductive layer is spliced with the insulation for long duration. For this reason we recommend a peeling tool for installation.

## Tests

- self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- rm = round conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Suitable for installation in indoors and in cable ducts, outdoors as well as for laying on racks for industrial and switching systems and power plants. Limited use when buried in the earth if the outer sheath could be damaged by high mechanical stress.

The inner conducting layer between the conductor and the XLPE insulation and the firmly bonded outer conducting layer on the XLPE insulation assures a construction free of partial discharges with high operational reliability.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Insulation thickness mm	Screen cross-sec. mm <sup>2</sup>	Sheath thickness Nominal value mm	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
38041	3 x 50 rm / 16	3,4	16	2,5	50,0	1670,0	3800,0	1
38042	3 x 70 rm / 16	3,4	16	2,5	54,0	2250,0	4650,0	2/0
38043	3 x 95 rm / 16	3,4	16	2,5	58,0	2995,0	5700,0	3/0
38044	3 x 120 rm / 16	3,4	16	2,5	61,0	3715,0	6800,0	4/0
38045	3 x 150 rm / 25	3,4	25	2,5	65,0	4635,0	7900,0	300 kcmil
38046	3 x 185 rm / 25	3,4	25	2,5	68,0	5645,0	9350,0	350 kcmil
38047	3 x 240 rm / 25	3,4	25	2,5	74,0	7274,0	11450,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ03)



## Technical data

- Power and control cable acc. to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage** U<sub>0</sub>/U 0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** single-core 15x cable Ø multi-core 12x cable Ø
- **Radiation resistance** up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Caloric load values** see "Technical Informations"

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2X11 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor J-type: GN-YE (½), BN, BK, GY O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, compound type HM4 to HD 604 S1
- Sheath colour: black

## Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- re = round conductor, single-wire
- rm = round conductor, multi-wire
- sm = sectional conductor, multi-wire
- J-version = with GN-YE conductor
- O-version = without GN-YE conductor
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.
- **LSOH** = Low Smoke Zero Halogen

## Application

Halogen-free power cables with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonry walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
J type	O type	mm <sup>2</sup>			
53558	1 x 1,5	6,0	14,4	41,0	16
53559	1 x 2,5	6,5	24,0	53,0	14
53100	53248	1 x 4	8,0	39,0	12
53101	53249	1 x 6	9,0	58,0	10
53102	53250	1 x 10	9,0	96,0	8
53103	53251	1 x 16	10,0	154,0	6
53104	53252	1 x 25	11,0	240,0	4
53105	53253	1 x 35	12,0	336,0	2
53106	53254	1 x 50	15,0	480,0	1
53107	53255	1 x 70	17,0	672,0	2/0
53108	53256	1 x 95	19,0	912,0	3/0
53109	53257	1 x 120	21,0	1152,0	4/0
53110	53258	1 x 150	23,0	1440,0	300 kcmil
53111	53259	1 x 185	25,0	1776,0	350 kcmil
53112	53260	1 x 240	28,0	2304,0	500 kcmil
53113	53261	1 x 300	30,0	2880,0	600 kcmil
52485	52486	1 x 400	32,9	3840,0	750 kcmil

Part no.	No. cores x cross-sec.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.		
J type	O type	mm <sup>2</sup>					
53114	53262	2 x 1,5	re	12,0	29,0	185,0	16
53115	53263	2 x 2,5	re	12,2	48,0	220,0	14
53116	53264	2 x 4	re	13,2	77,0	275,0	12
53117	53265	2 x 6	re	14,1	115,0	335,0	10
53118	53266	2 x 10	re	16,2	192,0	450,0	8
53119	53267	2 x 16	re	17,8	307,0	620,0	6
53120	53268	2 x 25	rm	21,0	480,0	930,0	4

# N2XH

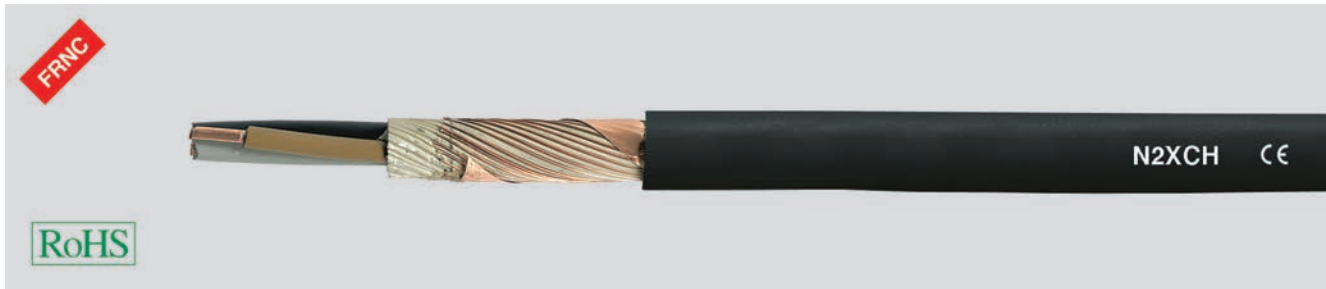
power cable, 0,6/1 kV, halogen-free, without functionality



Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no. J type	O type	No.cores x cross-sec. mm²	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53121	53269	3 x 1,5 re	13,0	43,0	220,0	16	53136	53330	3 x 50 / 25 sm	28,5	1680,0	2100,0	1
53122	53270	3 x 2,5 re	14,0	72,0	280,0	14	53137	53331	3 x 70 / 35 sm	31,4	2352,0	2800,0	2/0
53123	53271	3 x 4 re	15,0	115,0	350,0	12	53138	53332	3 x 95 / 50 sm	34,9	3216,0	3750,0	3/0
53124	53272	3 x 6 re	16,0	173,0	420,0	10	53139	53333	3 x 120 / 70 sm	38,0	4128,0	4750,0	4/0
53125	53273	3 x 10 re	18,0	288,0	600,0	8	53140	53334	3 x 150 / 70 sm	43,3	4992,0	5750,0	300 kcmil
53126	53274	3 x 16 re	20,0	461,0	770,0	6	53141	53335	3 x 185 / 95 sm	47,2	6240,0	7200,0	350 kcmil
53127	53275	3 x 25 rm	21,8	720,0	1120,0	4	53142	53336	3 x 240 / 120 sm	53,4	8064,0	9300,0	500 kcmil
53128	53276	3 x 35 sm	24,9	1008,0	1550,0	2							
53129	53277	3 x 50 sm	25,2	1440,0	1750,0	1							
53130	53278	3 x 70 sm	29,2	2016,0	2450,0	2/0							
53131	53279	3 x 95 sm	32,0	2736,0	3250,0	3/0							
53132	53280	3 x 120 sm	34,9	3456,0	4000,0	4/0							
53133	53281	3 x 150 sm	39,2	4320,0	5000,0	300 kcmil							
53134	53282	3 x 185 sm	44,1	5328,0	6150,0	350 kcmil							
53135	53283	3 x 240 sm	49,2	6912,0	8000,0	500 kcmil							
53143	53284	4 x 1,5 re	13,0	58,0	235,0	16							
53144	53285	4 x 2,5 re	14,0	96,0	290,0	14							
53145	53286	4 x 4 re	15,0	154,0	370,0	12							
53146	53287	4 x 6 re	16,0	230,0	470,0	10							
53147	53288	4 x 10 re	18,0	384,0	670,0	8							
53148	53289	4 x 16 re	20,0	614,0	930,0	6							
53149	53290	4 x 25 rm	25,0	960,0	1440,0	4							
53150	53291	4 x 35 sm	27,0	1344,0	1890,0	2							
53151	53292	4 x 50 sm	28,0	1920,0	2300,0	1							
53152	53293	4 x 70 sm	32,0	2688,0	3200,0	2/0							
53153	53294	4 x 95 sm	36,0	3648,0	4250,0	3/0							
53154	53295	4 x 120 sm	40,2	4608,0	5350,0	4/0							
53155	53296	4 x 150 sm	45,8	5760,0	6550,0	300 kcmil							
53156	53297	4 x 185 sm	49,5	7104,0	8100,0	350 kcmil							
53157	53298	4 x 240 sm	56,0	9216,0	10550,0	500 kcmil							
53158	53299	5 x 1,5 re	14,5	72,0	280,0	16							
53159	53309	5 x 2,5 re	16,0	120,0	350,0	14							
53160	53310	5 x 4 re	17,0	192,0	450,0	12							
53161	53311	5 x 6 re	18,5	288,0	600,0	10							
53162	53312	5 x 10 re	21,0	480,0	850,0	8							
53163	53313	5 x 16 re	24,0	768,0	1200,0	6							
53557		5 x 25 rm	28,0	1200,0	1539,0	4							
53164	53314	7 x 1,5 re	15,5	101,0	350,0	16							
53171	53315	7 x 2,5 re	17,0	168,0	370,0	14							
53178	53316	7 x 4 re	17,2	269,0	530,0	12							
53165	53317	10 x 1,5 re	18,5	144,0	480,0	16							
53172	53318	10 x 2,5 re	20,0	240,0	500,0	14							
53166	53319	12 x 1,5 re	19,0	173,0	520,0	16							
53173	53320	12 x 2,5 re	21,0	288,0	560,0	14							
53179	53321	12 x 4 re	21,2	461,0	800,0	12							
53167	53322	14 x 1,5 re	20,0	202,0	550,0	16							
53174	53323	14 x 2,5 re	22,0	336,0	630,0	14							
53168	53324	19 x 1,5 re	22,0	274,0	700,0	16							
53175	53325	19 x 2,5 re	24,0	456,0	800,0	14							
53169	53326	24 x 1,5 re	25,0	346,0	850,0	16							
53176	53327	24 x 2,5 re	27,0	576,0	990,0	14							
53170	53328	30 x 1,5 re	26,0	432,0	950,0	16							
53177	53329	30 x 2,5 re	28,0	720,0	1180,0	14							

Dimensions and specifications may be changed without prior notice. (RQ02)

# N2XCH power cable, 0,6/1kV, halogen-free, with concentric conductor, without functionality



## Technical data

- Power and control cable acc. to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range** during installation -5°C to +50°C fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius** 12x cable  $\varnothing$
- **Radiation resistance** up to  $100 \times 10^6$  cJ/kg (up to 100 Mrad)
- **Caloric load values** see Technical Informations

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2X11 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheat
- Covered by filling compound or taping
- Concentric conductor of bare Cu-wires
- Outer sheath of thermoplastic polyolefine, compound type HM4 to HD 604 S1
- Sheath colour black

## Properties

- Halogen-free, no liberation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- re = round conductor, single-wire
- rm = round conductor, multi-wire
- sm = sectional conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in  $\text{mm}^2$ .
- **LSOH** = Low Smoke Zero Halogen

## Application

The power cables with enhanced characteristics in case of fire are used in power stations.

The concentric conductor can be used as a PE or PEN conductor or as screen. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonry walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. $\text{mm}^2$	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53200	2 x 1,5 / 1,5 re	12,0	53,0	250,0	16
53201	2 x 2,5 / 2,5 re	13,0	81,0	280,0	14
53202	2 x 4 / 4 re	14,0	122,0	320,0	12
53203	2 x 6 / 6 re	15,0	183,0	400,0	10
53204	2 x 10 / 10 re	16,0	311,0	560,0	8
53205	2 x 16 / 16 re	19,1	490,0	780,0	6
53206	3 x 1,5 / 1,5 re	13,0	67,0	250,0	16
53207	3 x 2,5 / 2,5 re	14,0	104,0	320,0	14
53208	3 x 4 / 4 re	16,5	161,0	400,0	12
53209	3 x 6 / 6 re	18,0	242,0	500,0	10
53210	3 x 10 / 10 re	20,0	408,0	750,0	8
53211	3 x 16 / 16 re	22,5	643,0	1000,0	6
53212	3 x 25 / 16 rm	27,0	902,0	1600,0	4
53213	3 x 35 / 16 rm	27,5	1190,0	1900,0	2
53214	3 x 50 / 25 rm	32,3	1723,0	2400,0	1
53215	3 x 70 / 35 sm	35,6	2410,0	3060,0	2/0
53216	3 x 95 / 50 sm	39,0	3296,0	4200,0	3/0
53217	3 x 120 / 70 sm	42,0	4236,0	5207,0	4/0
53218	3 x 150 / 70 sm	43,5	5100,0	5700,0	300 kcmil
53219	3 x 185 / 95 sm	47,4	6383,0	7150,0	350 kcmil
53220	3 x 240 / 120 sm	53,5	8240,0	9250,0	500 kcmil
53221	4 x 1,5 / 1,5 re	13,5	81,0	300,0	16
53222	4 x 2,5 / 2,5 re	14,5	129,0	380,0	14

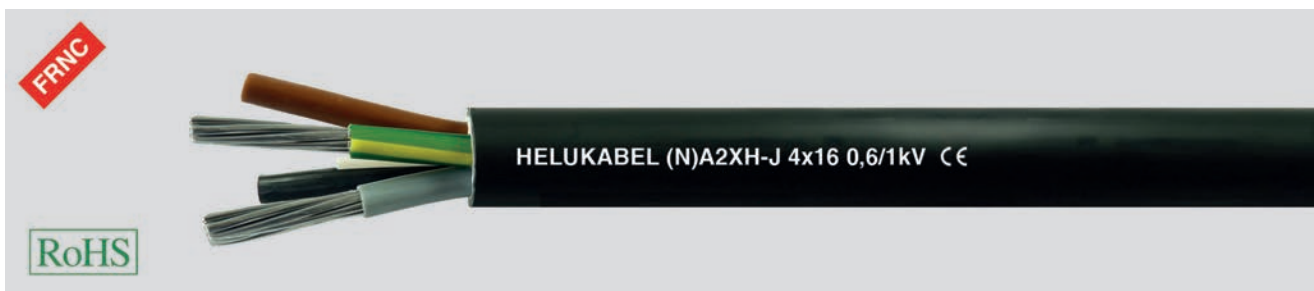
Part no.	No. cores x cross-sec. $\text{mm}^2$	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53223	4 x 4 / 4 re	17,5	202,0	480,0	12
53224	4 x 6 / 6 re	19,0	297,0	600,0	10
53225	4 x 10 / 10 re	21,5	504,0	850,0	8
53226	4 x 16 / 16 re	24,5	797,0	1200,0	6
53227	4 x 25 / 16 rm	29,0	1142,0	1800,0	4
53228	4 x 35 / 16 rm	29,5	1528,0	2100,0	2
53229	4 x 50 / 25 sm	32,5	2203,0	2800,0	1
53230	4 x 70 / 35 sm	38,0	3082,0	3800,0	2/0
53231	4 x 95 / 50 sm	43,5	4208,0	5100,0	3/0
53232	4 x 120 / 70 sm	50,5	5388,0	6556,0	4/0
53233	4 x 150 / 70 sm	52,1	6540,0	7600,0	300 kcmil
53234	4 x 185 / 95 sm	57,2	8159,0	9370,0	350 kcmil
53235	4 x 240 / 120 sm	62,6	10546,0	11611,0	500 kcmil
53236	7 x 1,5 / 2,5 re	15,0	132,0	320,0	16
53237	7 x 2,5 / 2,5 re	15,5	200,0	400,0	14
53238	7 x 4 / 4 re	18,1	316,0	580,0	12
53239	10 x 1,5 / 2,5 re	17,2	177,0	420,0	16
53240	10 x 2,5 / 4 re	18,9	287,0	550,0	14
53241	12 x 1,5 / 2,5 re	18,4	204,0	460,0	16
53242	12 x 2,5 / 4 re	19,2	335,0	610,0	14
53243	12 x 4 / 6 re	22,6	528,0	910,0	12
53244	16 x 1,5 / 4 re	20,0	275,0	686,0	16
53245	16 x 2,5 / 6 re	20,9	450,0	805,0	14

# N2XCH power cable, 0,6/1kV, halogen-free, with concentric conductor, without functionality



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53236	21 x 1,5 / 6 re	22,6	370,0	766,0	16
53243	21 x 2,5 / 6 re	25,2	572,0	1015,0	14
53237	24 x 1,5 / 6 re	23,2	412,0	800,0	16
53244	24 x 2,5 / 10 re	26,1	695,0	1100,0	14
53238	30 x 1,5 / 6 re	24,3	500,0	930,0	16
53245	30 x 2,5 / 10 re	28,0	842,0	1290,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)



## Technical data

- Power and control cable adapted to DIN VDE 0276 part 604, HD 604 S1 part 1 and part 5G
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Test voltage** 4 kV
- **Minimum bending radius**  
single-core 15x cable  $\varnothing$   
multi-core 12x cable  $\varnothing$
- **Radiation resistance**  
up to  $100 \times 10^6$  cJ/kg (up to 100 Mrad)

## Cable structure

- Aluminium-conductor, to DIN VDE 0295 cl.1 or cl.2, single-wire or multi-wire, BS 6360 cl.1 or cl.2, IEC 60228 cl.1 or cl.2
- Core insulation of cross-linked polyethylene (XLPE) compound type 2X11 to HD 604 S1
- Core identification to DIN VDE 0293-308
- Core identification for 3+½ conductor  
J-type: GN-YE (½), BN, BK, GY  
O-type: BU (½), BN, BK, GY
- Cores stranded in layers (for multi-core cables)
- Overall filled inner sheath
- Covered by filling compound or taping
- Outer sheath of thermoplastic polyolefine, ompound type HM4 to HD 604 S1
- Sheath colour black

## Properties

- Halogen-free, no separation of corrosive or toxic gases
- Limited propagation of fire
- Low smoke development
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Halogen-free acc. to DIN VDE 0482 part 267, DIN EN 50267-2-1, IEC 60754-1 (equivalent DIN VDE 0472 part 815)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- rm = round conductor, multi-wire;  
se = sector-shaped conductor, single-wire;  
sm = sector-shaped conductor, multi-wire
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- **LSOH** = Low Smoke Zero Halogen

## Application

Halogen-free power cables for energy with enhanced characteristics in case of fire are used for applications where harm to human life and damage to property must be prevented in the event of fire, e. g. in power stations, industrial installations, communal establishments, hotels, airports, underground stations, railway stations, hospitals department stores, banks, schools theaters, multi-storey buildings, process control centres etc. Suitable for fixed installation in dry, damp or wet environments, in, above, on and beneath plaster as well as in masonry walls and in concrete. These cables are suitable for outdoor applications and in underground by using in conduits or tubes. For the installation in conduit all precautions must be taken that no accumulation of water can occur in the pipes.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no. J type	O type	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.	Part no. J type	O type	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50073	50128	1 x 25 rm	9,9	73,0	132,0	4	50083	50137	3 x 16 rm	16,3	139,0	364,0	6
50074	50129	1 x 35 rm	11,0	102,0	166,0	2	50084	50138	3 x 25 rm	19,6	218,0	530,0	4
50075	50130	1 x 50 rm	12,5	145,0	211,0	1	50085	50139	3 x 35 rm	22,1	305,0	684,0	2
50076	50131	1 x 70 rm	14,1	203,0	283,0	2/0	50086	50140	3 x 35 se	19,0	305,0	486,0	2
50077	50132	1 x 95 rm	16,1	276,0	376,0	3/0	50087	50141	3 x 50 sm	22,4	435,0	655,0	1
50078	50133	1 x 120 rm	17,5	348,0	456,0	4/0	50088	50142	3 x 50 se	21,2	435,0	622,0	1
53562	53553	1 x 150 rm	19,6	435,0	560,0	300 kcmil	50089	50143	3 x 70 sm	26,1	609,0	903,0	2/0
50079	50134	1 x 185 rm	21,8	537,0	697,0	350 kcmil	50090	50144	3 x 70 se	25,2	609,0	859,0	2/0
53561	50135	1 x 240 rm	24,0	696,0	878,0	500 kcmil	50091	50145	3 x 95 sm	29,1	827,0	1174,0	3/0
50080	53554	1 x 300 rm	26,7	870,0	1073,0	600 kcmil	50092	50146	3 x 95 se	27,8	827,0	1115,0	3/0
50081	50136	1 x 400 rm	29,7	1160,0	1347,0	750 kcmil	50093	50147	3 x 120 sm	32,2	1044,0	1446,0	4/0
50082	53555	1 x 500 rm	33,1	1450,0	1705,0	1000 kcmil	50094	50148	3 x 120 se	30,8	1044,0	1379,0	4/0

# (N)A2XH power cable, 0,6/1 kV, halogen-free, without functionality



Part no. J type	O type	No.cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.	Part no. J type	O type	No.cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Alu weight kg / km	Weight app. kg / km	AWG-No.
50095	50149	3 x 150 sm	36,2	1305,0	1780,0	300 kcmil	50109	50171	4 x 95 sm	33,3	1102,0	1538,0	3/0
50096	50150	3 x 150 se	33,9	1305,0	1685,0	300 kcmil	50110	50172	4 x 95 se	32,1	1102,0	1467,0	3/0
50097	50154	3 x 185 sm	40,1	1610,0	2197,0	350 kcmil	50111	50173	4 x 120 sm	37,2	1392,0	1903,0	4/0
50098	50155	3 x 185 se	37,6	1610,0	2089,0	350 kcmil	50112	50174	4 x 120 se	35,5	1392,0	1817,0	4/0
50099	50156	3 x 240 sm	44,9	2088,0	2782,0	500 kcmil	50113	50175	4 x 150 sm	41,3	1740,0	2328,0	300 kcmil
50100	50157	3 x 240 se	41,8	2088,0	2634,0	500 kcmil	50114	50176	4 x 150 se	39,4	1740,0	2223,0	300 kcmil
50101	50158	3 x 70 / 35 sm	28,3	711,0	1044,0	2/0	50115	50177	4 x 185 sm	45,7	2146,0	2874,0	350 kcmil
50102	50159	3 x 120 / 70 sm	35,1	1247,0	1704,0	4/0	50116	50178	4 x 185 se	43,4	2146,0	2750,0	350 kcmil
53550	50160	3 x 150 / 70 sm	39,7	1508,0	2065,0	300 kcmil	50117	50179	4 x 240 sm	51,2	2784,0	3646,0	500 kcmil
50103	50161	3 x 185 / 95 sm	43,7	1885,0	2563,0	350 kcmil	50118	50180	4 x 240 se	48,0	2784,0	3465,0	500 kcmil
53551	50162	3 x 240 / 120 sm	49,1	2436,0	3237,0	500 kcmil	50119	50181	5 x 25 rm	23,9	362,0	763,0	4
53560	50163	4 x 16 rm	19,0	186,0	460,0	6	50120	50182	5 x 35 rm	27,0	508,0	986,0	2
50104	50164	4 x 25 rm	21,7	290,0	636,0	4	50121	50183	5 x 50 rm	31,3	725,0	1309,0	1
50105	50165	4 x 35 sm	22,4	406,0	649,0	2	50122	50184	5 x 70 rm	35,8	1015,0	1771,0	2/0
50106	50166	4 x 35 se	21,6	406,0	623,0	2	50123	50185	5 x 95 sm	36,5	1378,0	1891,0	3/0
50107	50167	4 x 50 sm	25,4	580,0	845,0	1	50124	50186	5 x 120 sm	39,2	1740,0	2306,0	4/0
53556	50168	4 x 50 se	24,6	580,0	810,0	1	50125	50187	5 x 150 sm	45,4	2175,0	2865,0	300 kcmil
50108	50169	4 x 70 sm	29,7	812,0	1178,0	2/0	50126	50188	5 x 185 sm	50,1	2683,0	3534,0	350 kcmil
53552	50170	4 x 70 se	28,8	812,0	1126,0	2/0	50127	50189	5 x 240 sm	55,2	3480,0	4482,0	500 kcmil

Dimensions and specifications may be changed without prior notice. (RQ02)

# (N)HXH-FE 180/E 30

Security cable, halogen-free, 0.6/1 kV



## Technical data

- Halogen free security cable adapted to DIN VDE 0266
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature**  
at conductor +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0.6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
single core 15x outer Ø  
multi core 12x outer Ø
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Overall core covering
- Outer sheath of polyolefin
- Sheath colour: orange

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## Properties

- Halogen-free
- Flame retardant
- Self-extinguished
- No flame propagation
- Low smoke density
- **FE 180: Insulation integrity**  
for 180 minutes. Tests acc. to DIN VDE 0472-814 / IEC 60331
- **E 30: Functionality** of electrical cable systems for min. 30 minutes. This fulfils the demands of technical guide lines for fire protection Test method to DIN 4102-12  
The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

## Note

- re = round conductor, single wire
- rm = round conductor, multi wire
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Wherever damage to people and material must be prevented in the event of a fire due to a high concentration of material assets. Suitable for permanent installation in dry, damp and wet rooms above, on, in and under plaster, as well as in masonry and concrete. They are also suitable for laying outdoors and in the ground when laying in pipes. Laying in the pipe is permitted if precautions have been taken to prevent water from building up in the pipe. CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52700	1 x 4 re	7,0	38,0	98,0	12
52701	1 x 6 re	7,5	58,0	125,0	10
52702	1 x 10 re	8,0	96,0	165,0	8
52703	1 x 16 rm	9,0	154,0	230,0	6
52704	1 x 25 rm	10,5	240,0	345,0	4
52705	1 x 35 rm	11,5	336,0	450,0	2
52706	1 x 50 rm	12,0	480,0	590,0	1

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52707	1 x 70 rm	15,0	672,0	800,0	2/0
52708	1 x 95 rm	16,5	912,0	1100,0	3/0
52709	1 x 120 rm	18,5	1152,0	1350,0	4/0
52710	1 x 150 rm	20,5	1440,0	1650,0	300 kcmil
52711	1 x 185 rm	23,0	1776,0	2000,0	350 kcmil
52712	1 x 240 rm	25,5	2304,0	2650,0	500 kcmil
52713	1 x 300 rm	31,8	2880,0	3200,0	600 kcmil

Continuation ►



# (N)HXH-FE 180/E 30

Security cable, halogen-free, 0.6/1 kV



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52714	2 x 2,5 re	12,5	48,0	290,0	14
52715	2 x 4 re	13,5	77,0	345,0	12
52716	2 x 6 re	14,5	115,0	410,0	10
52717	2 x 10 re	16,0	192,0	540,0	8
52718	2 x 16 rm	18,0	307,0	720,0	6
52719	2 x 25 rm	21,0	480,0	1100,0	4
52720	2 x 35 rm	24,0	672,0	1120,0	2
52721	3 x 1,5 re	12,5	43,0	280,0	16
52722	3 x 2,5 re	13,5	72,0	330,0	14
52723	3 x 4 re	14,5	115,0	400,0	12
52724	3 x 6 re	15,5	173,0	480,0	10
52725	3 x 10 re	17,0	288,0	650,0	8
52726	3 x 16 rm	19,0	461,0	850,0	6
52727	3 x 25 rm	22,5	720,0	1300,0	4
52728	3 x 35 rm	24,5	1080,0	1700,0	2
52729	3 x 50 rm	27,5	1440,0	2200,0	1
52730	3 x 70 rm	32,0	2016,0	3000,0	2/0
52731	3 x 95 rm	35,5	2736,0	4000,0	3/0
52732	3 x 120 rm	39,5	3456,0	4850,0	4/0
52733	3 x 150 rm	44,0	4320,0	5950,0	300 kcmil
52734	3 x 185 rm	49,5	5328,0	7450,0	350 kcmil
52735	3 x 240 rm	60,0	6910,0	8600,0	500 kcmil
52736	4 x 1,5 re	13,5	58,0	325,0	16
52737	4 x 2,5 re	14,0	96,0	385,0	14
52738	4 x 4 re	15,5	154,0	470,0	12
52739	4 x 6 re	16,5	230,0	580,0	10
52740	4 x 10 re	18,5	384,0	790,0	8
52741	4 x 16 rm	20,5	614,0	1100,0	6

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52742	4 x 25 rm	24,5	960,0	1650,0	4
52743	4 x 35 rm	27,0	1344,0	2150,0	2
52744	4 x 50 rm	30,0	1920,0	2800,0	1
52745	4 x 70 rm	35,0	2688,0	3800,0	2/0
52746	4 x 95 rm	39,5	3648,0	5050,0	3/0
52747	4 x 120 rm	43,5	4608,0	6150,0	4/0
52748	4 x 150 rm	49,0	5760,0	7650,0	300 kcmil
52749	5 x 1,5 re	14,0	72,0	375,0	16
52750	5 x 2,5 re	15,0	120,0	445,0	14
52751	5 x 4 re	16,5	192,0	560,0	12
52752	5 x 6 re	18,0	288,0	690,0	10
52753	5 x 10 re	20,0	480,0	950,0	8
52754	5 x 16 re	22,5	768,0	1300,0	6
52755	5 x 25 rm	26,5	1200,0	1980,0	4
52756	5 x 35 rm	36,0	1680,0	2600,0	2
52757	7 x 1,5 re	15,0	101,0	365,0	16
52758	7 x 2,5 re	16,5	168,0	540,0	14
52759	10 x 1,5 re	18,0	144,0	580,0	16
52760	10 x 2,5 re	20,0	240,0	710,0	14
52761	12 x 1,5 re	19,0	173,0	640,0	16
52762	12 x 2,5 re	20,5	288,0	790,0	14
52763	14 x 1,5 re	20,0	202,0	740,0	16
52764	14 x 2,5 re	21,5	336,0	880,0	14
52765	19 x 1,5 re	21,5	274,0	880,0	16
52766	19 x 2,5 re	23,5	456,0	1150,0	14
52767	24 x 1,5 re	25,0	346,0	1100,0	16
52768	24 x 2,5 re	27,0	576,0	1400,0	14
52769	30 x 1,5 re	26,0	432,0	1300,0	16
52770	30 x 2,5 re	28,5	720,0	1650,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

# (N)HXCH-FE 180/E 30

Security cable, halogen-free, 0.6/1 kV



## Technical data

- Halogen free security cable adapted to DIN VDE 0266
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature**  
at conductor +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0.6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
12x outer Ø
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification acc. to DIN VDE 0293-308  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- Core stranded in layer
- Overall core covering
- Bare copper wire screening with helix of copper tape
- Separator
- Outer sheath of polyolefin
- Sheath colour: orange

## Tests

- Flame test acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1+2 /  
DIN EN 61034-1+2 / IEC 61034-1+2

## Properties

- Halogen-free
- Flame retardant
- Self-extinguished
- No flame propagation
- Low smoke density
- **FE 180: Insulation integrity**  
for 180 minutes. Tests acc. to  
DIN VDE 0472-814 / IEC 60331
- **E 30: Functionality** of electrical cable systems for min. 30 minutes. This fulfils the demands of technical guide lines for fire protection  
Test method acc. to DIN 4102-12  
The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.

## Note

- re = round conductor, single wire
- rm = round conductor, multi wire
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Wherever damage to people and material must be prevented in the event of a fire due to a high concentration of material assets. Suitable for permanent installation in dry, damp and wet rooms above, on, in and under plaster, as well as in masonry and concrete. They are also suitable for laying outdoors and in the ground when laying in pipes. Laying in the pipe is permitted if precautions have been taken to prevent water from building up in the pipe.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52900	2 x 1,5 / 1,5 re	13,0	52,0	220,0	16
52901	2 x 2,5 / 2,5 re	13,5	80,0	385,0	14
52902	2 x 4 / 4 re	14,5	123,0	470,0	10
52903	2 x 6 / 6 re	16,0	182,0	550,0	10
52904	2 x 10 / 10 re	18,0	312,0	730,0	8
52905	3 x 1,5 / 1,5 re	13,5	66,0	380,0	16
52906	3 x 2,5 / 2,5 re	14,5	104,0	430,0	14
52907	3 x 4 / 4 re	15,5	161,0	530,0	12
52908	3 x 6 / 6 re	16,5	240,0	630,0	10
52909	3 x 10 / 10 re	18,5	408,0	850,0	8

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52910	3 x 16 / 16 rm	20,5	643,0	1150,0	6
52911	3 x 25 / 16 rm	24,0	902,0	1700,0	4
52912	3 x 35 / 16 rm	26,5	1190,0	2150,0	2
52913	3 x 50 / 25 rm	29,5	1723,0	2800,0	1
52914	3 x 70 / 35 rm	33,0	2410,0	3800,0	2/0
52915	3 x 95 / 50 rm	37,5	3296,0	5100,0	3/0
52916	3 x 120 / 70 rm	42,5	4236,0	6250,0	4/0
52917	3 x 150 / 70 rm	47,0	5100,0	6900,0	300 kcmil
52918	3 x 185 / 95 rm	52,5	6383,0	8550,0	350 kcmil
52919	3 x 240 / 120 rm	58,5	8242,0	11150,0	500 kcmil

Continuation ►

# (N)HXCH-FE 180/E 30

Security cable, halogen-free, 0.6/1 kV



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52920	4 x 1,5 / 1,5 re	14,5	81,0	435,0	16
52921	4 x 2,5 / 2,5 re	15,5	128,0	500,0	14
52922	4 x 4 / 4 re	16,5	200,0	610,0	12
52923	4 x 6 / 6 re	17,5	297,0	740,0	10
52924	4 x 10 / 10 re	20,0	504,0	1050,0	8
52925	4 x 16 / 16 re	22,0	796,0	1350,0	6
52926	4 x 25 / 16 rm	26,0	1142,0	1950,0	4
52927	4 x 35 / 16 rm	28,5	1526,0	2400,0	2
52928	4 x 50 / 25 rm	32,0	2203,0	3200,0	1
52929	4 x 70 / 35 rm	37,0	3082,0	4300,0	2/0
52930	4 x 95 / 50 rm	41,5	4208,0	5750,0	3/0
52931	4 x 120 / 70 rm	47,0	5388,0	7100,0	4/0
52932	4 x 150 / 70 rm	52,0	6558,0	8550,0	300 kcmil
52933	4 x 185 / 95 rm	58,0	8159,0	10700,0	350 kcmil
52934	4 x 240 / 120 rm	64,0	10546,0	13930,0	500 kcmil

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
52935	7 x 1,5 / 2,5 re	16,5	133,0	635,0	16
52936	7 x 2,5 / 2,5 re	17,5	200,0	680,0	14
52937	10 x 1,5 / 2,5 re	19,5	176,0	870,0	16
52938	10 x 2,5 / 4 re	21,0	286,0	980,0	14
52939	12 x 1,5 / 2,5 re	20,0	205,0	1050,0	16
52940	12 x 2,5 / 4 re	21,5	334,0	1050,0	14
52941	24 x 1,5 / 6 re	26,0	413,0	1900,0	16
52942	24 x 2,5 / 10 re	28,5	696,0	1900,0	14
52943	30 x 1,5 / 6 re	27,0	499,0	2200,0	16
52944	30 x 2,5 / 10 re	30,0	840,0	2200,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

# (N)HXH-FE 180/E 90

Security cable, halogen-free, 0.6/1 kV



## Technical data

- Halogen free security cable adapted to DIN VDE 0266
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature**  
at conductor +90°C
- **Nominal voltage**  
 $U_0/U$  0.6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
single core 15x outer  $\varnothing$   
multi core 12x outer  $\varnothing$
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification acc. to DIN VDE 0293-308  
1 core: black  
 $\leq 5$  cores: coloured  
 $\geq 6$  cores: black with continuous white numbering
- GN-YE conductor, 3 cores and above
- Cores stranded in layer
- Overall core covering
- Core wrapping with glass-fibre tape as flame-protection
- Outer sheath of polyolefin
- Sheath colour: orange

## Tests

- Flame test acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1+2 /  
DIN EN 61034-1+2 / IEC 61034-1+2

## Properties

- Halogen-free
- Flame retardant
- Self-extinguished
- No flame propagation
- Low smoke density
- **FE 180: Insulation integrity**  
for 180 minutes. Tests acc. to  
DIN VDE 0472-814 / IEC 60331
- **E 90: Functionality** of electrical cable systems for min. 90 minutes. This fulfils the demands of technical guide lines for fire protection  
Test method acc. to DIN 4102-12  
The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

## Note

- re = round conductor, single wire  
rm = round conductor, multi wire
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Wherever damage to people and material must be prevented in the event of a fire due to a high concentration of material assets. Suitable for permanent installation in dry, damp and wet rooms above, on, in and under plaster, as well as in masonry and concrete. They are also suitable for laying outdoors and in the ground when laying in pipes. Laying in the pipe is permitted if precautions have been taken to prevent water from building up in the pipe.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53180	1 x 16 rm	11,0	154,0	255,0	6
53181	1 x 25 rm	12,5	240,0	375,0	4
53182	1 x 35 rm	13,5	336,0	475,0	2
53183	1 x 50 rm	15,0	480,0	625,0	1
53184	1 x 70 rm	16,5	672,0	855,0	2/0
53185	1 x 95 rm	18,0	912,0	1140,0	3/0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer $\varnothing$ app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53186	1 x 120 rm	20,5	1152,0	1410,0	4/0
53187	1 x 150 rm	22,5	1440,0	1730,0	300 kcmil
53188	1 x 185 rm	24,5	1776,0	2140,0	350 kcmil
53189	1 x 240 rm	27,0	2304,0	2700,0	500 kcmil
53190	1 x 300 rm	30,0	2880,0	3420,0	600 kcmil
53191	1 x 400 rm	33,5	3840,0	4310,0	750 kcmil

Continuation ►

# (N)HXH-FE 180/E 90

Security cable, halogen-free, 0.6/1 kV



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
59056	2 x 1,5 re	12,9	29,0	184,0	16
53000	3 x 1,5 re	14,0	43,0	280,0	16
53001	3 x 2,5 re	15,0	72,0	330,0	14
53002	3 x 4 re	16,0	115,0	400,0	12
53003	3 x 6 re	17,0	173,0	480,0	10
53004	3 x 10 re	19,0	288,0	650,0	8
53005	3 x 16 re	21,0	461,0	850,0	6
52990	3 x 25 rm	25,0	720,0	1300,0	4
52991	3 x 35 rm	28,0	1008,0	1700,0	2
52992	3 x 35 / 16 rm	28,0	1162,0	1850,0	2
52993	3 x 50 / 25 rm	32,0	1680,0	2500,0	1
52994	3 x 70 / 35 rm	36,0	2352,0	3350,0	2/0
52995	3 x 95 / 50 rm	42,0	3216,0	4500,0	3/0
52996	3 x 120 / 70 rm	45,0	4128,0	5600,0	4/0
52997	3 x 150 / 70 rm	49,0	4992,0	6700,0	300 kcmil
52998	3 x 185 / 95 rm	55,0	6240,0	8350,0	350 kcmil
52999	3 x 240 / 120 rm	63,0	8064,0	10000,0	500 kcmil
53006	4 x 1,5 re	15,0	58,0	325,0	16
53007	4 x 2,5 re	16,0	96,0	385,0	14
53008	4 x 4 re	17,0	154,0	470,0	12
53009	4 x 6 re	18,0	230,0	580,0	10
53010	4 x 10 re	20,0	384,0	790,0	8
53011	4 x 16 re	22,0	614,0	1100,0	6

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53012	4 x 25 rm	27,0	960,0	1650,0	4
53013	4 x 35 rm	30,0	1344,0	2150,0	2
53014	4 x 50 rm	34,0	1920,0	2800,0	1
53030	4 x 70 rm	39,0	2688,0	3800,0	2/0
53031	4 x 95 rm	44,0	3648,0	5050,0	3/0
53070	4 x 120 rm	47,0	4608,0	6150,0	4/0
53390	4 x 150 rm	51,2	5760,0	7662,0	300 kcmil
53015	5 x 1,5 re	16,0	72,0	375,0	16
53016	5 x 2,5 re	17,0	120,0	445,0	14
53017	5 x 4 re	18,0	192,0	560,0	12
53018	5 x 6 re	20,0	288,0	690,0	10
53019	5 x 10 re	22,0	480,0	950,0	8
53020	5 x 16 rm	24,0	768,0	1300,0	6
53021	5 x 25 rm	29,0	1200,0	1980,0	4
53028	5 x 35 rm	33,0	1680,0	2350,0	2
53029	5 x 50 rm	38,0	2400,0	3100,0	1
11018801	5 x 95 rm	47,6	4560,0	6164,0	3/0
53022	7 x 1,5 re	19,0	101,0	560,0	16
53027	7 x 2,5 re	21,0	168,0	650,0	14
53025	10 x 1,5 re	23,0	144,0	750,0	16
53026	10 x 2,5 re	25,0	240,0	910,0	14
53023	12 x 1,5 re	25,0	173,0	850,0	16
53024	12 x 2,5 re	26,0	288,0	1000,0	14
59057	24 x 1,5 re	27,4	346,0	895,0	16

Dimensions and specifications may be changed without prior notice. (RQ02)

# (N)HXCH-FE 180/E 90

Security cable, halogen-free, 0,6/1 kV



## Technical data

- Halogen free security cable adapted to DIN VDE 0266
- **Temperature range**  
during installation -5°C to +50°C  
fixed installation -30°C to +90°C
- Permissible **operating temperature**  
at conductor +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
4000 V
- **Minimum bending radius**  
12x outer Ø
- **Caloric load values**  
see "Technical Information"

## Cable structure

- Bare copper conductor, single wire or multi wire acc. to DIN VDE 0295 cl.1 or cl.2 / IEC 60228 cl.1 or cl.2
- Core insulation of polymer
- Core identification acc. to DIN VDE 0293-308  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- Cores stranded in layer
- Overall core sheath
- Bare copper wire screening with helix of copper tape
- Separator
- Outer sheath of polyolefin
- Sheath colour: orange

## Tests

- Flame test acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1+2 /  
DIN EN 61034-1+2 / IEC 61034-1+2

## Properties

- Halogen-free
- Flame retardant
- Self-extinguished
- No flame propagation
- Low smoke density
- **FE 180: Insulation integrity**  
for 180 minutes. Tests acc. to  
DIN VDE 0472-814 / IEC 60331
- **E 90: Functionality** of electrical cable systems for min. 90 minutes. This fulfils the demands of technical guide lines for fire protection Test method acc. to DIN 4102-12 The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

## Note

- re = round conductor, single wire  
rm = round conductor, multi wire
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

Wherever damage to people and material must be prevented in the event of a fire due to a high concentration of material assets. Suitable for permanent installation in dry, damp and wet rooms above, on, in and under plaster, as well as in masonry and concrete. They are also suitable for laying outdoors and in the ground when laying in pipes. Laying in the pipe is permitted if precautions have been taken to prevent water from building up in the pipe.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
59028	2 x 2,5 / 2,5 re	16,0	80,0	390,0	14	53039	3 x 35 / 16 rm	30,0	1190,0	2150,0	2
53032	3 x 1,5 / 1,5 re	16,9	66,0	380,0	16	53040	3 x 50 / 25 rm	34,0	1723,0	2800,0	1
53033	3 x 2,5 / 2,5 re	18,0	104,0	430,0	14	53041	3 x 70 / 35 rm	38,0	2410,0	3800,0	2/0
53034	3 x 4 / 4 re	19,0	161,0	530,0	12	53042	3 x 95 / 50 rm	44,0	3296,0	5100,0	3/0
53035	3 x 6 / 6 re	20,1	240,0	640,0	10	53043	3 x 120 / 70 rm	47,0	4236,0	6250,0	4/0
53036	3 x 10 / 10 re	22,0	408,0	850,0	8	53044	3 x 150 / 70 rm	51,0	4992,0	6900,0	300 kcmil
53037	3 x 16 / 16 rm	24,0	643,0	1150,0	6	53045	3 x 185 / 95 rm	56,0	6383,0	8550,0	350 kcmil
53038	3 x 25 / 16 rm	28,0	902,0	1700,0	4	53046	3 x 240 / 120 rm	65,0	8242,0	11150,0	500 kcmil

Continuation ►

# (N)HXCH-FE 180/E 90

Security cable, halogen-free, 0,6/1 kV

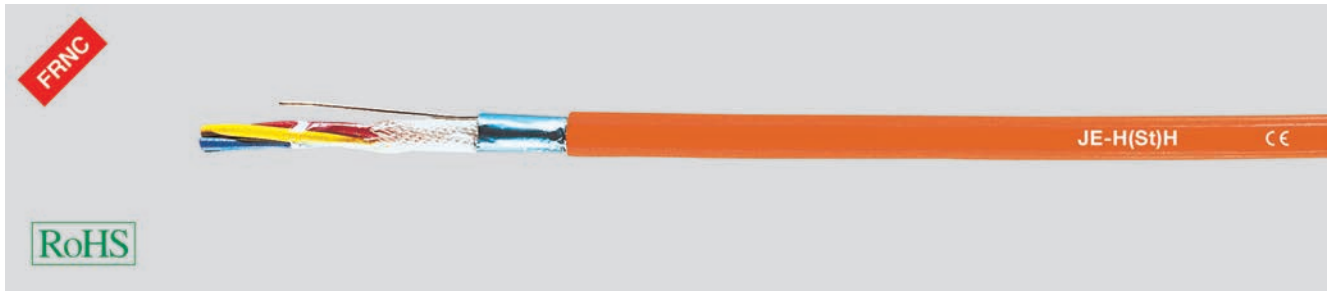


Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53047	4 x 1,5 / 1,5 re	18,0	81,0	435,0	16
53048	4 x 2,5 / 2,5 re	18,9	128,0	500,0	14
53049	4 x 4 / 4 re	20,0	200,0	610,0	12
53050	4 x 6 / 6 re	21,0	297,0	740,0	10
53051	4 x 10 / 10 re	23,0	504,0	1050,0	8
53052	4 x 16 / 16 rm	25,0	796,0	1350,0	6
53053	4 x 25 / 16 rm	30,0	1142,0	1950,0	4
53054	4 x 35 / 16 rm	33,0	1526,0	2400,0	2
53055	4 x 50 / 25 rm	37,0	2203,0	3200,0	1
53056	4 x 70 / 35 rm	42,0	3082,0	4300,0	2/0
53057	4 x 95 / 50 rm	47,0	4208,0	5750,0	3/0
53058	4 x 120 / 70 rm	51,0	5388,0	7100,0	4/0
53059	4 x 150 / 70 rm	56,0	6540,0	8550,0	300 kcmil
53060	4 x 185 / 95 rm	68,0	8159,0	10700,0	350 kcmil
53061	4 x 240 / 120 rm	70,0	10546,0	13930,0	500 kcmil

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
53062	7 x 1,5 / 2,5 re	21,0	133,0	680,0	16
53066	7 x 2,5 / 2,5 re	21,0	200,0	680,0	14
53063	12 x 1,5 / 2,5 re	27,0	205,0	1050,0	16
53067	12 x 2,5 / 4 re	28,0	334,0	1050,0	14
53064	24 x 1,5 / 6 re	37,0	413,0	1900,0	16
53068	24 x 2,5 / 10 re	37,5	696,0	1900,0	14
53065	30 x 1,5 / 6 re	39,0	499,0	2200,0	16
53069	30 x 2,5 / 10 re	39,5	840,0	2200,0	14

Dimensions and specifications may be changed without prior notice. (RQ02)

# JE-H(St)H Bd FE 180/E 30 up to E 90 (orange), halogen-free



## Technical data

- Flame retardant, halogen-free installation cable adapted to DIN VDE 0815
- **Loop resistance**  
max. 73,2 Ohm/km
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Operating peak voltage**  
225 V (not for purposes of high current and power installation)
- **Test voltage**  
core/core 500 V  
core/screen 2000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance**  
max. 120 nF/km at 800 Hz  
(this values may be extended at 20% with a make-up up to 4 pairs)
- **Capacitance unbalance**  
max. 200 pF/100 m  
(20% of the values, but one value up to 400 pF is allowed)
- **Minimum bending radius**  
6x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation halogen-free, cross-linked polymer, compound type HI1 flame retardant (E90 with special foil wrapping over conductor)
- Core identification with colour rings and ring-groups to DIN VDE 0815
- Cores twisted to pairs, 4 pairs consist to unit, several units stranded to layers
- Units identified by numbered tape
- Core wrapping with special polyester and glass-fibre tape
- Screening with alu-laminated polyester tape and solid tinned copper drain wire 0,8 mm Ø
- Outer sheath halogen-free, flame retardant to DIN VDE 0207 part 24 HM2
- Sheath colour orange

## Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- **E 30 to E 90**  
Functionality (burning behaviour) is dependant on corresponding installation technique.
- **LSOH** = Low Smoke Zero Halogen

## Properties

- No fire propagation
- Low smoke density
- Not for purposes of high current and power installation as well as underground laying.
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814  $\Delta$  IEC 60331.  
**Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12.  
The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12.  
The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

## Application

Flame resistant, halogen-free, static screened installation cables for telecommunication purpose. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected and a safety consciousness take a special significance, e. g. in industrial complexes, public buildings, hotels, airports, under ground railway networks, hospitals.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### Functionality E 30 to E 90

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
34081	2 x 2 x 0,8	7,4	25,0	74,0	-
34082	4 x 2 x 0,8	10,8	45,0	127,0	-
34083	8 x 2 x 0,8	16,9	85,0	300,0	-
34084	12 x 2 x 0,8	18,5	126,0	336,0	-
34085	16 x 2 x 0,8	20,1	166,0	426,0	-
34086	20 x 2 x 0,8	22,2	206,0	529,0	-
34087	32 x 2 x 0,8	29,1	326,0	859,0	-
34088	40 x 2 x 0,8	34,2	407,0	1094,0	-
34089	52 x 2 x 0,8	37,3	529,0	1280,0	-

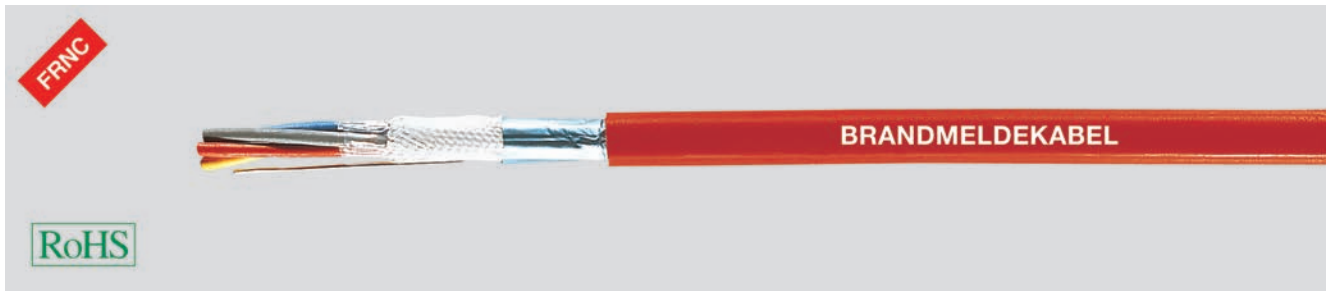
### Functionality E 30

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
34148	2 x 2 x 0,8	7,5	25,0	74,0	-
34149	4 x 2 x 0,8	9,3	45,0	127,0	-
34150	8 x 2 x 0,8	11,4	85,0	300,0	-
34151	12 x 2 x 0,8	13,0	126,0	336,0	-
34152	16 x 2 x 0,8	15,7	166,0	426,0	-
34153	20 x 2 x 0,8	16,5	206,0	529,0	-
34154	32 x 2 x 0,8	20,3	326,0	859,0	-
34155	40 x 2 x 0,8	23,4	407,0	1094,0	-
34156	52 x 2 x 0,8	25,2	529,0	1280,0	-

Dimensions and specifications may be changed without prior notice. (RQ02)



# JE-H(St)H Bd fire warning cable, FE 180/E 30 to E 90 (red), halogen-free



## Technical data

- Flame retardant, halogen-free installation cable, adapted to DIN VDE 0815
- **Loop resistance**  
max. 73,2 Ohm/km
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Operating peak voltage**  
225 V (not for purposes of high current and power installation)
- **Test voltage**  
core/core 500 V  
core/screen 2000 V
- **Insulation resistance**  
min. 100 MΩm x km
- **Mutual capacitance**  
max. 120 nF/km at 800 Hz  
(this values may be extended at 20% with a make-up up to 4 pairs)
- **Capacitance unbalance**  
max. 200 pF/100 m (20% of the values, but one value up to 400 pF is allowed)
- **Minimum bending radius**  
6x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation halogen-free, cross-linked polymer HI1, flame retardant (E90 with special foil wrapping over conductor)
- Core identification with colour rings and ring-groups to DIN VDE 0815
- Cores twisted to pairs, each 4 pairs consist to unit, several units stranded to layers
- Units identified with numbered tape
- Core wrapping with special polyester and glass-fibre tape
- Screening with alu-laminated polyester tape and solid copper drain wire 0,8 mm Ø
- Outer sheath halogen-free, flame retardant to DIN VDE 0207 part 24, HM2
- Sheath colour red, RAL 3000 with imprint "BRANDMELDEKABEL"

## Tests

- Flame test acc. to DIN VDE 0482-332-3, BS 4066 part 3, DIN EN 60332-3, IEC 60332-3 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- **E 30 to E 90**  
Functionality (burning behaviour) is dependant on corresponding installation technique.
- **LSOH** = Low Smoke Zero Halogen

## Properties

- No fire propagation
- Low smoke density
- Not for purposes of high current and power installation as well as underground laying
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814  $\pm$  IEC 60331.  
**Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12.  
The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12.  
The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

## Application

Static screened installation cables for telecommunication purposes. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected and a safety consciousness take a special significance, e. g. in industrial complexes, public buildings, hotels, airports, under ground railway networks, hospitals.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### Functionality E 30 to E 90

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
34091	2 x 2 x 0,8	7,4	25,0	74,0	-
34092	4 x 2 x 0,8	10,8	45,0	127,0	-
34093	8 x 2 x 0,8	16,9	85,0	300,0	-
34094	12 x 2 x 0,8	18,5	126,0	336,0	-
34095	16 x 2 x 0,8	20,1	166,0	426,0	-
34096	20 x 2 x 0,8	22,2	206,0	529,0	-
34097	32 x 2 x 0,8	29,1	326,0	859,0	-
34098	40 x 2 x 0,8	34,2	407,0	1094,0	-
34099	52 x 2 x 0,8	37,3	529,0	1280,0	-

### Functionality E 30

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
34157	2 x 2 x 0,8	7,5	25,0	67,0	-
34158	4 x 2 x 0,8	9,3	45,0	103,0	-
34159	8 x 2 x 0,8	11,4	85,0	168,0	-
34160	12 x 2 x 0,8	13,0	126,0	237,0	-
34161	16 x 2 x 0,8	15,7	166,0	303,0	-
34162	20 x 2 x 0,8	16,5	206,0	361,0	-
34163	32 x 2 x 0,8	20,3	326,0	553,0	-
34164	40 x 2 x 0,8	23,4	407,0	699,0	-
34165	52 x 2 x 0,8	25,2	529,0	865,0	-

Dimensions and specifications may be changed without prior notice. (RQ02)

# JE-H(St)HRH Bd fire warning cable, FE 180/E 30 to E 90, halogen-free



## Technical data

- Special insulation for cores and outer sheath adapted to DIN VDE 0815.
- **Loop resistance**  
max. 73,2 Ohm/km
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Operating peakvoltage**  
max. 225 V (not for purposes of high current and power installation)
- **Test voltage**  
core/core 500 V  
core/screen 2000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance**  
max. 120 nF/km at 800 Hz
- **Minimum bending radius**  
6x cable Ø
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of cross-linked polymer, compound type HI1 with mica tape, flame retardant
- Core identification with colour rings and ring-groups to DIN VDE 0815
- Cores twisted to pairs, each 4 pairs consist to unit, several units stranded to layers
- Units identified with numbered tape
- Glass-fibre taped
- Screening with alu-laminated polyester tape
- solid copper drain wire 0,8 mm Ø
- Inner sheath, flame retardant polyolefin compound to DIN VDE 0207 part 24 HM3
- Galvanized steel wire braided screen
- Outer sheath of polyolefin compound type HM2 to DIN VDE 0207 part 24
- Outer sheath red (RAL 3000) with imprint "BRANDMELDEKABEL"

## Tests

- Flame test acc. to  
DIN VDE 0482-332-3, BS 4066 part 3,  
DIN EN 60332-3, IEC 60332-3 (previously  
DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases  
acc. to DIN VDE 0482 part 267,  
DIN EN 50267-2-2, IEC 60754-2  
(equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482  
part 1034-1+2, DIN EN 61034-1+2,  
IEC 61034-1+2, BS 7622 part 1+2  
(previously DIN VDE 0472 part 816)

## Note

- **E 30 to E 90**  
Functionality is dependant on installation technique.
- **LSOH** = Low Smoke Zero Halogen

## Properties

- No fire propagation
- Low smoke density
- Not for purposes of high current and power installation as well as underground laying
- **FE 180: Insulation integrity** for 180 minutes. Tests acc.to DIN VDE 0472 part 814  $\Delta$  IEC 60331.  
**Insulation integrity** under direct flame propagation for the test period of 180 minutes.
- **E 30: Functionality** of electrical cable systems for minimum 30 minutes. Test to DIN 4102 part 12.  
The **functionality** for 30 minutes assures when persons and animals are to be saved from a burning building. 30 minutes secures the functional performance of the fire warning and alarm systems, safety and spare lighting, passenger lifts with evacuation circuits, except the cables which are installed within the ladder shafts and engine rooms.
- **E 90: Functionality** of electrical cable systems for minimum 90 minutes. Test method to DIN 4102 part 12.  
The **functionality** for 90 minutes assures the functional performance of water-pressure-rising stations for the supply to avoid smoke and heat in safety-stairs and inner rooms, ladder shafts and engine rooms for fire brigade lifts, emergency lifts for sickbeds in hospitals and the fire brigade lifts.

## Application

Wherever necessary to prevent high property value in case of fire damage to human and material. The static screen prevents strong interference impulse. Suitable for fixed installation everywhere, where in case of fire human life and material assets are to be protected and a safety consciousness take a special significance, e. g. in industrial complexes, public buildings, hotels, airports, under ground railway networks, hospitals.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Part no.	No.pairs x cross-sec. mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
34075	2 x 2 x 0,8	11,7	25,0	150,0	34080	20 x 2 x 0,8	28,9	206,0	870,0
34076	4 x 2 x 0,8	15,7	45,0	275,0	34072	32 x 2 x 0,8	41,1	326,0	1360,0
34077	8 x 2 x 0,8	21,6	85,0	545,0	34073	40 x 2 x 0,8	42,3	407,0	1800,0
34078	12 x 2 x 0,8	23,8	126,0	602,0	34074	52 x 2 x 0,8	45,2	529,0	2038,0
34079	16 x 2 x 0,8	27,7	166,0	734,0					

Dimensions and specifications may be changed without prior notice. (RQ02)

# HELUDATA® EN-50288-7 FIRE RES OSA 500

Instrumentation cable, fire resistant, halogen-free, XLPE/OS/SWA/LS0H



## Technical data

- Instrumentation cable acc. to DIN EN 50288-7
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U<sub>Ac</sub> 500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
fixed 10 x cable Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
cable element: < 100 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
1,5 mm<sup>2</sup> < 40 µH/Ω  
≥ 2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Fire barrier: MICA tape
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, GY, RD  
5 cores: BU, BN, BK, GY, RD  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PET tape over tinned copper stranded drain wire (7x0,3 mm)
- Inner sheath: LS0H compound acc. to EN 50290-2-27
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: LS0H compound acc. to EN 50290-2-27
- Inner and outer sheath colour: orange (RAL 2004)
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements have to be produced out of non-hygroscopic materials
- Resistant to hydrocarbons

## Tests

- Fire resistant acc. to IEC 60331-21
- Flame retardant acc. to  
DIN VDE 482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24  
(Cat. C)
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22  
(Cat. A)
- Corrosiveness of combustion gases acc. to  
DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1 /  
DIN EN 61034-1 / IEC 61034-1
- Halogen-free acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
- Oil resistant acc. to IEC 60811-532 /  
NEMA WC 57 / IEC 60811-404
- UV and sunlight resistant acc. to  
ISO 4892-3 & UL 1581 sect. 1200
- Suitable for usage in explosive  
atmospheres acc. to  
IEC 60079-14 sec. 16.2.2

## Note

- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- Suitable for direct burial
- Version suitable for installation on ships acc. to IEC 60092-350 on request

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks. In the case of fire, the cable maintains circuit integrity for min. 180 minutes.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016406	1 x 2 x 1,5	16	12,0 - 14,2	36,2	347
11016407	2 x 2 x 1,5	16	15,9 - 18,9	67,3	542
11016408	4 x 2 x 1,5	16	18,0 - 21,6	129,5	828
11016409	6 x 2 x 1,5	16	21,6 - 25,9	191,7	1107
11016410	8 x 2 x 1,5	16	23,8 - 28,6	253,9	1312
11016411	10 x 2 x 1,5	16	26,7 - 32,1	316,1	1535
11016412	12 x 2 x 1,5	16	27,5 - 33,1	378,3	1880
11016413	1 x 3 x 1,5	16	12,5 - 14,8	51,7	392
11016414	2 x 3 x 1,5	16	17,2 - 20,5	98,4	640

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016415	4 x 3 x 1,5	16	20,3 - 24,3	177,6	1018
11015824	1 x 2 x 2,5	14	12,9 - 15,7	56,9	416
11015825	1 x 3 x 2,5	14	13,5 - 16,4	82,8	471
11015826	1 x 4 x 2,5	14	14,5 - 17,7	108,8	538
11015953	5 x 2,5	14	15,5 - 18,9	124,8	628
11015954	1 x 3 x 4	12	15,3 - 18,3	120,0	581
11015955	1 x 4 x 4	12	16,3 - 19,6	158,4	682
11015956	5 x 4	12	17,5 - 21,0	196,8	859

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 FIRE RES IOS 500

Instrumentation cable, fire resistant, halogen-free, XLPE/IS/OS/LS0H



HELUDATA® EN-50288-7 FIRE RES IOS 500 CE

## Technical data

- Instrumentation cable acc. to DIN EN 50288-7
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
 $U_{AC}$  500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
fixed 7,5 x cable Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
cable element: < 100 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
< 40 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Fire barrier: MICA tape
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
blue cores with continuous black numbering
- Individual screen: pairs or triads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PET tape over tinned copper stranded drain wire (7x0,3 mm)
- Outer sheath: LS0H compound acc. to EN 50290-2-27
- Outer sheath colour: orange (RAL 2004)
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements have to be produced out of non-hygroscopic materials
- Resistant to hydrocarbons

## Tests

- Fire resistant acc. to IEC 60331-21
- Flame retardant acc. to  
DIN VDE 482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24  
(Cat. C)
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22  
(Cat. A)
- Corrosiveness of combustion gases acc. to  
DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1 /  
DIN EN 61034-1 / IEC 61034-1
- Halogen-free acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
- Oil resistant acc. to ICEA S-73-532 /  
NEMA WC 57 / IEC 60811-404
- UV and sunlight resistant acc. to  
ISO 4892-3 & UL 1581 sect. 1200
- Suitable for usage in explosive  
atmospheres acc. to  
IEC 600079-14 sec. 16.2.2

## Note

- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- Not suitable for direct burial
- Version suitable for installation on ships acc. to IEC 60092-350 on request

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks. In the case of fire, the cable maintains circuit integrity for min. 180 minutes.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016566	2 x 2 x 1,5	16	14,9 - 18,0	73,1	206
11016567	4 x 2 x 1,5	16	17,9 - 21,5	141,2	340
11016568	6 x 2 x 1,5	16	21,6 - 26,0	209,1	534
11016569	8 x 2 x 1,5	16	24,5 - 29,5	277,1	669
11016570	10 x 2 x 1,5	16	28,3 - 34,0	345,2	798

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016571	12 x 2 x 1,5	16	29,3 - 35,2	413,2	918
11016573	2 x 3 x 1,5	16	16,8 - 20,2	104,2	272
11016579	4 x 3 x 1,5	16	19,9 - 24,0	188,4	459

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 FIRE RES IOSA 500

Instrumentation cable, fire resistant, halogen-free, XLPE/IS/OS/LS0H/SWA/LS0H



## Technical data

- Instrumentation cable acc. to DIN EN 50288-7
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U<sub>Ac</sub> 500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
fixed 10 x cable Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
cable element: < 100 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
< 40 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Fire barrier: MICA tape
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
blue cores with continuous black numbering
- Individual screen: pairs or triads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper stranded drain wire (7x0,3 mm)
- Inner sheath: LS0H compound acc. to EN 50290-2-27
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: LS0H compound acc. to EN 50290-2-27
- Inner and outer sheath colour:  
orange (RAL 2004)
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements have to be produced out of non-hygroscopic materials
- Resistant to hydrocarbons

## Tests

- Fire resistant acc. to IEC 60331-21
- Flame retardant acc. to  
DIN VDE 482-332-1-2,  
DIN EN 60332-1-2, IEC 60332-1-2
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24  
(Cat. C)
- Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22  
(Cat. A)
- Corrosiveness of combustion gases acc. to  
DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to  
DIN VDE 0482-1034-1 /  
DIN EN 61034-1 / IEC 61034-1
- Halogen-free acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
- Oil resistant acc. to IEC 60811-404 /  
NEMA WC 57 / IEC 60811-404
- UV and sunlight resistant acc. to  
ISO 4892-3 & UL 1581 sect. 1200
- Suitable for usage in explosive  
atmospheres acc. to  
IEC 600079-14 sec. 16.2.2

## Note

- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- Suitable for direct burial
- Version suitable for installation on ships acc. to IEC 60092-350 on request

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks. In the case of fire, the cable maintains circuit integrity for min. 180 minutes.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016416	2 x 2 x 1,5	16	19,5 - 23,2	73,1	706	11016421	12 x 2 x 1,5	16	34,8 - 41,6	413,2	2279
11016417	4 x 2 x 1,5	16	22,2 - 26,5	141,2	1002	11016428	2 x 3 x 1,5	16	21,2 - 25,3	104,2	897
11016418	6 x 2 x 1,5	16	26,0 - 31,0	209,1	1357	11016429	4 x 3 x 1,5	16	24,3 - 29,0	188,4	1210
11016419	8 x 2 x 1,5	16	29,9 - 35,7	277,1	1702						
11016420	10 x 2 x 1,5	16	33,7 - 40,2	345,2	2103						

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 FIRE RES OS 500

Instrumentation cable, fire resistant, halogen-free, XLPE/OS/LSOH



HELUDATA® EN-50288-7 FIRE RES OS 500 CE

## Technical data

- Instrumentation cable acc. to DIN EN 50288-7
- **Temperature range**  
flexing -10°C to +90°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U<sub>AC</sub> 500 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
fixed 7,5 x cable Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
cable element: < 100 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
1,5 mm<sup>2</sup> < 40 μH/Ω  
≥ 2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl. 2 / IEC 60228 cl. 2
- Fire barrier: MICA tape
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads, quads or 5 cores
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, GY, RD  
5 cores: BU, BN, BK, GY, RD  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PET tape over tinned copper stranded drain wire (7x0,3 mm)
- Outer sheath: LSOH compound acc. to EN 50290-2-27
- Outer sheath colour:  
orange (RAL 2004)
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements have to be produced out of non-hygroscopic materials
  - Resistant to hydrocarbons
- ### Tests
- Fire resistant acc. to IEC 60331-21
  - Flame retardant acc. to  
DIN VDE 0482-332-1-2 /  
DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-24 /  
DIN EN 60332-3-24 / IEC 60332-3-24  
(Cat. C)
  - Flame test on bunched wires acc.  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22  
(Cat. A)
  - Corrosiveness of combustion gases acc. to  
DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
  - Smoke density acc. to  
DIN VDE 0482-1034-1 /  
DIN EN 61034-1 / IEC 61034-1
  - Halogen-free acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
  - Oil resistant acc. to IEC 60811-532 /  
NEMA WC 57 / IEC 60811-404
  - UV and sunlight resistant acc. to  
ISO 4892-3 & UL 1581 sect. 1200
  - Suitable for usage in explosive  
atmospheres acc. to  
IEC 60079-14 sec. 16.2.2

## Note

- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- Not suitable for direct burial
- Version suitable for installation on ships acc. to IEC 60092-350 on request

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks. In the case of fire, the cable maintains circuit integrity for min. 180 minutes.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016430	1 x 2 x 1,5	16	8,1 - 9,7	36,2	91
11016557	2 x 2 x 1,5	16	12,0 - 14,4	67,3	164
11016558	4 x 2 x 1,5	16	14,1 - 17,1	129,5	269
11016559	6 x 2 x 1,5	16	17,1 - 20,7	191,7	418
11016560	8 x 2 x 1,5	16	19,4 - 23,5	253,9	530
11016561	10 x 2 x 1,5	16	22,2 - 26,9	316,1	625
11016562	12 x 2 x 1,5	16	23,1 - 28,0	378,3	724
11016563	1 x 3 x 1,5	16	8,6 - 10,3	51,7	117
11016564	2 x 3 x 1,5	16	13,5 - 16,3	98,4	221

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016565	4 x 3 x 1,5	16	15,9 - 19,3	177,6	374
11015812	1 x 2 x 2,5	14	9,0 - 11,2	56,9	121
11015813	1 x 3 x 2,5	14	9,6 - 11,9	82,8	159
11015814	1 x 4 x 2,5	14	10,6 - 13,3	108,8	200
11015815	5 x 2,5	14	11,6 - 14,4	124,8	254
11015816	1 x 3 x 4	12	11,3 - 13,8	120,0	221
11015817	1 x 4 x 4	12	12,4 - 15,1	158,4	284
11015818	5 x 4	12	13,7 - 16,7	196,8	365

Dimensions and specifications may be changed without prior notice.



# HELUPOWER® CHARGE-750-AC

flexible, flame retardant



## TECHNICAL DATA

E-Mobility charging cable according to DIN VDE 0285-620 / DIN EN 50620 / GB/T 33594-2017

<b>Temperature range</b>	flexible -40°C bis +90°C fixed -40°C bis +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	U <sub>0</sub> /U 450/750 V AC
<b>Test voltage</b>	signal cores: 2000 V DC power cores: 2500 V AC complete cable: 3500 V AC
<b>Minimum bending radius</b>	flexible 7,5 x Kabel-Ø fixed 4 x Kabel-Ø

## CABLE STRUCTURE

- power and signal cores: bare copper conductor acc. to DIN VDE 0295 cl. 5, fine wire, IEC 60228 Kl. 5
- core insulation: halogen-free polymer type EVI-2 acc. to DIN EN 50620
- core identification: signal cores acc. to DIN VDE 0285-620 / DIN EN 50620 and DIN VDE 0293-334 / DIN EN 50334  
power supply cores: colour coding acc. to DIN VDE 0293-308 and HD 308 S2
- outer sheath: halogen-free polymer type EVM-1 acc. to DIN EN 50620
- outer sheath colour: black or red (RAL 3020)
- with meter marking

## PROPERTIES

- resistant to: oil, UV radiation
- halogen-free
- flame retardant

## TESTS

- oil resistant acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- flame retardant acc. to DIN VDE 0482-332-1 / DIN EN 60332-1 / IEC 60332-1
- halogen-free acc. to DIN VDE 0285-620 / DIN EN 50620
- UV-resistant acc. to DIN VDE 0285-620 / DIN EN 50620

## APPLICATION

E-Mobility charging cable for multiple use scenarios. It can be used for charging electronic vehicles at public charge stations like parking areas, near highways or in garages as well as at domestic sockets. The UV and oil resistance ensure a reliable charging process indoors and outdoors. Due to its TPE-U outer sheath it even withstands harsh handling on concrete.

## NOTES

- other constructions or outer sheath colours available on request
- UL 62 charging cable available on request
- can also be delivered for alternating current as HELUPOWER® CHARGE 1200 DC

### outer sheath: black

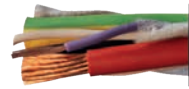
Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001062	3 G 1.5 + 1 x 0.5	9.5	48.0	115
17001063	3 G 1.5 + 2 x 0.5	9.5	53.0	125
17001064	3 G 2.5 + 1 x 0.5	10.0	77.0	153
17001065	3 G 2.5 + 2 x 0.5	10.0	82.0	161
17001066	5 G 2.5 + 1 x 0.5	12.8	125.0	238
17001067	5 G 2.5 + 2 x 0.5	12.8	130.0	245
17001068	5 G 2.5 + 4 x 0.5	13.4	140.0	263
17001069	3 G 6 + 1 x 0.5	12.8	178.0	293
17001070	3 G 6 + 2 x 0.5	12.8	183.0	300
17001071	5 G 6 + 1 x 0.5	16.0	293.0	455
17001072	5 G 6 + 2 x 0.5	16.0	298.0	461
17001073	5 G 16 + 1 x 1	22.7	778.0	1100

### outer sheath: red

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001074	3 G 1.5 + 1 x 0.5	9.5	48.0	115
17001075	3 G 1.5 + 2 x 0.5	9.5	53.0	125
17001076	3 G 2.5 + 1 x 0.5	10.0	77.0	153
17001077	3 G 2.5 + 2 x 0.5	10.0	82.0	161
17001078	5 G 2.5 + 1 x 0.5	12.8	125.0	238
17001079	5 G 2.5 + 2 x 0.5	12.8	130.0	245
17001080	5 G 2.5 + 4 x 0.5	13.4	140.0	263
17001081	3 G 6 + 1 x 0.5	12.8	178.0	293
17001082	3 G 6 + 2 x 0.5	12.8	183.0	300
17001083	5 G 6 + 1 x 0.5	16.0	293.0	455
17001084	5 G 6 + 2 x 0.5	16.0	298.0	461
17001085	5 G 16 + 1 x 1	22.7	778.0	1100

# HELUPOWER® CHARGE-1200-DC

flexible, flame retardant



HELUPOWER® CHARGE 1200 DC CE

## TECHNICAL DATA

E-Mobility charging cable with VDE-REG No.

**Temperature range** flexible -40°C bis +90°C  
fixed -40°C bis +90°C

**Permissible operating temperature of the conductor**  
+90°C

**Nominal voltage** U<sub>0</sub>/U 600/1200 V DC

**Test voltage** signal cores: 2000 V DC  
power cores: 2500 V AC  
complete cable: 3500 V AC

**Minimum bending radius** flexible 7,5 x Kabel-Ø  
fixed 4 x Kabel-Ø

## ■ CABLE STRUCTURE

- bare copper-conductor acc. to DIN VDE 0295 cl. 6, finest wire, BS 6360 cl. 6, IEC 60228 cl. 6
- core insulation: halogen-free polymer type EVI-2 acc. to DIN 50620
- core identification: signal cores acc. to DIN VDE 0285-620 / DIN EN 50620 and DIN VDE 0293-334 / DIN EN 50334  
power supply cores: BK/RD/GNYE
- outer sheath: halogen-free polymer type EVM-1 acc. to DIN EN 50620
- outer sheath colour: black or red (RAL 3020)
- with meter marking

outer sheath: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001086	3 G 16 + 3 x 2 x 0.75	19.2	525.0	780
17001087	2 x 35 + 1 G 25 + 3 x 2 x 0.75	26.0	995.0	1300
17001088	2 x 50 + 1 G 25 + 6 x 0.75	28.6	1295.0	1650
17001089	2 x 70 + 1 G 35 + 6 x 0.75	32.5	1795.0	2300

## ■ PROPERTIES

- resistant to: oil, UV radiation
- halogen-free
- flame retardant

## ■ TESTS

- oil resistant acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2
- flame retardant acc. to DIN VDE 0482-332-1 / DIN EN 60332-1 / IEC 60332-1
- halogen-free acc. to DIN VDE 0285-620 / DIN EN 50620
- UV-resistant acc. to DIN VDE 0285-620 / DIN EN 50620

## ■ APPLICATION

E-Mobility charging cable for multiple use scenarios. It can be used for charging electronic vehicles at public charge stations like parking areas, near highways or in garages as well as at domestic sockets. The UV and oil resistance ensure a reliable charging process indoors and outdoors. Due to its TPE-U outer sheath, it even withstands harsh handling on concrete. The high voltage with 1200 V direct current (DC) enables quick charging and therefore reduces the charging time significantly.

## ■ NOTES

- other constructions or outer sheath colours available on request
- UL 62 charging cable available on request
- can also be delivered for alternating current as HELUPOWER® CHARGE 750 AC
- according to DIN VDE 0285-620 / DIN EN 50620 / GB/T 33594-2017

outer sheath: red

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001090	3 G 16 + 3 x 2 x 0.75	19.2	525.0	780
17001091	2 x 35 + 1 G 25 + 3 x 2 x 0.75	26.0	995.0	1300
17001092	2 x 50 + 1 G 25 + 6 x 0.75	28.6	1295.0	1650
17001093	2 x 70 + 1 G 35 + 6 x 0.75	32.5	1795.0	2300



# HELUPOWER® CHARGE-1000-AC-UL

flexible, flame retardant



## TECHNICAL DATA

### E-Mobility charging cable according to UL 62

<b>Temperature range</b>	flexible -40°C bis +90°C fixed -40°C bis +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	EVJE U 300 V AC EVE U 1000 V AC
<b>Test voltage</b>	2000 V AC
<b>Minimum bending radius</b>	flexible 7,5 x Kabel-Ø fixed 4 x Kabel-Ø

## ■ CABLE STRUCTURE

- power and signal cores: bare copper conductor, fine wire acc. to UL 62
- core insulation: TPE-O
- core identification: coloured cores acc. to UL 62
- cores stranded in layers with optimal lay-length
- outer sheath: TPU
- outer sheath colour: black or red (RAL 3020)

## ■ PROPERTIES

- resistant to: oil, UV radiation
- flame retardant

## ■ TESTS

- flame retardant: vertical flame test FT1 acc. to UL 1581
- oil resistant acc. to UL 62
- weather resistant acc. to UL 62

## ■ APPLICATION

E-Mobility charging cable for multiple use scenarios. It can be used for charging electronic vehicles at public charge stations like parking areas, near highways or in garages as well as at domestic sockets. The UV and oil resistance ensure a reliable charging process indoors and outdoors. Due to its TPU outer sheath it even withstands harsh handling on concrete.

## ■ NOTES

- other constructions or outer sheath colours available on request
- can also be delivered for direct current as HELUPOWER® CHARGE-1000-DC-UL

### outer sheath: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001265	3 x AWG 14 (2.08 mm <sup>2</sup> ) + 1 x AWG 20 (0.52 mm <sup>2</sup> )	10.5	72.0	130
17001266	3 x AWG 14 (2.08 mm <sup>2</sup> ) + 1 x AWG 18 (0.82 mm <sup>2</sup> )	10.7	75.0	140
17001267	3 x AWG 14 (2.08 mm <sup>2</sup> ) + 2 x AWG 18 (0.82 mm <sup>2</sup> )	11.8	84.0	175
17001268	3 x AWG 12 (3.31 mm <sup>2</sup> ) + 1 x AWG 18 (0.82 mm <sup>2</sup> )	15.2	111.0	310
17001269	3 x AWG 10 (5.26 mm <sup>2</sup> ) + 1 x AWG 20 (0.52 mm <sup>2</sup> )	15.7	171.0	375
17001270	3 x AWG 10 (5.26 mm <sup>2</sup> ) + 1 x AWG 18 (0.82 mm <sup>2</sup> )	16.0	174.0	380
17001271	3 x AWG 10 (5.26 mm <sup>2</sup> ) + 2 x AWG 20 (0.52 mm <sup>2</sup> )	16.0	177.0	385
17001272	5 x AWG 10 (5.26 mm <sup>2</sup> ) + 1 x AWG 20 (0.52 mm <sup>2</sup> )	19.8	281.0	590

### outer sheath: red

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001273	3 x AWG 14 (2.08 mm <sup>2</sup> ) + 1 x AWG 20 (0.52 mm <sup>2</sup> )	10.5	72.0	130
17001274	3 x AWG 14 (2.08 mm <sup>2</sup> ) + 1 x AWG 18 (0.82 mm <sup>2</sup> )	10.7	75.0	140
17001275	3 x AWG 14 (2.08 mm <sup>2</sup> ) + 2 x AWG 18 (0.82 mm <sup>2</sup> )	11.8	84.0	175
17001276	3 x AWG 12 (3.31 mm <sup>2</sup> ) + 1 x AWG 18 (0.82 mm <sup>2</sup> )	15.2	111.0	310
17001277	3 x AWG 10 (5.26 mm <sup>2</sup> ) + 1 x AWG 20 (0.52 mm <sup>2</sup> )	15.7	171.0	375
17001278	3 x AWG 10 (5.26 mm <sup>2</sup> ) + 1 x AWG 18 (0.82 mm <sup>2</sup> )	16.0	174.0	380
17001279	3 x AWG 10 (5.26 mm <sup>2</sup> ) + 2 x AWG 20 (0.52 mm <sup>2</sup> )	16.0	177.0	385
17001280	5 x AWG 10 (5.26 mm <sup>2</sup> ) + 1 x AWG 20 (0.52 mm <sup>2</sup> )	19.8	281.0	590

# HELUPOWER® CHARGE-1000-DC-UL

flexible, flame retardant



## TECHNICAL DATA

E-Mobility charging cable according to UL 62

**Temperature range** flexible -40°C bis +90°C  
fixed -40°C bis +90°C

**Permissible operating temperature of the conductor**  
+90°C

**Nominal voltage** U 1000 V DC

**Test voltage** 2000 V DC

**Minimum bending radius** flexible 7,5 x Kabel-Ø  
fixed 4 x Kabel-Ø

## ■ CABLE STRUCTURE

- power and signal cores: bare copper conductor, fine wire acc. to UL 62
- core insulation: TPE-O
- core identification: coloured cores acc. to UL 62
- cores stranded in layers with optimal lay-length
- outer sheath: TPU
- outer sheath colour: black or red (RAL 3020)

## ■ PROPERTIES

- resistant to: oil, UV radiation
- flame retardant

## ■ TESTS

- flame retardant: vertical flame test FT1 acc. to UL 1581
- oil resistant acc. to UL 62
- weather resistant acc. to UL 62

## ■ APPLICATION

E-Mobility charging cable for multiple use scenarios. It can be used for charging electronic vehicles at public charge stations like parking areas, near highways or in garages as well as at domestic sockets. The UV and oil resistance ensure a reliable charging process indoors and outdoors. Due to its TPU outer sheath it even withstands harsh handling on concrete.

## ■ NOTES

- other constructions or outer sheath colours available on request
- can also be delivered for alternating current as HELUPOWER® CHARGE-1000-AC-UL

### outer sheath: black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001533	3 x AWG 6 (13.3 mm <sup>2</sup> ) + 3 x 2 x AWG 18 (0.82 mm <sup>2</sup> )	18.6	479.0	990
17001534	2 x AWG 2 (33.6 mm <sup>2</sup> ) + 1 x AWG 4 (21.2 mm <sup>2</sup> ) + 3 x 2 x AWG 18 (0.82 mm <sup>2</sup> )	25.1	950.0	1570
17001535	2 x AWG 1 (42.4 mm <sup>2</sup> ) + 1 x AWG 3 (26.7 mm <sup>2</sup> ) + 1 x 6 x AWG 18 (0.82 mm <sup>2</sup> )	28.2	1234.0	2040
17001536	2 x AWG 2/0 (67.4 mm <sup>2</sup> ) + 1 x AWG 3 (26.7 mm <sup>2</sup> ) + 1 x 6 x AWG 18 (0.82 mm <sup>2</sup> )	39.2	1674.0	2700

### outer sheath: red

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001537	3 x AWG 6 (13.3 mm <sup>2</sup> ) + 3 x 2 x AWG 18 (0.82 mm <sup>2</sup> )	18.6	479.0	990
17001538	2 x AWG 2 (33.6 mm <sup>2</sup> ) + 1 x AWG 4 (21.2 mm <sup>2</sup> ) + 3 x 2 x AWG 18 (0.82 mm <sup>2</sup> )	25.1	950.0	1570
17001539	2 x AWG 1 (42.4 mm <sup>2</sup> ) + 1 x AWG 3 (26.7 mm <sup>2</sup> ) + 1 x 6 x AWG 18 (0.82 mm <sup>2</sup> )	28.2	1234.0	2040
17001540	2 x AWG 2/0 (67.4 mm <sup>2</sup> ) + 1 x AWG 3 (26.7 mm <sup>2</sup> ) + 1 x 6 x AWG 18 (0.82 mm <sup>2</sup> )	39.2	1674.0	2700

# HELUKABEL® ISOBUS PUR

Hybrid cable for data transmission between tractor and accessory equipment



## Technical data

- PUR-Hybrid cable for data transmission in the agricultural industry
- **Temperature range**  
flexing -20°C to +85°C  
fixed installation -40°C to +85°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
2000 V min. 5 Min.
- Conductor resistance acc. to DIN 50395  
0,5 mm<sup>2</sup> ≤ 39,0 Ω/km  
2,5 mm<sup>2</sup> ≤ 7,98 Ω/km  
6 mm<sup>2</sup> ≤ 3,3 Ω/km  
10 mm<sup>2</sup> ≤ 1,91 Ω/km  
16 mm<sup>2</sup> ≤ 1,21 Ω/km
- **Minimum bending radius**  
flexing 12 x cable Ø  
fixed installation 6 x cable Ø

## Cable structure

- bare copper conductor, finely stranded acc. to DIN VDE 0295 cl. 5 / IEC 60228 cl. 5
- **stranding elements:**
  - 4x0,5 mm<sup>2</sup>:  
core insulation: PP  
core colours: red, yellow, black, green  
acc. to ISO 11783-2  
cores stranded in star quad formation  
wrapping with synthetic fleece
  - 2x2,5 mm<sup>2</sup>:  
core insulation: PVC  
core colours: red, black
  - 2x6/10/16 mm<sup>2</sup>:  
core insulation: PVC  
core colours: red, black
- stranding: cores with optimal lay-lengths, with filler elements
- wrapping: with fibre tape / synthetic fleece
- outer sheath: TPU
- sheath colour: black (similar RAL9005)

## Properties

- the materials used in production are free of silicone, cadmium and substance inhibiting paint adhesion
- abrasion-resistant, wear-resistant
- resistant against: UV-rays, weather conditions, microbes, ammonia
- suitable for high pressure cleaning depending on temperature, exposure time and water pressure

## Tests

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-40
- flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- MUD resistant acc. IEC 61892-Annex D

## Note

- customised construction solutions are available on request

## Application

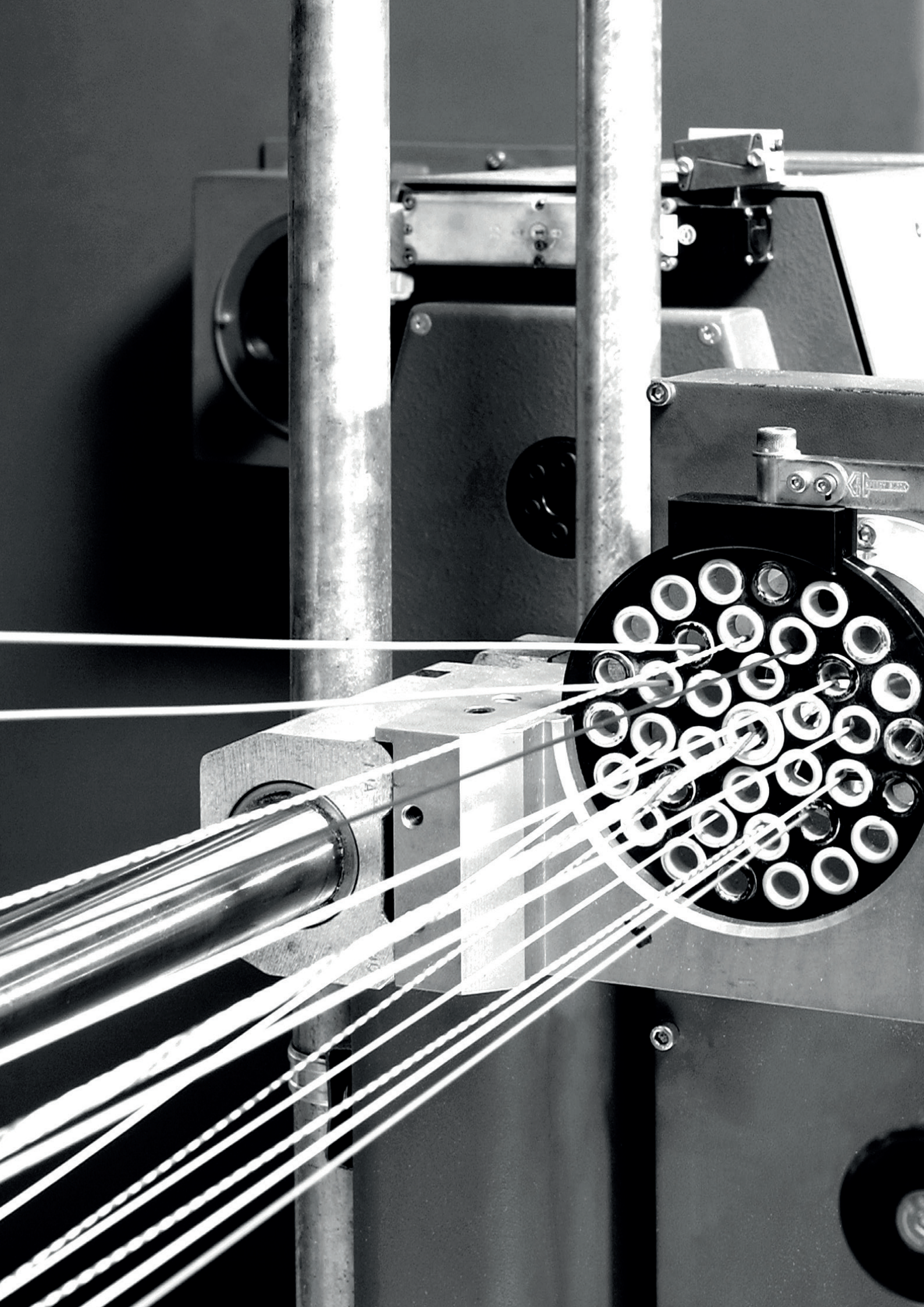
The ISOBUS system is a robust hybrid cable used for agricultural vehicles and machines. Optimum performance materials enable long-term durability for deployment in agricultural technology.

CE = Product complies to the Low-Voltage Directive 2014/35/EU

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
17001249	2x6 + 2x2,5 + 1x4x0,5	12,7	182,4	280
17001528	2x6 + 2x2,5 + 1x4x0,5	15,3	182,4	349
17001250	2x10 + 2x2,5 + 1x4x0,5	15,3	259,2	412
17001251	2x16 + 2x2,5 + 1x4x0,5	16,8	374,4	524

Dimensions and specifications may be changed without prior notice.







A black and white photograph of industrial machinery, possibly a lathe or mill, with various metal parts, bolts, and a tool visible. The background is slightly blurred, focusing attention on the text overlay.

# Multipolari posa fissa trasmissione dati

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Lan cable	545
Industrial ethernet spe	575
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Fondation fieldbus	614
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Can bus	625
Asi-bus	634
Devicenet	639
Lon bus	641
Mod-bus	643
Knx   Eib   E-bus	644



HELUKABEL® TRONIC (LiYY) 10x0,25 QMM / 18036 CE

## TECHNICAL DATA

### PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 1.5 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	0.14 - 0.25 mm <sup>2</sup> : 1200 V 0.34 - 1.5 mm <sup>2</sup> : 2000 V
<b>Breakdown voltage</b>	0.14 - 0.25 mm <sup>2</sup> : 2400 V 0.34 - 1.5 mm <sup>2</sup> : 4000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.14 - 0.25 mm <sup>2</sup> : approx. 100 pF/m 0.34 - 1.5 mm <sup>2</sup> : approx. 150 pF/m
<b>Characteristic impedance</b>	78 Ohm, (approx. value)
<b>Inductance</b>	approx. 0.65 mH/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, 0.5 - 1.5 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm
  - 0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm
  - 0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification in alignment with DIN 47100, colour coded without colour repetition from the 45th core

- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Suitable for flexible applications with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. For use where design or constructional measures in the outer diameter require the smallest possible control and signal cables; machine, tool and plant construction, as well as in electronic engineering. Also used in computer systems, scales and in measurement and control technology.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
18001	2 x 0.14	26	3.2	2.7	13.0
18002	3 x 0.14	26	3.4	4.0	16.0
18003	4 x 0.14	26	3.6	5.4	19.0
18004	5 x 0.14	26	3.9	6.7	22.0
18005	6 x 0.14	26	4.4	8.1	25.0
18006	7 x 0.14	26	4.4	9.4	28.0
18007	8 x 0.14	26	5.0	10.7	35.0
18008	10 x 0.14	26	5.4	13.4	41.0
18009	12 x 0.14	26	5.6	16.1	48.0
18010	14 x 0.14	26	6.0	18.8	53.0
18011	16 x 0.14	26	6.3	21.5	59.0
18012	18 x 0.14	26	6.6	24.2	65.0
18013	20 x 0.14	26	6.9	26.9	70.0
18014	21 x 0.14	26	6.9	28.2	77.0
18015	24 x 0.14	26	7.8	32.3	87.0
18117	25 x 0.14	26	7.8	33.6	91.0
18016	27 x 0.14	26	7.8	36.3	97.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
18017	30 x 0.14	26	8.2	40.3	108.0
18018	32 x 0.14	26	8.5	43.0	114.0
18019	36 x 0.14	26	8.8	48.4	126.0
18020	40 x 0.14	26	9.7	54.0	139.0
18021	42 x 0.14	26	9.7	56.0	146.0
18022	44 x 0.14	26	10.0	59.0	153.0
18023	48 x 0.14	26	10.2	65.0	164.0
18024	52 x 0.14	26	10.4	70.0	173.0
18025	56 x 0.14	26	10.9	75.0	187.0
18026	61 x 0.14	26	11.2	82.0	204.0
18029	2 x 0.25	24	3.8	4.8	18.0
18030	3 x 0.25	24	4.0	7.2	22.0
18031	4 x 0.25	24	4.5	9.6	26.0
18032	5 x 0.25	24	4.9	12.0	30.0
18033	6 x 0.25	24	5.3	14.4	36.0
18034	7 x 0.25	24	5.3	16.8	42.0
18035	8 x 0.25	24	6.3	19.2	49.0

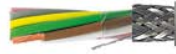
colour code DIN 47100, without colour repetition

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
18036	10 x 0.25	24	6.8	24.0	57.0
18037	12 x 0.25	24	7.0	28.8	66.0
18038	14 x 0.25	24	7.3	33.6	75.0
18039	16 x 0.25	24	7.9	38.4	84.0
18040	18 x 0.25	24	8.3	43.2	94.0
18114	19 x 0.25	24	8.3	46.0	98.0
18041	20 x 0.25	24	8.7	48.0	103.0
18042	21 x 0.25	24	8.7	50.0	107.0
18043	24 x 0.25	24	9.8	60.0	120.0
18118	25 x 0.25	24	9.8	61.0	132.0
18044	27 x 0.25	24	9.8	65.0	140.0
18045	30 x 0.25	24	10.3	72.0	156.0
18046	32 x 0.25	24	10.9	77.0	164.0
18047	36 x 0.25	24	11.3	86.0	182.0
18115	37 x 0.25	24	11.3	89.0	190.0
18048	40 x 0.25	24	12.4	96.0	200.0
18049	42 x 0.25	24	12.4	101.0	211.0
18050	44 x 0.25	24	12.8	106.0	225.0
18051	48 x 0.25	24	13.0	115.0	245.0
18052	52 x 0.25	24	13.3	125.0	263.0
18053	56 x 0.25	24	13.7	134.0	280.0
18054	61 x 0.25	24	14.3	146.0	305.0
18057	2 x 0.34	22	4.0	6.5	22.0
18058	3 x 0.34	22	4.4	9.8	30.0
18059	4 x 0.34	22	4.8	13.1	43.0
18060	5 x 0.34	22	5.2	16.3	54.0
18061	6 x 0.34	22	5.6	19.6	58.0
18062	7 x 0.34	22	5.6	22.8	61.0
18063	8 x 0.34	22	6.7	26.1	73.0
18064	10 x 0.34	22	7.2	32.6	82.0
18065	12 x 0.34	22	7.6	39.2	102.0
18066	14 x 0.34	22	8.0	45.7	108.0
18067	16 x 0.34	22	8.4	52.0	126.0
18068	18 x 0.34	22	8.8	59.0	143.0
18069	20 x 0.34	22	9.5	65.0	160.0
18070	21 x 0.34	22	9.5	69.0	166.0
18071	24 x 0.34	22	10.4	78.0	186.0
18096	25 x 0.34	22	10.4	82.0	192.0
18072	27 x 0.34	22	10.4	88.0	206.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
18073	30 x 0.34	22	11.2	98.0	226.0
18074	32 x 0.34	22	11.6	104.0	245.0
18075	36 x 0.34	22	12.0	118.0	285.0
18116	37 x 0.34	22	12.0	121.0	292.0
18076	40 x 0.34	22	13.1	131.0	318.0
18077	42 x 0.34	22	13.1	137.0	330.0
18078	44 x 0.34	22	13.6	144.0	370.0
18079	48 x 0.34	22	14.0	157.0	405.0
18080	52 x 0.34	22	14.4	170.0	430.0
18081	53 x 0.34	22	14.8	183.0	440.0
18082	61 x 0.34	22	15.2	199.0	610.0
18085	2 x 0.5	20	4.8	9.6	40.0
18086	3 x 0.5	20	5.1	14.4	46.0
18087	4 x 0.5	20	5.5	19.2	55.0
18088	5 x 0.5	20	6.2	24.0	64.0
18089	6 x 0.5	20	6.7	28.8	73.0
18090	7 x 0.5	20	6.7	33.6	81.0
18091	8 x 0.5	20	7.9	38.4	97.0
18092	10 x 0.5	20	8.6	48.0	116.0
18093	12 x 0.5	20	8.9	58.0	135.0
18103	16 x 0.5	20	10.0	77.0	168.0
18101	20 x 0.5	20	11.3	96.0	213.0
18094	24 x 0.5	20	12.6	116.0	241.0
18102	30 x 0.5	20	13.3	144.0	303.0
18095	40 x 0.5	20	15.8	192.0	391.0
18104	2 x 0.75	19	5.3	14.4	47.0
18097	3 x 0.75	19	5.6	21.6	54.0
18098	4 x 0.75	19	6.3	29.0	66.0
18099	5 x 0.75	19	6.9	36.0	80.0
18100	7 x 0.75	19	7.7	50.0	110.0
18105	8 x 0.75	19	8.8	58.0	125.0
18106	10 x 0.75	19	9.8	72.0	148.0
18107	12 x 0.75	19	10.1	86.0	176.0
18108	16 x 0.75	19	11.4	115.0	220.0
18109	20 x 0.75	19	12.8	144.0	276.0
18110	2 x 1	18	5.6	19.2	56.0
18111	3 x 1	18	6.1	29.0	71.0
18112	2 x 1.5	16	6.8	29.0	75.0
18113	3 x 1.5	16	7.2	43.0	90.0

# TRONIC-CY (LiY-CY) / TRONIC-DY (LiY-DY)

colour code DIN 47100, without colour repetition, EMC-preferred type



HELUKABEL® TRONIC-CY (LiY-CY) 6x0,25 QMM / 20083 €€

## TECHNICAL DATA

### PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 1.5 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	0.14 - 0.25 mm <sup>2</sup> : 1200 V 0.34 - 1.5 mm <sup>2</sup> : 2000 V
<b>Test voltage core/screen</b>	0.14 - 0.25 mm <sup>2</sup> : 800 V 0.34 - 1.5 mm <sup>2</sup> : 1200 V
<b>Breakdown voltage</b>	0.14 - 0.25 mm <sup>2</sup> : 2400 V 0.34 - 1.5 mm <sup>2</sup> : 4000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.14 - 0.25 mm <sup>2</sup> : approx. 100 pF/m 0.34 - 1.5 mm <sup>2</sup> : approx. 150 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 0.14 - 0.25 mm <sup>2</sup> : approx. 200 pF/m 0.34 - 1.5 mm <sup>2</sup> : approx. 270 pF/m
<b>Characteristic impedance</b>	78 Ohm, (approx. value)
<b>Inductance</b>	approx. 0.65 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, 0.5 - 1.5 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm  
0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm  
0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification in alignment with DIN 47100, colour coded without colour repetition from the 45th core

- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, tinned copper
- Screen:  
1 core(s): helically wound tinned copper wires, approx. coverage 85 %  
2 - 61 core(s): braided screen of tinned copper wires, approx. coverage 85 %
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil,  
for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC

## ■ APPLICATION

Suitable for flexible applications with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. Used as control and signal cables in the milliampere range for computer systems, control devices, scales etc. Due to its extremely small outer-Ø, it is especially suitable for subminiature plugs, electronic devices etc. These cables with copper screening are ideally suited for interference-free data and signal transmission for measurement and control technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

### TRONIC-DY (LiY-DY), helically wound tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20139	1 x 0.14	26	2.6	6.1	16.0
20084	1 x 0.25	24	2.9	7.2	27.0
20088	1 x 0.34	22	3.0	13.5	24.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16001	1 x 0.5	20	3.5	15.0	40.0
16025	1 x 0.75	19	3.8	19.0	41.0



# TRONIC-CY (LiY-CY) / TRONIC-DY (LiY-DY)



colour code DIN 47100, without colour repetition, EMC-preferred type

## TRONIC-CY (LiY-CY), braided screen of tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20001	2 x 0.14	26	3.8	12.0	20.0
20002	3 x 0.14	26	4.0	13.0	27.0
20003	4 x 0.14	26	4.2	14.5	32.0
20004	5 x 0.14	26	4.5	15.5	37.0
20005	6 x 0.14	26	5.0	18.2	42.0
20006	7 x 0.14	26	5.0	19.0	48.0
20007	8 x 0.14	26	5.6	21.3	55.0
20008	10 x 0.14	26	6.0	28.7	65.0
20009	12 x 0.14	26	6.2	30.5	77.0
20010	14 x 0.14	26	6.6	32.0	79.0
20011	16 x 0.14	26	6.9	43.2	89.0
20012	18 x 0.14	26	7.2	51.0	103.0
20013	20 x 0.14	26	7.6	55.0	116.0
20014	21 x 0.14	26	7.6	56.0	120.0
20015	24 x 0.14	26	8.4	62.0	131.0
20091	25 x 0.14	26	8.4	61.0	136.0
20016	27 x 0.14	26	8.4	65.0	142.0
20017	30 x 0.14	26	8.8	69.0	157.0
20018	32 x 0.14	26	9.1	76.0	163.0
20019	36 x 0.14	26	9.4	83.0	182.0
20020	40 x 0.14	26	10.3	88.0	209.0
20021	42 x 0.14	26	10.3	94.0	217.0
20022	44 x 0.14	26	10.6	110.0	226.0
20023	48 x 0.14	26	10.8	115.0	240.0
20024	52 x 0.14	26	11.0	124.0	270.0
20025	56 x 0.14	26	11.5	132.0	320.0
20026	61 x 0.14	26	11.8	146.0	370.0
20029	2 x 0.25	24	4.4	15.8	31.0
20030	3 x 0.25	24	4.6	18.6	36.0
20031	4 x 0.25	24	5.2	22.0	40.0
20032	5 x 0.25	24	5.5	26.5	51.0
20083	6 x 0.25	24	5.9	32.4	58.0
20033	7 x 0.25	24	5.9	35.0	64.0
20034	8 x 0.25	24	6.9	42.1	82.0
20035	10 x 0.25	24	7.4	49.9	85.0
20036	12 x 0.25	24	7.6	58.0	90.0
20037	14 x 0.25	24	8.0	62.0	98.0
20038	16 x 0.25	24	8.5	67.0	110.0
20039	18 x 0.25	24	8.9	78.0	142.0
20086	19 x 0.25	24	8.9	79.0	146.0
20040	20 x 0.25	24	9.3	88.0	152.0
20041	21 x 0.25	24	9.3	91.0	150.0
20042	24 x 0.25	24	10.4	96.0	163.0
20092	25 x 0.25	24	10.4	99.0	169.0
20043	27 x 0.25	24	10.4	122.0	176.0
20044	30 x 0.25	24	11.0	132.0	189.0
20045	32 x 0.25	24	11.5	138.0	204.0
20046	36 x 0.25	24	11.9	146.0	219.0
20087	37 x 0.25	24	11.9	152.0	230.0
20047	40 x 0.25	24	13.2	157.0	247.0
20048	42 x 0.25	24	13.2	160.0	269.0
20049	44 x 0.25	24	13.6	162.0	292.0
20050	48 x 0.25	24	13.8	168.0	317.0
20051	52 x 0.25	24	14.2	175.0	330.0
20052	56 x 0.25	24	14.5	189.0	343.0
20053	61 x 0.25	24	15.1	204.0	365.0
20056	2 x 0.34	22	4.6	18.0	30.0
20057	3 x 0.34	22	5.0	22.0	37.0
20058	4 x 0.34	22	5.4	28.0	48.0
20059	5 x 0.34	22	5.8	31.0	54.0
20085	6 x 0.34	22	6.2	45.0	61.0
20060	7 x 0.34	22	6.2	51.0	67.0
20061	8 x 0.34	22	7.3	54.0	81.0
20062	10 x 0.34	22	7.8	65.0	103.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20063	12 x 0.34	22	8.2	70.0	110.0
20064	14 x 0.34	22	8.6	81.0	153.0
20065	16 x 0.34	22	9.0	88.0	159.0
20066	18 x 0.34	22	9.4	103.0	172.0
20089	19 x 0.34	22	9.4	106.0	181.0
20067	20 x 0.34	22	10.1	112.0	191.0
20068	21 x 0.34	22	10.1	116.0	199.0
20069	24 x 0.34	22	11.0	129.0	229.0
20093	25 x 0.34	22	11.0	120.0	241.0
20070	27 x 0.34	22	11.0	138.0	258.0
20071	30 x 0.34	22	11.8	158.0	290.0
20072	32 x 0.34	22	12.2	163.0	305.0
20073	36 x 0.34	22	12.6	178.0	330.0
20090	37 x 0.34	22	12.6	192.0	348.0
20074	40 x 0.34	22	14.0	198.0	364.0
20075	42 x 0.34	22	14.0	203.0	389.0
20076	44 x 0.34	22	14.4	214.0	414.0
20077	48 x 0.34	22	14.8	227.0	420.0
20078	52 x 0.34	22	15.2	242.0	450.0
20079	56 x 0.34	22	15.6	267.0	480.0
20080	61 x 0.34	22	16.0	295.0	520.0
16002	2 x 0.5	20	5.4	29.0	45.0
16003	3 x 0.5	20	5.7	39.0	55.0
16004	4 x 0.5	20	6.1	46.0	61.0
16005	5 x 0.5	20	6.8	52.0	76.0
16006	6 x 0.5	20	7.3	66.0	89.0
16007	7 x 0.5	20	7.3	68.0	98.0
16008	8 x 0.5	20	8.6	80.0	117.0
16009	10 x 0.5	20	9.2	93.0	135.0
16010	12 x 0.5	20	9.5	117.0	157.0
16011	14 x 0.5	20	10.1	122.0	190.0
16012	16 x 0.5	20	10.6	129.0	210.0
16013	18 x 0.5	20	11.1	152.0	217.0
16526	19 x 0.5	20	11.1	156.0	246.0
16014	20 x 0.5	20	11.9	173.0	275.0
16015	24 x 0.5	20	13.4	236.0	337.0
16016	25 x 0.5	20	13.4	250.0	351.0
16527	27 x 0.5	20	13.4	265.0	373.0
16017	30 x 0.5	20	14.1	297.0	396.0
16018	32 x 0.5	20	14.8	301.0	431.0
16164	34 x 0.5	20	15.3	312.0	440.0
16019	36 x 0.5	20	15.3	320.0	445.0
16528	37 x 0.5	20	15.3	325.0	458.0
16020	40 x 0.5	20	16.7	345.0	470.0
16021	50 x 0.5	20	18.1	407.0	570.0
16022	61 x 0.5	20	19.3	508.0	650.0
16026	2 x 0.75	19	5.9	38.0	59.0
16027	3 x 0.75	19	6.2	50.0	66.0
16028	4 x 0.75	19	6.9	57.0	77.0
16029	5 x 0.75	19	7.5	70.0	93.0
16030	6 x 0.75	19	8.3	87.0	113.0
16031	7 x 0.75	19	8.3	96.0	130.0
16032	8 x 0.75	19	9.5	110.0	145.0
16033	10 x 0.75	19	10.4	140.0	180.0
16034	12 x 0.75	19	10.7	151.0	202.0
16035	14 x 0.75	19	11.2	167.0	225.0
16036	16 x 0.75	19	12.0	183.0	275.0
16037	18 x 0.75	19	12.6	207.0	292.0
16529	19 x 0.75	19	12.6	221.0	322.0
16038	20 x 0.75	19	13.6	238.0	362.0
16039	24 x 0.75	19	15.1	270.0	435.0
16040	25 x 0.75	19	15.1	278.0	415.0
16041	27 x 0.75	19	15.1	287.0	467.0
16042	30 x 0.75	19	15.9	315.0	486.0

# TRONIC-CY (LiY-CY) / TRONIC-DY (LiY-DY)



colour code DIN 47100, without colour repetition, EMC-preferred type

## TRONIC-CY (LiY-CY), braided screen of tinned copper wires

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
16043	32 x 0.75	19	16.7	330.0	530.0	16487	24 x 1	18	16.0	320.0	493.0
16163	34 x 0.75	19	17.3	350.0	570.0	16488	27 x 1	18	16.0	360.0	562.0
16044	36 x 0.75	19	17.3	370.0	600.0	16489	37 x 1	18	18.5	485.0	790.0
16530	37 x 0.75	19	17.3	386.0	640.0	16500	2 x 1.5	16	7.4	63.0	88.0
16045	40 x 0.75	19	19.0	395.0	680.0	16501	3 x 1.5	16	7.8	76.0	100.0
16120	42 x 0.75	19	19.0	408.0	714.0	16502	4 x 1.5	16	8.7	98.0	126.0
16047	61 x 0.75	19	22.0	555.0	900.0	16503	5 x 1.5	16	9.4	116.0	160.0
16475	2 x 1	18	6.2	46.0	65.0	16504	6 x 1.5	16	10.4	140.0	192.0
16476	3 x 1	18	6.8	56.0	80.0	16505	7 x 1.5	16	10.4	152.0	208.0
16477	4 x 1	18	7.3	69.0	98.0	16506	8 x 1.5	16	12.2	172.0	244.0
16478	5 x 1	18	7.9	89.0	127.0	16507	10 x 1.5	16	13.6	193.0	315.0
16479	6 x 1	18	8.7	105.0	144.0	16508	12 x 1.5	16	14.0	254.0	338.0
16480	7 x 1	18	8.7	111.0	158.0	16509	14 x 1.5	16	14.9	272.0	383.0
16481	8 x 1	18	10.2	130.0	197.0	16510	16 x 1.5	16	15.6	285.0	424.0
16482	10 x 1	18	11.0	140.0	232.0	16511	19 x 1.5	16	16.6	387.0	506.0
16483	12 x 1	18	11.6	168.0	260.0	16512	24 x 1.5	16	19.8	448.0	690.0
16484	14 x 1	18	12.1	198.0	302.0	16513	27 x 1.5	16	19.8	506.0	781.0
16485	16 x 1	18	12.7	218.0	346.0	16514	37 x 1.5	16	22.6	682.0	941.0
16486	19 x 1	18	13.7	268.0	412.0						



HELUKABEL® PAAR-TRONIC 5x2x0,25 QMM / 19038 CE

## TECHNICAL DATA

### PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +80°C fixed -30°C to +80°C
<b>Peak operating voltage</b>	350 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1200 V
<b>Breakdown voltage</b>	2400 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.14 - 0.25 mm <sup>2</sup> : approx. 100 pF/m 0.34 - 0.75 mm <sup>2</sup> : approx. 150 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 300 pF/100m
<b>Characteristic impedance</b>	78 Ohm, (approx. value)
<b>Inductance</b>	approx. 0.65 mH/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, 0.5 - 0.75 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm  
0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm  
0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19001	1 x 2 x 0.14	26	3.3	2.7	20.0
19002	2 x 2 x 0.14	26	4.7	5.0	25.0
19003	3 x 2 x 0.14	26	5.0	8.0	31.0
19004	4 x 2 x 0.14	26	5.4	11.0	38.0
19005	5 x 2 x 0.14	26	5.9	13.0	45.0
19006	6 x 2 x 0.14	26	6.6	16.0	50.0
19007	7 x 2 x 0.14	26	6.6	19.0	57.0
19008	8 x 2 x 0.14	26	7.6	22.0	64.0
19009	10 x 2 x 0.14	26	8.3	27.0	78.0
19010	11 x 2 x 0.14	26	8.8	30.0	86.0
19011	12 x 2 x 0.14	26	8.8	32.0	94.0
19012	14 x 2 x 0.14	26	9.2	38.0	105.0
19013	15 x 2 x 0.14	26	9.7	40.0	108.0
19014	16 x 2 x 0.14	26	9.7	43.0	110.0
19015	18 x 2 x 0.14	26	10.2	48.0	119.0
19016	20 x 2 x 0.14	26	10.9	54.0	130.0
19017	22 x 2 x 0.14	26	12.1	59.0	150.0

- Foil wrapping
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

Suitable for flexible applications with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. Used as a control and signal cable in electronic engineering, measurement and control technology and wherever wiring must be executed using the smallest possible outside diameter, with consideration of electronic possibilities, e.g. computer systems, signal technology, scales etc.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19018	24 x 2 x 0.14	26	12.1	65.0	170.0
19019	25 x 2 x 0.14	26	12.4	67.0	180.0
19020	26 x 2 x 0.14	26	12.4	70.0	184.0
19021	27 x 2 x 0.14	26	12.4	73.0	188.0
19022	28 x 2 x 0.14	26	12.4	75.0	192.0
19023	30 x 2 x 0.14	26	13.0	81.0	200.0
19024	32 x 2 x 0.14	26	13.2	86.0	224.0
19025	34 x 2 x 0.14	26	13.7	91.0	247.0
19026	36 x 2 x 0.14	26	13.7	97.0	260.0
19027	38 x 2 x 0.14	26	14.2	102.0	272.0
19028	40 x 2 x 0.14	26	14.2	108.0	294.0
19029	44 x 2 x 0.14	26	15.6	118.0	334.0
19030	45 x 2 x 0.14	26	15.6	121.0	342.0
19031	50 x 2 x 0.14	26	16.3	134.0	387.0
19032	52 x 2 x 0.14	26	16.1	140.0	403.0
19033	55 x 2 x 0.14	26	16.6	148.0	427.0
19034	1 x 2 x 0.25	24	3.9	5.0	32.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19035	2 x 2 x 0.25	24	5.7	10.0	37.0
19036	3 x 2 x 0.25	24	6.1	15.0	47.0
19037	4 x 2 x 0.25	24	6.8	20.0	58.0
19038	5 x 2 x 0.25	24	7.5	25.0	70.0
19039	6 x 2 x 0.25	24	8.1	30.0	80.0
19040	7 x 2 x 0.25	24	8.1	35.0	89.0
19041	8 x 2 x 0.25	24	9.7	40.0	99.0
19042	10 x 2 x 0.25	24	10.5	50.0	114.0
19043	11 x 2 x 0.25	24	11.1	55.0	126.0
19044	12 x 2 x 0.25	24	11.1	60.0	137.0
19045	14 x 2 x 0.25	24	11.7	70.0	161.0
19046	15 x 2 x 0.25	24	12.3	75.0	174.0
19047	16 x 2 x 0.25	24	12.3	80.0	187.0
19048	18 x 2 x 0.25	24	13.2	90.0	212.0
19049	20 x 2 x 0.25	24	13.8	100.0	234.0
19050	22 x 2 x 0.25	24	15.6	110.0	250.0
19051	24 x 2 x 0.25	24	15.6	120.0	280.0
19052	25 x 2 x 0.25	24	15.9	125.0	300.0
19053	26 x 2 x 0.25	24	15.9	130.0	320.0
19054	27 x 2 x 0.25	24	15.9	135.0	330.0
19055	28 x 2 x 0.25	24	15.9	140.0	345.0
19056	30 x 2 x 0.25	24	16.5	150.0	370.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19057	32 x 2 x 0.25	24	16.8	160.0	410.0
19058	34 x 2 x 0.25	24	17.6	170.0	425.0
19059	36 x 2 x 0.25	24	17.6	180.0	440.0
19060	38 x 2 x 0.25	24	18.3	190.0	480.0
19061	40 x 2 x 0.25	24	18.3	200.0	530.0
19062	44 x 2 x 0.25	24	20.0	220.0	580.0
19063	45 x 2 x 0.25	24	20.0	225.0	600.0
19064	50 x 2 x 0.25	24	20.8	250.0	650.0
19065	52 x 2 x 0.25	24	20.6	260.0	670.0
19066	55 x 2 x 0.25	24	21.2	275.0	790.0
19067	1 x 2 x 0.34	22	4.1	6.5	36.0
19068	2 x 2 x 0.34	22	6.1	13.0	42.0
19069	3 x 2 x 0.34	22	6.6	20.0	50.0
19070	4 x 2 x 0.34	22	7.2	26.0	61.0
19071	1 x 2 x 0.5	20	4.7	9.6	42.0
19072	2 x 2 x 0.5	20	7.3	19.2	51.0
19073	3 x 2 x 0.5	20	7.7	28.8	62.0
19074	4 x 2 x 0.5	20	8.7	38.4	73.0
19075	1 x 2 x 0.75	19	5.2	14.0	47.0
19076	2 x 2 x 0.75	19	8.1	29.0	59.0
19077	3 x 2 x 0.75	19	8.8	43.0	74.0
19078	4 x 2 x 0.75	19	9.7	58.0	93.0



HELUKABEL® PAAR-TRONIC-CY 6x2x0,25 QMM / 21038 €€

## TECHNICAL DATA

### PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +80°C fixed -30°C to +80°C
<b>Peak operating voltage</b>	350 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1200 V
<b>Test voltage core/screen</b>	800 V
<b>Breakdown voltage</b>	2400 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.14 - 0.25 mm <sup>2</sup> : approx. 100 pF/m 0.34 - 1.5 mm <sup>2</sup> : approx. 150 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 0.14 mm <sup>2</sup> : approx. 240 pF/m 0.25 mm <sup>2</sup> : approx. 270 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 300 pF/100m
<b>Characteristic impedance</b>	78 Ohm (approx. value)
<b>Inductance</b>	approx. 0.65 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, 0.5 - 1.5 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm
  - 0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm
  - 0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100 (paired stranding), colour coded

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21001	1 x 2 x 0.14	26	3.8	16.0	34.0
21002	2 x 2 x 0.14	26	5.2	18.5	40.0
21003	3 x 2 x 0.14	26	5.5	23.0	49.0
21004	4 x 2 x 0.14	26	5.9	27.0	55.0
21005	5 x 2 x 0.14	26	6.6	31.0	66.0
21006	6 x 2 x 0.14	26	7.1	48.0	86.0
21007	7 x 2 x 0.14	26	7.1	51.0	91.0
21008	8 x 2 x 0.14	26	8.1	54.0	97.0
21009	10 x 2 x 0.14	26	9.0	59.0	109.0
21010	12 x 2 x 0.14	26	9.3	66.0	141.0
21011	14 x 2 x 0.14	26	9.7	74.0	148.0
21012	15 x 2 x 0.14	26	10.2	76.0	152.0
21013	16 x 2 x 0.14	26	10.2	79.0	155.0
21014	18 x 2 x 0.14	26	10.9	83.0	171.0

- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, Tinned copper
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Suitable for flexible applications with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. Used as control and signal cables for systems at risk of interference radiation. Due to the dense braided screening, interference through parallel running cables is suppressed and as a result of the pair stranding, favourable crosstalk attenuation values are achieved. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21015	20 x 2 x 0.14	26	11.4	97.0	183.0
21016	22 x 2 x 0.14	26	13.0	103.0	205.0
21017	24 x 2 x 0.14	26	13.0	111.0	228.0
21018	25 x 2 x 0.14	26	13.3	113.0	239.0
21019	26 x 2 x 0.14	26	13.3	122.0	245.0
21020	27 x 2 x 0.14	26	13.3	125.0	251.0
21021	28 x 2 x 0.14	26	13.3	128.0	258.0
21022	30 x 2 x 0.14	26	13.7	140.0	270.0
21023	32 x 2 x 0.14	26	13.9	145.0	284.0
21024	34 x 2 x 0.14	26	14.4	150.0	300.0
21025	36 x 2 x 0.14	26	14.4	156.0	316.0
21026	38 x 2 x 0.14	26	14.9	162.0	350.0
21027	40 x 2 x 0.14	26	14.9	177.0	370.0
21028	44 x 2 x 0.14	26	16.3	181.0	390.0

# PAAR-TRONIC-CY

colour code DIN 47100, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21029	46 x 2 x 0.14	26	16.6	195.0	430.0
21030	50 x 2 x 0.14	26	17.0	202.0	440.0
21031	52 x 2 x 0.14	26	16.8	206.0	460.0
21032	55 x 2 x 0.14	26	17.5	210.0	480.0
21033	1 x 2 x 0.25	24	4.4	15.0	45.0
21034	2 x 2 x 0.25	24	6.4	28.0	53.0
21035	3 x 2 x 0.25	24	6.8	32.0	65.0
21036	4 x 2 x 0.25	24	7.4	38.0	80.0
21037	5 x 2 x 0.25	24	8.0	55.0	98.0
21038	6 x 2 x 0.25	24	8.9	65.0	114.0
21039	7 x 2 x 0.25	24	8.9	70.0	121.0
21040	8 x 2 x 0.25	24	10.2	75.0	129.0
21041	10 x 2 x 0.25	24	11.3	110.0	157.0
21042	12 x 2 x 0.25	24	11.6	117.0	189.0
21043	14 x 2 x 0.25	24	12.2	122.0	213.0
21044	15 x 2 x 0.25	24	13.2	134.0	225.0
21045	16 x 2 x 0.25	24	13.2	143.0	237.0
21046	18 x 2 x 0.25	24	13.9	148.0	248.0
21047	20 x 2 x 0.25	24	14.5	162.0	275.0
21048	22 x 2 x 0.25	24	16.3	172.0	303.0
21049	24 x 2 x 0.25	24	16.3	223.0	330.0
21050	25 x 2 x 0.25	24	16.6	233.0	343.0
21051	26 x 2 x 0.25	24	16.6	238.0	345.0
21052	27 x 2 x 0.25	24	16.6	244.0	350.0
21053	28 x 2 x 0.25	24	16.6	249.0	360.0
21054	30 x 2 x 0.25	24	17.2	254.0	375.0
21055	32 x 2 x 0.25	24	17.7	290.0	400.0
21056	34 x 2 x 0.25	24	18.5	312.0	410.0
21057	36 x 2 x 0.25	24	18.5	322.0	420.0
21058	38 x 2 x 0.25	24	19.2	339.0	450.0
21059	40 x 2 x 0.25	24	19.2	349.0	485.0
21060	44 x 2 x 0.25	24	20.9	359.0	500.0
21061	46 x 2 x 0.25	24	21.2	398.0	540.0
21062	50 x 2 x 0.25	24	22.0	403.0	550.0
21063	52 x 2 x 0.25	24	21.6	435.0	580.0
21064	55 x 2 x 0.25	24	22.4	464.0	630.0
19970	1 x 2 x 0.34	22	4.6	16.0	58.0
19971	2 x 2 x 0.34	22	6.8	37.0	65.0
19972	3 x 2 x 0.34	22	7.1	45.0	78.0
19973	4 x 2 x 0.34	22	7.8	54.0	90.0
19974	5 x 2 x 0.34	22	8.7	64.0	110.0
19975	6 x 2 x 0.34	22	9.4	73.0	130.0
19976	7 x 2 x 0.34	22	9.4	80.0	145.0
19977	8 x 2 x 0.34	22	11.0	88.0	150.0
19978	9 x 2 x 0.34	22	11.9	99.0	170.0
19979	10 x 2 x 0.34	22	11.9	107.0	190.0
19980	12 x 2 x 0.34	22	12.3	122.0	220.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19981	14 x 2 x 0.34	22	13.3	138.0	245.0
19982	16 x 2 x 0.34	22	14.0	154.0	250.0
19983	18 x 2 x 0.34	22	14.7	198.0	275.0
19984	21 x 2 x 0.34	22	16.3	214.4	300.0
19985	25 x 2 x 0.34	22	17.9	238.0	400.0
19986	27 x 2 x 0.34	22	17.9	262.0	410.0
19987	30 x 2 x 0.34	22	18.7	287.0	440.0
19988	34 x 2 x 0.34	22	19.9	310.0	510.0
19989	37 x 2 x 0.34	22	19.9	369.0	550.0
19990	40 x 2 x 0.34	22	20.6	393.0	590.0
19991	44 x 2 x 0.34	22	22.4	424.0	600.0
19992	50 x 2 x 0.34	22	23.4	456.0	650.0
19993	52 x 2 x 0.34	22	23.1	488.0	680.0
19994	56 x 2 x 0.34	22	24.2	518.0	750.0
19995	61 x 2 x 0.34	22	24.9	557.0	840.0
17047	1 x 2 x 0.5	20	5.2	24.0	60.0
17001	2 x 2 x 0.5	20	7.8	54.0	89.0
17002	3 x 2 x 0.5	20	8.2	70.0	104.0
17003	4 x 2 x 0.5	20	9.2	91.0	126.0
17004	5 x 2 x 0.5	20	10.0	105.0	148.0
17005	6 x 2 x 0.5	20	11.1	120.0	171.0
17006	8 x 2 x 0.5	20	13.2	144.0	290.0
17007	10 x 2 x 0.5	20	14.4	178.0	320.0
17008	12 x 2 x 0.5	20	14.8	199.0	361.0
17009	16 x 2 x 0.5	20	16.6	254.0	421.0
17010	20 x 2 x 0.5	20	18.8	302.0	580.0
17011	25 x 2 x 0.5	20	21.4	344.0	740.0
17048	1 x 2 x 0.75	19	5.7	28.0	71.0
17012	2 x 2 x 0.75	19	8.9	58.0	105.0
17013	3 x 2 x 0.75	19	9.4	84.0	128.0
17014	4 x 2 x 0.75	19	10.2	108.0	156.0
17015	5 x 2 x 0.75	19	11.4	126.0	189.0
17016	6 x 2 x 0.75	19	12.6	146.0	216.0
17017	8 x 2 x 0.75	19	14.8	180.0	309.0
17018	10 x 2 x 0.75	19	16.3	220.0	355.0
17019	12 x 2 x 0.75	19	16.8	261.0	405.0
17020	16 x 2 x 0.75	19	19.0	328.0	565.0
17021	20 x 2 x 0.75	19	21.2	392.0	700.0
17022	25 x 2 x 0.75	19	24.6	470.0	950.0
17049	1 x 2 x 1	18	6.0	46.0	75.0
17050	2 x 2 x 1	18	9.4	82.0	116.0
17051	3 x 2 x 1	18	9.9	103.0	140.0
17052	4 x 2 x 1	18	11.0	132.0	191.0
17053	1 x 2 x 1.5	16	7.2	63.0	84.0
17054	2 x 2 x 1.5	16	11.3	111.0	122.0
17055	3 x 2 x 1.5	16	11.9	136.0	194.0
17056	4 x 2 x 1.5	16	13.5	172.0	240.0



HELUKABEL® PAAR-CY-OZ 5x2x1 QMM / 17026 300/500 V CE

## TECHNICAL DATA

PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -15°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	1200 V
<b>Test voltage core/screen</b>	800 V
<b>Breakdown voltage</b>	2400 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 150 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz, approx. 270 pF/m
<b>Inductance</b>	approx. 0.67 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17023	2 x 2 x 1	18	9.5	82.0	135.0
17024	3 x 2 x 1	18	10.0	103.0	160.0
17025	4 x 2 x 1	18	11.0	132.0	197.0
17026	5 x 2 x 1	18	12.3	161.0	253.0
17027	6 x 2 x 1	18	13.4	188.0	295.0
17028	8 x 2 x 1	18	14.7	240.0	410.0
17029	10 x 2 x 1	18	16.4	282.0	518.0
17030	12 x 2 x 1	18	18.2	324.0	601.0
17031	16 x 2 x 1	18	19.0	412.0	990.0
17032	20 x 2 x 1	18	19.8	505.0	1400.0
17033	25 x 2 x 1	18	23.5	610.0	1600.0

- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

Suitable for flexible applications with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms, however, not suitable for outdoor use. Used as a connection cable for signal, measurement and control technology, as well as in electronic engineering. Also applicable in pulse and data technology. Special areas of application include locations with high electromagnetic radiation, e.g. through adjacent lines. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
17034	2 x 2 x 1.5	16	11.3	112.0	168.0
17035	3 x 2 x 1.5	16	12.2	139.0	221.0
17036	4 x 2 x 1.5	16	13.5	176.0	269.0
17037	5 x 2 x 1.5	16	14.5	212.0	314.0
17038	6 x 2 x 1.5	16	17.2	255.0	550.0
17039	8 x 2 x 1.5	16	17.5	322.0	650.0
17040	10 x 2 x 1.5	16	20.1	380.0	900.0
17041	12 x 2 x 1.5	16	21.8	442.0	950.0
17042	16 x 2 x 1.5	16	25.0	572.0	1100.0
17043	20 x 2 x 1.5	16	27.0	705.0	1700.0
17044	25 x 2 x 1.5	16	29.5	862.0	1900.0



HELUKABEL® PAAR-TRONIC-CY-CY 6x2x0,34 QMM / 21094 C€

## TECHNICAL DATA

### PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 0.5 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	0.14 mm <sup>2</sup> : 1200 V 0.25 - 0.5 mm <sup>2</sup> : 2000 V
<b>Test voltage core/screen</b>	800 V
<b>Breakdown voltage</b>	0.14 mm <sup>2</sup> : 2400 V 0.25 - 0.5 mm <sup>2</sup> : 4000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.14 mm <sup>2</sup> : approx. 147 pF/m 0.25 mm <sup>2</sup> : approx. 152 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 0.14 mm <sup>2</sup> : approx. 220 pF/m 0.25 mm <sup>2</sup> : approx. 263 pF/m
<b>Capacitive coupling k<sub>c</sub></b>	at 800 Hz, max. 250 pF/100m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 12x Outer-Ø fixed 6x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, 0.5 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm  
0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm  
0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21065	2 x 2 x 0.14	26	8.3	31.0	95.0
21066	3 x 2 x 0.14	26	9.2	34.0	105.0
21067	4 x 2 x 0.14	26	10.2	45.0	140.0
21068	5 x 2 x 0.14	26	11.1	58.0	160.0
21069	6 x 2 x 0.14	26	12.3	67.0	185.0
21070	7 x 2 x 0.14	26	12.3	78.0	230.0
21071	8 x 2 x 0.14	26	14.6	97.0	245.0
21072	9 x 2 x 0.14	26	15.8	101.0	280.0
21073	10 x 2 x 0.14	26	16.0	108.0	325.0
21074	12 x 2 x 0.14	26	16.7	134.0	380.0
21075	16 x 2 x 0.14	26	18.6	179.0	440.0
21076	20 x 2 x 0.14	26	21.0	225.0	520.0

- Screening element: Pairs, braided screen of tinned copper wires, approx. coverage 85%
- PVC sheath over each screened pair
- Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

Used as a control and signal cable in electronic engineering, measurement and control technology. It provides interference-free transmission of data signals from peripheral equipment to information storage. Excellent connection cable for sound mixers, studio equipment and measurement and control technology. Reliable in process control, machining centres and safety-related systems. These cables with copper screening are ideally suited for interference-free data and signal transmission for measurement and control technology. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21077	2 x 2 x 0.25	24	9.5	62.0	125.0
21078	3 x 2 x 0.25	24	10.6	78.2	140.0
21079	4 x 2 x 0.25	24	11.5	124.1	205.0
21080	5 x 2 x 0.25	24	13.0	137.6	230.0
21081	6 x 2 x 0.25	24	14.3	148.1	275.0
21082	7 x 2 x 0.25	24	14.3	159.1	295.0
21083	8 x 2 x 0.25	24	16.8	178.7	330.0
21084	10 x 2 x 0.25	24	18.4	213.9	420.0
21085	12 x 2 x 0.25	24	19.4	238.3	465.0
21086	16 x 2 x 0.25	24	21.6	291.4	590.0
21087	20 x 2 x 0.25	24	24.3	325.0	620.0
21088	24 x 2 x 0.25	24	27.4	367.5	690.0



# PAAR-TRONIC-CY-CY

colour code DIN 47100, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21089	32 x 2 x 0.25	24	30.3	588.0	785.0
21090	48 x 2 x 0.25	24	36.3	840.5	970.0
21091	2 x 2 x 0.34	22	10.1	73.1	139.0
21092	3 x 2 x 0.34	22	11.0	88.1	157.0
21093	4 x 2 x 0.34	22	12.2	137.2	213.0
21094	6 x 2 x 0.34	22	15.0	174.8	308.0
21095	8 x 2 x 0.34	22	17.6	247.2	385.0
21096	10 x 2 x 0.34	22	19.5	288.7	433.0
21097	12 x 2 x 0.34	22	20.3	321.0	495.0
21098	14 x 2 x 0.34	22	21.5	388.4	600.0
21099	16 x 2 x 0.34	22	22.6	425.5	637.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21100	24 x 2 x 0.34	22	28.6	577.1	781.0
21101	2 x 2 x 0.5	20	11.2	83.1	143.0
21102	3 x 2 x 0.5	20	12.3	106.4	179.0
21103	4 x 2 x 0.5	20	13.9	158.0	241.0
21104	6 x 2 x 0.5	20	16.7	201.4	319.0
21105	8 x 2 x 0.5	20	20.0	311.5	441.0
21106	10 x 2 x 0.5	20	21.9	334.5	464.0
21107	12 x 2 x 0.5	20	22.8	394.1	529.0
21108	14 x 2 x 0.5	20	24.1	446.0	641.0
21109	16 x 2 x 0.5	20	25.5	501.2	694.0
21110	24 x 2 x 0.5	20	32.1	712.4	930.0

# PAAR-TRONIC-Li-2YCYv



low capacitance, reinforced outer sheath, EMC-preferred type



HELUKABEL® PAAR-TRONIC-Li-2YCYv 4x2x0,34 QMM / 21137 C€

## TECHNICAL DATA

### PVC data cable

<b>Temperature range</b>	flexible -5°C to +70°C fixed -30°C to +80°C
<b>Peak operating voltage</b>	250 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	1000 V
<b>Conductor resistance at 20°C</b>	0.22 mm <sup>2</sup> : max. 93.0 Ohm/km 0.34 mm <sup>2</sup> : max. 57.5 Ohm/km 0.5 mm <sup>2</sup> : max. 39.3 Ohm/km 1 mm <sup>2</sup> : max. 19.6 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 72 pF/m 8 - 10 pairs: approx. 60 pF/m
<b>Crosstalk attenuation</b>	at 1 MHz, 50.00 dB at 10 MHz, 40.00 dB (approx. value)
<b>Inductance</b>	approx. 0.66 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 12x Outer-Ø fixed 7.5x Outer-Ø

- Foil wrapping
- Drain wire, tinned copper
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2), reinforced (v)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects
- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals: EAC

## CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:
  - 0.22 mm<sup>2</sup>: 7 x 0.2 mm
  - 0.34 mm<sup>2</sup>: 7 x 0.25 mm
  - 0.5 mm<sup>2</sup>: 7 x 0.3 mm
  - 1 mm<sup>2</sup>: 7 x 0.42 mm
- Core insulation: PE acc. to DIN VDE 0819-103 / DIN EN 50290-2-23 (compound type LD/MD)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths

## APPLICATION

PE-insulated data cable with twisted pairs, for interference-free transmission of data and signals over longer distances. The twisted-pair lay-up prevents electrical unbalances within the cable and this thus effectively suppresses cross-talking effects. The high transmission rates are particularly suitable for RS 422 and RS 485 interfaces; suitable for fixed installations in dry, damp and wet rooms, as well as outdoors and direct burial. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21129	2 x 2 x 0.22	24	8.3	26.0	60.0
21130	3 x 2 x 0.22	24	8.6	31.0	79.0
21131	4 x 2 x 0.22	24	9.2	38.0	96.0
21132	8 x 2 x 0.22	24	11.6	62.0	140.0
21133	10 x 2 x 0.22	24	12.4	79.0	184.0
21135	2 x 2 x 0.34	22	9.5	35.0	83.0
21136	3 x 2 x 0.34	22	9.9	44.0	92.0
21137	4 x 2 x 0.34	22	10.6	53.0	112.0
21138	8 x 2 x 0.34	22	13.7	86.0	179.0
21139	10 x 2 x 0.34	22	15.0	104.0	219.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21141	2 x 2 x 0.5	20	10.0	49.0	90.0
21142	3 x 2 x 0.5	20	10.5	60.0	126.0
21143	4 x 2 x 0.5	20	11.2	73.0	146.0
21144	8 x 2 x 0.5	20	14.9	124.0	246.0
21145	10 x 2 x 0.5	20	16.0	155.0	292.0
21146	2 x 2 x 1	18	11.9	81.0	141.0
21147	3 x 2 x 1	18	12.5	102.0	170.0
21148	4 x 2 x 1	18	13.5	130.0	203.0
21149	8 x 2 x 1	18	18.3	240.0	361.0
21150	10 x 2 x 1	18	20.0	282.0	387.0

# PAAR-TRONIC-Li-2YCY

low capacitance, EMC-preferred type



HELUKABEL® PAAR-TRONIC-Li-2YCY 4x2x0,34 QMM / 21119 CE

## TECHNICAL DATA

### PVC data cable

<b>Temperature range</b>	flexible -5°C to +70°C fixed -30°C to +80°C
<b>Peak operating voltage</b>	250 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	1000 V
<b>Conductor resistance at 20°C</b>	0.22 mm <sup>2</sup> : max. 93.0 Ohm/km 0.34 mm <sup>2</sup> : max. 57.5 Ohm/km 0.5 mm <sup>2</sup> : max. 39.3 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 72 pF/m 8 - 10 pairs: approx. 60 pF/m
<b>Crosstalk attenuation</b>	at 1 MHz, 50.00 dB at 10 MHz, 40.00 dB (approx. value)
<b>Inductance</b>	approx. 0.66 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 12x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.22 mm<sup>2</sup>: 7 x 0.2  
0.34 mm<sup>2</sup>: 7 x 0.25  
0.5 mm<sup>2</sup>: 7 x 0.3
- Core insulation: PE acc. to DIN VDE 0819-103 / DIN EN 50290-2-23 (compound type LD/MD)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21111	2 x 2 x 0.22	24	6.3	26.0	48.0
21112	3 x 2 x 0.22	24	6.6	31.0	66.0
21113	4 x 2 x 0.22	24	7.2	38.0	82.0
21114	8 x 2 x 0.22	24	9.6	62.0	123.0
21115	10 x 2 x 0.22	24	10.4	79.0	165.0
21117	2 x 2 x 0.34	22	7.5	35.0	68.0
21118	3 x 2 x 0.34	22	7.9	44.0	77.0
21119	4 x 2 x 0.34	22	8.6	53.0	95.0

- Foil wrapping
- Drain wire, tinned copper
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## APPLICATION

PE-insulated data cable with twisted pairs, for interference-free transmission of data and signals over longer distances. The twisted-pair lay-up prevents electrical unbalances within the cable and this thus effectively suppresses cross-talking effects. The high transmission rates are particularly suitable for RS 422 and RS 485 interfaces; suitable for fixed installations in dry, damp and wet rooms, but not outdoors. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21120	8 x 2 x 0.34	22	11.9	86.0	158.0
21121	10 x 2 x 0.34	22	13.4	104.0	195.0
21123	2 x 2 x 0.5	20	8.0	49.0	74.0
21124	3 x 2 x 0.5	20	8.5	60.0	109.0
21125	4 x 2 x 0.5	20	9.4	73.0	128.0
21126	8 x 2 x 0.5	20	13.3	124.0	223.0
21127	10 x 2 x 0.5	20	14.4	155.0	265.0



HELUKABEL® LifYCY 4x2x0,2 QMM / 15989 350 V CE

### TECHNICAL DATA

PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Peak operating voltage</b>	350 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1200 V
<b>Breakdown voltage</b>	2400 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, super finely stranded, wire diameter: 0.05 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15987	2 x 2 x 0.2	25	5.7	24.0	60.0
15988	3 x 2 x 0.2	25	6.1	35.0	70.0
15989	4 x 2 x 0.2	25	6.6	45.0	80.0
15990	5 x 2 x 0.2	25	7.9	54.0	90.0
15991	6 x 2 x 0.2	25	8.3	56.0	100.0
15992	7 x 2 x 0.2	25	8.3	68.0	120.0
15993	8 x 2 x 0.2	25	9.4	72.0	130.0

### ■ PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### ■ APPLICATION

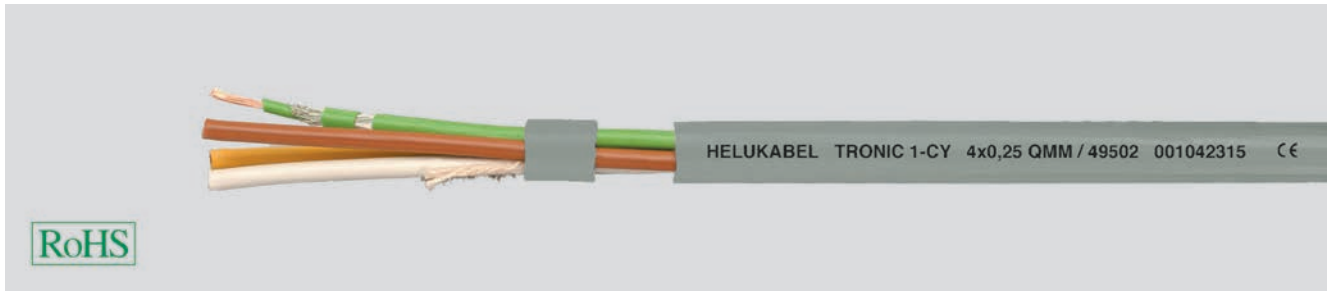
This cable is used as a connection cable for signal, measurement and control technology, e.g. for call and intercom systems, electronic weighing equipment, office machines, computing and telecommunication systems etc. It enables extremely flexible handling and laying. The paired stranding reduces electrical couplings within the cables and crosstalk effects can be effectively suppressed. The tinned copper braided screen serves as protection against external high-frequency influences (capacitive coupling). The cable can be used for fixed installation and flexible applications involving medium mechanical stress with free movement, without tensile stress and without forced motion control in dry, damp and wet rooms. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15994	10 x 2 x 0.2	25	10.2	108.0	150.0
15995	12 x 2 x 0.2	25	10.9	125.0	180.0
15996	16 x 2 x 0.2	25	12.3	144.0	210.0
15997	18 x 2 x 0.2	25	13.1	155.0	230.0
15998	20 x 2 x 0.2	25	13.2	216.0	250.0
15999	24 x 2 x 0.2	25	15.0	228.0	330.0
16000	32 x 2 x 0.2	25	16.6	269.0	400.0

# TRONIC 1-CY each core individually screened, EMC-preferred type, meter marking



## Technical data

- Special-PVC core insulation adapted to DIN VDE 0812
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Operating peak voltage**  
(not for heavy current installation purposes)  
0,25 mm<sup>2</sup> 250 V  
0,50 mm<sup>2</sup> 350 V
- **Test voltage** (core/screen)  
0,25 mm<sup>2</sup> 800 V  
0,50 mm<sup>2</sup> 1200 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, from 0,5 mm<sup>2</sup> to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Conductor construction:  
0,25 mm<sup>2</sup> = 14x0,15 mm  
0,50 mm<sup>2</sup> = 16x0,2 mm
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100
- Each core individually with copper spiral shield, approx. 85% coverage
- Contact protection, PVC sheath
- Cores stranded in layers with optimal lay-length
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

## Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

The individually screened, flexible cable is ideal for use in data and impulse transfer in computers, communication systems and external units and offers interference-free data flow for all measuring and command functions. This cable type is widely used in the machine and steel producing industries as well as for traffic signals and data processing areas.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
49501	3 x 0,25	6,5	18,0	40,0	24	49512	3 x 0,5	7,3	28,8	71,0	20
49502	4 x 0,25	7,2	24,0	45,0	24	49513	4 x 0,5	8,2	38,5	81,0	20
49503	5 x 0,25	8,0	30,0	56,0	24	49514	5 x 0,5	9,2	48,0	95,0	20
49504	7 x 0,25	8,8	42,0	70,0	24	49515	7 x 0,5	10,0	67,0	115,0	20
49505	8 x 0,25	10,0	48,0	87,0	24	49516	8 x 0,5	11,0	77,0	145,0	20
49506	10 x 0,25	11,3	60,0	90,0	24	49517	10 x 0,5	13,2	96,0	169,0	20
49507	12 x 0,25	12,0	72,0	95,0	24	49518	12 x 0,5	14,0	114,6	185,0	20
49508	16 x 0,25	13,1	96,0	115,0	24	49519	16 x 0,5	15,5	154,0	225,0	20
49509	24 x 0,25	16,0	144,0	170,0	24	49520	32 x 0,5	21,5	308,0	440,0	20
49510	32 x 0,25	18,5	192,0	210,0	24						
49511	48 x 0,25	23,5	288,0	320,0	24						

Dimensions and specifications may be changed without prior notice. (RB01)

# TRONIC 2-CY 2 cores screened, meter marking



HELUKABEL TRONIC 2-CY 4x0,25 QMM / 49526 001042316



## Technical data

- Special-PVC core insulation adapted to DIN VDE 0812
- **Temperature range**  
flexing -5°C to +80°C  
fixed installation -40°C to +80°C
- **Conductor resistance**  
0,14 mm<sup>2</sup> = max. 138 Ohm/km  
0,25 mm<sup>2</sup> = max. 77,8 Ohm/km  
0,50 mm<sup>2</sup> = max. 37,8 Ohm/km
- **Operating peak voltage**  
(not for heavy current installation purposes)  
0,14 mm<sup>2</sup> = max. 350 V  
0,25 mm<sup>2</sup> = max. 500 V  
0,50 mm<sup>2</sup> = max. 500 V
- **Test voltage** (50 Hz eff)  
0,14 mm<sup>2</sup> = 800 V  
0,25 mm<sup>2</sup> = 800 V  
0,50 mm<sup>2</sup> = 1200 V
- **Breakdown voltage**  
0,14 mm<sup>2</sup> = 1600 V  
0,25 mm<sup>2</sup> = 1600 V  
0,50 mm<sup>2</sup> = 2400 V
- **Insulation resistance**  
min. 200 MOhm x km
- **Mutual capacitance** (approx.-value)  
core/core  
0,14 mm<sup>2</sup> = 70 pF/m  
0,25 mm<sup>2</sup> = 80 pF/m  
0,50 mm<sup>2</sup> = 80 pF/m  
core/screen  
0,14 mm<sup>2</sup> = 270 pF/m  
0,25 mm<sup>2</sup> = 350 pF/m  
0,50 mm<sup>2</sup> = 400 pF/m
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, from 0,5 mm<sup>2</sup> to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5  
0,14 and 0,25 mm<sup>2</sup> to DIN VDE 0812
- Conductor construction:  
0,14 mm<sup>2</sup> = 18x0,1 mm  
0,25 mm<sup>2</sup> = 14x0,15 mm  
0,50 mm<sup>2</sup> = 16x0,2 mm
- Core insulation of special PVC compound type T12 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Core identification to DIN 47100
- White and brown cores each individually screened
- Copper braided screen, approx. 85% coverage
- Cores stranded in layers with optimal lay-length
- Contact protection, PVC sheath
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Sheath colour grey (RAL 7001)
- with meter marking

## Properties

- Extensively oil resistant, oil-/ chemical Resistance - see table Technical Informations
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

TRONIC 2-CY is used in all areas of measuring and control technology requiring only 2 impulse transfer cores. This cable type is used mainly in the machinery and industrial equipment fields as well as in the steel industry and in electronics.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
49521	4 x 0,14	6,2	14,6	40,0	26
49522	8 x 0,14	7,2	20,3	50,0	26
49523	12 x 0,14	8,4	26,8	70,0	26
49524	16 x 0,14	8,6	32,0	80,0	26
49525	24 x 0,14	9,0	43,4	110,0	26
49526	4 x 0,25	6,5	21,3	60,0	24
49527	8 x 0,25	8,0	31,0	90,0	24
49528	12 x 0,25	9,2	40,5	120,0	24
49529	16 x 0,25	9,6	50,1	140,0	24
49530	24 x 0,25	12,0	69,3	200,0	24

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
49531	4 x 0,5	7,6	34,0	100,0	20
49532	8 x 0,5	11,6	53,2	150,0	20
49533	12 x 0,5	11,9	72,4	190,0	20
49534	16 x 0,5	12,5	91,6	240,0	20
49535	24 x 0,5	15,3	130,0	310,0	20

Dimensions and specifications may be changed without prior notice. (RB01)



HELUKABEL® LiY-TPC-Y 2x2x0,34 QMM / 21340 500 V CE

## TECHNICAL DATA

### PVC data cable in alignment with DIN VDE 0812

<b>Temperature range</b>	flexible -5°C to +70°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	500 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1200 V
<b>Breakdown voltage</b>	2400 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 12x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, 0.5 - 1 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:
  - 0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm
  - 0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping of the pairs
- Screening element: pairs, braided screen of tinned copper wires, approx. coverage 85%
- Pairs stranded in layers with optimal lay lengths
- Foil wrapping

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21323	2 x 2 x 0.25	24	6.2	32.0	60.0
21324	3 x 2 x 0.25	24	6.8	48.0	80.0
21325	4 x 2 x 0.25	24	7.4	64.0	112.0
21326	5 x 2 x 0.25	24	8.7	80.0	142.0
21327	6 x 2 x 0.25	24	9.1	96.0	159.0
21328	7 x 2 x 0.25	24	9.6	112.0	177.0
21329	10 x 2 x 0.25	24	11.7	160.0	250.0
21340	2 x 2 x 0.34	22	6.7	42.0	78.0
21341	3 x 2 x 0.34	22	7.5	63.0	104.0
21342	4 x 2 x 0.34	22	8.1	84.0	153.0
21343	5 x 2 x 0.34	22	9.5	105.0	189.0
21344	7 x 2 x 0.34	22	10.1	147.0	238.0

- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

The pair screened data transmission cable is used as a control and signal cable in electronics and in measurement and control technology. It provides interference-free transmission of data signals from peripheral equipment to information storage. Excellent connection cable for sound mixers, studio equipment and measurement and control technology. Reliable in process control, machining centres and safety engineering systems. These cables with copper screening are ideally suited for interference-free data and signal transmission for measurement and control technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21345	10 x 2 x 0.34	22	13.4	210.0	322.0
21355	2 x 2 x 0.5	20	8.3	58.0	96.0
21356	3 x 2 x 0.5	20	9.2	87.0	136.0
21357	4 x 2 x 0.5	20	10.2	116.0	187.0
21370	2 x 2 x 0.75	19	9.2	76.0	132.0
21371	3 x 2 x 0.75	19	10.1	114.0	178.0
21372	4 x 2 x 0.75	19	11.2	152.0	243.0
21373	5 x 2 x 0.75	19	12.7	190.0	312.0
21385	2 x 2 x 1	18	9.6	86.0	142.0
21386	3 x 2 x 1	18	10.8	130.0	189.0
21387	4 x 2 x 1	18	11.9	149.0	275.0

# HELUDATA® TRONIC 2464 / 300 GREY / HELUDATA® TRONIC 2464 / 300 BLACK



UL Style 2464, 300 V, 80 °C



HELUKABEL® HELUDATA® TRONIC 2464 / 300 GREY .UL= AWM STYLE 2464 22 AWG / 0,34 QMM  
12 C 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1



HELUKABEL® HELUDATA® TRONIC 2464 / 300 BLACK .UL= AWM STYLE 2464 22 AWG / 0,34 QMM  
12 C 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2464, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +80°C fixed -40°C to +80°C
Nominal voltage	UL (AWM) AC 300 V
Test voltage core/core	1500 V
Breakdown voltage	3000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Wire structure:
  - 26 AWG: 7 x 0.162 mm
  - 24 AWG: 7 x 0.202 mm
  - 22 AWG: 7 x 0.254 mm
  - 20 AWG: 7 x 0.320 mm
  - 18 AWG: 19 x 0.235 mm
  - 16 AWG: 19 x 0.310 mm
- Core insulation:
  - 26 - 20 AWG: semirigid PVC acc. to UL-Std. 1581 Tab. 50.183
  - 18 - 16 AWG: PVC acc. to UL-Std. 1581 Tab. 50.182
- Core identification: see table
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths

- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182, CSA-Std. C22.2 No. 210
- Sheath colour: see table

## ■ PROPERTIES

- resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## ■ APPLICATION

UL-/CSA-approved, flexible data cable for use as a signal and measuring cable in machine tools, assembly lines, conveyor belts, plant construction, air conditioning devices, metallurgical plants, steel mills.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100, colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83137	2 x 26	0.14	3.6	2.7	13.0
83138	3 x 26	0.14	3.7	4.0	15.0
83139	4 x 26	0.14	4.0	5.4	18.0
83140	6 x 26	0.14	4.6	8.1	25.0
83141	10 x 26	0.14	5.5	13.4	38.0
83142	12 x 26	0.14	5.7	16.2	46.0
83143	16 x 26	0.14	6.2	21.5	56.0
83144	18 x 26	0.14	6.5	24.4	62.0
83145	24 x 26	0.14	7.7	32.4	82.0
83146	27 x 26	0.14	7.9	36.3	97.0
83147	30 x 26	0.14	8.1	40.4	110.0
83153	2 x 24	0.23	3.8	4.6	16.0
83154	3 x 24	0.23	4.0	7.1	19.0
83155	4 x 24	0.23	4.3	9.4	23.0
83156	6 x 24	0.23	4.9	14.2	32.0
83157	10 x 24	0.23	6.0	23.8	55.0
83158	12 x 24	0.23	6.2	28.5	60.0
83159	16 x 24	0.23	6.8	38.1	75.0
83160	18 x 24	0.23	7.1	43.1	82.0
83161	24 x 24	0.23	8.4	59.7	116.0
83162	27 x 24	0.23	8.6	64.7	140.0
83163	30 x 24	0.23	9.1	71.9	150.0
83169	2 x 22	0.34	4.1	6.5	25.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83170	3 x 22	0.34	4.3	9.8	30.0
83171	4 x 22	0.34	4.6	13.0	45.0
83172	6 x 22	0.34	5.4	19.6	60.0
83173	10 x 22	0.34	6.6	32.5	80.0
83174	12 x 22	0.34	6.8	39.1	105.0
83175	16 x 22	0.34	7.7	52.0	130.0
83176	18 x 22	0.34	8.1	59.0	140.0
83177	24 x 22	0.34	9.6	79.0	190.0
83178	27 x 22	0.34	9.8	88.0	207.0
83179	30 x 22	0.34	10.1	97.8	225.0
83185	2 x 20	0.56	4.5	10.8	30.0
83186	3 x 20	0.56	4.7	16.1	33.0
83187	4 x 20	0.56	5.1	21.5	41.0
83188	6 x 20	0.56	6.0	32.3	65.0
83189	10 x 20	0.56	7.6	53.8	102.0
83190	12 x 20	0.56	7.9	64.5	120.0
83191	16 x 20	0.56	8.7	86.0	152.0
83192	18 x 20	0.56	9.3	96.8	168.0
83193	24 x 20	0.56	11.0	129.0	224.0
83194	27 x 20	0.56	11.2	145.1	260.0
83195	30 x 20	0.56	11.6	161.3	300.0
83201	2 x 18	0.82	5.6	15.2	50.0
83202	3 x 18	0.82	5.9	23.2	62.0



# HELUDATA® TRONIC 2464 / 300 GREY / HELUDATA® TRONIC 2464 / 300 BLACK



UL Style 2464, 300 V, 80 °C

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100, colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83203	4 x 18	0.82	6.4	31.3	72.0	83218	3 x 16	1.30	6.7	37.1	90.0
83204	6 x 18	0.82	7.7	47.0	100.0	83219	4 x 16	1.30	7.5	49.4	110.0
83205	10 x 18	0.82	9.9	78.2	180.0	83220	6 x 16	1.30	9.1	74.2	160.0
83206	12 x 18	0.82	10.4	94.0	182.0	83221	10 x 16	1.30	11.8	124.0	250.0
83207	16 x 18	0.82	11.5	125.1	240.0	83222	12 x 16	1.30	12.2	149.0	300.0
83208	18 x 18	0.82	12.3	141.1	270.0	83223	16 x 16	1.30	13.6	198.7	400.0
83209	24 x 18	0.82	14.5	188.2	370.0	83224	18 x 16	1.30	14.4	224.0	450.0
83210	27 x 18	0.82	14.9	212.0	400.0	83225	24 x 16	1.30	17.1	298.4	650.0
83211	30 x 18	0.82	15.5	235.6	470.0	83226	27 x 16	1.30	17.7	336.0	680.0
83217	2 x 16	1.30	6.3	24.4	70.0	83227	30 x 16	1.30	18.3	373.6	750.0

Sheath colour: black (RAL 9005); core identification acc. to international colour code, colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83045	2 x 26	0.14	3.6	2.7	13.0	83386	2 x 20	0.56	4.5	10.8	30.0
83046	3 x 26	0.14	3.7	4.0	15.0	83387	3 x 20	0.56	4.7	16.1	33.0
83047	4 x 26	0.14	4.0	5.4	18.0	83388	4 x 20	0.56	5.1	21.5	41.0
83048	6 x 26	0.14	4.6	8.1	25.0	83389	6 x 20	0.56	6.0	32.3	65.0
83049	10 x 26	0.14	5.5	13.4	38.0	83390	10 x 20	0.56	7.6	53.8	102.0
83050	12 x 26	0.14	5.7	16.2	46.0	83391	12 x 20	0.56	7.9	64.5	120.0
83055	16 x 26	0.14	6.2	21.5	56.0	83392	16 x 20	0.56	8.7	86.0	152.0
83056	18 x 26	0.14	6.5	24.4	62.0	83393	18 x 20	0.56	9.3	96.8	168.0
83057	24 x 26	0.14	7.7	32.4	82.0	83394	24 x 20	0.56	11.0	129.0	224.0
83058	27 x 26	0.14	7.9	36.3	97.0	83395	27 x 20	0.56	11.2	145.1	260.0
83059	30 x 26	0.14	8.1	40.4	110.0	83396	30 x 20	0.56	11.6	161.3	300.0
83130	2 x 24	0.23	3.8	4.6	16.0	83397	2 x 18	0.82	5.6	15.2	50.0
83131	3 x 24	0.23	4.0	7.1	19.0	83398	3 x 18	0.82	5.9	23.2	62.0
83132	4 x 24	0.23	4.3	9.4	23.0	83399	4 x 18	0.82	6.4	31.3	72.0
83133	6 x 24	0.23	4.9	14.2	32.0	83474	6 x 18	0.82	7.7	47.0	100.0
83134	10 x 24	0.23	6.0	23.8	55.0	83475	10 x 18	0.82	9.9	78.2	180.0
83135	12 x 24	0.23	6.2	28.5	60.0	83476	12 x 18	0.82	10.4	94.0	182.0
83136	16 x 24	0.23	6.8	38.1	75.0	83477	16 x 18	0.82	11.5	125.1	240.0
83371	18 x 24	0.23	7.1	43.1	82.0	83478	18 x 18	0.82	12.3	141.1	270.0
83372	24 x 24	0.23	8.4	59.7	116.0	83479	24 x 18	0.82	14.5	188.2	370.0
83373	27 x 24	0.23	8.6	64.7	140.0	83480	27 x 18	0.82	14.9	212.0	400.0
83374	30 x 24	0.23	9.1	71.9	150.0	83481	30 x 18	0.82	15.5	235.6	470.0
83375	2 x 22	0.34	4.1	6.5	25.0	83482	2 x 16	1.30	6.3	24.4	70.0
83376	3 x 22	0.34	4.3	9.8	30.0	83483	3 x 16	1.30	6.7	37.1	90.0
83377	4 x 22	0.34	4.6	13.0	45.0	83484	4 x 16	1.30	7.5	49.4	110.0
83378	6 x 22	0.34	5.4	19.6	60.0	83491	6 x 16	1.30	9.1	74.2	160.0
83379	10 x 22	0.34	6.6	32.5	80.0	83492	10 x 16	1.30	11.8	124.0	250.0
83380	12 x 22	0.34	6.8	39.1	105.0	83493	12 x 16	1.30	12.2	149.0	300.0
83381	16 x 22	0.34	7.7	52.0	130.0	83494	16 x 16	1.30	13.6	198.7	400.0
83382	18 x 22	0.34	8.1	59.0	140.0	83495	18 x 16	1.30	14.4	224.0	450.0
83383	24 x 22	0.34	9.6	79.0	190.0	83496	24 x 16	1.30	17.1	298.4	650.0
83384	27 x 22	0.34	9.8	88.0	207.0	83497	27 x 16	1.30	17.7	336.0	680.0
83385	30 x 22	0.34	10.1	97.8	225.0	83498	30 x 16	1.30	18.3	373.6	750.0

# HELUDATA® TRONIC-CY 2464 / 300 GREY / HELUDATA® TRONIC-CY 2464 / 300 BLACK



UL Style 2464, 300 V, 80°C, EMC-preferred type



HELUKABEL® HELUDATA® TRONIC-CY 2464 / 300 GREY AWM STYLE 2464  
22 AWG / 0,34 QMM 12 C 83291 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1



HELUKABEL® HELUDATA® TRONIC-CY 2464 / 300 BLACK AWM STYLE 2464  
22 AWG / 0,34 QMM 12 C 65049 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2464, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +80°C fixed -40°C to +80°C
Nominal voltage	UL (AWM) AC 300 V
Test voltage core/core	1500 V
Breakdown voltage	3000 V
Coupling resistance	at 30 MHz, approx. 250 Ohm/ km
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Wire structure:
  - 26 AWG: 7 x 0.162 mm
  - 24 AWG: 7 x 0.202 mm
  - 22 AWG: 7 x 0.254 mm
  - 20 AWG: 7 x 0.320 mm
  - 18 AWG: 19 x 0.235 mm
  - 16 AWG: 19 x 0.310 mm
- Core insulation:
  - 26 - 20 AWG: semirigid PVC acc. to UL-Std. 1581 Tab. 50.183
  - 18 - 16 AWG: PVC acc. to UL-Std. 1581 Tab. 50.182
- Core identification: see table
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, tinned copper

- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182, CSA-Std. C22.2 No. 210
- Sheath colour: see table

## ■ PROPERTIES

- resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## ■ APPLICATION

UL/CSA approved, flexible data cable for applications within control and regulation engineering as well as measurement, signal and impulse technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100, colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83254	2 x 26	0.14	4.3	12.6	20.0	83278	24 x 24	0.23	9.4	97.3	131.0
83255	3 x 26	0.14	4.5	13.7	25.0	83279	27 x 24	0.23	9.5	122.0	160.0
83256	4 x 26	0.14	4.7	14.9	28.0	83280	30 x 24	0.23	9.8	132.0	170.0
83257	6 x 26	0.14	5.3	18.9	30.0	83286	2 x 22	0.34	4.9	18.1	40.0
83258	10 x 26	0.14	6.3	29.5	50.0	83287	3 x 22	0.34	5.1	22.2	50.0
83259	12 x 26	0.14	6.4	31.4	53.0	83288	4 x 22	0.34	5.4	28.7	60.0
83260	16 x 26	0.14	7.0	43.9	60.0	83289	6 x 22	0.34	6.1	45.4	80.0
83261	18 x 26	0.14	7.5	52.1	70.0	83290	10 x 22	0.34	7.6	66.1	130.0
83262	24 x 26	0.14	8.5	62.8	100.0	83291	12 x 22	0.34	7.8	70.8	140.0
83263	27 x 26	0.14	8.6	66.3	105.0	83292	16 x 22	0.34	8.5	88.4	160.0
83264	30 x 26	0.14	9.1	70.4	110.0	83293	18 x 22	0.34	9.1	104.1	170.0
83270	2 x 24	0.23	4.6	16.1	20.0	83294	24 x 22	0.34	10.5	129.0	220.0
83271	3 x 24	0.23	4.7	18.9	25.0	83295	27 x 22	0.34	10.7	138.4	250.0
83272	4 x 24	0.23	5.0	23.0	30.0	83296	30 x 22	0.34	11.0	159.0	280.0
83273	6 x 24	0.23	5.7	32.8	40.0	83302	2 x 20	0.56	5.3	29.4	50.0
83274	10 x 24	0.23	6.8	50.9	60.0	83303	3 x 20	0.56	5.5	39.7	55.0
83275	12 x 24	0.23	6.9	59.1	70.0	83304	4 x 20	0.56	5.9	46.1	61.0
83276	16 x 24	0.23	7.7	68.4	90.0	83305	6 x 20	0.56	6.7	66.8	90.0
83277	18 x 24	0.23	8.1	79.5	123.0	83306	10 x 20	0.56	8.4	93.1	133.0

# HELUDATA® TRONIC-CY 2464 / 300 GREY / HELUDATA® TRONIC-CY 2464 / 300 BLACK



UL Style 2464, 300 V, 80°C, EMC-preferred type

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100, colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83307	12 x 20	0.56	8.6	117.4	151.0	83326	24 x 18	0.82	15.6	272.6	450.0
83308	16 x 20	0.56	9.6	130.4	190.0	83327	27 x 18	0.82	15.9	289.1	470.0
83309	18 x 20	0.56	10.0	151.4	216.0	83328	30 x 18	0.82	16.6	317.4	490.0
83310	24 x 20	0.56	11.9	237.0	339.0	83334	2 x 16	1.30	7.0	59.1	90.0
83311	27 x 20	0.56	12.1	257.4	374.0	83335	3 x 16	1.30	7.6	74.1	160.0
83312	30 x 20	0.56	12.5	297.0	397.0	83336	4 x 16	1.30	8.2	96.4	200.0
83318	2 x 18	0.82	6.3	39.1	60.0	83337	6 x 16	1.30	9.8	137.4	290.0
83319	3 x 18	0.82	6.6	50.0	75.0	83338	10 x 16	1.30	12.5	191.7	450.0
83320	4 x 18	0.82	7.1	59.1	90.0	83339	12 x 16	1.30	12.9	251.7	600.0
83321	6 x 18	0.82	8.5	89.1	125.0	83340	16 x 16	1.30	14.8	276.1	650.0
83322	10 x 18	0.82	10.8	141.4	180.0	83341	18 x 16	1.30	15.5	364.1	680.0
83323	12 x 18	0.82	11.2	152.8	220.0	83342	24 x 16	1.30	18.2	442.4	900.0
83324	16 x 18	0.82	12.4	184.1	290.0	83343	27 x 16	1.30	18.6	494.7	990.0
83325	18 x 18	0.82	13.0	207.2	300.0	83344	30 x 16	1.30	19.6	521.4	1050.0

Sheath colour: black (RAL 9005); core identification acc. to international colour code, colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83976	2 x 26	0.14	4.3	12.6	20.0	65055	2 x 20	0.56	5.3	29.4	50.0
83977	3 x 26	0.14	4.5	13.7	25.0	65056	3 x 20	0.56	5.5	39.7	55.0
83978	4 x 26	0.14	4.7	14.9	28.0	65057	4 x 20	0.56	5.9	46.1	61.0
83979	6 x 26	0.14	5.3	18.9	30.0	65058	6 x 20	0.56	6.7	66.8	90.0
83980	10 x 26	0.14	6.3	29.5	50.0	65059	10 x 20	0.56	8.4	93.1	133.0
83981	12 x 26	0.14	6.4	31.4	53.0	65060	12 x 20	0.56	8.6	117.4	151.0
83982	16 x 26	0.14	7.0	43.9	60.0	65061	16 x 20	0.56	9.6	130.4	190.0
83983	18 x 26	0.14	7.5	52.1	70.0	65062	18 x 20	0.56	10.0	151.4	216.0
83984	24 x 26	0.14	8.5	62.8	100.0	65063	24 x 20	0.56	11.9	237.0	339.0
83985	27 x 26	0.14	8.6	66.3	105.0	65064	27 x 20	0.56	12.1	257.4	374.0
83986	30 x 26	0.14	9.1	70.4	110.0	65065	30 x 20	0.56	12.5	297.0	397.0
83987	2 x 24	0.23	4.6	16.1	20.0	65066	2 x 18	0.82	6.3	39.1	60.0
83988	3 x 24	0.23	4.7	18.9	25.0	65067	3 x 18	0.82	6.6	50.0	75.0
83989	4 x 24	0.23	5.0	23.0	30.0	65068	4 x 18	0.82	7.1	59.1	90.0
83990	6 x 24	0.23	5.7	32.8	40.0	65069	6 x 18	0.82	8.5	89.1	125.0
83991	10 x 24	0.23	6.8	50.9	60.0	65070	10 x 18	0.82	10.8	141.4	180.0
83992	12 x 24	0.23	6.9	59.1	70.0	65071	12 x 18	0.82	11.2	152.8	220.0
83993	16 x 24	0.23	7.7	68.4	90.0	65072	16 x 18	0.82	12.4	184.1	290.0
83994	18 x 24	0.23	8.1	79.5	123.0	65073	18 x 18	0.82	13.0	207.2	300.0
83995	24 x 24	0.23	9.4	97.3	131.0	65074	24 x 18	0.82	15.6	272.6	450.0
83996	27 x 24	0.23	9.5	122.0	160.0	65075	27 x 18	0.82	15.9	289.1	470.0
83997	30 x 24	0.23	9.8	132.0	170.0	65076	30 x 18	0.82	16.6	317.4	490.0
65044	2 x 22	0.34	4.9	18.1	40.0	65077	2 x 16	1.30	7.0	59.1	90.0
65045	3 x 22	0.34	5.1	22.2	50.0	65078	3 x 16	1.30	7.6	74.1	160.0
65046	4 x 22	0.34	5.4	28.7	60.0	65079	4 x 16	1.30	8.2	96.4	200.0
65047	6 x 22	0.34	6.1	45.4	80.0	65080	6 x 16	1.30	9.8	137.4	290.0
65048	10 x 22	0.34	7.6	66.1	130.0	65081	10 x 16	1.30	12.5	191.7	450.0
65049	12 x 22	0.34	7.8	70.8	140.0	65082	12 x 16	1.30	12.9	251.7	600.0
65050	16 x 22	0.34	8.5	88.4	160.0	65083	16 x 16	1.30	14.8	276.1	650.0
65051	18 x 22	0.34	9.1	104.1	170.0	65084	18 x 16	1.30	15.5	364.1	680.0
65052	24 x 22	0.34	10.5	129.0	220.0	65085	24 x 16	1.30	18.2	442.4	900.0
65053	27 x 22	0.34	10.7	138.4	250.0	65086	27 x 16	1.30	18.6	494.7	990.0
65054	30 x 22	0.34	11.0	159.0	280.0	65087	30 x 16	1.30	19.6	521.4	1050.0

# HELUDATA® PAAR-TRONIC 2464 / 300 GREY / HELUDATA® PAAR-TRONIC 2464 / 300 BLACK

UL Style 2464, 300 V, 80°C



HELUKABEL® HELUDATA® PAAR-TRONIC 2464 / 300 GREY AWM STYLE 2464  
20 AWG / 0,56 QMM 8C / 83961 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1



HELUKABEL® HELUDATA® PAAR-TRONIC 2464 / 300 BLACK AWM STYLE 2464  
22 AWG / 0,34 QMM 8C / 65253 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2464, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +80°C fixed -40°C to +80°C
Nominal voltage	UL (AWM) AC 300 V
Test voltage core/core	1500 V
Breakdown voltage	3000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Wire structure:  
26 AWG: 7 x 0.160 mm  
24 AWG: 7 x 0.203 mm  
22 AWG: 7 x 0.254 mm  
20 AWG: 7 x 0.320 mm
- Core insulation: semirigid PVC acc. to UL-Std. 1581 Tab. 50.183
- Core identification: see table
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182, CSA-Std. C22.2 No. 210

- Sheath colour: see table

## ■ PROPERTIES

- resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## ■ APPLICATION

UL/CSA approved, twisted pair data cable for use as a signal and measuring cable in machine tools, assembly lines, conveyor belts, plant construction, air conditioning devices, metallurgical plants, steel mills.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100 (paired stranding), colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83904	1 x 2 x 26	0.14	3.7	2.7	20.0	83927	6 x 2 x 24	0.23	7.2	29.3	80.0
83905	2 x 2 x 26	0.14	4.9	5.4	24.0	83928	7 x 2 x 24	0.23	7.2	34.1	89.0
83906	3 x 2 x 26	0.14	5.2	8.1	30.0	83929	8 x 2 x 24	0.23	8.4	39.1	98.0
83907	4 x 2 x 26	0.14	5.6	10.8	38.0	83930	10 x 2 x 24	0.23	9.4	48.9	111.0
83908	5 x 2 x 26	0.14	6.0	13.6	44.0	83931	12 x 2 x 24	0.23	9.7	59.4	135.0
83909	6 x 2 x 26	0.14	6.5	16.2	51.0	83932	14 x 2 x 24	0.23	10.3	68.7	160.0
83910	7 x 2 x 26	0.14	6.5	19.0	57.0	83933	15 x 2 x 24	0.23	10.8	73.7	171.0
83911	8 x 2 x 26	0.14	7.7	21.7	64.0	83934	16 x 2 x 24	0.23	10.8	79.1	185.0
83912	10 x 2 x 26	0.14	8.3	26.7	76.0	83935	18 x 2 x 24	0.23	11.4	88.9	209.0
83913	12 x 2 x 26	0.14	8.6	32.6	93.0	83936	20 x 2 x 24	0.23	12.1	98.4	230.0
83914	14 x 2 x 26	0.14	9.2	37.4	103.0	83937	22 x 2 x 24	0.23	13.6	108.6	248.0
83915	15 x 2 x 26	0.14	9.7	40.7	109.0	83938	24 x 2 x 24	0.23	13.6	117.9	279.0
83916	16 x 2 x 26	0.14	9.7	43.4	112.0	83939	25 x 2 x 24	0.23	13.9	123.5	292.0
83917	18 x 2 x 26	0.14	10.3	48.5	119.0	83940	1 x 2 x 22	0.34	4.2	6.5	38.0
83918	20 x 2 x 26	0.14	10.8	54.2	130.0	83941	2 x 2 x 22	0.34	5.8	13.0	44.0
83919	22 x 2 x 26	0.14	12.1	59.3	150.0	83942	3 x 2 x 22	0.34	6.2	19.5	60.0
83920	24 x 2 x 26	0.14	12.1	64.7	169.0	83943	4 x 2 x 22	0.34	6.7	26.1	79.0
83921	25 x 2 x 26	0.14	12.4	67.2	178.0	83944	5 x 2 x 22	0.34	7.5	32.6	92.0
83922	1 x 2 x 24	0.23	3.9	4.8	32.0	83945	6 x 2 x 22	0.34	8.1	39.2	119.0
83923	2 x 2 x 24	0.23	5.3	9.7	36.0	83946	7 x 2 x 22	0.34	8.1	45.7	128.0
83924	3 x 2 x 24	0.23	5.6	14.7	48.0	83947	8 x 2 x 22	0.34	9.6	52.3	139.0
83925	4 x 2 x 24	0.23	6.1	19.6	56.0	83948	10 x 2 x 22	0.34	10.6	65.3	171.0
83926	5 x 2 x 24	0.23	6.6	24.6	71.0	83949	12 x 2 x 22	0.34	10.9	78.4	194.0

# HELUDATA® PAAR-TRONIC 2464 / 300 GREY / HELUDATA® PAAR-TRONIC 2464 / 300 BLACK



UL Style 2464, 300 V, 80°C

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100 (paired stranding), colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83950	14 x 2 x 22	0.34	11.4	91.5	222.0	83963	6 x 2 x 20	0.56	9.3	64.6	151.0
83951	15 x 2 x 22	0.34	12.2	97.8	231.0	83964	7 x 2 x 20	0.56	9.3	75.3	174.0
83952	16 x 2 x 22	0.34	12.2	104.6	240.0	83965	8 x 2 x 20	0.56	10.9	86.1	262.0
83953	18 x 2 x 22	0.34	12.8	117.8	264.0	83966	10 x 2 x 20	0.56	12.1	107.7	298.0
83954	20 x 2 x 22	0.34	13.7	130.7	291.0	83967	12 x 2 x 20	0.56	12.4	129.1	302.0
83955	22 x 2 x 22	0.34	15.3	143.6	300.0	83968	14 x 2 x 20	0.56	13.3	150.6	327.0
83956	24 x 2 x 22	0.34	15.3	156.8	359.0	83969	15 x 2 x 20	0.56	14.0	161.3	370.0
83957	25 x 2 x 22	0.34	15.6	163.3	381.0	83970	16 x 2 x 20	0.56	14.0	172.1	402.0
83958	1 x 2 x 20	0.56	4.6	10.8	60.0	83971	18 x 2 x 20	0.56	14.9	193.6	480.0
83959	2 x 2 x 20	0.56	6.5	21.5	80.0	83972	20 x 2 x 20	0.56	15.6	215.1	551.0
83960	3 x 2 x 20	0.56	6.9	32.3	94.0	83973	22 x 2 x 20	0.56	17.7	236.6	621.0
83961	4 x 2 x 20	0.56	7.7	43.1	104.0	83974	24 x 2 x 20	0.56	17.7	258.0	703.0
83962	5 x 2 x 20	0.56	8.4	53.8	130.0	83975	25 x 2 x 20	0.56	18.0	268.9	721.0

Sheath colour: black (RAL 9005); core identification acc. to international colour code (paired stranding), colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
65214	1 x 2 x 26	0.14	3.7	2.7	20.0	65250	1 x 2 x 22	0.34	4.2	6.5	38.0
65215	2 x 2 x 26	0.14	4.9	5.4	24.0	65251	2 x 2 x 22	0.34	5.8	13.0	44.0
65216	3 x 2 x 26	0.14	5.2	8.1	30.0	65252	3 x 2 x 22	0.34	6.2	19.5	60.0
65217	4 x 2 x 26	0.14	5.6	10.8	38.0	65253	4 x 2 x 22	0.34	6.7	26.1	79.0
65218	5 x 2 x 26	0.14	6.0	13.6	44.0	65254	5 x 2 x 22	0.34	7.5	32.6	92.0
65219	6 x 2 x 26	0.14	6.5	16.2	51.0	65255	6 x 2 x 22	0.34	8.1	39.2	119.0
65220	7 x 2 x 26	0.14	6.5	19.0	57.0	65256	7 x 2 x 22	0.34	8.1	45.7	128.0
65221	8 x 2 x 26	0.14	7.7	21.7	64.0	65257	8 x 2 x 22	0.34	9.6	52.3	139.0
65222	10 x 2 x 26	0.14	8.3	26.7	76.0	65258	10 x 2 x 22	0.34	10.6	65.3	171.0
65223	12 x 2 x 26	0.14	8.6	32.6	93.0	65259	12 x 2 x 22	0.34	10.9	78.4	194.0
65224	14 x 2 x 26	0.14	9.2	37.4	103.0	65260	14 x 2 x 22	0.34	11.4	91.5	222.0
65225	15 x 2 x 26	0.14	9.7	40.7	109.0	65261	15 x 2 x 22	0.34	12.2	97.8	231.0
65226	16 x 2 x 26	0.14	9.7	43.4	112.0	65262	16 x 2 x 22	0.34	12.2	104.6	240.0
65227	18 x 2 x 26	0.14	10.3	48.5	119.0	65263	18 x 2 x 22	0.34	12.8	117.8	264.0
65228	20 x 2 x 26	0.14	10.8	54.2	130.0	65264	20 x 2 x 22	0.34	13.7	130.7	291.0
65229	22 x 2 x 26	0.14	12.1	59.3	150.0	65265	22 x 2 x 22	0.34	15.3	143.6	300.0
65230	24 x 2 x 26	0.14	12.1	64.7	169.0	65266	24 x 2 x 22	0.34	15.3	156.8	359.0
65231	25 x 2 x 26	0.14	12.4	67.2	178.0	65267	25 x 2 x 22	0.34	15.6	163.3	381.0
65232	1 x 2 x 24	0.23	3.9	4.8	32.0	65268	1 x 2 x 20	0.56	4.6	10.8	60.0
65233	2 x 2 x 24	0.23	5.3	9.7	36.0	65269	2 x 2 x 20	0.56	6.5	21.5	80.0
65234	3 x 2 x 24	0.23	5.6	14.7	48.0	65270	3 x 2 x 20	0.56	6.9	32.3	94.0
65235	4 x 2 x 24	0.23	6.1	19.6	56.0	65271	4 x 2 x 20	0.56	7.7	43.1	104.0
65236	5 x 2 x 24	0.23	6.6	24.6	71.0	65272	5 x 2 x 20	0.56	8.4	53.8	130.0
65237	6 x 2 x 24	0.23	7.2	29.3	80.0	65273	6 x 2 x 20	0.56	9.3	64.6	151.0
65238	7 x 2 x 24	0.23	7.2	34.1	89.0	65274	7 x 2 x 20	0.56	9.3	75.3	174.0
65239	8 x 2 x 24	0.23	8.4	39.1	98.0	65275	8 x 2 x 20	0.56	10.9	86.1	262.0
65240	10 x 2 x 24	0.23	9.4	48.9	111.0	65276	10 x 2 x 20	0.56	12.1	107.7	298.0
65241	12 x 2 x 24	0.23	9.7	59.4	135.0	65277	12 x 2 x 20	0.56	12.4	129.1	302.0
65242	14 x 2 x 24	0.23	10.3	68.7	160.0	65278	14 x 2 x 20	0.56	13.3	150.6	327.0
65243	15 x 2 x 24	0.23	10.8	73.7	171.0	65279	15 x 2 x 20	0.56	14.0	161.3	370.0
65244	16 x 2 x 24	0.23	10.8	79.1	185.0	65280	16 x 2 x 20	0.56	14.0	172.1	402.0
65245	18 x 2 x 24	0.23	11.4	88.9	209.0	65281	18 x 2 x 20	0.56	14.9	193.6	480.0
65246	20 x 2 x 24	0.23	12.1	98.4	230.0	65282	20 x 2 x 20	0.56	15.6	215.1	551.0
65247	22 x 2 x 24	0.23	13.6	108.6	248.0	65283	22 x 2 x 20	0.56	17.7	236.6	621.0
65248	24 x 2 x 24	0.23	13.6	117.9	279.0	65284	24 x 2 x 20	0.56	17.7	258.0	703.0
65249	25 x 2 x 24	0.23	13.9	123.5	292.0	65285	25 x 2 x 20	0.56	18.0	268.9	721.0

# HELUDATA® PAAR-TRONIC-CY 2464 / 300 GREY / HELUDATA® PAAR-TRONIC-CY 2464 / 300 BLACK



UL Style 2464, 300 V, 80°C, EMC-preferred type



HELUKABEL® HELUDATA® PAAR-TRONIC-CY 2464 / 300 GREY AWM STYLE 2464  
20 AWG / 0,56 QMM 8C / 83831 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1



HELUKABEL® HELUDATA® PAAR-TRONIC-CY 2464 / 300 BLACK AWM STYLE 2464  
22 AWG / 0,34 QMM 8C / 65353 80°C 300V VW-1 AWM I/II A/B 80°C 300V FT1

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2464, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +80°C fixed -40°C to +80°C
Nominal voltage	UL (AWM) AC 300 V
Test voltage core/core	1500 V
Breakdown voltage	3000 V
Coupling resistance	at 30 MHz, approx. 250 Ohm/km
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Wire structure:
  - 26 AWG: 7 x 0.160 mm
  - 24 AWG: 7 x 0.203 mm
  - 22 AWG: 7 x 0.254 mm
  - 20 AWG: 7 x 0.320 mm
- Core insulation: semirigid PVC acc. to UL-Std. 1581 Tab. 50.183
- Core identification: see table
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, tinned copper

- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182, CSA-Std. C22.2 No. 210
- Sheath colour: see table

## ■ PROPERTIES

- resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## ■ APPLICATION

UL/CSA approved, screened, twisted pair data cable for use as a signal and measuring cable in machine tools, assembly lines, conveyor belts, plant construction, air conditioning devices, metallurgical plants, steel mills. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100 (paired stranding), colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83774	1 x 2 x 26	0.14	4.3	15.7	32.0	83794	3 x 2 x 24	0.23	6.3	31.7	65.0
83775	2 x 2 x 26	0.14	5.6	19.5	39.0	83795	4 x 2 x 24	0.23	6.7	37.4	79.0
83776	3 x 2 x 26	0.14	5.8	23.7	47.0	83796	5 x 2 x 24	0.23	7.5	54.7	98.0
83777	4 x 2 x 26	0.14	6.2	26.9	55.0	83797	6 x 2 x 24	0.23	8.0	65.6	114.0
83778	5 x 2 x 26	0.14	6.7	31.2	68.0	83798	7 x 2 x 24	0.23	8.0	60.2	121.0
83779	6 x 2 x 26	0.14	7.2	49.7	86.0	83799	8 x 2 x 24	0.23	9.3	74.1	129.0
83780	7 x 2 x 26	0.14	7.2	52.0	92.0	83800	10 x 2 x 24	0.23	10.0	109.3	152.0
83781	8 x 2 x 26	0.14	8.3	53.9	97.0	83801	12 x 2 x 24	0.23	10.5	115.8	189.0
83782	10 x 2 x 26	0.14	9.2	59.6	111.0	83802	14 x 2 x 24	0.23	11.0	120.7	213.0
83783	12 x 2 x 26	0.14	9.4	67.1	141.0	83803	15 x 2 x 24	0.23	11.5	132.4	225.0
83784	14 x 2 x 26	0.14	9.8	75.2	150.0	83804	16 x 2 x 24	0.23	11.5	141.6	227.0
83785	15 x 2 x 26	0.14	10.5	77.3	154.0	83805	18 x 2 x 24	0.23	12.2	146.6	238.0
83786	16 x 2 x 26	0.14	10.5	80.4	155.0	83806	20 x 2 x 24	0.23	12.8	160.6	270.0
83787	18 x 2 x 26	0.14	11.0	84.2	170.0	83807	22 x 2 x 24	0.23	13.7	170.8	300.0
83788	20 x 2 x 26	0.14	11.5	98.2	183.0	83808	24 x 2 x 24	0.23	14.5	229.7	321.0
83789	22 x 2 x 26	0.14	12.1	104.1	207.0	83809	25 x 2 x 24	0.23	14.9	231.4	340.0
83790	24 x 2 x 26	0.14	12.8	112.0	228.0	83810	1 x 2 x 22	0.34	4.9	17.0	58.0
83791	25 x 2 x 26	0.14	13.2	114.4	239.0	83811	2 x 2 x 22	0.34	6.5	36.7	65.0
83792	1 x 2 x 24	0.23	4.6	16.4	46.0	83812	3 x 2 x 22	0.34	6.8	44.6	78.0
83793	2 x 2 x 24	0.23	6.0	27.4	53.0	83813	4 x 2 x 22	0.34	7.5	54.1	88.0

# HELUDATA® PAAR-TRONIC-CY 2464 / 300 GREY / HELUDATA® PAAR-TRONIC-CY 2464 / 300 BLACK



UL Style 2464, 300 V, 80°C, EMC-preferred type

Sheath colour: grey (RAL 7001); core identification acc. to DIN 47100 (paired stranding), colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83814	5 x 2 x 22	0.34	8.1	63.4	110.0	83830	3 x 2 x 20	0.56	7.7	71.7	102.0
83815	6 x 2 x 22	0.34	8.9	73.4	126.0	83831	4 x 2 x 20	0.56	8.3	92.4	119.0
83816	7 x 2 x 22	0.34	8.9	79.4	140.0	83832	5 x 2 x 20	0.56	9.2	107.4	140.0
83817	8 x 2 x 22	0.34	10.4	88.4	148.0	83833	6 x 2 x 20	0.56	9.9	122.4	162.0
83818	10 x 2 x 22	0.34	11.2	107.0	184.0	83834	7 x 2 x 20	0.56	9.9	131.7	198.0
83819	12 x 2 x 22	0.34	11.5	122.4	210.0	83835	8 x 2 x 20	0.56	11.6	144.3	272.0
83820	14 x 2 x 22	0.34	12.3	138.2	241.0	83836	10 x 2 x 20	0.56	12.7	179.6	307.0
83821	15 x 2 x 22	0.34	12.9	154.3	245.0	83837	12 x 2 x 20	0.56	13.5	201.7	318.0
83822	16 x 2 x 22	0.34	12.9	161.4	251.0	83838	14 x 2 x 20	0.56	14.1	221.4	342.0
83823	18 x 2 x 22	0.34	13.9	197.9	275.0	83839	15 x 2 x 20	0.56	15.0	231.6	381.0
83824	20 x 2 x 22	0.34	14.7	211.4	300.0	83840	16 x 2 x 20	0.56	15.0	257.1	417.0
83825	22 x 2 x 22	0.34	15.3	217.6	320.0	83841	18 x 2 x 20	0.56	15.7	282.4	494.0
83826	24 x 2 x 22	0.34	16.4	230.4	371.0	83842	20 x 2 x 20	0.56	16.6	306.7	570.0
83827	25 x 2 x 22	0.34	16.7	237.0	402.0	83843	22 x 2 x 20	0.56	17.4	321.8	643.0
83828	1 x 2 x 20	0.56	5.3	26.0	70.0	83844	24 x 2 x 20	0.56	18.5	342.4	724.0
83829	2 x 2 x 20	0.56	7.1	56.1	89.0	83845	25 x 2 x 20	0.56	19.1	361.2	740.0

Sheath colour: black (RAL 9005); core identification acc. to international colour code (paired stranding), colour coded

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
65314	1 x 2 x 26	0.14	4.3	15.7	32.0	65350	1 x 2 x 22	0.34	4.9	17.0	58.0
65315	2 x 2 x 26	0.14	5.6	19.5	39.0	65351	2 x 2 x 22	0.34	6.5	36.7	65.0
65316	3 x 2 x 26	0.14	5.8	23.7	47.0	65352	3 x 2 x 22	0.34	6.8	44.6	78.0
65317	4 x 2 x 26	0.14	6.2	26.9	55.0	65353	4 x 2 x 22	0.34	7.5	54.1	88.0
65318	5 x 2 x 26	0.14	6.7	31.2	68.0	65354	5 x 2 x 22	0.34	8.1	63.4	110.0
65319	6 x 2 x 26	0.14	7.2	49.7	86.0	65355	6 x 2 x 22	0.34	8.9	73.4	126.0
65320	7 x 2 x 26	0.14	7.2	52.0	92.0	65356	7 x 2 x 22	0.34	8.9	79.4	140.0
65321	8 x 2 x 26	0.14	8.3	53.9	97.0	65357	8 x 2 x 22	0.34	10.4	88.4	148.0
65322	10 x 2 x 26	0.14	9.2	59.6	111.0	65358	10 x 2 x 22	0.34	11.2	107.0	184.0
65323	12 x 2 x 26	0.14	9.4	67.1	141.0	65359	12 x 2 x 22	0.34	11.5	122.4	210.0
65324	14 x 2 x 26	0.14	9.8	75.2	150.0	65360	14 x 2 x 22	0.34	12.3	138.2	241.0
65325	15 x 2 x 26	0.14	10.5	77.3	154.0	65361	15 x 2 x 22	0.34	12.9	154.3	245.0
65326	16 x 2 x 26	0.14	10.5	80.4	155.0	65362	16 x 2 x 22	0.34	12.9	161.4	251.0
65327	18 x 2 x 26	0.14	11.0	84.2	170.0	65363	18 x 2 x 22	0.34	13.9	197.9	275.0
65328	20 x 2 x 26	0.14	11.5	98.2	183.0	65364	20 x 2 x 22	0.34	14.7	211.4	300.0
65329	22 x 2 x 26	0.14	12.1	104.1	207.0	65365	22 x 2 x 22	0.34	15.3	217.6	320.0
65330	24 x 2 x 26	0.14	12.8	112.0	228.0	65366	24 x 2 x 22	0.34	16.4	230.4	371.0
65331	25 x 2 x 26	0.14	13.2	114.4	239.0	65367	25 x 2 x 22	0.34	16.7	237.0	402.0
65332	1 x 2 x 24	0.23	4.6	16.4	46.0	65368	1 x 2 x 20	0.56	5.3	26.0	70.0
65333	2 x 2 x 24	0.23	6.0	27.4	53.0	65369	2 x 2 x 20	0.56	7.1	56.1	89.0
65334	3 x 2 x 24	0.23	6.3	31.7	65.0	65370	3 x 2 x 20	0.56	7.7	71.7	102.0
65335	4 x 2 x 24	0.23	6.7	37.4	79.0	65371	4 x 2 x 20	0.56	8.3	92.4	119.0
65336	5 x 2 x 24	0.23	7.5	54.7	98.0	65372	5 x 2 x 20	0.56	9.2	107.4	140.0
65337	6 x 2 x 24	0.23	8.0	65.6	114.0	65373	6 x 2 x 20	0.56	9.9	122.4	162.0
65338	7 x 2 x 24	0.23	8.0	60.2	121.0	65374	7 x 2 x 20	0.56	9.9	131.7	198.0
65339	8 x 2 x 24	0.23	9.3	74.1	129.0	65375	8 x 2 x 20	0.56	11.6	144.3	272.0
65340	10 x 2 x 24	0.23	10.0	109.3	152.0	65376	10 x 2 x 20	0.56	12.7	179.6	307.0
65341	12 x 2 x 24	0.23	10.5	115.8	189.0	65377	12 x 2 x 20	0.56	13.5	201.7	318.0
65342	14 x 2 x 24	0.23	11.0	120.7	213.0	65378	14 x 2 x 20	0.56	14.1	221.4	342.0
65343	15 x 2 x 24	0.23	11.5	132.4	225.0	65379	15 x 2 x 20	0.56	15.0	231.6	381.0
65344	16 x 2 x 24	0.23	11.5	141.6	227.0	65380	16 x 2 x 20	0.56	15.0	257.1	417.0
65345	18 x 2 x 24	0.23	12.2	146.6	238.0	65381	18 x 2 x 20	0.56	15.7	282.4	494.0
65346	20 x 2 x 24	0.23	12.8	160.6	270.0	65382	20 x 2 x 20	0.56	16.6	306.7	570.0
65347	22 x 2 x 24	0.23	13.7	170.8	300.0	65383	22 x 2 x 20	0.56	17.4	321.8	643.0
65348	24 x 2 x 24	0.23	14.5	229.7	321.0	65384	24 x 2 x 20	0.56	18.5	342.4	724.0
65349	25 x 2 x 24	0.23	14.9	231.4	340.0	65385	25 x 2 x 20	0.56	19.1	361.2	740.0



# TRAYCONTROL® 300

flexible, oil resistant, NFPA 79



HELUKABEL TRAYCONTROL 300 24AWG/0,241 mm<sup>2</sup> 6C/62652

CE

## Technical data

- Flexible PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 16 with transparent nylon skin)
- Core identification to international colour code
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL (AWG 22 - AWG 16):**  
PLTC-ER, ITC-ER, Type CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 28):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
- **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirements

## Application

HELUKABEL® TRAYCONTROL® 300 is a multi-core PVC data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. Applications: tool machines, control panels, control and instrumentation technology, production automation, cable ducts, renewable energies.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm <sup>2</sup> x AWG-No.	No. cores	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62625	0,093	2 x 28	3,8	1,8	12,0
62626	0,093	3 x 28	3,9	3,0	18,0
62627	0,093	4 x 28	4,2	4,0	21,0
62628	0,093	6 x 28	4,7	5,0	27,0
62629	0,093	8 x 28	5,0	7,0	30,0
62630	0,093	10 x 28	5,6	9,0	30,0
62631	0,093	15 x 28	6,2	13,0	43,0
62632	0,093	20 x 28	6,8	18,0	54,0
62633	0,093	25 x 28	7,6	22,0	63,0
62634	0,093	30 x 28	8,0	27,0	73,0
62635	0,093	40 x 28	8,8	36,0	89,0
62636	0,093	50 x 28	9,8	45,0	109,0
62637	0,154	2 x 26	4,0	3,0	18,0
62638	0,154	3 x 26	4,2	4,0	21,0
62639	0,154	4 x 26	4,4	6,0	24,0
62640	0,154	6 x 26	5,0	9,0	30,0
62641	0,154	8 x 26	5,3	12,0	34,0
62642	0,154	10 x 26	6,0	15,0	42,0
62643	0,154	15 x 26	6,7	22,0	52,0
62644	0,154	20 x 26	7,5	30,0	67,0
62645	0,154	25 x 26	8,2	37,0	80,0
62646	0,154	30 x 26	8,6	44,0	92,0
62647	0,154	40 x 26	9,5	59,0	116,0
62648	0,154	50 x 26	11,1	74,0	145,0
62649	0,241	2 x 24	4,3	5,0	19,0
62650	0,241	3 x 24	4,5	7,0	22,0
62651	0,241	4 x 24	4,8	9,0	27,0
62652	0,241	6 x 24	5,5	14,0	33,0
62653	0,241	8 x 24	5,8	18,0	42,0
62654	0,241	10 x 24	6,6	23,2	49,0

Part no.	Cross-section mm <sup>2</sup> x AWG-No.	No. cores	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62655	0,241	15 x 24	7,7	35,0	69,0
62656	0,241	20 x 24	8,4	46,3	86,0
62657	0,241	25 x 24	9,1	58,0	103,0
62658	0,241	30 x 24	9,6	69,4	131,0
62659	0,241	40 x 24	11,2	92,6	173,0
62660	0,241	50 x 24	12,4	115,7	219,0
62661	0,382	2 x 22	6,5	7,0	22,0
62662	0,382	3 x 22	6,7	11,0	28,0
62663	0,382	4 x 22	7,2	14,7	32,0
62664	0,382	6 x 22	8,3	22,0	46,0
62665	0,382	8 x 22	8,8	29,4	54,0
62666	0,382	10 x 22	10,1	37,0	66,0
62667	0,382	15 x 22	11,4	55,0	90,0
62668	0,382	20 x 22	12,5	73,0	115,0
62669	0,382	25 x 22	14,6	92,0	141,0
62670	0,382	30 x 22	15,4	110,0	176,0
62671	0,382	40 x 22	17,0	147,0	234,0
62672	0,382	50 x 22	19,0	183,0	293,0
62673	0,616	2 x 20	6,9	11,9	57,0
62674	0,616	3 x 20	7,2	17,8	60,0
62675	0,616	4 x 20	7,8	23,7	73,0
62676	0,616	6 x 20	9,0	36,0	97,0
62677	0,616	8 x 20	9,6	47,4	133,0
62678	0,616	10 x 20	11,0	59,0	143,0
62679	0,616	15 x 20	12,5	89,0	177,0
62680	0,616	20 x 20	14,6	118,0	261,0
62681	0,616	25 x 20	16,0	148,0	353,0
62682	0,616	30 x 20	16,8	178,0	419,0
62683	0,616	40 x 20	18,7	237,0	562,0
62684	0,616	50 x 20	21,0	296,0	699,0



# TRAYCONTROL® 300

flexible, oil resistant, NFPA 79



Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62685	0,963	2 x 18	7,4	18,5	61,0
62686	0,963	3 x 18	7,7	28,0	64,0
62687	0,963	4 x 18	8,3	37,0	77,0
62688	0,963	6 x 18	9,7	56,0	101,0
62689	0,963	8 x 18	10,4	74,0	142,0
62690	0,963	10 x 18	11,9	92,0	195,0
62691	0,963	15 x 18	13,5	139,0	247,0
62692	0,963	20 x 18	15,8	185,0	328,0
62693	0,963	25 x 18	17,4	231,0	407,0
62694	0,963	30 x 18	18,3	277,0	539,0
62695	0,963	40 x 18	20,4	370,0	717,0
62696	0,963	50 x 18	23,9	462,0	894,0

Part no.	Cross-section mm²	No. cores x AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62697	1,31	2 x 16	7,9	25,0	83,0
62698	1,31	3 x 16	8,3	38,0	91,0
62699	1,31	4 x 16	8,9	50,0	109,0
62700	1,31	6 x 16	10,3	76,0	162,0
62702	1,31	8 x 16	11,2	101,0	243,0
62703	1,31	10 x 16	12,9	126,0	267,0
62704	1,31	15 x 16	15,4	189,0	364,0
62705	1,31	20 x 16	17,2	252,0	493,0
62706	1,31	25 x 16	18,8	314,0	608,0
62707	1,31	30 x 16	19,9	377,0	729,0
62708	1,31	40 x 16	23,3	503,0	967,0
62709	1,31	50 x 16	26,1	629,0	1214,0

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 300-C

flexible, oil resistant, screened, EMC-preferred type, NFPA 79



## Technical data

- Flexible screened PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 16 with transparent nylon skin)
- Core identification to international colour code
- Cores stranded in layers with optimal lay length
- 1. Screen with special aluminium foil
- Drain wire
- 2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL (AWG 22 - AWG 16):**  
PLTC-ER, ITC-ER, Type CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 28):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
- **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

## Application

HELUKABEL® TRAYCONTROL® 300-C is a screened, multi-core PVC data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. The double-screening with aluminium foil (100% coverage) and copper braid (approx. 85% coverage) guarantee superior EMC protection. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm <sup>2</sup> x AWG-No.	No. cores	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62710	0,093	2 x 28	4,2	6,0	16,0
62711	0,093	3 x 28	4,3	7,0	22,0
62712	0,093	4 x 28	4,6	9,0	27,0
62713	0,093	6 x 28	5,0	12,0	34,0
62714	0,093	8 x 28	5,5	15,0	37,0
62715	0,093	10 x 28	6,0	18,0	43,0
62716	0,093	15 x 28	6,7	24,0	52,0
62717	0,093	20 x 28	7,5	30,0	67,0
62718	0,093	25 x 28	8,1	37,0	79,0
62719	0,093	30 x 28	8,5	43,0	88,0
62720	0,093	40 x 28	9,3	54,0	112,0
62721	0,093	50 x 28	10,7	67,0	131,0
62722	0,154	2 x 26	4,4	9,0	24,0
62723	0,154	3 x 26	4,5	10,0	27,0
62724	0,154	4 x 26	4,8	12,0	31,0
62725	0,154	6 x 26	5,5	16,0	39,0
62726	0,154	8 x 26	5,8	19,0	43,0
62727	0,154	10 x 26	6,5	24,0	51,0
62728	0,154	15 x 26	7,4	31,0	66,0
62729	0,154	20 x 26	8,0	40,0	79,0
62730	0,154	25 x 26	8,7	49,0	92,0
62731	0,154	30 x 26	9,1	57,0	110,0
62732	0,154	40 x 26	10,5	72,0	136,0
62733	0,154	50 x 26	11,6	88,0	165,0

Part no.	Cross-section mm <sup>2</sup> x AWG-No.	No. cores	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62734	0,241	2 x 24	4,7	15,0	30,0
62735	0,241	3 x 24	4,9	16,0	33,0
62736	0,241	4 x 24	5,3	19,0	37,0
62737	0,241	6 x 24	6,2	27,0	48,0
62738	0,241	8 x 24	6,6	31,0	57,0
62739	0,241	10 x 24	7,3	39,0	67,0
62740	0,241	15 x 24	8,2	51,0	85,0
62741	0,241	20 x 24	8,8	64,0	106,0
62742	0,241	25 x 24	9,6	77,0	128,0
62743	0,241	30 x 24	10,6	92,0	155,0
62744	0,241	40 x 24	11,6	118,0	206,0
62745	0,241	50 x 24	12,9	148,0	249,0
62746	0,382	2 x 22	6,9	19,0	34,0
62747	0,382	3 x 22	7,2	22,0	40,0
62748	0,382	4 x 22	7,7	27,0	46,0
62749	0,382	6 x 22	8,8	34,0	60,0
62750	0,382	8 x 22	9,3	45,0	72,0
62751	0,382	10 x 22	10,6	69,0	85,0
62752	0,382	15 x 22	11,9	77,0	115,0
62753	0,382	20 x 22	13,0	92,0	140,0
62754	0,382	25 x 22	15,0	121,0	176,0
62755	0,382	30 x 22	15,9	139,0	210,0
62756	0,382	40 x 22	17,7	177,0	273,0
62757	0,382	50 x 22	19,7	215,0	331,0

# TRAYCONTROL® 300-C

flexible, oil resistant, screened, EMC-preferred type, NFPA 79



Part no.	Cross-section mm² x AWG-No.	No.cores	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62758	0,616	2 x 20	7,4	28,0	73,0
62759	0,616	3 x 20	7,7	34,0	77,0
62760	0,616	4 x 20	8,3	40,0	91,0
62761	0,616	6 x 20	9,4	54,0	118,0
62762	0,616	8 x 20	10,1	70,0	158,0
62763	0,616	10 x 20	11,5	83,0	173,0
62764	0,616	15 x 20	13,0	119,0	218,0
62765	0,616	20 x 20	15,1	130,0	298,0
62766	0,616	25 x 20	16,5	186,0	401,0
62767	0,616	30 x 20	17,5	224,0	477,0
62768	0,616	40 x 20	19,0	288,0	623,0
62769	0,616	50 x 20	22,6	337,0	752,0
62770	0,963	2 x 18	7,8	37,0	80,0
62771	0,963	3 x 18	8,2	49,0	86,0
62772	0,963	4 x 18	8,8	58,0	101,0
62773	0,963	6 x 18	10,1	82,0	130,0
62774	0,963	8 x 18	10,8	100,0	168,0
62775	0,963	10 x 18	12,4	124,0	226,0

Part no.	Cross-section mm² x AWG-No.	No.cores	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62776	0,963	15 x 18	14,9	180,0	295,0
62777	0,963	20 x 18	16,3	234,0	386,0
62778	0,963	25 x 18	18,0	277,0	462,0
62779	0,963	30 x 18	18,9	323,0	590,0
62780	0,963	40 x 18	21,2	416,0	773,0
62781	0,963	50 x 18	24,7	508,0	958,0
62782	1,31	2 x 16	8,4	51,0	110,0
62783	1,31	3 x 16	8,7	63,0	116,0
62784	1,31	4 x 16	9,4	76,0	139,0
62785	1,31	6 x 16	10,9	104,0	195,0
62786	1,31	8 x 16	11,7	134,0	283,0
62787	1,31	10 x 16	13,4	168,0	316,0
62788	1,31	15 x 16	16,0	234,0	410,0
62789	1,31	20 x 16	17,8	301,0	551,0
62790	1,31	25 x 16	19,5	367,0	675,0
62791	1,31	30 x 16	20,6	428,0	794,0
62792	1,31	40 x 16	24,0	550,0	1033,0
62793	1,31	50 x 16	26,8	669,0	1274,0

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 300 TP

twisted pair, flexible, oil resistant, NFPA 79



HELUKABEL TRAYCONTROL 300TP 24 AWG/0,241 mm<sup>2</sup> 8C/61942 CE

## Technical data

- Flexible PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire stranded, with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 18 with transparent nylon skin)
- Core identification (pair) acc. to international colour code
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- **Tests**
- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL (AWG 22 - AWG 18):**  
PLTC-ER, ITC-ER, Type CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
- **UL (AWG 24 - AWG 26):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
- **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

## Application

HELUKABEL® TRAYCONTROL® 300 TP is a twisted pair data and control cable. Cross-sections with PLTC-ER and ITC-ER approval for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm <sup>2</sup>	No.pairs x Outer Ø No.cores app. mm x AWG-no.	Cu factor per km	Weight app. kg / km	
62794	0,154	1 x 2 x 26	4,0	3,0	20,0
62795	0,154	2 x 2 x 26	5,2	5,0	24,0
62796	0,154	3 x 2 x 26	5,5	8,0	30,0
62797	0,154	4 x 2 x 26	5,9	11,0	38,0
62798	0,154	5 x 2 x 26	6,4	14,0	44,0
62799	0,154	6 x 2 x 26	6,9	16,0	51,0
62800	0,154	7 x 2 x 26	6,9	19,0	57,0
61928	0,154	8 x 2 x 26	7,6	22,0	64,0
61929	0,154	10 x 2 x 26	8,7	27,0	76,0
61930	0,154	12 x 2 x 26	9,0	33,0	93,0
61931	0,154	14 x 2 x 26	9,4	38,0	103,0
61932	0,154	15 x 2 x 26	10,4	41,0	109,0
61933	0,154	16 x 2 x 26	10,4	43,0	112,0
61934	0,154	18 x 2 x 26	11,0	49,0	119,0
61935	0,154	20 x 2 x 26	11,4	54,0	130,0
61936	0,154	22 x 2 x 26	11,9	59,0	150,0
61937	0,154	24 x 2 x 26	12,5	65,0	169,0
61938	0,154	25 x 2 x 26	12,5	67,0	178,0

Part no.	Cross-section mm <sup>2</sup>	No.pairs x Outer Ø No.cores app. mm x AWG-no.	Cu factor per km	Weight app. kg / km	
61939	0,241	1 x 2 x 24	4,3	5,0	32,0
61940	0,241	2 x 2 x 24	5,7	10,0	36,0
61941	0,241	3 x 2 x 24	6,0	15,0	48,0
61942	0,241	4 x 2 x 24	6,5	20,0	56,0
61943	0,241	5 x 2 x 24	7,0	25,0	71,0
61944	0,241	6 x 2 x 24	7,8	29,0	80,0
61945	0,241	7 x 2 x 24	7,8	34,0	89,0
61946	0,241	8 x 2 x 24	8,4	39,0	98,0
61947	0,241	10 x 2 x 24	9,7	49,0	111,0
61948	0,241	12 x 2 x 24	10,6	59,0	135,0
61949	0,241	14 x 2 x 24	11,0	69,0	160,0
61950	0,241	15 x 2 x 24	11,6	74,0	171,0
61951	0,241	16 x 2 x 24	11,6	79,0	185,0
61952	0,241	18 x 2 x 24	12,2	89,0	209,0
61953	0,241	20 x 2 x 24	12,8	98,0	230,0
61954	0,241	22 x 2 x 24	13,3	109,0	248,0
61955	0,241	24 x 2 x 24	14,0	118,0	279,0
61956	0,241	25 x 2 x 24	14,0	124,0	292,0

# TRAYCONTROL® 300 TP

twisted pair, flexible, oil resistant, NFPA 79



Part no.	Cross-section mm <sup>2</sup>	No.pairs x Outer Ø No.cores x AWG-no.	app. mm	Cu factor per km	Weight app. kg / km
61957	0,382	1 x 2 x 22	6,5	7,0	38,0
61958	0,382	2 x 2 x 22	8,8	13,0	44,0
61959	0,382	3 x 2 x 22	9,2	20,0	60,0
61960	0,382	4 x 2 x 22	10,0	29,0	79,0
61961	0,382	5 x 2 x 22	10,9	33,0	92,0
61962	0,382	6 x 2 x 22	11,8	39,0	119,0
61963	0,382	7 x 2 x 22	11,8	46,0	128,0
61964	0,382	8 x 2 x 22	12,7	52,0	139,0
61965	0,382	10 x 2 x 22	15,6	65,0	171,0
61966	0,382	12 x 2 x 22	16,1	78,0	194,0
61967	0,382	14 x 2 x 22	16,9	92,0	222,0
61968	0,382	15 x 2 x 22	17,8	98,0	231,0
61969	0,382	16 x 2 x 22	17,8	105,0	240,0
61970	0,382	18 x 2 x 22	18,6	118,0	264,0
61971	0,382	20 x 2 x 22	19,6	131,0	291,0
61972	0,382	22 x 2 x 22	20,5	144,0	300,0
61973	0,382	24 x 2 x 22	22,7	157,0	359,0
61974	0,382	25 x 2 x 22	22,7	163,0	381,0
61975	0,616	1 x 2 x 20	6,9	11,0	60,0
61976	0,616	2 x 2 x 20	9,6	22,0	80,0
61977	0,616	3 x 2 x 20	10,1	32,0	94,0

Part no.	Cross-section mm <sup>2</sup>	No.pairs x Outer Ø No.cores x AWG-no.	app. mm	Cu factor per km	Weight app. kg / km
61978	0,616	4 x 2 x 20	10,9	43,0	104,0
61979	0,616	5 x 2 x 20	11,9	54,0	130,0
61980	0,616	6 x 2 x 20	12,9	65,0	151,0
61981	0,616	7 x 2 x 20	12,9	75,0	174,0
61982	0,616	8 x 2 x 20	14,8	86,0	262,0
61983	0,616	10 x 2 x 20	15,9	108,0	298,0
61984	0,616	12 x 2 x 20	17,7	129,0	302,0
61985	0,616	14 x 2 x 20	18,5	151,0	327,0
61986	0,616	15 x 2 x 20	19,5	161,0	370,0
61987	0,616	16 x 2 x 20	19,5	172,0	402,0
61988	0,616	18 x 2 x 20	20,5	194,0	480,0
61989	0,616	20 x 2 x 20	22,0	215,0	551,0
61990	0,616	22 x 2 x 20	23,1	237,0	621,0
61991	0,616	24 x 2 x 20	24,4	258,0	703,0
61992	0,616	25 x 2 x 20	24,4	269,0	721,0
61993	0,963	1 x 2 x 18	7,4	18,0	61,0
61994	0,963	2 x 2 x 18	10,3	36,0	77,0
61995	0,963	3 x 2 x 18	10,8	54,0	103,0
61996	0,963	6 x 2 x 18	14,9	107,0	216,0
61997	0,963	9 x 2 x 18	17,2	162,0	328,0
61998	0,963	15 x 2 x 18	21,3	271,0	542,0

Dimensions and specifications may be changed without prior notice. (RN02)

# TRAYCONTROL® 300-C TP

twisted pair, flexible, screened, oil resistant, EMC-preferred type, NFPA 79



## Technical data

- Flexible screened PVC data and control cable
- **Temperature range**  
-25°C to +105°C
- **Nominal voltage**  
300 V
- **Test voltage**  
2000 V
- **Minimum bending radius**  
flexing 6x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Tinned copper conductor, fine wire stranded, with AWG dimensions
- Core insulation of special PVC (AWG 22 - AWG 18 with transparent nylon skin)
- Core identification (pair) acc. to international colour code
- Cores stranded in pairs with optimal lay length
- Pairs stranded in layers with optimal lay length
- 1. Screening with special aluminium foil
- Drain wire
- 2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special PVC
- Sheath colour: grey (RAL 7001)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- ### Tests
- Self-extinguishing and flame retardant acc. to CSA FT4
  - **UL (AWG 22 - AWG 18):**  
PLTC-ER, ITC-ER, CM, NFPA 79, OIL RES I & II, Class I Div. 2, NEC Art. 501, 725, 760 & 800, AWM 2517
  - **UL (AWG 24 - AWG 26):**  
CM, AWM 2517, rated OIL RES I & II, NEC Art. 725, 760 & 800, NFPA 79
  - **CSA:**  
CSA CMG FT4, AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, easy to install
- Oil resistant to OIL RES I & II

### Available on request

- PUR or TPE outer sheath
- Sheath colour to suit customer requirement

## Application

HELUKABEL® TRAYCONTROL® 300-C TP is a screened, twisted pair data and control cable. Cross-sections with PLTC-ER and ITC-ER approval suitable for open, unprotected installation in cable trays to the machine; their outstanding oil resistance (OIL RES I & II) makes them ideally suited as connecting and joining cables and also for control, signal and measuring systems in industrial plants. The flexible cable structure facilitates installation inside and outside of machines and switch cabinets. The double-screening with aluminium foil (100% coverage) and copper braid (approx. 85% coverage) guarantee superior EMC protection. Applications: tool machines, control panels, measuring devices, production automation, cable ducts, renewable energies.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Cross-section mm <sup>2</sup>	No.pairs x Outer Ø No.cores app. mm x AWG-no.	Cu factor per km	Weight app. kg / km	
61999	0,154	1 x 2 x 26	4,4	16,0	32,0
59760	0,154	2 x 2 x 26	5,6	20,0	39,0
59761	0,154	3 x 2 x 26	5,9	24,0	47,0
59762	0,154	4 x 2 x 26	6,3	27,0	55,0
59763	0,154	5 x 2 x 26	6,8	31,0	68,0
59764	0,154	6 x 2 x 26	7,5	50,0	86,0
59765	0,154	7 x 2 x 26	7,5	52,0	92,0
59766	0,154	8 x 2 x 26	8,0	54,0	97,0
59767	0,154	10 x 2 x 26	9,1	60,0	111,0
59768	0,154	12 x 2 x 26	9,4	67,0	141,0
59769	0,154	14 x 2 x 26	10,4	75,0	150,0
59770	0,154	15 x 2 x 26	10,8	77,0	154,0
59771	0,154	16 x 2 x 26	10,8	80,0	155,0
59772	0,154	18 x 2 x 26	11,3	84,0	170,0
59773	0,154	20 x 2 x 26	11,8	98,0	183,0
59774	0,154	22 x 2 x 26	12,3	104,0	207,0
59775	0,154	24 x 2 x 26	13,0	112,0	228,0
59776	0,154	25 x 2 x 26	13,0	114,0	239,0

Part no.	Cross-section mm <sup>2</sup>	No.pairs x Outer Ø No.cores app. mm x AWG-no.	Cu factor per km	Weight app. kg / km	
59777	0,241	1 x 2 x 24	4,6	16,0	46,0
59778	0,241	2 x 2 x 24	6,2	27,0	53,0
59779	0,241	3 x 2 x 24	6,5	32,0	65,0
59780	0,241	4 x 2 x 24	7,2	37,0	79,0
59781	0,241	5 x 2 x 24	7,8	55,0	98,0
59782	0,241	6 x 2 x 24	8,3	66,0	114,0
59783	0,241	7 x 2 x 24	8,3	60,0	121,0
59784	0,241	8 x 2 x 24	8,9	74,0	129,0
59785	0,241	10 x 2 x 24	10,8	109,0	152,0
59786	0,241	12 x 2 x 24	11,0	116,0	189,0
59787	0,241	14 x 2 x 24	11,5	121,0	213,0
59788	0,241	15 x 2 x 24	12,1	132,0	225,0
59789	0,241	16 x 2 x 24	12,1	142,0	227,0
59790	0,241	18 x 2 x 24	12,6	147,0	238,0
59791	0,241	20 x 2 x 24	13,2	161,0	270,0
59792	0,241	22 x 2 x 24	13,8	171,0	300,0
59793	0,241	24 x 2 x 24	14,5	230,0	321,0
59794	0,241	25 x 2 x 24	14,5	231,0	340,0

# TRAYCONTROL® 300-C TP

twisted pair, flexible, screened, oil resistant, EMC-preferred type, NFPA 79



Part no.	Cross-section mm <sup>2</sup>	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
59795	0,382	1 x 2 x 22	6,9	17,0	58,0
59796	0,382	2 x 2 x 22	9,3	37,0	65,0
59797	0,382	3 x 2 x 22	9,7	45,0	79,0
59798	0,382	4 x 2 x 22	10,5	54,0	88,0
59799	0,382	5 x 2 x 22	11,4	63,0	110,0
59800	0,382	6 x 2 x 22	12,3	73,0	126,0
59801	0,382	7 x 2 x 22	12,3	79,0	140,0
59802	0,382	8 x 2 x 22	13,2	88,0	148,0
59803	0,382	10 x 2 x 22	15,9	107,0	184,0
59804	0,382	12 x 2 x 22	16,6	122,0	210,0
59805	0,382	14 x 2 x 22	17,4	138,0	241,0
59806	0,382	15 x 2 x 22	18,2	154,0	245,0
59807	0,382	16 x 2 x 22	18,2	161,0	251,0
59808	0,382	18 x 2 x 22	19,1	198,0	275,0
59809	0,382	20 x 2 x 22	20,1	211,0	300,0
59810	0,382	22 x 2 x 22	21,0	218,0	320,0
59811	0,382	24 x 2 x 22	23,1	230,0	371,0
59812	0,382	25 x 2 x 22	23,1	239,0	402,0
59813	0,616	1 x 2 x 20	7,4	26,0	70,0
59814	0,616	2 x 2 x 20	10,0	56,0	89,0
59815	0,616	3 x 2 x 20	10,5	72,0	102,0

Part no.	Cross-section mm <sup>2</sup>	No.pairs x No.cores x AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
59816	0,616	4 x 2 x 20	11,4	92,0	119,0
59817	0,616	5 x 2 x 20	12,4	107,0	140,0
59818	0,616	6 x 2 x 20	13,4	122,0	162,0
59819	0,616	7 x 2 x 20	13,4	132,0	198,0
59820	0,616	8 x 2 x 20	15,3	144,0	272,0
59821	0,616	10 x 2 x 20	16,4	180,0	307,0
59822	0,616	12 x 2 x 20	18,3	202,0	318,0
59823	0,616	14 x 2 x 20	19,2	221,0	342,0
59824	0,616	15 x 2 x 20	20,1	232,0	381,0
59825	0,616	16 x 2 x 20	20,1	257,0	417,0
59826	0,616	18 x 2 x 20	21,2	282,0	494,0
59827	0,616	20 x 2 x 20	22,7	307,0	570,0
59828	0,616	22 x 2 x 20	23,8	322,0	643,0
59829	0,616	24 x 2 x 20	25,0	342,0	724,0
59830	0,616	25 x 2 x 20	25,0	361,0	740,0
59831	0,963	1 x 2 x 18	7,8	28,0	104,0
59832	0,963	2 x 2 x 18	10,8	57,0	121,0
59833	0,963	3 x 2 x 18	11,3	75,0	150,0
59834	0,963	6 x 2 x 18	15,4	139,0	328,0
59835	0,963	9 x 2 x 18	17,9	212,0	490,0
59836	0,963	15 x 2 x 18	21,9	358,0	811,0

Dimensions and specifications may be changed without prior notice. (RN02)

# HELUCONTROL® 2516 / 600 GREY / HELUCONTROL® 2516 / 600 BLACK

UL Style 2516, 600 V, 105°C



HELUKABEL® HELUCONTROL® 2516 / 600 GREY AWM STYLE 2516  
14 AWG 12C / 83238 600V VW-1 AWM I/II A/B 105°C FT1



HELUKABEL® HELUCONTROL® 2516 / 600 BLACK AWM STYLE 2516  
14 AWG 12C / 83629 600V VW-1 AWM I/II A/B 105°C FT1

## TECHNICAL DATA

PVC control and connection cable acc. to UL-Std. 758 (AWM)  
Style 2516, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +105°C fixed -40°C to +105°C
Nominal voltage	UL (AWM) AC 600 V
Test voltage core/core	2000 V
Breakdown voltage	4000 V
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Wire structure:  
14 AWG: 44 x 0.247 mm  
12 AWG: 70 x 0.247 mm
- Core insulation: PVC acc. to UL-Std. 1581 Tab. 50.182 (105°C)
- Core identification: see table
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths

- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182 (105°C), CSA-Std. C22.2 No. 210
- Sheath colour: see table

## PROPERTIES

- resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## APPLICATION

UL-/CSA-approved, flexible control and connecting cable for use in machine tools, assembly lines, conveyor belts, plant construction, air conditioning systems, in iron and steel mills.

Sheath colour: grey (RAL 7001); Core identification acc. to DIN 47100 - colour coded

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83233	2 x 14	8.4	39.6	120.0	83244	36 x 14	25.2	717.2	1800.0
83234	3 x 14	8.9	59.6	150.0	83245	2 x 12	9.4	61.0	150.0
83235	4 x 14	9.6	79.2	190.0	83246	3 x 12	9.9	91.4	210.0
83236	6 x 14	11.4	119.0	300.0	83247	4 x 12	10.8	121.6	300.0
83237	10 x 14	15.2	198.4	450.0	83248	6 x 12	12.9	183.7	430.0
83238	12 x 14	15.7	238.7	500.0	83249	10 x 12	17.2	305.9	500.0
83239	16 x 14	17.3	319.0	700.0	83250	12 x 12	17.7	367.6	700.0
83240	18 x 14	18.2	358.4	750.0	83251	16 x 12	19.7	490.9	810.0
83241	24 x 14	22.2	478.4	900.0	83252	18 x 12	21.7	551.7	970.0
83242	27 x 14	22.7	538.1	1100.0	83253	24 x 12	25.2	736.4	1200.0
83243	30 x 14	23.4	598.4	1150.0					

Sheath colour: black (RAL 9005); Core identification acc. to international colour code - colour coded

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83624	2 x 14	8.4	39.6	120.0	83635	36 x 14	25.2	717.2	1800.0
83625	3 x 14	8.9	59.6	150.0	83636	2 x 12	9.4	61.0	150.0
83626	4 x 14	9.6	79.2	190.0	83637	3 x 12	9.9	91.4	210.0
83627	6 x 14	11.4	119.0	300.0	83638	4 x 12	10.8	121.6	300.0
83628	10 x 14	15.2	198.4	450.0	83639	6 x 12	12.9	183.7	430.0
83629	12 x 14	15.7	238.7	500.0	83640	10 x 12	17.2	305.9	500.0
83630	16 x 14	17.3	319.0	700.0	83641	12 x 12	17.7	367.6	700.0
83631	18 x 14	18.2	358.4	750.0	83642	16 x 12	19.7	490.9	810.0
83632	24 x 14	22.2	478.4	900.0	83643	18 x 12	21.7	551.7	970.0
83633	27 x 14	22.7	538.1	1100.0	83644	24 x 12	25.2	736.4	1200.0
83634	30 x 14	23.4	598.4	1150.0					



# HELUCONTROL® 2516 / 600-C GREY / HELUCONTROL® 2516 / 600-C BLACK



UL Style 2516, 600 V, 105°C, EMC-preferred type



HELUKABEL® HELUCONTROL® 2516 / 600-C GREY AWM STYLE 2516  
14 AWG 12C 83355 600V VW-1 AWM I/II A/B 105°C 600V FT1



HELUKABEL® HELUCONTROL® 2516 / 600-C BLACK AWM STYLE 2516  
14 AWG 12C 65119 600V VW-1 AWM I/II A/B 105°C 600V FT1

## TECHNICAL DATA

PVC control and connection cable acc. to UL-Std. 758 (AWM) Style 2516, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -10°C to +105°C fixed -40°C to +105°C
Nominal voltage	UL (AWM) AC 600 V
Test voltage core/core	2000 V
Breakdown voltage	4000 V
Coupling resistance	at 30 MHz, approx. 250 Ohm/km
Minimum bending radius	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, finely stranded, AWG sizes
- Wire structure:
  - 12 AWG: 70 x 0.247 mm
  - 14 AWG: 44 x 0.247 mm
- Core insulation: PVC acc. to UL-Std. 1581 Tab. 50.182 (105°C)
- Core identification: see table
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, tinned copper

- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to UL-Std. 1581 Tab. 50.182 (105°C), CSA-Std. C22.2 No. 210
- Sheath colour: see table

## ■ PROPERTIES

- resistant to: oil, solvents, acids, alkalis
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1

## ■ APPLICATION

UL-/CSA-approved, flexible control and connecting cable for use in machine tools, assembly lines, conveyor belts, plant construction, air conditioning systems, in iron and steel mills. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

Sheath colour: grey (RAL 7001); Core identification acc. to DIN 47100 - colour coded

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83350	2 x 14	9.1	92.1	180.0
83351	3 x 14	9.6	140.6	220.0
83352	4 x 14	10.4	162.4	270.0
83353	6 x 14	12.1	200.0	380.0
83354	10 x 14	16.1	313.1	600.0
83355	12 x 14	16.6	417.6	770.0
83356	16 x 14	18.2	510.3	870.0
83357	18 x 14	19.3	540.4	990.0
83358	24 x 14	23.3	580.6	1300.0
83359	27 x 14	23.8	604.2	1400.0

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
83360	30 x 14	24.6	660.1	1610.0
83362	2 x 12	10.1	131.4	200.0
83363	3 x 12	10.7	162.6	240.0
83364	4 x 12	11.6	221.7	300.0
83365	6 x 12	14.6	328.1	400.0
83366	10 x 12	18.1	401.8	580.0
83367	12 x 12	18.7	460.2	800.0
83368	16 x 12	21.8	532.3	900.0
83369	18 x 12	22.8	573.4	1000.0
83370	24 x 12	26.5	626.8	1300.0

Sheath colour: black (RAL 9005); Core identification acc. to international colour code - colour coded

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
65114	2 x 14	9.1	92.1	180.0
65115	3 x 14	9.6	140.6	220.0
65116	4 x 14	10.4	162.4	270.0
65117	6 x 14	12.1	200.0	380.0
65118	10 x 14	16.1	313.1	600.0
65119	12 x 14	16.6	417.6	770.0
65120	16 x 14	18.2	510.3	870.0
65121	18 x 14	19.3	540.4	990.0
65122	24 x 14	23.3	580.6	1300.0
65123	27 x 14	23.8	604.2	1400.0

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
65124	30 x 14	24.6	660.1	1610.0
65125	2 x 12	10.1	131.4	200.0
65126	3 x 12	10.7	162.6	240.0
65127	4 x 12	11.6	221.7	300.0
65128	6 x 12	14.6	328.1	400.0
65129	10 x 12	18.1	401.8	580.0
65130	12 x 12	18.7	460.2	800.0
65131	16 x 12	21.8	532.3	900.0
65132	18 x 12	22.8	573.4	1000.0
65133	24 x 12	26.5	626.8	1300.0



HELUKABEL® DATAFLAMM® 6x0,14 QMM / 52304 350 V halogen-free CE

## TECHNICAL DATA

### Data cable

<b>Temperature range</b>	flexible +5°C to +70°C fixed -40°C to +70°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 0.75 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core:</b>	0.14 mm <sup>2</sup> : 800 V 0.25 - 0.75 mm <sup>2</sup> : 1200 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 70 pF/m
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, 0.5 - 0.75 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm
  - 0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm
  - 0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PE acc. to DIN VDE 0819-103 / DIN EN 50290-2-23 (compound type LD/MD)
- Core identification in alignment with DIN 47100, colour coded, without colour repetition from the 45th core
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Outer sheath: thermoplastic compound acc. to DIN VDE 0207-24 (compound type HM2)
- Sheath colour: grey (RAL 7005)
- Length marking: in metres

## PROPERTIES

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- PE-insulated cores ensure substantially lower capacity values than PVC-insulated cores

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 (outer sheath)

## APPLICATION

DATAFLAMM® halogen-free data cables are used as connection cables for signal, measurement and control technology, call systems and intercoms, clock systems, electronic weighing equipment and office machines. The cables can be laid on plaster and in dry, damp and wet rooms. Areas of application include telecommunication devices and information processing systems in public buildings, laboratories, department stores and other buildings where the release of halogens must be avoided in the event of fire. The halogen-free thermoplastic sheath does not emit corrosive or toxic gases.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52300	2 x 0.14	26	3.2	2.6	14.0
52301	3 x 0.14	26	3.4	4.0	17.0
52302	4 x 0.14	26	3.6	5.3	19.0
52303	5 x 0.14	26	3.9	6.6	23.0
52304	6 x 0.14	26	4.2	7.9	25.0
52305	7 x 0.14	26	4.2	9.2	27.0
52306	8 x 0.14	26	4.7	10.3	30.0
52307	10 x 0.14	26	5.4	13.2	38.0
52308	12 x 0.14	26	5.6	16.0	45.0
52309	15 x 0.14	26	6.3	20.1	57.0
52310	18 x 0.14	26	6.6	23.7	65.0
52311	21 x 0.14	26	6.9	27.9	76.0
52312	25 x 0.14	26	7.8	33.4	88.0
52313	30 x 0.14	26	8.2	39.3	98.0
52314	34 x 0.14	26	9.0	45.5	111.0
52315	40 x 0.14	26	9.7	53.6	139.0
52316	50 x 0.14	26	10.6	64.9	764.0
52317	2 x 0.25	24	3.8	4.7	18.0
52318	3 x 0.25	24	4.0	7.1	21.0
52319	4 x 0.25	24	4.5	9.5	26.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52320	5 x 0.25	24	4.9	12.0	31.0
52321	7 x 0.25	24	5.3	16.6	40.0
52322	10 x 0.25	24	6.8	24.0	56.0
52323	12 x 0.25	24	7.0	28.6	64.0
52324	15 x 0.25	24	7.9	36.0	80.0
52430	18 x 0.25	24	8.3	43.2	90.0
52431	21 x 0.25	24	8.9	50.4	105.0
52325	25 x 0.25	24	9.8	59.8	121.0
52326	34 x 0.25	24	11.3	81.3	168.0
52327	40 x 0.25	24	12.4	96.0	196.0
52328	2 x 0.34	22	4.6	6.4	25.0
52329	3 x 0.34	22	4.9	9.7	30.0
52330	4 x 0.34	22	5.3	13.0	35.0
52331	5 x 0.34	22	5.7	16.4	43.0
52332	7 x 0.34	22	6.4	22.7	58.0
52333	10 x 0.34	22	8.2	32.4	80.0
52334	12 x 0.34	22	8.5	39.1	91.0
52335	15 x 0.34	22	9.5	49.1	115.0
52336	18 x 0.34	22	10.0	59.1	135.0
52337	21 x 0.34	22	10.7	68.3	154.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52338	25 x 0.34	22	12.0	81.4	180.0
52339	34 x 0.34	22	13.8	111.1	233.0
52340	40 x 0.34	22	15.1	130.5	272.0
52341	2 x 0.5	20	4.8	9.5	30.0
52342	3 x 0.5	20	5.1	14.2	36.0
52343	4 x 0.5	20	5.5	19.2	43.0
52344	5 x 0.5	20	6.2	24.0	56.0
52345	7 x 0.5	20	6.7	33.7	70.0
52346	10 x 0.5	20	8.6	48.0	101.0
52347	12 x 0.5	20	9.1	57.4	117.0
52348	15 x 0.5	20	10.0	72.0	145.0
52349	18 x 0.5	20	10.7	86.4	171.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52350	21 x 0.5	20	11.3	101.0	197.0
52351	25 x 0.5	20	12.6	120.0	230.0
52352	30 x 0.5	20	13.5	142.6	269.0
52353	34 x 0.5	20	14.7	163.1	301.0
52354	40 x 0.5	20	15.8	192.0	365.0
52355	2 x 0.75	19	5.5	14.3	40.0
52356	3 x 0.75	19	6.0	21.5	51.0
52357	4 x 0.75	19	6.6	28.6	61.0
52358	5 x 0.75	19	7.1	36.1	76.0
52359	7 x 0.75	19	8.0	50.3	97.0
52360	10 x 0.75	19	10.4	72.0	137.0
52361	12 x 0.75	19	10.7	86.2	167.0



HELUKABEL® DATAFLAMM®-C 4x0,5 QMM / 52413 500 V halogen-free CE

## TECHNICAL DATA

### Data cable

<b>Temperature range</b>	flexible +5°C to +70°C fixed -40°C to +70°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 0.75 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	0.14 mm <sup>2</sup> : 800 V 0.25 - 0.75 mm <sup>2</sup> : 1200 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 70 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, 0.5 - 0.75 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm  
0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm  
0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PE acc. to DIN VDE 0819-103 / DIN EN 50290-2-23 (compound type LD/MD)
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, Tinned copper
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Foil wrapping
- Outer sheath: thermoplastic compound acc. to DIN VDE 0207-24 (compound type HM2)
- Sheath colour: grey (RAL 7005)
- Length marking: in metres

## PROPERTIES

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- PE-insulated cores ensure substantially lower capacity values than PVC-insulated cores

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 (outer sheath)

## APPLICATION

Used as a connection cable for signal, measurement and control technology, call systems and intercoms, clock systems, electronic weighing equipment and office machines. The cables can be laid on plaster and in dry, damp and wet rooms. Areas of application include telecommunication devices and information processing systems in public buildings, laboratories, department stores and other buildings where the release of halogens must be avoided in the event of fire. Interference-free screening ensures protection against external pulse generators or high-frequency signals. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52365	2 x 0.14	26	3.8	12.4	21.0
52366	3 x 0.14	26	4.0	14.0	25.0
52367	4 x 0.14	26	4.3	15.8	26.0
52368	5 x 0.14	26	4.5	19.5	32.0
52369	7 x 0.14	26	5.0	23.4	39.0
52370	10 x 0.14	26	6.2	28.4	54.0
52371	12 x 0.14	26	6.3	31.4	69.0
52372	14 x 0.14	26	6.8	37.5	76.0
52373	16 x 0.14	26	7.1	43.4	82.0
52374	18 x 0.14	26	7.4	51.4	90.0
52375	21 x 0.14	26	7.7	61.8	102.0
52376	25 x 0.14	26	8.6	76.0	121.0
52377	30 x 0.14	26	9.0	92.7	146.0
52378	34 x 0.14	26	9.6	121.0	167.0
52379	40 x 0.14	26	10.4	126.1	170.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52380	2 x 0.25	24	4.4	14.6	23.0
52381	3 x 0.25	24	4.6	17.0	28.0
52382	4 x 0.25	24	5.2	20.6	34.0
52384	5 x 0.25	24	5.7	24.7	42.0
52385	7 x 0.25	24	6.1	31.2	49.0
52386	10 x 0.25	24	7.6	42.1	81.0
52387	12 x 0.25	24	7.8	47.5	88.0
52388	14 x 0.25	24	8.3	52.7	100.0
52389	16 x 0.25	24	8.7	58.1	113.0
52390	18 x 0.25	24	9.1	78.0	126.0
52391	21 x 0.25	24	9.5	94.3	144.0
52392	25 x 0.25	24	10.6	116.5	164.0
52393	30 x 0.25	24	11.1	132.2	191.0
52394	34 x 0.25	24	12.1	144.6	214.0
52395	40 x 0.25	24	13.1	163.3	245.0

# DATAFLAMM®-C

colour code DIN 47100, low capacitance, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52396	2 x 0.34	22	5.2	16.9	31.0
52397	3 x 0.34	22	5.6	20.6	38.0
52398	4 x 0.34	22	6.0	24.5	47.0
52399	5 x 0.34	22	6.7	30.0	58.0
52400	7 x 0.34	22	7.2	38.2	76.0
52401	10 x 0.34	22	9.0	62.2	110.0
52402	12 x 0.34	22	9.2	69.4	123.0
52403	14 x 0.34	22	9.6	82.1	140.0
52404	16 x 0.34	22	10.3	95.0	157.0
52405	18 x 0.34	22	10.8	107.3	172.0
52406	21 x 0.34	22	11.5	122.4	195.0
52407	25 x 0.34	22	12.6	142.2	226.0
52408	30 x 0.34	22	13.4	162.6	261.0
52409	34 x 0.34	22	14.4	178.9	285.0
52410	40 x 0.34	22	15.7	203.3	330.0
52411	2 x 0.5	20	5.4	23.0	37.0
52412	3 x 0.5	20	5.8	30.0	46.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52413	4 x 0.5	20	6.3	35.3	57.0
52414	5 x 0.5	20	7.0	52.5	77.0
52415	7 x 0.5	20	7.5	65.3	92.0
52416	10 x 0.5	20	9.4	88.7	135.0
52417	12 x 0.5	20	9.6	98.7	148.0
52418	18 x 0.5	20	11.3	141.2	210.0
52419	21 x 0.5	20	12.0	161.0	242.0
52420	25 x 0.5	20	13.4	187.2	285.0
52421	30 x 0.5	20	14.1	223.2	340.0
52422	40 x 0.5	20	16.7	294.9	445.0
52423	2 x 0.75	19	6.3	30.6	45.0
52424	3 x 0.75	19	6.8	38.1	60.0
52425	4 x 0.75	19	7.3	58.0	80.0
52426	5 x 0.75	19	7.9	68.4	97.0
52427	7 x 0.75	19	8.7	88.4	127.0
52428	10 x 0.75	19	11.0	122.5	175.0
52429	12 x 0.75	19	11.5	137.2	196.0

# DATAFLAMM®-C-PAAR

colour code DIN 47100, low capacitance, EMC-preferred type



HELUKABEL® DATAFLAMM®-C-PAAR 4x2x0,5 QMM / 52467 500 V halogen-free CE

## TECHNICAL DATA

### Data cable

<b>Temperature range</b>	flexible +5°C to +70°C fixed -40°C to +70°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 0.75 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core:</b>	0.14 mm <sup>2</sup> : 800 V 0.25 - 0.75 mm <sup>2</sup> : 1200 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 70 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, 0.5 - 0.75 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm  
0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm  
0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PE acc. to DIN VDE 0819-103 / DIN EN 50290-2-23 (compound type LD/MD)
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths, Pairs stranded in layers with optimal lay lengths
- Foil wrapping
- Drain wire, tinned copper
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Foil wrapping

- Outer sheath: thermoplastic compound acc. to DIN VDE 0207-24 (compound type HM2)
- Sheath colour: grey (RAL 7005)
- Length marking: in metres

## PROPERTIES

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- PE-insulated cores ensure substantially lower capacity values than PVC-insulated cores

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 (outer sheath)

## APPLICATION

Used in telecommunication devices and information processing systems in public buildings, laboratories and department stores where the release of halogens must be avoided in the event of fire. Used as connection cable for signal, measurement and control technology, call systems and intercoms, clock systems, electronic weighing equipment and office machines. The cable can be laid on plaster and in dry, damp and wet rooms. The halogen-free thermoplastic sheath does not emit corrosive or toxic gases. Due to the screening, it is interference-free against foreign pulse generators and high-frequency signals. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52435	2 x 2 x 0.14	26	5.4	22.5	37.0
52436	3 x 2 x 0.14	26	5.8	25.6	47.0
52437	4 x 2 x 0.14	26	6.5	39.1	66.0
52438	5 x 2 x 0.14	26	7.0	45.3	76.0
52439	6 x 2 x 0.14	26	7.5	51.4	87.0
52440	7 x 2 x 0.14	26	7.5	54.2	94.0
52441	10 x 2 x 0.14	26	9.6	68.7	119.0
52442	12 x 2 x 0.14	26	9.8	78.3	135.0
52443	15 x 2 x 0.14	26	11.0	79.9	157.0
52444	18 x 2 x 0.14	26	11.5	99.2	190.0
52445	2 x 2 x 0.25	24	6.8	27.1	44.0
52446	3 x 2 x 0.25	24	7.1	42.4	66.0
52447	4 x 2 x 0.25	24	7.9	54.5	81.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52448	5 x 2 x 0.25	24	8.5	59.8	98.0
52449	6 x 2 x 0.25	24	9.4	64.6	116.0
52450	7 x 2 x 0.25	24	9.4	71.3	120.0
52451	10 x 2 x 0.25	24	11.8	93.3	153.0
52452	12 x 2 x 0.25	24	12.1	108.0	175.0
52453	15 x 2 x 0.25	24	13.5	123.4	213.0
52454	18 x 2 x 0.25	24	14.5	139.7	248.0
52455	2 x 2 x 0.34	22	8.0	43.3	68.0
52456	3 x 2 x 0.34	22	8.4	55.0	92.0
52457	4 x 2 x 0.34	22	9.1	64.0	110.0
52458	5 x 2 x 0.34	22	10.1	74.5	128.0
52459	6 x 2 x 0.34	22	11.1	85.0	147.0
52460	7 x 2 x 0.34	22	11.1	89.8	154.0

# DATAFLAMM®-C-PAAR

colour code DIN 47100, low capacitance, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52461	10 x 2 x 0.34	22	14.2	119.8	209.0
52462	12 x 2 x 0.34	22	14.7	139.4	245.0
52463	15 x 2 x 0.34	22	16.4	160.0	279.0
52464	18 x 2 x 0.34	22	17.4	207.2	363.0
52465	2 x 2 x 0.5	20	8.3	50.2	76.0
52466	3 x 2 x 0.5	20	8.8	64.5	107.0
52467	4 x 2 x 0.5	20	9.7	77.2	134.0
52468	5 x 2 x 0.5	20	10.6	96.2	150.0
52469	6 x 2 x 0.5	20	11.6	107.4	176.0
52470	7 x 2 x 0.5	20	11.6	117.3	185.0
52471	10 x 2 x 0.5	20	15.0	158.2	275.0
52472	12 x 2 x 0.5	20	15.6	177.8	330.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52473	15 x 2 x 0.5	20	17.4	236.4	380.0
52474	18 x 2 x 0.5	20	18.3	265.4	450.0
52475	2 x 2 x 0.75	19	9.7	64.6	105.0
52476	3 x 2 x 0.75	19	10.3	81.7	137.0
52477	4 x 2 x 0.75	19	11.4	107.6	166.0
52478	5 x 2 x 0.75	19	12.6	126.1	200.0
52479	6 x 2 x 0.75	19	13.6	138.6	236.0
52480	7 x 2 x 0.75	19	13.6	153.7	255.0
52481	10 x 2 x 0.75	19	17.8	220.0	363.0
52482	12 x 2 x 0.75	19	18.3	265.5	434.0
52483	15 x 2 x 0.75	19	20.6	327.6	500.0
52484	18 x 2 x 0.75	19	21.9	374.6	580.0



HELUKABEL® DATAPUR-C® 7x0,34 QMM / 52516 500 V CE

## TECHNICAL DATA

PUR data cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Peak operating voltage</b>	0.14 mm <sup>2</sup> : 350 V 0.25 - 0.5 mm <sup>2</sup> : 500 V (not for high power current installation purposes)
<b>Test voltage core/core:</b>	0.14 mm <sup>2</sup> : 800 V 0.25 - 0.5 mm <sup>2</sup> : 1200 V
<b>Mutual capacitance core/core</b>	at 800 Hz 0.14 - 0.34 mm <sup>2</sup> : approx. 120 pF/m 0.5 mm <sup>2</sup> : approx. 160 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, 0.5 mm<sup>2</sup>: finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm
  - 0.25 mm<sup>2</sup>: approx. 14 x 0.15 mm
  - 0.34 mm<sup>2</sup>: 7 x 0.25 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%

- Foil wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

The specific construction of DATAPUR-C® makes this cable type ideal for use in all types of computer systems, office machinery, signal and control units. DATAPUR-C® proves its efficiency but also in the acoustic field in telecommunications, paging and intercom systems but also in the cradle of technology and in the measuring and control technology. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52490	2 x 0.14	26	3.9	12.3	21.0
52491	3 x 0.14	26	4.0	14.0	25.0
52492	4 x 0.14	26	4.3	15.7	29.0
52493	5 x 0.14	26	4.7	19.5	35.0
52494	7 x 0.14	26	5.2	23.4	41.0
52495	10 x 0.14	26	6.5	28.5	54.0
52496	12 x 0.14	26	6.7	34.3	64.0
52497	14 x 0.14	26	6.9	39.9	74.0
52498	18 x 0.14	26	7.6	51.5	93.0
52499	21 x 0.14	26	8.4	60.1	108.0
52500	25 x 0.14	26	9.1	71.9	128.0
52501	2 x 0.25	24	4.3	14.7	26.0
52502	3 x 0.25	24	4.5	17.1	33.0
52503	4 x 0.25	24	4.8	20.6	38.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52504	5 x 0.25	24	5.4	24.8	44.0
52505	7 x 0.25	24	5.8	31.1	53.0
52506	10 x 0.25	24	7.3	42.0	79.0
52507	12 x 0.25	24	7.5	51.0	92.0
52508	14 x 0.25	24	8.1	60.1	105.0
52509	18 x 0.25	24	9.1	77.9	128.0
52510	21 x 0.25	24	9.6	91.4	148.0
52511	25 x 0.25	24	10.6	110.8	175.0
52512	2 x 0.34	22	4.9	17.0	33.0
52513	3 x 0.34	22	5.1	20.7	42.0
52514	4 x 0.34	22	5.5	24.7	48.0
52515	5 x 0.34	22	6.0	30.1	57.0
52516	7 x 0.34	22	6.6	38.2	77.0
52517	10 x 0.34	22	8.4	63.1	111.0



# DATAPUR-C®

colour code DIN 47100, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52518	12 x 0.34	22	8.6	74.2	128.0
52519	14 x 0.34	22	9.0	85.3	144.0
52520	18 x 0.34	22	10.1	107.4	175.0
52521	21 x 0.34	22	10.9	124.1	200.0
52522	25 x 0.34	22	12.0	147.0	233.0
52523	2 x 0.5	20	5.3	23.2	38.0
52524	3 x 0.5	20	5.6	30.1	51.0
52525	4 x 0.5	20	6.4	35.4	58.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
52526	5 x 0.5	20	6.9	52.6	77.0
52527	7 x 0.5	20	7.3	65.3	93.0
52528	10 x 0.5	20	9.6	88.8	134.0
52529	12 x 0.5	20	9.7	101.9	155.0
52530	14 x 0.5	20	10.2	115.1	175.0
52531	18 x 0.5	20	11.5	141.2	214.0
52532	21 x 0.5	20	12.1	161.1	245.0
52533	25 x 0.5	20	13.7	187.9	285.0



HELUKABEL® EDV-PiMF-CY 10x2x0,75 QMM / 43536 CE

### TECHNICAL DATA

#### PVC data cable

<b>Temperature range</b>	flexible -5°C to +80°C fixed -20°C to +80°C
<b>Peak operating voltage</b>	300 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	1000 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 75 pF/m
<b>Characteristic impedance</b>	at 1 kHz, 360 Ohm at 10 kHz, 125 Ohm at 100 kHz, 87 Ohm at 1000 kHz, 70 Ohm (approx. value)
<b>Cable attenuation</b>	at 1 kHz, 1.1 dB/km at 10 kHz, 2.7 dB/km at 100 kHz, 6.8 dB/km at 1000 kHz, 35.0 dB/km (approx. value)
<b>Crosstalk attenuation</b>	at 100 kHz, 60.00 dB (approx. value)
<b>Inductance</b>	approx. 0.40 mH/km
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

### CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: PE
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor

- Cores stranded in pairs with optimal lay lengths
- Foil wrapping of the pairs
- Drain wire per pair, tinned copper
- Screening element: pairs, plastic-coated Aluminium foil (St), approx. overlap 25%
- Pairs (in metal foil) stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: PVC in alignment with DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

### PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- PiMF: Pair in Metal Foil

### TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### APPLICATION

Used as a data cable with overall pair screening and low capacities for installed terminals in medical and data technology. Application is also suitable in tool and machine construction, rolling mills and smelters, as well as traffic and process technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

### NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
43553	2 x 2 x 0.5	20	9.1	50.0	101.0
43554	3 x 2 x 0.5	20	10.2	66.0	120.0
43524	4 x 2 x 0.5	20	11.1	108.0	196.0
43555	5 x 2 x 0.5	20	12.2	120.0	201.0
43525	6 x 2 x 0.5	20	14.0	148.0	260.0
43526	8 x 2 x 0.5	20	14.3	180.0	310.0
43527	10 x 2 x 0.5	20	16.0	236.0	398.0
43528	16 x 2 x 0.5	20	20.7	338.0	515.0
43529	20 x 2 x 0.5	20	23.2	394.0	688.0
43530	30 x 2 x 0.5	20	27.9	577.0	980.0
43531	40 x 2 x 0.5	20	31.0	684.0	1390.0
43532	50 x 2 x 0.5	20	34.7	834.0	1860.0
43556	2 x 2 x 0.75	19	10.5	61.0	117.0
43557	3 x 2 x 0.75	19	12.0	97.0	142.0
43533	4 x 2 x 0.75	19	12.9	141.0	240.0
43558	5 x 2 x 0.75	19	14.5	163.0	304.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
43534	6 x 2 x 0.75	19	15.8	198.0	352.0
43535	8 x 2 x 0.75	19	17.1	246.0	415.0
43536	10 x 2 x 0.75	19	19.2	305.0	505.0
43537	16 x 2 x 0.75	19	24.4	446.0	732.0
43538	20 x 2 x 0.75	19	27.3	530.0	860.0
43539	30 x 2 x 0.75	19	32.1	765.0	1210.0
43559	2 x 2 x 1	18	12.6	72.0	130.0
43560	3 x 2 x 1	18	13.7	104.0	161.0
43540	4 x 2 x 1	18	15.0	186.0	360.0
43561	5 x 2 x 1	18	16.8	231.0	412.0
43541	6 x 2 x 1	18	18.9	260.0	472.0
43542	8 x 2 x 1	18	20.7	322.0	540.0
43543	10 x 2 x 1	18	22.7	382.0	670.0
43544	16 x 2 x 1	18	29.4	578.0	982.0
43545	20 x 2 x 1	18	32.4	710.0	1240.0
43546	30 x 2 x 1	18	38.1	1050.0	1720.0

# EDV-PiMF-CY

PE insulation, low capacitance, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
43562	2 x 2 x 1.5	16	13.8	81.0	164.0
43563	3 x 2 x 1.5	16	15.2	141.0	197.0
43547	4 x 2 x 1.5	16	16.6	261.0	480.0
43564	5 x 2 x 1.5	16	19.7	284.0	516.0
43548	6 x 2 x 1.5	16	20.9	355.0	590.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
43549	8 x 2 x 1.5	16	22.0	448.0	696.0
43550	10 x 2 x 1.5	16	25.6	551.0	874.0
11009069	12 x 2 x 1.5	16	28.8	625.0	1095.0
43551	16 x 2 x 1.5	16	32.2	838.0	1340.0
43552	20 x 2 x 1.5	16	35.4	1030.0	1620.0



### TECHNICAL DATA

#### PVC data cable in alignment with DIN VDE 0815

<b>Temperature range</b>	flexible -5°C to +50°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	600 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 39.2 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 120 pF/m 8 - 96 pairs: approx. 100 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 200 pF/100m; 20% of the values, but at least one value may amount up to 400 pF/100m
<b>Characteristic impedance</b>	at 1 kHz, 370 Ohm, at 10 kHz, 130 Ohm, (approx. value)
<b>Cable attenuation</b>	at 1 kHz, 1.2 dB/km at 10 kHz, 3.0 dB/km (approx. value)
<b>Crosstalk attenuation</b>	at 10 kHz, 60.00 dB (approx. value)
<b>Minimum bending radius</b>	fixed 7.5x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.3 mm
- Core insulation: semirigid PVC
- Core identification: colour coded, per bundle:  
Pair no. 1: a-core = blue; b-core = red  
Pair no. 2: a-core = grey; b-core = yellow  
Pair no. 3: a-core = green; b-core = brown  
Pair no. 4: a-core = white; b-core = black

- Cores stranded in pairs with optimal lay lengths, 4 pairs stranded into bundles with optimal lay lengths, bundles stranded in layers with optimal lay lengths
- Bundle identification: synthetic helix with printed digits
- Drain wire, tinned copper, stranded (0.5 mm<sup>2</sup> = 7 x 0.3 mm)
- Screen: plastic-coated aluminium foil (St), approx. overlap 25%
- Outer sheath: PVC
- Sheath colour: see table
- Length marking: in metres

### ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- pair stranding with short and varied lay lengths within a bundle, leads to good crosstalk attenuation values

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC

### ■ APPLICATION

RD data transmission cables are used in measurement and control technology, as well as in control stations of industrial plants. The cables are used for the transmission of analogue and digital signals up to a frequency of approximately 10 kHz. They are suitable for fixed installations inside buildings.

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- 2-pair cables: cores stranded to a star quad
- with blue sheathing for the installation of intrinsically safe systems (ignition protection type -i-) in explosion-endangered areas according to DIN VDE 0165-1 / DIN EN 60079-14 / IEC 60079-14, Section 16.2.2

#### Sheath color: grey (RAL 7032)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20140	2 x 2 x 0.5	20	6.2	25.0	61.0
20141	4 x 2 x 0.5	20	8.3	45.0	96.0
20142	8 x 2 x 0.5	20	11.3	85.0	160.0
20143	12 x 2 x 0.5	20	12.1	125.0	210.0
20144	16 x 2 x 0.5	20	13.5	165.0	282.0
20145	24 x 2 x 0.5	20	16.0	245.0	330.0
20146	32 x 2 x 0.5	20	19.0	325.0	530.0
20147	48 x 2 x 0.5	20	22.0	485.0	730.0
20148	96 x 2 x 0.5	20	31.5	965.0	1400.0

#### Sheath color: blue (RAL 5015)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20189	2 x 2 x 0.5	20	6.2	25.0	61.0
20190	4 x 2 x 0.5	20	8.3	45.0	96.0
20191	8 x 2 x 0.5	20	11.3	85.0	160.0
20192	12 x 2 x 0.5	20	12.1	125.0	210.0
20193	16 x 2 x 0.5	20	13.5	165.0	282.0
20194	24 x 2 x 0.5	20	16.0	245.0	330.0
20195	32 x 2 x 0.5	20	19.0	325.0	530.0
20196	48 x 2 x 0.5	20	22.0	485.0	730.0
20197	96 x 2 x 0.5	20	31.5	965.0	1400.0



HELUKABEL® RD-Y(St)Yv 4x2x0,5 QMM / 20161 CE

### TECHNICAL DATA

#### PVC data cable in alignment with DIN VDE 0815

<b>Temperature range</b>	flexible -5°C to +50°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	600 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 39.2 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 120 pF/m 8 - 96 pairs: approx. 100 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 200 pF/100m; 20% of the values, but at least one value may amount up to 400 pF/100m
<b>Characteristic impedance</b>	at 1 kHz, 370 Ohm, at 10 kHz, 130 Ohm, (approx. value)
<b>Cable attenuation</b>	at 1 kHz, 1.2 dB/km at 10 kHz, 3.0 dB/km (approx. value)
<b>Crosstalk attenuation</b>	at 10 kHz, 60.00 dB (approx. value)
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 10x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.3 mm
- Core insulation: semirigid PVC
- Core identification: colour coded, per bundle:  
Pair no. 1: a-core = blue; b-core = red  
Pair no. 2: a-core = grey; b-core = yellow  
Pair no. 3: a-core = green; b-core = brown  
Pair no. 4: a-core = white; b-core = black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20160	2 x 2 x 0.5	20	7.8	25.0	82.0
20161	4 x 2 x 0.5	20	9.7	45.0	125.0
20162	8 x 2 x 0.5	20	12.9	85.0	205.0
20163	12 x 2 x 0.5	20	13.6	125.0	259.0
20164	16 x 2 x 0.5	20	14.7	165.0	318.0

- Cores stranded in pairs with optimal lay lengths, 4 pairs stranded into bundles with optimal lay lengths, bundles stranded in layers with optimal lay lengths
- Bundle identification: synthetic helix with printed digits
- Drain wire, tinned copper, stranded (0.5 mm<sup>2</sup> = 7 x 0.3 mm)
- Screen: plastic-coated aluminium foil (St), approx. overlap 25%
- Outer sheath: PVC, reinforced (v)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

### ■ PROPERTIES

- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- pair stranding with short and varied lay lengths within a bundle, leads to good crosstalk attenuation values

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC

### ■ APPLICATION

RD data transmission cables are used in measurement and control technology, as well as in control stations of industrial plants. The cables are used for the transmission of analogue and digital signals up to a frequency of approximately 10 kHz. They are suitable for fixed installations inside buildings, outdoors and underground.

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- 2-pair cables: cores stranded to a star quad

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20165	24 x 2 x 0.5	20	17.2	245.0	438.0
20166	32 x 2 x 0.5	20	21.6	325.0	583.0
20167	48 x 2 x 0.5	20	22.7	485.0	788.0
20168	96 x 2 x 0.5	20	35.5	965.0	1300.0



HELUKABEL® RD-Y(St)YY 4x2x0,5 QMM / 20181 CE

### TECHNICAL DATA

#### PVC data cable in alignment with DIN VDE 0815

<b>Temperature range</b>	flexible -5°C to +50°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	600 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 39.2 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 120 pF/m 8 - 96 pairs: approx. 100 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 200 pF/100m; 20% of the values, but at least one value may amount up to 400 pF/100m
<b>Characteristic impedance</b>	at 1 kHz, 370 Ohm, at 10 kHz, 130 Ohm, (approx. value)
<b>Cable attenuation</b>	at 1 kHz, 1.2 dB/km at 10 kHz, 3.0 dB/km (approx. value)
<b>Crosstalk attenuation</b>	at 10 kHz, 60.00 dB (approx. value)
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 10x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.3 mm
- Core insulation: semirigid PVC
- Core identification: colour coded, per bundle:  
Pair no. 1: a-core = blue; b-core = red  
Pair no. 2: a-core = grey; b-core = yellow  
Pair no. 3: a-core = green; b-core = brown  
Pair no. 4: a-core = white; b-core = black

- Cores stranded in pairs with optimal lay lengths, 4 pairs stranded into bundles with optimal lay lengths, bundles stranded in layers with optimal lay lengths
- Bundle identification: synthetic helix with printed digits
- Drain wire, tinned copper, stranded (0.5 mm<sup>2</sup> = 7 x 0.3 mm)
- Screen: plastic-coated aluminium foil (St), approx. overlap 25%
- Outer sheath: PVC, double (YY)
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

### ■ PROPERTIES

- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- pair stranding with short and varied lay lengths within a bundle, leads to good crosstalk attenuation values

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC

### ■ APPLICATION

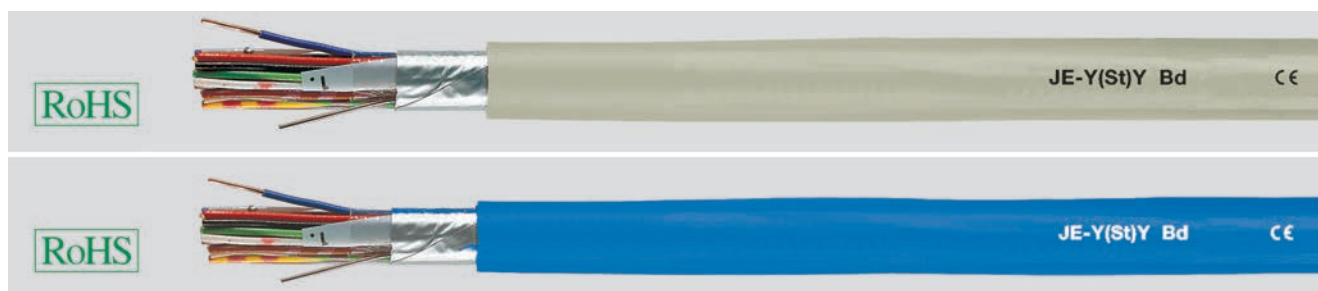
RD data transmission cables are used in measurement and control technology, as well as in control stations of industrial plants. The cables are used for the transmission of analogue and digital signals up to a frequency of approximately 10 kHz. They are suitable for fixed installations inside buildings, outdoors and underground.

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- 2-pair cables: cores stranded to a star quad

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20180	2 x 2 x 0.5	20	8.4	25.0	93.0
20181	4 x 2 x 0.5	20	10.3	45.0	139.0
20182	8 x 2 x 0.5	20	13.5	85.0	223.0
20183	12 x 2 x 0.5	20	14.2	125.0	279.0
20184	16 x 2 x 0.5	20	15.7	165.0	354.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20185	24 x 2 x 0.5	20	18.2	245.0	480.0
20186	32 x 2 x 0.5	20	23.0	325.0	657.0
20187	48 x 2 x 0.5	20	24.1	485.0	866.0
20188	96 x 2 x 0.5	20	36.5	965.0	1450.0



## Technical data

- Special industrial electronic cable to DIN VDE 0815
- **Conductor resistance** at 20°C 36,6 Ohm/km
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Operating peak voltage** 225 V  
(not for purposes of high current and power installation)
- **Test voltage**  
core/core 500 V  
core/screen 2000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance**  
max. 100 pF/m (the value can exceed of 20% by cables up to 4 pairs)
- **Capacitance unbalance**  
max. 200 pF/100 m
- **Inductance** approx. 0,70 mH/km
- **Attenuation**  
at 800 Hz approx. 1,1 dB/km
- **Radiation resistance**  
up to 80x10<sup>9</sup> cJ/kg (up to 80 Mrad)
- **Minimum bending radius**  
fixed installation 6x cable Ø
- **Caloric load values**  
see table Technical Informations

## Cable structure

- Solid bare copper conductor wire 0,8 mm Ø
- Core insulation of PVC Y13, to DIN VDE 0207 part 4
- Core identification (pair) to DIN VDE 0815 (Simatic colour code)
- Cores stranded in pairs with optimal lay-length
- 4 pairs stranded to a unit
- Unit stranded with optimal lay-length
- Foil wrapping
- Shielding of plastic laminated foil
- Copper drain-wire
- Outer sheath of PVC compound type YM1 to DIN VDE 0207 part 5
- Sheath colour grey (RAL 7032) or blue (RAL 5015)

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- Also available in a halogen-free version. (see also content "Halogen-free Security Cables and Wires".)
- Control cable with blue outer sheath, see Flexible Control Cables
- with blue outer sheath for hazardous areas to hazard type -i- for intrinsically safe installation acc. to DIN EN 60079-14 section 12.2.2 (VDE 0165 part 1)
- 2-paired cables:  
cores stranded to a star quad

## Application

These cable types are suitable for transmission of signals and measurements in the symmetric circuits of the control and regulation technology, and for the transmission of data and process information in computer systems. Used in dry and damp premises, and in or under plaster in the open air for fixed installation. Installation cables are not allowed for purposes of high current and power or burial installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
48500	1 x 2 x 0,8	GY	5,0	20,0	43,0	-
48501	2 x 2 x 0,8	GY	6,6	25,0	60,0	-
48502	4 x 2 x 0,8	GY	8,3	45,0	95,0	-
48503	8 x 2 x 0,8	GY	10,5	85,0	157,0	-
48504	12 x 2 x 0,8	GY	11,8	126,0	224,0	-
48505	16 x 2 x 0,8	GY	13,5	166,0	290,0	-
48506	20 x 2 x 0,8	GY	14,7	206,0	350,0	-
48507	32 x 2 x 0,8	GY	19,0	327,0	545,0	-
48508	40 x 2 x 0,8	GY	20,7	407,0	660,0	-
48509	80 x 2 x 0,8	GY	29,5	809,0	1160,0	-

Part no.	No.pairs x cross-sec. mm	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
48519	1 x 2 x 0,8	BU	5,0	20,0	43,0	-
48520	2 x 2 x 0,8	BU	6,6	25,0	60,0	-
48521	4 x 2 x 0,8	BU	8,3	45,0	95,0	-
48522	8 x 2 x 0,8	BU	10,5	85,0	157,0	-
48523	12 x 2 x 0,8	BU	11,8	126,0	224,0	-
48524	16 x 2 x 0,8	BU	13,5	166,0	290,0	-
48525	20 x 2 x 0,8	BU	14,7	206,0	350,0	-
48526	32 x 2 x 0,8	BU	19,0	327,0	545,0	-
48527	40 x 2 x 0,8	BU	20,7	407,0	660,0	-
48528	80 x 2 x 0,8	BU	29,5	809,0	1160,0	-

Dimensions and specifications may be changed without prior notice. (RB01)



HELUKABEL® JE-LiYCY Bd CE



HELUKABEL® JE-LiYCY Bd CE

### TECHNICAL DATA

PVC data cable in alignment with DIN VDE 0815

<b>Temperature range</b>	flexible -5°C to +50°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	225 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	500 V
<b>Test voltage core/screen</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 39.2 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 120 pF/m 8 - 40 pairs: approx. 100 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 200 pF/100m
<b>Cable attenuation</b>	at 800 Hz, 1.1 dB/km (approx. value)
<b>Inductance</b>	approx. 0.70 mH/km
<b>Minimum bending radius</b>	fixed 6x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.30 mm
- Core insulation: semi-rigid PVC
- Core identification nach DIN VDE 0815, colour coded
- Cores stranded in pairs with optimal lay lengths, 4 Pairs stranded into bundles with optimal lay lengths, bundles stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of bare or tinned copper wires, approx. coverage 85%
- Outer sheath: PVC acc. to DIN VDE 0207-5 (compound type YM1)

- Sheath colour: see table

### ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

### ■ APPLICATION

The cables are used for the transmission of signals and measurements in symmetrical circuits for control technology, as well as for the transmission of information in data and process computer systems. They can be used in dry and damp operating areas, as well as in and under plaster and outdoors with fixed installation. Installation cables are not permitted for high voltage current installations or underground laying. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- 2-pair cables: cores stranded to a star quad
- Maxi-Termi-Point® is a registered trademark of AMP
- with blue sheathing for the installation of intrinsically safe systems (ignition protection type -i-) in explosion-endangered areas according to DIN VDE 0165-1 / DIN EN 60079-14 / IEC 60079-14, Section 16.2.2

Sheath color: grey (RAL 7032)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
48510	2 x 2 x 0.5	20	7.0	51.0	94.0
48511	4 x 2 x 0.5	20	8.6	87.0	154.0
48512	8 x 2 x 0.5	20	12.0	144.0	259.0
48513	12 x 2 x 0.5	20	13.1	196.0	340.0
48514	16 x 2 x 0.5	20	14.3	249.0	431.0
48515	20 x 2 x 0.5	20	15.5	299.0	494.0
48516	24 x 2 x 0.5	20	16.8	348.0	604.0
48517	32 x 2 x 0.5	20	20.5	444.0	737.0
48518	40 x 2 x 0.5	20	22.5	537.0	844.0

Sheath color: blue (RAL 5015)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
48529	2 x 2 x 0.5	20	7.0	51.0	94.0
48530	4 x 2 x 0.5	20	8.6	87.0	154.0
48531	8 x 2 x 0.5	20	12.0	144.0	259.0
48532	12 x 2 x 0.5	20	13.1	196.0	340.0
48533	16 x 2 x 0.5	20	14.3	249.0	431.0
48534	20 x 2 x 0.5	20	15.5	299.0	494.0
48535	24 x 2 x 0.5	20	16.8	348.0	604.0
48536	32 x 2 x 0.5	20	20.5	444.0	737.0
48537	40 x 2 x 0.5	20	22.5	537.0	844.0





HELUKABEL® JE-LiHCH CE

### TECHNICAL DATA

Data cable in alignment with DIN VDE 0815

<b>Temperature range</b>	flexible -5°C to +50°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	225 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	500 V
<b>Test voltage core/screen</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 39.2 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 144 pF/m 8 - 40 pairs: approx. 120 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 200 pF/100m; 20% of the values, but at least one value may amount up to 400 pF/100m
<b>Minimum bending radius</b>	fixed 7.5x Outer-Ø

### ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.3 mm
- Core insulation: halogen-free polymer acc. to DIN VDE 0819-106 / DIN EN 50290-2-26
- Core identification acc. to DIN VDE 0815, colour coded ring marking of the bundles
- Cores stranded in pairs with optimal lay lengths, 4 pairs stranded into bundles with optimal lay lengths, bundles stranded in layers with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free polymer acc. to DIN VDE 0819-107 / DIN EN 50290-2-27
- Sheath colour: grey (RAL 7032)

### ■ PROPERTIES

- halogen-free

### ■ TESTS

- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- certifications and approvals:  
EAC

### ■ APPLICATION

Halogen-free installation cables with improved characteristics in the case of fire are used for telephone transmission, measuring and signal purposes. The copper screened design (C) protects the transmission circuits against electrical interferences. A fire propagation is prevented through high oxygen index of the insulation material and produce no corrosive gases in case of fire. They are preferably used for telecommunication installations inside buildings. These cables are suitable for fixed installation in areas with danger of fire, in dry and damp environments as well as in and under plaster. Installation cables are not allowed for purposes of high current and power or burial installation. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

### ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- 2-pair cables: cores stranded to a star quad

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
34350	2 x 2 x 0.5	20	6.8	44.0	102.0
34351	4 x 2 x 0.5	20	8.7	80.0	168.0
34352	8 x 2 x 0.5	20	12.9	152.0	297.0
34353	12 x 2 x 0.5	20	13.6	192.0	357.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
31119	16 x 2 x 0.5	20	14.7	243.0	405.0
34354	20 x 2 x 0.5	20	15.9	288.0	555.0
34355	32 x 2 x 0.5	20	20.5	439.0	852.0
34356	40 x 2 x 0.5	20	22.5	531.0	1005.0



HELUKABEL® RD-H(St)H 4x2x0,5 QMM / 20201 225 V C €

## TECHNICAL DATA

### Data cable in alignment with DIN VDE 0815

<b>Temperature range</b>	flexible -5°C to +50°C fixed -30°C to +70°C
<b>Peak operating voltage</b>	225 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	500 V
<b>Test voltage core/screen</b>	2000 V
<b>Conductor resistance at 20°C</b>	0.5 mm <sup>2</sup> : max. 39.2 Ohm/km 1 mm <sup>2</sup> : max. 18.4 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 2 - 4 pairs: approx. 120 pF/m 8 - 96 pairs: approx. 100 pF/m
<b>Capacitive coupling k<sub>1</sub></b>	at 800 Hz, max. 200 pF/100m; 20% of the values, but at least one value may amount up to 400 pF/100m
<b>Characteristic impedance</b>	at 1 kHz 0.5 mm <sup>2</sup> : 450 Ohm 1 mm <sup>2</sup> : 320 Ohm (approx. value)
<b>Cable attenuation</b>	at 1 kHz 0.5 mm <sup>2</sup> : 1.2 dB/km 1 mm <sup>2</sup> : 0.9 dB/km (approx. value)
<b>Crosstalk attenuation</b>	at 10 kHz, 60.00 dB (approx. value)
<b>Minimum bending radius</b>	fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.30 mm  
1 mm<sup>2</sup>: 7 x 0.43 mm

- Core insulation: halogen-free polymer
- Core identification: colour coded, per bundle:  
Pair no. 1: a-core = blue; b-core = red  
Pair no. 2: a-core = grey; b-core = yellow  
Pair no. 3: a-core = green; b-core = brown  
Pair no. 4: a-core = white; b-core = black
- Cores stranded in pairs with optimal lay lengths, 4 pairs stranded into bundles with optimal lay lengths, bundles stranded in layers with optimal lay lengths
- Bundle identification: synthetic helix with printed digits
- Foil wrapping
- Drain wire, tinned copper, stranded (0.5 mm<sup>2</sup> = 7 x 0.3 mm)
- Screen: plastic-coated aluminium foil (St), approx. overlap 25%
- Outer sheath: halogen-free polymer
- Sheath colour: grey (RAL 7032)

## ■ PROPERTIES

- halogen-free
- pair stranding with short and varied lay lengths within a bundle, leads to good crosstalk attenuation values

## ■ TESTS

- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## ■ APPLICATION

Halogen-free data transmission cables are used in measurement and control technology for the transmission of digital and analogue signals up to a frequency of 10 kHz. These cables are used inside buildings and outdoors, however, not without UV protection.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- 2-pair cables: cores stranded to a star quad

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20200	2 x 2 x 0.5	20	7.0	26.0	70.0
20201	4 x 2 x 0.5	20	9.0	46.0	110.0
20202	8 x 2 x 0.5	20	11.6	86.0	190.0
20203	12 x 2 x 0.5	20	13.5	127.0	240.0
20204	16 x 2 x 0.5	20	14.0	167.0	300.0
20205	20 x 2 x 0.5	20	16.0	209.0	360.0
20206	24 x 2 x 0.5	20	17.5	250.0	420.0
20207	28 x 2 x 0.5	20	19.0	290.0	480.0
20208	32 x 2 x 0.5	20	21.0	331.0	570.0
20209	36 x 2 x 0.5	20	21.5	372.0	614.0
20210	40 x 2 x 0.5	20	22.5	412.0	680.0
20211	44 x 2 x 0.5	20	23.5	453.0	700.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20212	48 x 2 x 0.5	20	24.0	494.0	790.0
20213	64 x 2 x 0.5	20	30.0	658.0	1040.0
20214	80 x 2 x 0.5	20	33.0	821.0	1300.0
20215	96 x 2 x 0.5	20	36.0	986.0	1510.0
20216	2 x 2 x 1	18	9.0	47.0	110.0
20217	4 x 2 x 1	18	12.0	89.0	190.0
20218	8 x 2 x 1	18	16.5	172.0	320.0
20219	12 x 2 x 1	18	17.5	255.0	435.0
20220	16 x 2 x 1	18	19.5	338.0	560.0
20221	20 x 2 x 1	18	21.0	423.0	680.0
20222	24 x 2 x 1	18	23.0	507.0	800.0
20223	28 x 2 x 1	18	27.0	590.0	905.0

# RD-H(St)H

## Data transmission cable



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20225	32 x 2 x 1	18	29.0	674.0	1080.0
20226	36 x 2 x 1	18	30.0	757.0	1260.0
20227	40 x 2 x 1	18	31.0	841.0	1330.0
20228	44 x 2 x 1	18	32.5	924.0	1410.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20229	48 x 2 x 1	18	34.0	1008.0	1550.0
20230	64 x 2 x 1	18	39.0	1342.0	2000.0
20231	80 x 2 x 1	18	43.0	1676.0	2470.0
20232	96 x 2 x 1	18	47.0	2016.0	2970.0

# A-2Y(L)2Y Bd telephone-outdoor cable, according to DIN VDE 0816, laminated sheath, unfilled



## Technical data

- acc. to DIN VDE 0816
- **Temperature range**  
flexible -20°C to +50°C  
fixed installation to +70°C
- **Loop resistance** at 20°C  
0,6 mm = max. 130 Ohm/km  
0,8 mm = max. 73,2 Ohm/km
- **Operating peak voltage** max. 225 V  
(not for purposes of high current and power installation)
- **Test voltage**  
core/core U eff. 500<sup>2)</sup> V  
core/screen U eff. 2000 V
- **Insulation resistance**  
min. 5 GOhm x km
- **Line attenuation**  
of side circuits at 800 Hz  
0,6 mm = 1,04 dB/km  
0,8 mm = 0,78 dB/km
- **Impedance**  
of side circuits at 800 Hz  
0,6 mm = 720 Ohm  
0,8 mm = 520 Ohm
- **Minimum bending radius**  
10x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE (2Y)
- Core identification of quads marked with black rings
- 4 cores twisted to a star quad
- 5 star quads stranded to sub units, each 5 or 10 sub units stranded to main units and the sub or main units stranded to cable core
- Core wrapping with several plastic tapes
- Outer sheath, as laminated sheath (L)2Y, PE-coated aluminium tape spliced with PE (2Y) sheath
- Sheath colour black
- Sheath marking continuously with telephone-receiver, meter marking in white colour

## Properties

- These cables are not allowed for power installation or applications requiring high current levels. Due to their PE outer sheath, these cables are also not permitted for fire and hazardous areas without any protective measures.
- **Mutual capacitance** at 800 Hz of all values 100%  
0,6 mm - max. 52 nF/km  
0,8 mm - max. 55 nF/km  
of all values 95%  
0,6 mm - max. 50<sup>3)</sup> nF/km  
0,8 mm - max. 53<sup>3)</sup> nF/km  
of all values 80%  
0,6 mm - max. 48 nF/km  
0,8 mm - max. 50 nF/km
- **Capacitance unbalances** at 800 Hz of all values k<sub>1</sub> 100% -max. 800<sup>1)</sup> pF/300 m of all values k<sub>1</sub> 98% -max. 400 pF/300 m of all values k<sub>9-12</sub> 100% -max. 300<sup>1)</sup> pF/300 m of all values k<sub>9-12</sub> 98% -max. 100 pF/300 m

## Note

- <sup>1)</sup> But at least for 2 quads.
- <sup>2)</sup> Local cables with more than 100 pairs the test conductor/conductor is emitted.
- <sup>3)</sup> For cables up to 10 double cores is the 100 % value valid
- Conductor Ø 0,4 mm on request.

## Application

These external subscriber telephone cables are installed as telecommunication connection cable for connecting the telephone extension to the telephone exchange or central offices and as well as for industrial plants. These subscriber connecting cables are suitable for laying in under ground, in cable ducts and cable conduits - and also for indoor-laying. Both sides of PE-copolymere coated aluminium type (L), which is spliced with the outer PE-sheath ensures a **barrier against water vapour** and diagonally water-proof. Black coloured PE-sheath is **UV-resistant**. The Polyethelene material (PE 2Y) is **halogen-free**.

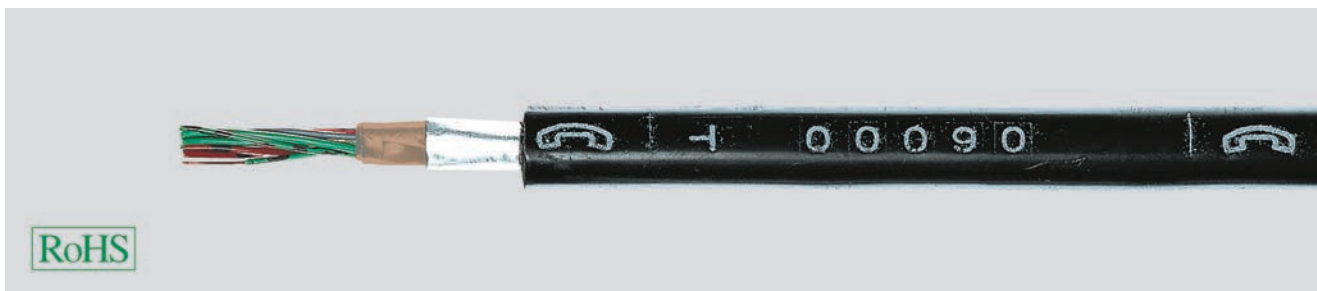
☞ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
34100	2 x 2 x 0,6	8,0	11,0	82,0	-
34101	4 x 2 x 0,6	10,0	23,0	127,0	-
34102	6 x 2 x 0,6	11,5	34,0	132,0	-
34103	10 x 2 x 0,6	12,5	57,0	171,0	-
34104	20 x 2 x 0,6	15,5	113,0	268,0	-
34105	30 x 2 x 0,6	17,5	170,0	358,0	-
34106	40 x 2 x 0,6	19,5	226,0	438,0	-
34107	50 x 2 x 0,6	21,0	283,0	531,0	-
34108	70 x 2 x 0,6	24,5	396,0	712,0	-
34109	100 x 2 x 0,6	28,0	565,0	950,0	-
34110	150 x 2 x 0,6	33,0	848,0	1348,0	-
34111	200 x 2 x 0,6	37,0	1131,0	1758,0	-
34112	250 x 2 x 0,6	40,5	1414,0	2137,0	-
34113	300 x 2 x 0,6	44,0	1696,0	2533,0	-
34114	350 x 2 x 0,6	47,5	1979,0	2954,0	-
34115	400 x 2 x 0,6	50,0	2262,0	3342,0	-

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
34130	2 x 2 x 0,8	11,0	20,0	102,0	-
34131	4 x 2 x 0,8	12,0	40,0	158,0	-
34132	6 x 2 x 0,8	13,0	60,0	179,0	-
34133	10 x 2 x 0,8	14,5	101,0	241,0	-
34134	20 x 2 x 0,8	18,0	201,0	393,0	-
34135	30 x 2 x 0,8	21,0	302,0	540,0	-
34136	40 x 2 x 0,8	23,0	402,0	675,0	-
34137	50 x 2 x 0,8	25,5	503,0	842,0	-
34138	70 x 2 x 0,8	29,0	704,0	1105,0	-
34139	100 x 2 x 0,8	34,0	1005,0	1524,0	-
34140	150 x 2 x 0,8	40,0	1508,0	2208,0	-
34141	200 x 2 x 0,8	46,5	2011,0	2915,0	-
34142	250 x 2 x 0,8	51,0	2514,0	3575,0	-
34143	300 x 2 x 0,8	53,0	3016,0	4232,0	-
34144	350 x 2 x 0,8	56,5	3519,0	4940,0	-
34145	400 x 2 x 0,8	60,0	4022,0	5565,0	-
34146	500 x 2 x 0,8	68,0	5027,0	6955,0	-
34147	600 x 2 x 0,8	73,0	6032,0	8240,0	-

Dimensions and specifications may be changed without prior notice. (RP01)

# A-2YF(L)2Y Bd telephone-outdoor cable, according to DIN VDE 0816, laminated sheath, filled cable core, longitudinally water-proof



## Technical data

- acc. to DIN VDE 0816
- **Temperature range**  
flexible -20°C to +50°C  
fixed installation to +70°C
- **Loop resistance** at 20°C  
0,6 mm = max. 130 Ohm/km  
0,8 mm = max. 73,2 Ohm/km
- **Operating peak voltage** max. 225 V  
(not for purposes of high current and power installation)
- **Test voltage**  
core/core U eff. 500<sup>2)</sup> V  
core/screen U eff. 2000 V
- **Insulation resistance**  
min. 1,5 GOhm x km
- **Line attenuation**  
of side circuits at 800 Hz  
0,6 mm = 1,04 dB/km  
0,8 mm = 0,78 dB/km
- **Impedance** of side circuits  
at 800 Hz  
0,6 mm = 720 Ohm  
0,8 mm = 520 Ohm
- **Minimum bending radius**  
10x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> Cj/kg (up to 80 Mrad)
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE (2Y)
- Core identification of quads marked with black rings
- 4 cores twisted to a star quad
- 5 star quads stranded to sub units, each 5 or 10 sub units stranded to main units and the sub or main units stranded to cable core
- Core cavities continuously filled with petrol-jelly
- Core wrapping with paper tape
- Outer sheath, as laminated sheath (L)2Y, PE-coated aluminium tape spliced with PE (2Y) sheath
- Sheath colour black
- Sheath marking continuously with telephone-receiver, meter marking in white colour

## Properties

- These cables are not allowed for power installation or applications requiring high current levels. Due to their PE outer sheath, these cables are also not permitted for fire and hazardous areas without any protective measures.
- **Mutual capacitance** at 800 Hz  
of all values 100%  
0,6 mm - max. 52 nF/km  
0,8 mm - max. 55 nF/km  
of all values 95%  
0,6 mm - max. 50<sup>3)</sup> nF/km  
0,8 mm - max. 53<sup>3)</sup> nF/km  
of all values 80%  
0,6 mm - max. 48 nF/km  
0,8 mm - max. 50 nF/km
- **Capacitance unbalances** at 800 Hz  
of all values k<sub>1</sub> 100% -max. 800<sup>1)</sup> pF/300 m  
of all values k<sub>1</sub> 98% -max. 400 pF/300 m  
of all values k<sub>9-12</sub> 100% -max. 300<sup>1)</sup> pF/300 m  
of all values k<sub>9-12</sub> 98% -max. 100 pF/300 m

## Note

- <sup>1)</sup> But at least for 2 quads.
- <sup>2)</sup> Local cables with more than 100 pairs the test conductor/conductor is emitted.
- <sup>3)</sup> For cables up to 10 double cores is the 100 % value valid
- Conductor Ø 0,4 mm on request.

## Application

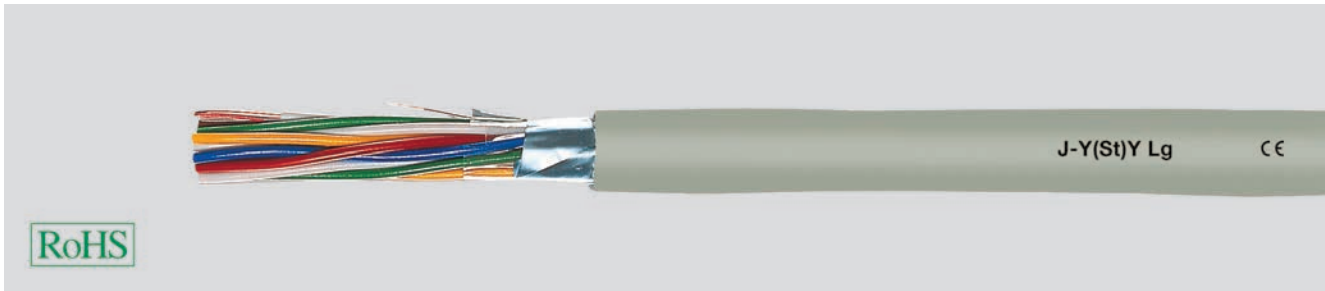
These external subscriber telephone cables are installed as telecommunication connection cable for connecting the telephone extension to the telephone exchange for transmitting signals. These subscriber connecting cables are suitable for laying in under ground, in cable ducts and cable conduits. According to DIN VDE 0800 part 1, these cables are allowed in all types of installation plants. The cavities of the cable core, filled continuously with viscous compound (F). Both sides of PE-copolymere coated aluminium type (L), which is spliced with the outer PE-sheath, ensures a barrier against water vapour and **crosswise and longitudinal water tightness**. Black coloured PE-sheath is **UV-resistant**. The Polyethelene material (PE 2Y) is **halogen-free**.

☑ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km
34007	2 x 2 x 0,6	7,5	11,0	80,0
34008	4 x 2 x 0,6	9,0	23,0	140,0
34009	6 x 2 x 0,6	12,0	34,0	150,0
34010	10 x 2 x 0,6	13,5	57,0	190,0
34011	20 x 2 x 0,6	16,0	113,0	310,0
34012	30 x 2 x 0,6	19,0	170,0	430,0
34013	40 x 2 x 0,6	20,5	226,0	545,0
34014	50 x 2 x 0,6	23,0	283,0	660,0
34015	70 x 2 x 0,6	26,0	396,0	895,0
34016	100 x 2 x 0,6	31,5	565,0	1230,0
34017	150 x 2 x 0,6	37,5	848,0	1780,0
34018	200 x 2 x 0,6	42,5	1131,0	2320,0
34036	250 x 2 x 0,6	47,5	1414,0	2910,0
34037	300 x 2 x 0,6	51,5	1696,0	3490,0
34038	350 x 2 x 0,6	55,0	1979,0	3970,0
34039	400 x 2 x 0,6	60,5	2262,0	4480,0
34040	500 x 2 x 0,6	66,0	2827,0	5460,0

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km
34029	2 x 2 x 0,8	8,5	20,0	100,0
34030	4 x 2 x 0,8	10,0	40,0	180,0
34019	6 x 2 x 0,8	8,5	60,0	190,0
34020	10 x 2 x 0,8	15,0	101,0	280,0
34021	20 x 2 x 0,8	19,0	201,0	480,0
34022	30 x 2 x 0,8	23,0	302,0	670,0
34023	40 x 2 x 0,8	26,0	402,0	860,0
34024	50 x 2 x 0,8	29,0	503,0	1060,0
34025	70 x 2 x 0,8	33,0	704,0	1420,0
34026	100 x 2 x 0,8	39,0	1005,0	1980,0
34027	150 x 2 x 0,8	47,0	1508,0	2940,0
34028	200 x 2 x 0,8	51,0	2011,0	3780,0
34031	250 x 2 x 0,8	58,0	2514,0	4660,0
34032	300 x 2 x 0,8	62,5	3016,0	5570,0
34033	350 x 2 x 0,8	68,0	3519,0	6750,0
34034	400 x 2 x 0,8	73,0	4022,0	7630,0
34035	500 x 2 x 0,8	81,5	5027,0	9540,0

Dimensions and specifications may be changed without prior notice. (RP01)



## Technical data

- Installation cable acc. to DIN VDE 0815
- **Temperature range**  
during operation -5°C to +50°C  
fixed installation -30°C to +70°C
- **Loop resistance** at 20°C  
0,6 mm - max. 130 Ohm/km  
0,8 mm - max. 73,2 Ohm/km
- **Operating peak voltage**  
(not for purposes of high current and power installation)  
0,6 mm - 300 V  
0,8 mm - 300<sup>3)</sup> V
- **Test voltage**  
core/core U eff. 800 V  
core/screen 800 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz  
max. 100<sup>1)</sup> nF/km
- **Capacitance unbalances** at 800 Hz  
k- max. 300<sup>2)</sup> pF/100 m
- **Line attenuation** at 800 Hz  
0,6 mm - 1,7 dB/km  
0,8 mm - 1,1 dB/km
- **Minimum bending radius**  
to DIN VDE 0891 part 5  
during delivery 7,5x cable Ø  
single bending without tension  
5x cable Ø  
repeated bending under tension  
7,5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PVC, compound type Y11 to DIN VDE 0207 part 4
- Core and pair identification to DIN VDE 0815
- Cores twisted to pairs and the pairs are stranded in layers
- Foil wrapping
- Electrostatic screen (St) of plastic coated aluminium foil and drain wire
- Outer sheath of PVC, flame retardant, compound type YM1 to DIN VDE 0207 part 5
- Sheath colour grey

## Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- <sup>1)</sup> This value may be extended by 20% with a make-up to 4 pairs.
- <sup>2)</sup> 20% of the values, but one value up to 500 pF is allowed.
- <sup>3)</sup> Short time operation (6 s/min) up to 600 V permitted.
- 2-paired cables:  
cores are stranded to a star quad.

## Application

This cable type with electrostatic screening (St) protects the transmission circuits against external electrical interferences. Installation cables laid up in pairs are preferably used for telecommunications installations, in dry and damp premises, and in or under plaster, in the open air for fixed installation. These cables are suitable for telephone stations and sub-extensions, for signal and data transmission. Telephone-Installation cables are not allowed for purposes of high current and power installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	Part no.	No. pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
33001	2 x 2 x 0,6	5,0	13,0	40,0	-	-	-	-	-	
33002	3 x 2 x 0,6	6,3	18,0	50,0	-	-	-	-	-	
33003	4 x 2 x 0,6	6,5	24,0	60,0	-	-	-	-	-	
33004	5 x 2 x 0,6	7,2	30,0	70,0	-	-	-	-	-	
33005	6 x 2 x 0,6	7,5	35,0	80,0	-	-	-	-	-	
33006	8 x 2 x 0,6	8,0	46,0	90,0	-	-	-	-	-	
33007	10 x 2 x 0,6	10,0	58,0	110,0	-	-	-	-	-	
33008	12 x 2 x 0,6	10,2	71,0	130,0	-	-	-	-	-	
33009	16 x 2 x 0,6	11,0	93,0	160,0	-	-	-	-	-	
33010	20 x 2 x 0,6	12,0	116,0	190,0	-	-	-	-	-	
33011	24 x 2 x 0,6	13,0	139,0	220,0	-	-	-	-	-	
33012	30 x 2 x 0,6	14,0	172,0	280,0	-	-	-	-	-	
33013	40 x 2 x 0,6	15,0	220,0	350,0	-	-	-	-	-	
33014	50 x 2 x 0,6	17,0	286,0	430,0	-	-	-	-	-	
33015	60 x 2 x 0,6	19,0	342,0	500,0	-	-	-	-	-	
33016	80 x 2 x 0,6	21,0	455,0	640,0	-	-	-	-	-	
33017	100 x 2 x 0,6	24,0	568,0	850,0	-	-	-	-	-	
-	-	-	-	-	33018	2 x 2 x 0,8	7,0	21,0	60,0	-
-	-	-	-	-	33019	3 x 2 x 0,8	8,5	31,0	80,0	-
-	-	-	-	-	33020	4 x 2 x 0,8	9,0	41,0	100,0	-
-	-	-	-	-	33021	5 x 2 x 0,8	9,5	52,0	120,0	-
-	-	-	-	-	33022	6 x 2 x 0,8	11,0	62,0	140,0	-
-	-	-	-	-	33023	8 x 2 x 0,8	11,5	82,0	170,0	-
-	-	-	-	-	33024	10 x 2 x 0,8	13,2	102,0	220,0	-
-	-	-	-	-	33025	12 x 2 x 0,8	14,2	123,0	250,0	-
-	-	-	-	-	33026	16 x 2 x 0,8	16,0	164,0	320,0	-
-	-	-	-	-	33027	20 x 2 x 0,8	17,0	204,0	380,0	-
-	-	-	-	-	33028	24 x 2 x 0,8	19,0	244,0	460,0	-
-	-	-	-	-	33029	30 x 2 x 0,8	20,8	304,0	560,0	-
-	-	-	-	-	33030	40 x 2 x 0,8	23,0	405,0	710,0	-
-	-	-	-	-	33031	50 x 2 x 0,8	26,0	505,0	900,0	-
-	-	-	-	-	33032	60 x 2 x 0,8	28,0	606,0	1050,0	-
-	-	-	-	-	33033	80 x 2 x 0,8	31,5	807,0	1400,0	-
-	-	-	-	-	33034	100 x 2 x 0,8	33,0	1008,0	1750,0	-

Dimensions and specifications may be changed without prior notice. (RP01)

# J-Y(St)Y Lg fire warning installation cable



BRANDMELDE-KABEL



## Technical data

- Installation cable adapted to DIN VDE 0815
- **Temperature range**  
during operation -5°C to +50°C  
fixed installation -30°C to +70°C
- **Loop resistance**  
at 20°C max. 73,2 Ohm/km
- **Operating peak voltage** 300<sup>3)</sup> V  
(not for purposes of high current and power installation)
- **Test voltage** (50 Hz)  
core/core U eff. 800 V  
core/screen 800 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance**  
at 800 Hz max. 100<sup>1)</sup> nF/km
- **Capacitance unbalances**  
at 800 Hz k - max. 300<sup>2)</sup> pF/100 m
- **Line attenuation**  
at 800 Hz 1,1 dB/km
- **Minimum bending radius**  
to DIN VDE 0891 part 5  
during delivery 7,5x cable Ø  
single bending without tension  
5x cable Ø  
repeated bending under tension  
7,5x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PVC, compound type Y11 to DIN VDE 0207 part 4
- Core and pair identification to DIN VDE 0815
- Cores twisted in pairs Pairs stranded in layer
- Foil wrapping
- Plastic coated aluminium foil static screening (St)
- Outer sheath of PVC, flame retardant, compound type YM1 to DIN VDE 0207 part 5
- Sheath colour red, with imprint "Brandmelde-Kabel"

## Properties

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- <sup>1)</sup> This value may be extended by 20% with a make-up to 4 pairs.
- <sup>2)</sup> 20% of the values, but one value up to 500 pF is allowed.
- <sup>3)</sup> Short time operation (6 s/min) up to 600 V permitted.
- 2-paired cables:  
cores are stranded to a star quad.

## Application

This cable type with electrostatic screening (St) protects the transmission circuits against external electrical interferences. Installation cables laid up in pairs are preferably used for telecommunication installation in dry and damp premises, and in or under plaster, in the open air for fixed installation. These cables are suitable for telephone stations and sub-extensions, for signal and data transmission. Telephone-Installation cables are not allowed for purposes of high current and power installation.

☞ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
33035	1 x 2 x 0,8	4,5	11,0	38,0	-
33036	2 x 2 x 0,8	7,0	21,0	60,0	-
33037	3 x 2 x 0,8	8,5	31,0	80,0	-
33038	4 x 2 x 0,8	9,0	41,0	100,0	-
33039	5 x 2 x 0,8	9,5	52,0	120,0	-
33040	6 x 2 x 0,8	11,0	62,0	140,0	-
33041	8 x 2 x 0,8	11,5	82,0	170,0	-
33042	10 x 2 x 0,8	13,2	102,0	220,0	-
33043	12 x 2 x 0,8	14,2	123,0	250,0	-
33044	14 x 2 x 0,8	14,6	145,0	280,0	-

Part no.	No. pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
33045	16 x 2 x 0,8	16,0	164,0	320,0	-
33046	20 x 2 x 0,8	17,0	204,0	380,0	-
33047	24 x 2 x 0,8	19,0	244,0	460,0	-
33048	30 x 2 x 0,8	20,8	304,0	560,0	-
33049	40 x 2 x 0,8	23,0	405,0	710,0	-
33050	50 x 2 x 0,8	26,0	505,0	900,0	-
33051	60 x 2 x 0,8	28,0	606,0	1050,0	-
33052	80 x 2 x 0,8	31,5	807,0	1400,0	-
33053	100 x 2 x 0,8	33,0	1008,0	1750,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



# J-2Y(St)Y St III Bd 16 Mbits/s (Kat. 3) ISDN/EDV (Z = 100 Ohm), meter marking



## Technical data

- Special core insulation of PE adapted to DIN VDE 0815 and 0816
- **Conductor loop-resistance**  
max. 130 Ohm/km
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C
- **Operating peak voltage** 300 V  
(not for heavy current installation purposes)
- **Test voltage** 800 V
- **Insulation resistance**  
min. 5 GOhm x km
- **Mutual capacitance** 48 nF/km
- **Characteristic impedance (Z)**  
at 4-16 MHz: 100 Ohm 15%
- **Capacitance unbalance**  
K<sub>1</sub> max. 400 pF/300 m  
K<sub>9</sub>-K<sub>12</sub> max. 100 pF/300 m
- **Rel. velocity ratio**  
approx. 0,66
- **Attenuation** at  
1 MHz: 28 dB/km  
4 MHz: 47 dB/km  
5 MHz: 51 dB/km  
10 MHz: 65 dB/km  
15 MHz: 76 dB/km  
16 MHz: 78 dB/km  
20 MHz: 89 dB/km
- **Cross-talk attenuation**  
from 4 MHz up to 16 MHz  
for 2 pairs: min. 40 dB  
4 pairs and above: min. 25 dB
- **Minimum bending radius**  
stationary 10x cable Ø

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE
- Colour coding to DIN VDE 0815
- Conductors twisted to quads
- 5 quads twisted to units
- Static screen of plastics coated alu foil with drain wire 0,6 mm Ø
- Outer sheath of PVC, flame retardant, compound type YM1 to DIN VDE 0207 part 5
- Sheath colour grey (RAL 7032)
- with meter marking

## Properties

- PVC outer sheath: self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Application

Used as data transmission and connection cable suitable for fixed installation in and under plaster, for data transmission applications, for periphery instrument data processing computers. Suitable for transmission of analog- and digital signals up to 16 Mbit/s. High cross-talk attenuation values. Suitable as connecting cable for periphery equipment, data processing systems, monitors, printers and cash register systems. The static screen (St) screen assures a disturbance-free data and signal transmission for measuring and control systems. These cables are not allowed for purposes of high current and power installation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
33200	2 x 2 x 0,6	6,1	13,0	44,0	-
33201	4 x 2 x 0,6	7,5	24,0	80,0	-
33202	6 x 2 x 0,6	7,6	35,0	86,0	-
33203	8 x 2 x 0,6	8,8	46,0	105,0	-
33204	10 x 2 x 0,6	8,8	58,0	112,0	-
33205	20 x 2 x 0,6	12,9	116,0	218,0	-

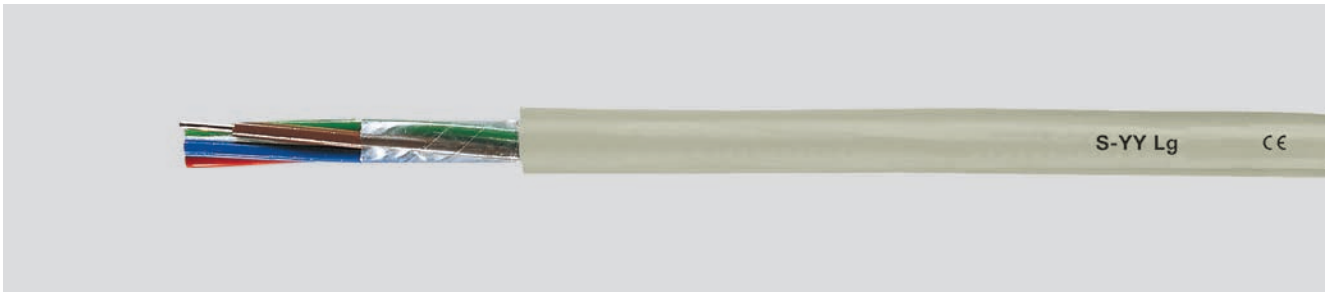
Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	
33206	30 x 2 x 0,6	14,0	172,0	302,0	-
33207	40 x 2 x 0,6	15,5	229,0	376,0	-
33208	50 x 2 x 0,6	17,3	266,0	480,0	-
33209	60 x 2 x 0,6	18,1	342,0	560,0	-
33210	80 x 2 x 0,6	22,0	455,0	748,0	-
33211	100 x 2 x 0,6	25,2	588,0	940,0	-

Dimensions and specifications may be changed without prior notice. (RB01)



# S-YY Lg

## Switchboard cable



### Technical data

- Switchboard cable adapted to DIN VDE 0813
- **Temperature range**  
during operation -5°C to +50°C  
fixed installation -30°C to +70°C
- **Conductor resistance**  
0,5 mm - max. 96 Ohm/km  
0,6 mm - max. 65 Ohm/km  
1 mm - max. 23,4 Ohm/km
- **Operating peak voltage**  
(not for purposes of high current and power installation)  
0,5 mm - max. 375 V  
0,6 mm - max. 375 V  
1 mm - max. 600 V
- **Test voltage** core/core  
0,5 mm - 2000 V  
0,6 mm - 2500 V  
1 mm - 2500 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Minimum bending radius**  
10x Outer Ø

### Cable structure

- Bare copper conductor, single-wire
- Core insulation of PVC
- Core identification to DIN VDE 0813
- Cores stranded in layers
- Foil wrapping
- Outer sheath of PVC
- Sheath colour: grey (RAL 7032)

### Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2

### Application

These are preferred for the transmission of data signals of telecommunication and control processings i. e. in interlocking installations, to connect the outdoor cables with relay groups as well as for fixed installation to interconnect the racks and distributor frames. This type is not allowed for the installation of heavy current operation.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cond. Ø mm	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	
34300	30 x 1 x 0,5	9,6	59,0	128,0	-
34301	60 x 1 x 0,5	11,9	118,0	233,0	-
34302	10 x 1 x 0,6	7,9	28,0	98,0	-
34303	20 x 1 x 0,6	9,6	57,0	132,0	-
34304	30 x 1 x 0,6	11,1	85,0	183,0	-
34305	60 x 1 x 0,6	15,4	170,0	344,0	-
34306	80 x 1 x 0,6	18,3	226,0	445,0	-
34307	20 x 1 x 1	14,5	157,0	292,0	-
34308	24 x 1 x 1	15,2	188,0	328,0	-
34309	32 x 1 x 1	16,3	251,0	430,0	-
34310	40 x 1 x 1	17,8	314,0	515,0	-
34311	60 x 1 x 1	22,2	471,0	710,0	-

Dimensions and specifications may be changed without prior notice. (RP01)



## Technical data

- Flame retardant, halogen-free installation cable acc. to DIN VDE 0815
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Loop resistance** at 20°C  
max. 130 Ohm/km at 0,6 mm  
max. 73,2 Ohm/km at 0,8 mm
- **Operating peak voltage** 300 V  
(not for purposes of high current and power installation)
- **Test voltage**  
core/core U eff. 800 V  
core/screen 800 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz  
max. 120<sup>1)</sup> nF/km
- **Capacitance unbalances** at 800 Hz  
K<sub>1</sub> max. 300<sup>2)</sup> pF/100 m  
K<sub>9</sub>-K<sub>12</sub> max. 100<sup>3)</sup> pF/100 m
- **Line attenuation** at 800 Hz  
approx. 1,5 dB/km
- **Minimum bending radius**  
during delivery 7,5x cable Ø  
single bending without tension  
2,5x cable Ø  
repeated bending under tension  
7,5x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Caloric load values**  
see technical informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation, halogen-free, compound type HI2 to DIN VDE 0207 part 23
- Core and star-quad identification to DIN VDE 0815
- Cores twisted in quads
- The cores to quads and the quads are stranded to units
- Foil wrapping
- Drain wire solid
- Electrostatic screen (St) of plastic coated aluminium foil
- Outer sheath, halogen-free, flame retardant, compound type HM2 to DIN VDE 0207 part 24
- Sheath colour grey

## Properties

- Not for purposes of high current and power installation as well as underground laying.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- <sup>1)</sup> This value may be extended by 20% with make-up up to 4 pairs.
- <sup>2)</sup> 20% of the values, but one value up to 500 pF is allowed.
- <sup>3)</sup> 10% of the values, but four values (relationship) up to 300 pF are allowed.
- **LS0H** = Low Smoke Zero Halogen

## Application

The halogen-free installation cables with improved characteristics in the case of fire are used for the telephone transmission, measurement and control technology. The static screen protects the transmission circuits against outer electrical interferences. A fire propagation is prevented through high oxygen index of the insulation material and produce no corrosive gases in case of fire. Those cables are preferably used for telecommunication installations in dry and damp premises, and in or under plaster.

☑ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km	Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km
34050	2 x 2 x 0,6	5,4	14,0	50,0	-	-	-	-	-
34051	4 x 2 x 0,6	7,3	25,0	91,0	-	-	-	-	-
34052	6 x 2 x 0,6	7,7	37,0	100,0	-	-	-	-	-
34053	10 x 2 x 0,6	9,1	59,0	147,0	-	-	-	-	-
34054	20 x 2 x 0,6	13,5	116,0	308,0	-	-	-	-	-
34055	30 x 2 x 0,6	15,1	172,0	350,0	-	-	-	-	-
34056	40 x 2 x 0,6	16,5	229,0	465,0	-	-	-	-	-
34057	50 x 2 x 0,6	18,6	286,0	571,0	-	-	-	-	-
34058	60 x 2 x 0,6	19,3	342,0	662,0	-	-	-	-	-
34059	80 x 2 x 0,6	24,6	455,0	877,0	-	-	-	-	-
34060	100 x 2 x 0,6	27,2	568,0	1055,0	-	-	-	-	-
34061	2 x 2 x 0,8	6,5	25,0	70,0	-	-	-	-	-
34062	4 x 2 x 0,8	9,0	45,0	135,0	-	-	-	-	-
34063	6 x 2 x 0,8	10,0	65,0	151,0	-	-	-	-	-
34064	10 x 2 x 0,8	11,5	106,0	230,0	-	-	-	-	-
34065	20 x 2 x 0,8	20,4	206,0	507,0	-	-	-	-	-
34066	30 x 2 x 0,8	21,5	307,0	600,0	-	-	-	-	-
34067	40 x 2 x 0,8	23,0	407,0	788,0	-	-	-	-	-
34068	50 x 2 x 0,8	25,0	508,0	972,0	-	-	-	-	-
34069	60 x 2 x 0,8	28,0	608,0	1120,0	-	-	-	-	-
34070	80 x 2 x 0,8	31,5	809,0	1475,0	-	-	-	-	-
34071	100 x 2 x 0,8	32,3	1010,0	1804,0	-	-	-	-	-

Dimensions and specifications may be changed without prior notice. (RP01)

# J-H(St)H Bd fire warning installation cable, halogen-free



## Technical data

- Flame retardant, halogen-free installation cable adapted to DIN VDE 0815
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Loop resistance** at 20°C  
max. 73,2 Ohm/km
- **Operating peak voltage** 300 V  
(not for purposes of high current and power installation)
- **Test voltage**  
core/core U<sub>eff</sub> 800 V  
core/screen 800 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Mutual capacitance** at 800 Hz  
max. 120<sup>1)</sup> nF/km
- **Capacitance unbalances** at 800 Hz  
K<sub>1</sub> max. 300<sup>2)</sup> pF/100 m  
K<sub>9</sub>-K<sub>12</sub> max. 100<sup>3)</sup> pF/100 m
- **Line attenuation** at 800 Hz  
approx. 1,5 dB/km
- **Minimum bending radius**  
during delivery 7,5x cable Ø  
single bending without tension  
2,5x cable Ø  
repeated bending under tension  
7,5x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)
- **Caloric load values**  
see Technical Informations

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation, halogen-free, compound type HI2 to DIN VDE 0207 part 23
- Core and star-quad identification to DIN VDE 0815
- Cores twisted in quads
- The cores to quads and the quads are stranded to units
- Foil wrapping
- Drain wire solid
- Electrostatic screen (St) of plastic coated aluminium foil
- Outer sheath, halogen-free, flame retardant, compound type HM2 to DIN VDE 0207 part 24
- Sheath colour red with imprint "BRANDMELDEKABEL"

## Properties

- Not for purposes of high current and power installation as well as underground laying
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- Flame test acc. to DIN VDE 0482-332-3-24, BS 4066 part 3, DIN EN 60332-3-24, IEC 60332-3-24 (previously DIN VDE 0472 part 804 test method C)
- Corrosiveness of combustion gases acc. to DIN VDE 0482 part 267, DIN EN 50267-2-2, IEC 60754-2 (equivalent DIN VDE 0472 part 813)
- Smoke density acc. to DIN VDE 0482 part 1034-1+2, DIN EN 61034-1+2, IEC 61034-1+2, BS 7622 part 1+2 (previously DIN VDE 0472 part 816)

## Note

- <sup>1)</sup> This value may be extended by 20% with make-up up to 4 pairs.
- <sup>2)</sup> 20% of the values, but one value up to 500 pF is allowed.
- <sup>3)</sup> 10% of the values, but four values (relationship) up to 300 pF are allowed.
- **LSOH** = Low Smoke Zero Halogen

## Application

The halogen-free installation cables with improved characteristics in the case of fire are used for the telephone transmission, measurement and control technology. The static screen protects the transmission circuits against outer electrical interferences. A fire propagation is prevented through high oxygen index of the insulation material and produce no corrosive gases in case of fire. Those cables are preferably used for telecommunication installations in dry and damp premises, and in or under plaster.

☞ The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km
34116	2 x 2 x 0,8	6,8	25,0	70,0
34117	4 x 2 x 0,8	10,5	45,0	135,0
34118	6 x 2 x 0,8	10,9	65,0	151,0
34119	10 x 2 x 0,8	13,1	106,0	230,0
34120	20 x 2 x 0,8	20,4	206,0	507,0
34121	30 x 2 x 0,8	21,5	307,0	600,0

Part no.	No.pairs x cross-sec. mm	Outer Ø approx. mm	Cu factor per km	Weight approx. kg / km
34122	40 x 2 x 0,8	24,5	407,0	788,0
34123	50 x 2 x 0,8	27,1	508,0	972,0
34124	60 x 2 x 0,8	29,4	608,0	1120,0
34125	80 x 2 x 0,8	33,2	809,0	1475,0
34126	100 x 2 x 0,8	37,2	1010,0	1804,0

Dimensions and specifications may be changed without prior notice. (RP01)

# J-2Y(St)H St III Bd 16 Mbits/s (Kat.3) ISDN/EDV (Z = 100 Ohm), halogen-free



## Technical data

- Special core insulation of PE adapted to DIN VDE 0815 and 0816
- **Conductor loop-resistance**  
max. 130 Ohm/km
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -30°C to +70°C
- **Operating peak voltage** 300 V  
(not for purposes of high current and power installation)
- **Test voltage** 800 V
- **Insulation resistance**  
min. 5 GOhm x km
- **Mutual capacitance** 48 nF/km
- **Characteristic impedance (Z)**  
at 4-16 MHz: 100 Ohm  $\pm$  15%
- **Capacitance unbalance**  
K<sub>1</sub> max. 400 pF/300 m  
K<sub>9</sub>-K<sub>12</sub> max. 100 pF/300 m
- **Rel. velocity ratio** approx. 0,66
- **Attenuation** at  
1 MHz: 28 dB/km  
4 MHz: 47 dB/km  
5 MHz: 51 dB/km  
10 MHz: 65 dB/km  
15 MHz: 76 dB/km  
16 MHz: 78 dB/km  
20 MHz: 89 dB/km
- **Cross-talk attenuation**  
from 4 MHz up to 16 MHz  
for 2 pairs: min. 40 dB  
4 pairs and above: min. 25 dB
- **Minimum bending radius**  
stationary 10x cable  $\varnothing$

## Cable structure

- Bare copper-conductor, single-wire
- Core insulation of PE (2Y)
- Colour coding to DIN VDE 0815
- Conductors twisted to quads
- 5 quads twisted to units
- Static screen of plastics coated alu foil with drain wire 0,6 mm  $\varnothing$
- Outer sheath, halogen-free, flame retardant, polymer-compound
- Sheath colour grey

## Properties

- Outer sheath  
Flame test acc. to  
DIN VDE 0482-332-3, BS 4066 part 3,  
DIN EN 60332-3, IEC 60332-3 (previously  
DIN VDE 0472 part 804 test method C)
- These cables are not allowed for purposes of high current and power installation
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Application

Used as data transmission and connection cable suitable for fixed installation in and under plaster, for data transmission applications, for periphery instrument data processing computers. Suitable for transmission of analog- and digital signals up to 16 Mbit/s. High cross-talk attenuation values. Suitable as connecting cable for periphery equipment, data processing systems, monitors, Printers and cash register systems. The static screen (St) screen assures a disturbance-free data and signal transmission for measuring and control systems.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No.pairs x cross-sec. mm	Outer $\varnothing$ approx. mm	Cu factor per km	Weight approx. kg / km		Part no.	No.pairs x cross-sec. mm	Outer $\varnothing$ approx. mm	Cu factor per km	Weight approx. kg / km	
34166	2 x 2 x 0,6	5,8	13,0	44,0	-	34172	30 x 2 x 0,6	15,0	172,0	302,0	-
34167	4 x 2 x 0,6	9,2	24,0	80,0	-	34173	40 x 2 x 0,6	16,8	229,0	376,0	-
34168	6 x 2 x 0,6	9,3	35,0	86,0	-	34174	50 x 2 x 0,6	18,5	266,0	480,0	-
34169	8 x 2 x 0,6	9,5	46,0	105,0	-	34175	60 x 2 x 0,6	20,2	342,0	560,0	-
34170	10 x 2 x 0,6	9,8	58,0	112,0	-	34176	80 x 2 x 0,6	23,0	455,0	748,0	-
34171	20 x 2 x 0,6	12,7	116,0	218,0	-	34177	100 x 2 x 0,6	25,2	588,0	940,0	-

Dimensions and specifications may be changed without prior notice. (RP01)

# RE-2Y(St)Yv

Instrumentation cable, reinforced outer sheath, meter marking



## Technical data

- Computer cable in reference to EN 50288-79 (VDE 0819-7)
- **Conductor resistance** at 20°C  
0,5 mm<sup>2</sup> max. 39,2 Ohm/km  
0,75 mm<sup>2</sup> max. 24,6 Ohm/km  
1,3 mm<sup>2</sup> max. 14,2 Ohm/km
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -40°C to +70°C
- **Operating peak voltage** max. 300 V  
(not for heavy current installation purposes)
- **Test voltage**  
core/core 2000 V  
core/screen 1000 V
- **Mutual capacitance** at 800 Hz  
- core/core 0.5 mm<sup>2</sup> approx. 60 pF/m  
for 1 and 2 pairs approx. 75 pF/m  
- core/core 0.75 mm<sup>2</sup> approx. 65 pF/m  
for 1 and 2 pairs approx. 100 pF/m  
- core/core 1.3 mm<sup>2</sup> approx. 75 pF/m  
for 1 and 2 pairs approx. 100 pF/m
- **Inductance** max. 0,75 mH/km
- **Cross-talk attenuation**  
at 60 kHz min. 0,88 dB
- **Minimum bending radius**  
fixed installation 7,5x outer Ø

## Cable structure

- Bare copper conductor, multi wire
- Conductor construction:  
0,5 mm<sup>2</sup> = 7x0,3 mm  
0,75 mm<sup>2</sup> = 7x0,37 mm  
1,3 mm<sup>2</sup> = 7x0,49 mm
- Core insulation of PE
- Core identification  
coloured with numbering 1/1, 2/2 etc.  
pairs: BK, WH  
triads: BK, WH, RD
- Cores twisted together in pairs / triads  
in optimal lay length
- Pairs stranded in layer
- 1 communication core 0,5 mm<sup>2</sup>, PE-insulated,  
orange (for multicore version)
- Foil wrapping
- Electrostatic screen (St) made of plastic-  
laminated aluminium foil and tinned copper  
stranded drain wire, 0.5 mm<sup>2</sup> (7x0.3 mm)
- Outer sheath of PVC, reinforced
- Sheath colour: black (RAL 9005)  
or blue (RAL 5015)
- With meter marking

## Properties

- Outdoor application
- Low level of line attenuations and  
low mutual capacitances enable  
long transmission distances and  
fast pulse acceleration
- The materials used during manufacturing  
are cadmium-free, contain no silicone  
and are free from substances harmful  
to the wetting properties of lacquers

## Tests

- Flame retardant acc. to  
DIN VDE 0482-332-1-2 /  
DIN EN 60332-1-2 / IEC 60332-1-2

## Note

- Cop.weight including communication core  
and stranded drain wire
- With blue outer sheath for hazardous areas  
to hazard type -i- for intrinsically safe  
installation acc. to DIN EN 60079-14  
section 16.2.2 (VDE 0165-1)
- The conductor is metrically constructed  
(mm<sup>2</sup>). The AWG designation is  
approximate and purely informative.

## Application

Instrumentation cables are used in data processing and process control. Low level of line attenuations and low mutual capacitances enable long transmission distances and fast pulse acceleration. Instrumentation cables are suitable for fixed installations in damp locations, in open spaces and for underground laying.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No.pairs x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
20099	1 x 2 x 0,5	BK	7,3	15,0	74,0	20
20100	2 x 2 x 0,5	BK	9,3	30,0	117,0	20
20101	4 x 2 x 0,5	BK	10,5	50,0	140,0	20
20233	6 x 2 x 0,5	BK	12,2	70,0	190,0	20
20102	8 x 2 x 0,5	BK	13,2	90,0	215,0	20
20103	10 x 2 x 0,5	BK	14,7	110,0	220,0	20
20104	12 x 2 x 0,5	BK	15,0	130,0	280,0	20
20105	16 x 2 x 0,5	BK	16,8	170,0	352,0	20
20106	20 x 2 x 0,5	BK	18,5	210,0	385,0	20
20107	24 x 2 x 0,5	BK	19,9	250,0	468,0	20
20108	36 x 2 x 0,5	BK	22,8	370,0	656,0	20
20109	48 x 2 x 0,5	BK	26,1	490,0	854,0	20
20149	1 x 2 x 0,75	BK	7,7	20,0	74,0	19
20150	2 x 2 x 0,75	BK	10,0	35,0	123,0	19
20151	4 x 2 x 0,75	BK	11,3	65,0	164,0	19
20152	8 x 2 x 0,75	BK	14,3	125,0	258,0	19
20153	10 x 2 x 0,75	BK	16,0	154,0	305,0	19
20154	12 x 2 x 0,75	BK	16,3	185,0	350,0	19
20155	16 x 2 x 0,75	BK	18,3	245,0	445,0	19
20156	20 x 2 x 0,75	BK	20,2	298,0	520,0	19
20157	24 x 2 x 0,75	BK	21,8	365,0	620,0	19
20158	36 x 2 x 0,75	BK	25,4	532,0	940,0	19
20159	48 x 2 x 0,75	BK	28,6	708,0	1250,0	19
20125	1 x 2 x 1,3	BK	8,5	31,0	102,0	-
20132	1 x 3 x 1,3	BK	8,9	44,0	116,0	-
20126	2 x 2 x 1,3	BK	11,3	62,0	161,0	-
20127	4 x 2 x 1,3	BK	12,9	114,0	230,0	-
20234	6 x 2 x 1,3	BK	15,2	168,0	310,0	-
20128	8 x 2 x 1,3	BK	16,5	218,0	377,0	-
20129	12 x 2 x 1,3	BK	18,9	322,0	515,0	-
20130	16 x 2 x 1,3	BK	21,3	426,0	656,0	-
20131	24 x 2 x 1,3	BK	25,9	684,0	952,0	-

Part no.	No.pairs x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
20235	1 x 2 x 0,5	BU	7,3	15,0	74,0	20
20236	2 x 2 x 0,5	BU	9,3	30,0	117,0	20
20237	4 x 2 x 0,5	BU	10,5	50,0	140,0	20
20238	6 x 2 x 0,5	BU	12,2	70,0	190,0	20
20239	8 x 2 x 0,5	BU	13,2	90,0	215,0	20
20240	10 x 2 x 0,5	BU	14,7	110,0	220,0	20
20241	12 x 2 x 0,5	BU	15,0	130,0	280,0	20
20242	16 x 2 x 0,5	BU	16,8	170,0	352,0	20
20243	20 x 2 x 0,5	BU	18,5	210,0	385,0	20
20244	24 x 2 x 0,5	BU	19,9	250,0	468,0	20
20245	36 x 2 x 0,5	BU	22,8	370,0	656,0	20
20246	48 x 2 x 0,5	BU	26,1	490,0	854,0	20
20169	1 x 2 x 0,75	BU	7,7	20,0	74,0	19
20170	2 x 2 x 0,75	BU	10,0	35,0	123,0	19
20171	4 x 2 x 0,75	BU	11,3	65,0	164,0	19
20172	8 x 2 x 0,75	BU	14,3	125,0	258,0	19
20173	10 x 2 x 0,75	BU	16,0	154,0	305,0	19
20174	12 x 2 x 0,75	BU	16,3	185,0	350,0	19
20175	16 x 2 x 0,75	BU	18,3	245,0	445,0	19
20176	20 x 2 x 0,75	BU	20,2	298,0	520,0	19
20177	24 x 2 x 0,75	BU	21,8	365,0	620,0	19
20178	36 x 2 x 0,75	BU	25,4	532,0	940,0	19
20179	48 x 2 x 0,75	BU	28,6	708,0	1250,0	19
20247	1 x 2 x 1,3	BU	8,5	31,0	102,0	-
20255	1 x 3 x 1,3	BU	8,9	44,0	116,0	-
20248	2 x 2 x 1,3	BU	11,3	62,0	161,0	-
20249	4 x 2 x 1,3	BU	12,9	114,0	230,0	-
20250	6 x 2 x 1,3	BU	15,2	168,0	310,0	-
20251	8 x 2 x 1,3	BU	16,5	218,0	377,0	-
20252	12 x 2 x 1,3	BU	18,9	322,0	515,0	-
20253	16 x 2 x 1,3	BU	21,3	426,0	656,0	-
20254	24 x 2 x 1,3	BU	25,9	684,0	952,0	-

Dimensions and specifications may be changed without prior notice. (RB01)

# RE-2Y(St)Yv PiMF

Computer cable, reinforced outer sheath



## TECHNICAL DATA

Computer cable in alignment with DIN VDE 0819-7 / DIN EN 50288-79

<b>Temperature range</b>	flexible -5°C to +50°C fixed -40°C to +70°C
<b>Peak operating voltage</b>	300 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Test voltage core/screen</b>	1000 V
<b>Conductor resistance at 20°C</b>	0.5 mm <sup>2</sup> : max. 39.2 Ohm/km 1.3 mm <sup>2</sup> : max. 14.2 Ohm/km
<b>Mutual capacitance core/core</b>	at 800 Hz 0.5 mm <sup>2</sup> : approx. 75 pF/m 1.3 mm <sup>2</sup> : approx. 100 pF/m
<b>Crosstalk attenuation</b>	at 60 kHz, 1.02 dB (approx. value)
<b>Inductance</b>	approx. 0.75 mH/km
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed 7.5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, stranded
- Wire structure:  
0.5 mm<sup>2</sup>: 7 x 0.30 mm  
1.3 mm<sup>2</sup>: 7 x 0.49 mm
- Core insulation: PE
- Core identification: colour coded,  
Pairs: a-core = black; b-core = white  
with consecutive numbering 1/1, 2/2, etc.
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping of the pairs
- Drain wire per pair, Tinned copper, Diameter: 0.6 mm
- Screening element: Pairs, plastic-coated Aluminium foil (St), approx. overlap 25%
- Pairs stranded in layers with optimal lay lengths

- for multiple pair design: communication core, Nominal cross-section: 0.5 mm<sup>2</sup>, Core insulation: PE, Core identification: orange
- Foil wrapping
- Drain wire, Tinned copper, stranded (0.5 mm<sup>2</sup> = 7 x 0.3 mm)
- Screen: plastic-coated Aluminium foil (St), approx. overlap 25%
- Outer sheath: PVC, reinforced (v)
- Sheath colour: see table
- Length marking: in metres

## ■ PROPERTIES

- for outdoor use
- direct burial
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- PiMF: Pair in Metal Foil
- low attenuation and operating capacities allow long transmission distances and short pulse transition times

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

Computer cables are used in data processing and process control. The individual screening of the pairs ensures good crosstalk attenuation values. When permanently installed, suitable for use in dry and damp rooms, outdoors and underground.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- copper weight including PiMF drain wires, copper stranded drain wires and communication core
- with blue sheathing for the installation of intrinsically safe systems (ignition protection type -i-) in explosion-endangered areas according to DIN VDE 0165-1 / DIN EN 60079-14 / IEC 60079-14, Section 16.2.2

Sheath color: black (RAL 9005)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20115	2 x 2 x 0.5	20	10.5	35.0	128.0
20116	4 x 2 x 0.5	20	11.8	60.0	170.0
21535	6 x 2 x 0.5	20	13.8	82.0	215.0
20117	8 x 2 x 0.5	20	14.8	121.0	246.0
20118	10 x 2 x 0.5	20	17.1	136.0	261.0
20119	12 x 2 x 0.5	20	17.1	161.0	351.0
20120	16 x 2 x 0.5	20	19.4	212.0	430.0
20121	20 x 2 x 0.5	20	21.3	262.0	496.0
20122	24 x 2 x 0.5	20	23.0	313.0	604.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
20123	36 x 2 x 0.5	20	27.3	465.0	850.0
20124	48 x 2 x 0.5	20	31.1	616.0	1115.0
20133	2 x 2 x 1.3		12.6	68.0	184.0
20134	4 x 2 x 1.3		14.4	124.0	269.0
21536	6 x 2 x 1.3		17.0	178.0	370.0
20135	8 x 2 x 1.3		18.3	239.0	442.0
20136	12 x 2 x 1.3		21.3	353.0	593.0
20137	16 x 2 x 1.3		24.8	468.0	789.0
20138	24 x 2 x 1.3		29.6	697.0	1104.0

# RE-2Y(St)Yv PiMF

Computer cable, reinforced outer sheath



Sheath color: blue (RAL 5015)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21537	2 x 2 x 0.5	20	10.5	35.0	128.0	21546	36 x 2 x 0.5	20	27.3	465.0	850.0
21538	4 x 2 x 0.5	20	11.8	60.0	170.0	21547	48 x 2 x 0.5	20	31.1	616.0	1115.0
21539	6 x 2 x 0.5	20	13.8	82.0	215.0	21548	2 x 2 x 1.3		12.6	68.0	184.0
21540	8 x 2 x 0.5	20	14.8	121.0	246.0	21549	4 x 2 x 1.3		14.4	124.0	269.0
21541	10 x 2 x 0.5	20	17.1	136.0	261.0	21550	6 x 2 x 1.3		17.0	178.0	370.0
21542	12 x 2 x 0.5	20	17.1	161.0	351.0	21551	8 x 2 x 1.3		18.3	239.0	442.0
21543	16 x 2 x 0.5	20	19.4	212.0	430.0	21552	12 x 2 x 1.3		21.3	353.0	593.0
21544	20 x 2 x 0.5	20	21.3	262.0	496.0	21553	16 x 2 x 1.3		24.8	468.0	789.0
21545	24 x 2 x 0.5	20	23.0	313.0	604.0	21554	24 x 2 x 1.3		29.6	697.0	1104.0



# HELUDATA® EN-50288-7 PVC/PVC OS 300

Instrumentation cable, PVC/OS/PVC



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
max. 250 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-Y(St)Y**
- Available also acc. to PAS 5308
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
BK	BU		mm <sup>2</sup>		min. - max. mm	per km	app. kg / km
11015681	11015832		1 x 2 x 0,5	20	4,9 - 6,3	15,4	47
11015682	11015833		2 x 2 x 0,5	20	7,0 - 9,1	25,8	81
11015683	11015834		4 x 2 x 0,5	20	8,2 - 10,7	46,5	120
11015684	11015835		5 x 2 x 0,5	20	8,9 - 11,7	56,9	142
11015685	11015836		6 x 2 x 0,5	20	9,6 - 12,6	67,3	166
11015686	11015837		8 x 2 x 0,5	20	10,9 - 14,4	88,0	207
11015687	11015838		10 x 2 x 0,5	20	12,3 - 16,3	108,8	263
11015688	11015839		12 x 2 x 0,5	20	12,8 - 17,0	129,5	288
11015689	11015840		15 x 2 x 0,5	20	14,2 - 18,7	160,6	355
11015690	11015841		16 x 2 x 0,5	20	14,2 - 18,7	171,0	366
11015691	11015842		20 x 2 x 0,5	20	15,9 - 21,1	212,4	455
11015692	11015843		24 x 2 x 0,5	20	17,5 - 23,3	253,9	533
11015693	11015844		30 x 2 x 0,5	20	18,7 - 24,9	316,1	637
11015694	11015845		36 x 2 x 0,5	20	20,3 - 27,1	378,3	760
11015695	11015846		1 x 3 x 0,5	20	5,4 - 6,8	20,6	58
11015696	11015847		2 x 3 x 0,5	20	7,9 - 10,3	36,2	109
11015697	11015848		3 x 3 x 0,5	20	8,3 - 10,9	51,7	129
11015703	11015854		1 x 4 x 0,5	20	5,7 - 7,4	25,8	68
11015704	11015855		2 x 4 x 0,5	20	9,5 - 12,5	46,5	137
11015705	11015856		3 x 4 x 0,5	20	10,3 - 13,5	67,3	173



# HELUDATA® EN-50288-7 PVC/PVC OS 300

Instrumentation cable, PVC/OS/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11015711	11015862	1 x 2 x 0,75	19	5,5 - 6,7	20,6	59
11015712	11015863	2 x 2 x 0,75	19	7,8 - 9,7	36,2	103
11015713	11015864	4 x 2 x 0,75	19	9,0 - 11,1	67,3	148
11015714	11015865	5 x 2 x 0,75	19	9,7 - 12,2	82,8	177
11015715	11015866	6 x 2 x 0,75	19	10,7 - 13,4	98,4	214
11015716	11015867	8 x 2 x 0,75	19	12,0 - 15,0	129,5	259
11015717	11015868	10 x 2 x 0,75	19	13,7 - 17,1	160,6	329
11015718	11015869	12 x 2 x 0,75	19	14,1 - 17,7	191,7	364
11015719	11015870	15 x 2 x 0,75	19	15,8 - 19,8	238,4	463
11015720	11015871	16 x 2 x 0,75	19	15,8 - 19,8	253,9	478
11015721	11015872	20 x 2 x 0,75	19	17,5 - 22,0	316,1	596
11015722	11015873	24 x 2 x 0,75	19	19,5 - 24,6	378,3	682
11015723	11015874	30 x 2 x 0,75	19	20,9 - 26,2	471,6	837
11015724	11015875	36 x 2 x 0,75	19	22,5 - 28,4	564,9	997
11015725	11015876	1 x 3 x 0,75	19	5,8 - 7,1	28,4	69
11015726	11015877	2 x 3 x 0,75	19	8,6 - 10,7	51,7	130
11015727	11015878	3 x 3 x 0,75	19	9,1 - 11,3	75,1	158
11015733	11015884	1 x 4 x 0,75	19	6,2 - 7,6	36,2	82
11015734	11015885	2 x 4 x 0,75	19	10,6 - 13,2	67,3	176
11015735	11015886	3 x 4 x 0,75	19	11,2 - 14,0	98,4	213
11015741	11015892	1 x 2 x 1	18	5,7 - 7,2	25,8	68
11015742	11015893	2 x 2 x 1	18	8,1 - 10,4	46,5	120
11015743	11015894	4 x 2 x 1	18	9,3 - 12,0	88,0	177
11015744	11015895	5 x 2 x 1	18	10,3 - 13,3	108,8	221
11015745	11015896	6 x 2 x 1	18	11,2 - 14,4	129,5	257
11015746	11015897	8 x 2 x 1	18	12,7 - 16,4	171,0	323
11015747	11015898	10 x 2 x 1	18	14,3 - 18,5	212,4	412
11015748	11015899	12 x 2 x 1	18	14,8 - 19,2	253,9	457
11015749	11015900	15 x 2 x 1	18	16,5 - 21,5	316,1	580
11015750	11015901	16 x 2 x 1	18	16,5 - 21,5	336,9	599
11015751	11015902	20 x 2 x 1	18	18,5 - 24,1	419,8	757
11015752	11015903	24 x 2 x 1	18	20,6 - 26,9	502,7	855
11015753	11015904	30 x 2 x 1	18	21,8 - 28,5	627,2	1048
11015754	11015905	36 x 2 x 1	18	23,7 - 31,0	751,6	1251
11015755	11015906	1 x 3 x 1	18	6,0 - 7,6	36,2	80
11015756	11015907	2 x 3 x 1	18	8,9 - 11,4	67,3	155
11015757	11015908	3 x 3 x 1	18	9,5 - 12,2	98,4	190
11015763	11015914	1 x 4 x 1	18	6,4 - 8,1	46,5	97
11015764	11015915	2 x 4 x 1	18	11,0 - 14,2	88,0	206
11015765	11015916	3 x 4 x 1	18	11,7 - 15,2	129,5	257
11015772	11015923	1 x 2 x 1,5	16	6,8 - 8,2	36,2	87
11015773	11015924	2 x 2 x 1,5	16	10,0 - 12,2	67,3	159
11015774	11015925	4 x 2 x 1,5	16	11,7 - 14,3	129,5	250
11015775	11015926	5 x 2 x 1,5	16	13,0 - 15,9	160,6	312
11015776	11015927	6 x 2 x 1,5	16	14,1 - 17,3	191,7	365
11015777	11015928	8 x 2 x 1,5	16	16,0 - 19,7	253,9	460
11015778	11015929	10 x 2 x 1,5	16	18,3 - 22,5	316,1	584
11015779	11015930	12 x 2 x 1,5	16	18,9 - 23,2	378,3	651
11015780	11015931	15 x 2 x 1,5	16	21,2 - 26,0	471,6	825
11015781	11015932	16 x 2 x 1,5	16	21,2 - 26,0	502,7	854
11015782	11015933	20 x 2 x 1,5	16	23,8 - 29,2	627,2	1110
11015783	11015934	24 x 2 x 1,5	16	26,5 - 32,6	751,6	1243
11015784	11015935	30 x 2 x 1,5	16	28,3 - 34,8	938,2	1525
11015785	11015936	36 x 2 x 1,5	16	30,7 - 37,8	1124,8	1818
11015786	11015937	1 x 3 x 1,5	16	7,2 - 8,7	51,7	106
11015787	11015938	2 x 3 x 1,5	16	11,2 - 13,7	98,4	216
11015788	11015939	3 x 3 x 1,5	16	11,9 - 14,6	145,0	270
11015794	11015945	1 x 4 x 1,5	16	7,9 - 9,6	67,3	135
11015795	11015946	2 x 4 x 1,5	16	13,9 - 17,0	129,5	292
11015796	11015947	3 x 4 x 1,5	16	14,8 - 18,2	191,7	376

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC OS 500

Instrumentation cable, PVC/OS/PVC



HELUDATA® EN-50288-7 PVC/PVC OS 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
single pair max. 250 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-Y(St)Y**
- Available also acc. to PAS 5308
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11015983	11016134	1 x 2 x 0,5	20	5,9 - 7,4	15,4	60
11015984	11016135	2 x 2 x 0,5	20	8,4 - 10,7	25,8	105
11015985	11016136	4 x 2 x 0,5	20	9,7 - 12,4	46,5	148
11015986	11016137	5 x 2 x 0,5	20	10,7 - 13,8	56,9	185
11015987	11016138	6 x 2 x 0,5	20	11,7 - 15,0	67,3	214
11015988	11016139	8 x 2 x 0,5	20	13,2 - 17,0	88,0	265
11015989	11016140	10 x 2 x 0,5	20	14,9 - 19,3	108,8	340
11015990	11016141	12 x 2 x 0,5	20	15,6 - 20,1	129,5	370
11015991	11016142	15 x 2 x 0,5	20	17,2 - 22,3	160,6	471
11015992	11016143	16 x 2 x 0,5	20	17,2 - 22,3	171,0	483
11015993	11016144	20 x 2 x 0,5	20	19,3 - 25,0	212,4	612
11015994	11016145	24 x 2 x 0,5	20	21,6 - 27,9	253,9	680
11015995	11016146	30 x 2 x 0,5	20	23,0 - 29,9	316,1	830
11015996	11016147	36 x 2 x 0,5	20	24,8 - 32,2	378,3	989
11015997	11016148	1 x 3 x 0,5	20	6,2 - 7,8	20,6	69
11015998	11016149	2 x 3 x 0,5	20	9,3 - 11,9	36,2	133
11015999	11016150	3 x 3 x 0,5	20	9,8 - 12,6	51,7	158
11016005	11016156	1 x 4 x 0,5	20	6,6 - 8,3	25,8	83
11016006	11016157	2 x 4 x 0,5	20	11,5 - 14,8	46,5	177
11016007	11016158	3 x 4 x 0,5	20	12,2 - 15,7	67,3	214

# HELUDATA® EN-50288-7 PVC/PVC OS 500

Instrumentation cable, PVC/OS/PVC

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016013		11016164	1 x 2 x 0,75	19	6,2 - 7,6	20,6	69
11016014		11016165	2 x 2 x 0,75	19	9,0 - 11,1	36,2	124
11016015		11016166	4 x 2 x 0,75	19	10,6 - 13,1	67,3	185
11016016		11016167	5 x 2 x 0,75	19	11,6 - 14,2	82,8	221
11016017		11016168	6 x 2 x 0,75	19	12,8 - 15,7	98,4	267
11016018		11016169	8 x 2 x 0,75	19	14,3 - 17,7	129,5	321
11016019		11016170	10 x 2 x 0,75	19	16,3 - 20,1	160,6	410
11016020		11016171	12 x 2 x 0,75	19	16,8 - 20,9	191,7	452
11016021		11016172	15 x 2 x 0,75	19	18,8 - 23,3	238,4	573
11016022		11016173	16 x 2 x 0,75	19	18,8 - 23,3	253,9	591
11016023		11016174	20 x 2 x 0,75	19	21,1 - 26,2	316,1	770
11016024		11016175	24 x 2 x 0,75	19	23,6 - 29,2	378,3	857
11016025		11016176	30 x 2 x 0,75	19	24,9 - 30,9	471,6	1048
11016026		11016177	36 x 2 x 0,75	19	27,1 - 33,7	564,9	1248
11016027		11016178	1 x 3 x 0,75	19	6,6 - 8,0	28,4	81
11016028		11016179	2 x 3 x 0,75	19	10,0 - 12,3	51,7	164
11016029		11016180	3 x 3 x 0,75	19	10,8 - 13,3	75,1	198
11016035		11016186	1 x 4 x 0,75	19	7,1 - 8,7	36,2	97
11016036		11016187	2 x 4 x 0,75	19	12,4 - 15,3	67,3	221
11016037		11016188	3 x 4 x 0,75	19	13,3 - 16,5	98,4	267
11016043		11016194	1 x 2 x 1	18	6,4 - 8,0	25,8	78
11016044		11016195	2 x 2 x 1	18	9,3 - 11,8	46,5	142
11016045		11016196	4 x 2 x 1	18	11,0 - 13,9	88,0	215
11016046		11016197	5 x 2 x 1	18	12,0 - 15,2	108,8	270
11016047		11016198	6 x 2 x 1	18	13,2 - 16,8	129,5	315
11016048		11016199	8 x 2 x 1	18	14,8 - 18,8	171,0	393
11016049		11016200	10 x 2 x 1	18	16,9 - 21,6	212,4	500
11016050		11016201	12 x 2 x 1	18	17,5 - 22,3	253,9	551
11016051		11016202	15 x 2 x 1	18	19,6 - 24,9	316,1	701
11016052		11016203	16 x 2 x 1	18	19,6 - 24,9	336,9	722
11016053		11016204	20 x 2 x 1	18	22,0 - 28,0	419,8	937
11016054		11016205	24 x 2 x 1	18	24,5 - 31,4	502,7	1045
11016055		11016206	30 x 2 x 1	18	26,1 - 33,4	627,2	1278
11016056		11016207	36 x 2 x 1	18	28,4 - 36,3	751,6	1523
11016057		11016208	1 x 3 x 1	18	6,8 - 8,5	36,2	93
11016058		11016209	2 x 3 x 1	18	10,5 - 13,3	67,3	190
11016059		11016210	3 x 3 x 1	18	11,1 - 14,1	98,4	232
11016065		11016216	1 x 4 x 1	18	7,3 - 9,2	46,5	112
11016066		11016217	2 x 4 x 1	18	13,0 - 16,5	88,0	252
11016067		11016218	3 x 4 x 1	18	13,8 - 17,5	129,5	310
11016074		11016225	1 x 2 x 1,5	16	7,2 - 8,7	36,2	93
11016075		11016226	2 x 2 x 1,5	16	10,7 - 13,1	67,3	180
11016076		11016227	4 x 2 x 1,5	16	12,5 - 15,2	129,5	277
11016077		11016228	5 x 2 x 1,5	16	13,8 - 16,8	160,6	333
11016078		11016229	6 x 2 x 1,5	16	15,2 - 18,6	191,7	434
11016079		11016230	8 x 2 x 1,5	16	17,1 - 20,9	253,9	492
11016080		11016231	10 x 2 x 1,5	16	19,5 - 23,9	316,1	656
11016081		11016232	12 x 2 x 1,5	16	20,4 - 24,9	378,3	698
11016082		11016233	15 x 2 x 1,5	16	22,8 - 27,9	471,6	930
11016083		11016234	16 x 2 x 1,5	16	22,8 - 27,9	502,7	932
11016084		11016235	20 x 2 x 1,5	16	25,6 - 31,2	627,2	1215
11016085		11016236	24 x 2 x 1,5	16	28,5 - 34,9	751,6	1353
11016086		11016237	30 x 2 x 1,5	16	30,4 - 37,2	938,2	1659
11016087		11016238	36 x 2 x 1,5	16	33,0 - 40,4	1124,8	2003
11016088		11016239	1 x 3 x 1,5	16	7,7 - 9,4	51,7	113
11016089		11016240	2 x 3 x 1,5	16	11,9 - 14,4	98,4	231
11016090		11016241	3 x 3 x 1,5	16	12,8 - 15,6	145,0	298
11016096		11016247	1 x 4 x 1,5	16	8,4 - 10,2	67,3	145
11016097		11016248	2 x 4 x 1,5	16	14,8 - 18,1	129,5	324
11016098		11016249	3 x 4 x 1,5	16	16,0 - 19,5	191,7	403
11016104		11016255	1 x 2 x 2,5	14	8,3 - 10,4	56,9	130
11016105		11016256	2 x 2 x 2,5	14	12,3 - 15,5	108,8	254
11016106		11016257	4 x 2 x 2,5	14	14,5 - 18,4	212,4	389
11016107		11016258	5 x 2 x 2,5	14	16,1 - 20,3	264,3	487
11016108		11016259	6 x 2 x 2,5	14	17,5 - 22,3	316,1	633
11016109		11016260	8 x 2 x 2,5	14	19,9 - 25,4	419,8	717
11016110		11016261	10 x 2 x 2,5	14	23,0 - 29,2	523,5	978
11016111		11016262	12 x 2 x 2,5	14	23,7 - 30,3	627,2	1041
11016112		11016263	15 x 2 x 2,5	14	26,6 - 33,8	782,7	1389
11016113		11016264	16 x 2 x 2,5	14	26,6 - 33,8	834,5	1389
11016114		11016265	20 x 2 x 2,5	14	29,8 - 38,1	1041,9	1805
11016115		11016266	24 x 2 x 2,5	14	33,5 - 42,7	1249,2	2015
11016116		11016267	30 x 2 x 2,5	14	35,7 - 45,5	1560,3	2472
11016117		11016268	36 x 2 x 2,5	14	38,7 - 49,4	1871,3	3023
11016118		11016269	1 x 3 x 2,5	14	8,8 - 11,0	82,8	161
11016119		11016270	2 x 3 x 2,5	14	13,8 - 17,5	160,6	334
11016120		11016271	3 x 3 x 2,5	14	14,7 - 18,6	238,4	432
11016126		11016277	1 x 4 x 2,5	14	9,5 - 12,0	108,8	200
11016127		11016278	2 x 4 x 2,5	14	17,2 - 21,9	212,4	519
11016128		11016279	3 x 4 x 2,5	14	18,6 - 23,5	316,1	580

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC IOS 300

Instrumentation cable, PVC/IS/OS/PVC



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
max. 250 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-Y(ST)Y PIMF**
- Available also acc. to PAS 5308
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
BK	BU		mm <sup>2</sup>		min. - max. mm	per km	app. kg / km
11014593	11014729		2 x 2 x 0,5	20	8,3 - 10,7	31,6	105
11014594	11014730		4 x 2 x 0,5	20	9,5 - 12,3	58,2	148
11014595	11014731		5 x 2 x 0,5	20	10,5 - 13,7	71,4	184
11014596	11014732		6 x 2 x 0,5	20	11,4 - 14,9	84,7	214
11014597	11014733		8 x 2 x 0,5	20	13,0 - 16,9	111,2	257
11014598	11014734		10 x 2 x 0,5	20	14,6 - 19,0	137,8	328
11014599	11014735		12 x 2 x 0,5	20	15,3 - 19,9	164,4	361
11014600	11014736		15 x 2 x 0,5	20	16,9 - 22,0	204,1	457
11014601	11014737		16 x 2 x 0,5	20	16,9 - 22,0	217,4	471
11014602	11014738		20 x 2 x 0,5	20	18,9 - 24,8	270,5	586
11014603	11014739		24 x 2 x 0,5	20	21,1 - 27,7	323,6	686
11014604	11014740		30 x 2 x 0,5	20	22,3 - 29,3	403,2	838
11014605	11014741		36 x 2 x 0,5	20	24,3 - 31,9	482,9	979
11014606	11014742		2 x 3 x 0,5	20	9,1 - 11,8	42,0	125
11014607	11014743		3 x 3 x 0,5	20	9,6 - 12,4	60,5	152
11014613	11014749		2 x 4 x 0,5	20	10,5 - 13,6	52,4	159
11014614	11014750		3 x 4 x 0,5	20	11,1 - 14,4	76,0	194

# HELUDATA® EN-50288-7 PVC/PVC IOS 300

Instrumentation cable, PVC/IS/OS/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11014620	11014756	2 x 2 x 0,75	19	8,9 - 11,0	42,0	122
11014621	11014757	4 x 2 x 0,75	19	10,5 - 13,1	78,9	186
11014622	11014758	5 x 2 x 0,75	19	11,4 - 14,2	97,3	221
11014623	11014759	6 x 2 x 0,75	19	12,4 - 15,4	115,8	258
11014624	11014760	8 x 2 x 0,75	19	14,1 - 17,5	152,7	324
11014625	11014761	10 x 2 x 0,75	19	16,1 - 20,0	189,6	413
11014626	11014762	12 x 2 x 0,75	19	16,6 - 20,8	226,6	458
11014627	11014763	15 x 2 x 0,75	19	18,6 - 23,2	281,9	578
11014628	11014764	16 x 2 x 0,75	19	18,6 - 23,2	300,3	599
11014629	11014765	20 x 2 x 0,75	19	20,9 - 26,0	374,2	745
11014630	11014766	24 x 2 x 0,75	19	23,3 - 29,1	448,0	871
11014631	11014767	30 x 2 x 0,75	19	24,6 - 30,8	558,7	1048
11014632	11014768	36 x 2 x 0,75	19	26,8 - 33,5	669,5	1248
11014633	11014769	2 x 3 x 0,75	19	9,8 - 12,2	57,6	150
11014634	11014770	3 x 3 x 0,75	19	10,6 - 13,2	83,8	192
11014640	11014776	2 x 4 x 0,75	19	11,4 - 14,1	73,1	191
11014641	11014777	3 x 4 x 0,75	19	12,1 - 15,0	107,1	235
11014647	11014783	2 x 2 x 1	18	9,3 - 11,8	52,4	141
11014648	11014784	4 x 2 x 1	18	10,9 - 13,9	99,7	216
11014649	11014785	5 x 2 x 1	18	11,9 - 15,2	123,2	260
11014650	11014786	6 x 2 x 1	18	13,1 - 16,8	146,9	313
11014651	11014787	8 x 2 x 1	18	14,7 - 18,8	194,2	382
11014652	11014788	10 x 2 x 1	18	16,8 - 21,6	241,5	485
11014653	11014789	12 x 2 x 1	18	17,3 - 22,4	288,8	541
11014654	11014790	15 x 2 x 1	18	19,4 - 25,0	359,6	700
11014655	11014791	16 x 2 x 1	18	19,4 - 25,0	383,3	724
11014656	11014792	20 x 2 x 1	18	21,8 - 28,0	477,9	932
11014657	11014793	24 x 2 x 1	18	24,3 - 31,4	572,4	1032
11014658	11014794	30 x 2 x 1	18	25,9 - 33,5	714,2	1266
11014659	11014795	36 x 2 x 1	18	28,1 - 36,4	856,1	1508
11014660	11014796	2 x 3 x 1	18	10,4 - 13,3	73,1	182
11014661	11014797	3 x 3 x 1	18	11,0 - 14,0	107,1	223
11014667	11014803	2 x 4 x 1	18	11,8 - 15,1	93,9	225
11014668	11014804	3 x 4 x 1	18	12,7 - 16,4	138,2	289
11014675	11014811	2 x 2 x 1,5	16	11,4 - 13,9	73,1	191
11014676	11014812	4 x 2 x 1,5	16	13,5 - 16,5	141,2	295
11014677	11014813	5 x 2 x 1,5	16	14,8 - 18,0	175,1	357
11014678	11014814	6 x 2 x 1,5	16	16,3 - 19,9	209,1	460
11014679	11014815	8 x 2 x 1,5	16	18,5 - 22,6	277,1	540
11014680	11014816	10 x 2 x 1,5	16	21,1 - 25,8	345,2	714
11014681	11014817	12 x 2 x 1,5	16	21,8 - 26,6	413,2	762
11014682	11014818	15 x 2 x 1,5	16	24,4 - 29,9	515,2	992
11014683	11014819	16 x 2 x 1,5	16	24,4 - 29,9	549,2	997
11014684	11014820	20 x 2 x 1,5	16	27,4 - 33,6	685,3	1294
11014685	11014821	24 x 2 x 1,5	16	30,8 - 37,7	821,2	1450
11014686	11014822	30 x 2 x 1,5	16	32,8 - 40,2	1025,2	1802
11014687	11014823	36 x 2 x 1,5	16	35,6 - 43,7	1229,4	2171
11014688	11014824	2 x 3 x 1,5	16	12,8 - 15,6	104,2	249
11014689	11014825	3 x 3 x 1,5	16	13,6 - 16,6	153,8	309
11014695	11014831	2 x 4 x 1,5	16	14,7 - 18,0	135,3	310
11014696	11014832	3 x 4 x 1,5	16	15,8 - 19,4	200,4	399

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC IOS 500

Instrumentation cable, PVC/IS/OS/PVC



HELUDATA® EN-50288-7 PVC/PVC IOS 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
single pair max. 250 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-Y(St)Y PIMF**
- Available also acc. to PAS 5308
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11014865	BK	BU	2 x 2 x 0,5	20	9,6 - 12,2	31,6	127
11014866			4 x 2 x 0,5	20	11,3 - 14,4	58,2	187
11014867			5 x 2 x 0,5	20	12,3 - 15,7	71,4	223
11014868			6 x 2 x 0,5	20	13,6 - 17,3	84,7	269
11014869			8 x 2 x 0,5	20	15,4 - 19,7	111,2	324
11014870			10 x 2 x 0,5	20	17,4 - 22,4	137,8	413
11014871			12 x 2 x 0,5	20	18,2 - 23,3	164,4	453
11014872			15 x 2 x 0,5	20	20,4 - 26,1	204,1	591
11014873			16 x 2 x 0,5	20	20,4 - 26,1	217,4	608
11014874			20 x 2 x 0,5	20	22,8 - 29,3	270,5	787
11014875			24 x 2 x 0,5	20	25,5 - 32,7	323,6	858
11014876			30 x 2 x 0,5	20	26,9 - 34,7	403,2	1048
11014877			36 x 2 x 0,5	20	29,3 - 37,7	482,9	1246
11014878			2 x 3 x 0,5	20	10,8 - 13,7	42,0	160
11014879			3 x 3 x 0,5	20	11,4 - 14,6	60,5	191
11014885			2 x 4 x 0,5	20	12,3 - 15,6	52,4	196
11014886			3 x 4 x 0,5	20	13,2 - 16,9	76,0	245

# HELUDATA® EN-50288-7 PVC/PVC IOS 500

Instrumentation cable, PVC/IS/OS/PVC

Part no.	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	
Sheath colour BK	Sheath colour BU					
11014892	11015028	2 x 2 x 0,75	19	10,4 - 12,7	42,0	151
11014893	11015029	4 x 2 x 0,75	19	12,1 - 14,9	78,9	217
11014894	11015030	5 x 2 x 0,75	19	13,4 - 16,5	97,3	270
11014895	11015031	6 x 2 x 0,75	19	14,6 - 18,0	115,8	318
11014896	11015032	8 x 2 x 0,75	19	16,6 - 20,3	152,7	392
11014897	11015033	10 x 2 x 0,75	19	18,9 - 23,3	189,6	500
11014898	11015034	12 x 2 x 0,75	19	19,6 - 24,1	226,6	550
11014899	11015035	15 x 2 x 0,75	19	21,9 - 27,0	281,9	698
11014900	11015036	16 x 2 x 0,75	19	21,9 - 27,0	300,3	719
11014901	11015037	20 x 2 x 0,75	19	24,6 - 30,3	374,2	933
11014902	11015038	24 x 2 x 0,75	19	27,4 - 33,8	448,0	1042
11014903	11015039	30 x 2 x 0,75	19	29,3 - 36,1	558,7	1272
11014904	11015040	36 x 2 x 0,75	19	31,8 - 39,3	669,5	1514
11014905	11015041	2 x 3 x 0,75	19	11,5 - 14,1	57,6	185
11014906	11015042	3 x 3 x 0,75	19	12,2 - 15,0	83,8	226
11014912	11015048	2 x 4 x 0,75	19	13,3 - 16,4	73,1	237
11014913	11015049	3 x 4 x 0,75	19	14,2 - 17,4	107,1	289
11014919	11015055	2 x 2 x 1	18	10,8 - 13,6	52,4	169
11014920	11015056	4 x 2 x 1	18	12,7 - 15,9	99,7	258
11014921	11015057	5 x 2 x 1	18	13,9 - 17,4	123,2	309
11014922	11015058	6 x 2 x 1	18	15,3 - 19,3	146,9	375
11014923	11015059	8 x 2 x 1	18	17,1 - 21,7	194,2	453
11014924	11015060	10 x 2 x 1	18	19,6 - 24,8	241,5	591
11014925	11015061	12 x 2 x 1	18	20,5 - 25,9	288,8	653
11014926	11015062	15 x 2 x 1	18	22,9 - 29,0	359,6	826
11014927	11015063	16 x 2 x 1	18	22,9 - 29,0	383,3	852
11014928	11015064	20 x 2 x 1	18	25,7 - 32,5	477,9	1106
11014929	11015065	24 x 2 x 1	18	28,6 - 36,4	572,4	1235
11014930	11015066	30 x 2 x 1	18	30,5 - 38,7	714,2	1509
11014931	11015067	36 x 2 x 1	18	33,1 - 42,1	856,1	1795
11014932	11015068	2 x 3 x 1	18	11,9 - 15,0	73,1	213
11014933	11015069	3 x 3 x 1	18	12,8 - 16,2	107,1	271
11014939	11015075	2 x 4 x 1	18	13,8 - 17,4	93,9	272
11014940	11015076	3 x 4 x 1	18	14,7 - 18,6	138,2	347
11014947	11015083	2 x 2 x 1,5	16	12,1 - 14,7	73,1	202
11014948	11015084	4 x 2 x 1,5	16	14,3 - 17,3	141,2	314
11014949	11015085	5 x 2 x 1,5	16	15,8 - 19,3	175,1	393
11014950	11015086	6 x 2 x 1,5	16	17,3 - 21,0	209,1	494
11014951	11015087	8 x 2 x 1,5	16	19,6 - 23,9	277,1	572
11014952	11015088	10 x 2 x 1,5	16	22,4 - 27,3	345,2	763
11014953	11015089	12 x 2 x 1,5	16	23,4 - 28,5	413,2	810
11014954	11015090	15 x 2 x 1,5	16	26,2 - 31,9	515,2	1082
11014955	11015091	16 x 2 x 1,5	16	26,2 - 31,9	549,2	1082
11014956	11015092	20 x 2 x 1,5	16	29,4 - 35,8	685,3	1404
11014957	11015093	24 x 2 x 1,5	16	33,0 - 40,2	821,2	1566
11014958	11015094	30 x 2 x 1,5	16	34,9 - 42,6	1025,2	1942
11014959	11015095	36 x 2 x 1,5	16	38,1 - 46,5	1229,4	2343
11014960	11015096	2 x 3 x 1,5	16	13,6 - 16,5	104,2	267
11014961	11015097	3 x 3 x 1,5	16	14,5 - 17,5	153,8	328
11014967	11015103	2 x 4 x 1,5	16	15,8 - 19,2	135,3	343
11014968	11015104	3 x 4 x 1,5	16	16,8 - 20,4	200,4	428
11014974	11015110	2 x 2 x 2,5	14	13,9 - 17,5	114,6	278
11014975	11015111	4 x 2 x 2,5	14	16,5 - 20,9	224,1	441
11014976	11015112	5 x 2 x 2,5	14	18,2 - 23,0	278,7	551
11014977	11015113	6 x 2 x 2,5	14	19,9 - 25,3	333,5	710
11014978	11015114	8 x 2 x 2,5	14	22,8 - 28,9	443,0	810
11014979	11015115	10 x 2 x 2,5	14	26,1 - 33,1	552,5	1095
11014980	11015116	12 x 2 x 2,5	14	27,0 - 34,2	662,0	1171
11014981	11015117	15 x 2 x 2,5	14	30,4 - 38,6	826,2	1554
11014982	11015118	16 x 2 x 2,5	14	30,4 - 38,6	881,0	1560
11014983	11015119	20 x 2 x 2,5	14	34,2 - 43,3	1100,0	2024
11014984	11015120	24 x 2 x 2,5	14	38,3 - 48,6	1318,9	2288
11014985	11015121	30 x 2 x 2,5	14	40,8 - 51,8	1647,3	2798
11014986	11015122	36 x 2 x 2,5	14	44,3 - 56,3	1975,9	3408
11014987	11015123	2 x 3 x 2,5	14	15,7 - 19,8	166,4	375
11014988	11015124	3 x 3 x 2,5	14	16,7 - 21,1	247,1	468
11014994	11015130	2 x 4 x 2,5	14	18,2 - 23,0	218,3	442
11014995	11015131	3 x 4 x 2,5	14	19,4 - 24,6	324,9	609

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC OSA 300

Instrumentation cable, PVC/OS/PVC/SWA/PVC



HELUDATA® EN-50288-7 PVC/PVC OSA 300 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
max. 250 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-Y(St)YRY**
- Available also acc. to PAS 5308
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
BK	BU						
11016285	11016436		1 x 2 x 0,5	20	9,0 - 11,0	15,4	206
11016286	11016437		2 x 2 x 0,5	20	11,1 - 13,8	25,8	299
11016287	11016438		4 x 2 x 0,5	20	12,1 - 15,2	46,5	373
11016288	11016439		5 x 2 x 0,5	20	12,8 - 16,2	56,9	411
11016289	11016440		6 x 2 x 0,5	20	13,6 - 17,1	67,3	457
11016290	11016441		8 x 2 x 0,5	20	14,8 - 18,9	88,0	534
11016291	11016442		10 x 2 x 0,5	20	16,2 - 20,8	108,8	643
11016292	11016443		12 x 2 x 0,5	20	16,6 - 21,3	129,5	669
11016293	11016444		15 x 2 x 0,5	20	18,1 - 23,2	160,6	917
11016294	11016445		16 x 2 x 0,5	20	18,1 - 23,2	171,0	928
11016295	11016446		20 x 2 x 0,5	20	20,3 - 26,1	212,4	1085
11016296	11016447		24 x 2 x 0,5	20	22,1 - 28,6	253,9	1217
11016297	11016448		30 x 2 x 0,5	20	23,1 - 30,0	316,1	1389
11016298	11016449		36 x 2 x 0,5	20	24,5 - 31,9	378,3	1569
11016299	11016450		1 x 3 x 0,5	20	9,3 - 11,3	20,6	225
11016300	11016451		2 x 3 x 0,5	20	11,8 - 14,8	36,2	354
11016301	11016452		3 x 3 x 0,5	20	12,2 - 15,4	51,7	383
11016307	11016458		1 x 4 x 0,5	20	9,6 - 11,9	25,8	243
11016308	11016459		2 x 4 x 0,5	20	13,4 - 17,0	46,5	426



# HELUDATA® EN-50288-7 PVC/PVC OSA 300

Instrumentation cable, PVC/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016315	11016466	1 x 2 x 0,75	19	9,4 - 11,2	20,6	233
11016316	11016467	2 x 2 x 0,75	19	11,7 - 14,2	36,2	342
11016317	11016468	4 x 2 x 0,75	19	12,9 - 15,6	67,3	416
11016318	11016469	5 x 2 x 0,75	19	13,6 - 16,7	82,8	468
11016319	11016470	6 x 2 x 0,75	19	14,7 - 17,9	98,4	541
11016320	11016471	8 x 2 x 0,75	19	15,9 - 19,5	129,5	610
11016321	11016472	10 x 2 x 0,75	19	17,4 - 21,4	160,6	866
11016322	11016473	12 x 2 x 0,75	19	18,0 - 22,1	191,7	901
11016323	11016474	15 x 2 x 0,75	19	20,2 - 24,8	238,4	1091
11016324	11016475	16 x 2 x 0,75	19	20,2 - 24,8	253,9	1106
11016325	11016476	20 x 2 x 0,75	19	22,1 - 27,3	316,1	1292
11016326	11016477	24 x 2 x 0,75	19	23,9 - 29,6	378,3	1436
11016327	11016478	30 x 2 x 0,75	19	25,2 - 31,2	471,6	1661
11016328	11016479	36 x 2 x 0,75	19	27,0 - 33,6	564,9	2095
11016329	11016480	1 x 3 x 0,75	19	9,7 - 11,6	28,4	244
11016330	11016481	2 x 3 x 0,75	19	12,5 - 15,2	51,7	390
11016331	11016482	3 x 3 x 0,75	19	13,0 - 15,8	75,1	433
11016337	11016488	1 x 4 x 0,75	19	10,1 - 12,1	36,2	271
11016338	11016489	2 x 4 x 0,75	19	14,5 - 17,7	67,3	503
11016345	11016496	1 x 2 x 1	18	9,6 - 11,7	25,8	249
11016346	11016497	2 x 2 x 1	18	12,0 - 14,9	46,5	374
11016347	11016498	4 x 2 x 1	18	13,2 - 16,5	88,0	467
11016348	11016499	5 x 2 x 1	18	14,1 - 17,5	108,8	549
11016349	11016500	6 x 2 x 1	18	15,1 - 18,9	129,5	609
11016350	11016501	8 x 2 x 1	18	16,4 - 20,7	171,0	705
11016351	11016502	10 x 2 x 1	18	18,2 - 23,0	212,4	1002
11016352	11016503	12 x 2 x 1	18	19,3 - 24,4	253,9	1047
11016353	11016504	15 x 2 x 1	18	20,9 - 26,5	316,1	1264
11016354	11016505	16 x 2 x 1	18	20,9 - 26,5	336,9	1283
11016355	11016506	20 x 2 x 1	18	22,9 - 29,1	419,8	1524
11016356	11016507	24 x 2 x 1	18	25,0 - 31,9	502,7	1678
11016357	11016508	30 x 2 x 1	18	26,4 - 33,7	627,2	2165
11016358	11016509	36 x 2 x 1	18	28,5 - 36,5	751,6	2472
11016359	11016510	1 x 3 x 1	18	9,9 - 12,1	36,2	268
11016360	11016511	2 x 3 x 1	18	12,8 - 15,9	67,3	431
11016361	11016512	3 x 3 x 1	18	13,4 - 16,7	98,4	481
11016367	11016518	1 x 4 x 1	18	10,3 - 12,6	46,5	300
11016368	11016519	2 x 4 x 1	18	14,9 - 18,7	88,0	556
11016376	11016527	1 x 2 x 1,5	16	10,7 - 12,7	36,2	297
11016377	11016528	2 x 2 x 1,5	16	13,9 - 16,7	67,3	464
11016378	11016529	4 x 2 x 1,5	16	15,6 - 18,8	129,5	601
11016379	11016530	5 x 2 x 1,5	16	16,7 - 20,2	160,6	700
11016380	11016531	6 x 2 x 1,5	16	18,0 - 21,8	191,7	915
11016381	11016532	8 x 2 x 1,5	16	20,4 - 24,7	253,9	1052
11016382	11016533	10 x 2 x 1,5	16	22,7 - 27,5	316,1	1296
11016383	11016534	12 x 2 x 1,5	16	23,3 - 28,2	378,3	1363
11016384	11016535	15 x 2 x 1,5	16	25,7 - 31,2	471,6	1648
11016385	11016536	16 x 2 x 1,5	16	25,7 - 31,2	502,7	1678
11016386	11016537	20 x 2 x 1,5	16	28,5 - 34,7	627,2	2232
11016387	11016538	24 x 2 x 1,5	16	32,1 - 39,1	751,6	2487
11016388	11016539	30 x 2 x 1,5	16	33,6 - 41,0	938,2	2900
11016389	11016540	36 x 2 x 1,5	16	36,3 - 44,2	1124,8	3304
11016390	11016541	1 x 3 x 1,5	16	11,3 - 13,4	51,7	323
11016391	11016542	2 x 3 x 1,5	16	15,1 - 18,2	98,4	552
11016392	11016543	3 x 3 x 1,5	16	15,8 - 19,0	145,0	622
11016398	11016549	1 x 4 x 1,5	16	11,8 - 14,1	67,3	375
11016399	11016550	2 x 4 x 1,5	16	17,6 - 21,3	129,5	830

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC OSA 500

Instrumentation cable, PVC/OS/PVC/SWA/PVC



HELUDATA® EN-50288-7 PVC/PVC OSA 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
single pair max. 250 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-Y(St)YRY**
- Available also acc. to PAS 5308
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
	BK	BU	mm <sup>2</sup>		min. - max.	per km	app. kg / km
					mm		
11016587		11016738	1 x 2 x 0,5	20	9,8 - 11,9	15,4	241
11016588		11016739	2 x 2 x 0,5	20	12,3 - 15,2	25,8	359
11016589		11016740	4 x 2 x 0,5	20	13,6 - 16,9	46,5	438
11016590		11016741	5 x 2 x 0,5	20	14,7 - 18,3	56,9	513
11016591		11016742	6 x 2 x 0,5	20	15,6 - 19,5	67,3	565
11016592		11016743	8 x 2 x 0,5	20	16,9 - 21,3	88,0	647
11016593		11016744	10 x 2 x 0,5	20	19,5 - 24,5	108,8	929
11016594		11016745	12 x 2 x 0,5	20	19,9 - 25,1	129,5	959
11016595		11016746	15 x 2 x 0,5	20	21,8 - 27,5	160,6	1155
11016596		11016747	16 x 2 x 0,5	20	21,8 - 27,5	171,0	1167
11016597		11016748	20 x 2 x 0,5	20	23,7 - 30,1	212,4	1378
11016598		11016749	24 x 2 x 0,5	20	26,1 - 33,2	253,9	1504
11016599		11016750	30 x 2 x 0,5	20	27,4 - 34,9	316,1	1947
11016600		11016751	36 x 2 x 0,5	20	30,2 - 38,4	378,3	2211
11016601		11016752	1 x 3 x 0,5	20	10,1 - 12,3	20,6	257
11016602		11016753	2 x 3 x 0,5	20	13,2 - 16,4	36,2	409
11016603		11016754	3 x 3 x 0,5	20	13,7 - 17,1	51,7	449
11016609		11016760	1 x 4 x 0,5	20	10,5 - 12,8	25,8	285
11016610		11016761	2 x 4 x 0,5	20	15,4 - 19,3	46,5	527

# HELUDATA® EN-50288-7 PVC/PVC OSA 500

Instrumentation cable, PVC/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016617	11016768	1 x 2 x 0,75	19	10,1 - 12,1	20,6	258
11016618	11016769	2 x 2 x 0,75	19	12,9 - 15,6	36,2	392
11016619	11016770	4 x 2 x 0,75	19	14,5 - 17,5	67,3	506
11016620	11016771	5 x 2 x 0,75	19	15,5 - 18,7	82,8	571
11016621	11016772	6 x 2 x 0,75	19	16,5 - 20,0	98,4	648
11016622	11016773	8 x 2 x 0,75	19	18,2 - 22,1	129,5	858
11016623	11016774	10 x 2 x 0,75	19	20,7 - 25,1	160,6	1052
11016624	11016775	12 x 2 x 0,75	19	21,2 - 25,9	191,7	1094
11016625	11016776	15 x 2 x 0,75	19	23,2 - 28,4	238,4	1300
11016626	11016777	16 x 2 x 0,75	19	23,2 - 28,4	253,9	1318
11016627	11016778	20 x 2 x 0,75	19	25,7 - 31,5	316,1	1593
11016628	11016779	24 x 2 x 0,75	19	28,1 - 34,5	378,3	1956
11016629	11016780	30 x 2 x 0,75	19	30,3 - 37,1	471,6	2271
11016630	11016781	36 x 2 x 0,75	19	32,7 - 40,1	564,9	2560
11016631	11016782	1 x 3 x 0,75	19	10,5 - 12,5	28,4	278
11016632	11016783	2 x 3 x 0,75	19	13,9 - 16,8	51,7	476
11016633	11016784	3 x 3 x 0,75	19	14,7 - 17,8	75,1	526
11016639	11016790	1 x 4 x 0,75	19	11,2 - 13,4	36,2	315
11016640	11016791	2 x 4 x 0,75	19	16,3 - 19,8	67,3	601
11016647	11016798	1 x 2 x 1	18	10,3 - 12,5	25,8	275
11016648	11016799	2 x 2 x 1	18	13,2 - 16,3	46,5	431
11016649	11016800	4 x 2 x 1	18	14,9 - 18,4	88,0	558
11016650	11016801	5 x 2 x 1	18	15,9 - 19,7	108,8	644
11016651	11016802	6 x 2 x 1	18	16,9 - 21,1	129,5	729
11016652	11016803	8 x 2 x 1	18	19,4 - 24,1	171,0	971
11016653	11016804	10 x 2 x 1	18	21,5 - 26,9	212,4	1185
11016654	11016805	12 x 2 x 1	18	22,0 - 27,5	253,9	1237
11016655	11016806	15 x 2 x 1	18	23,9 - 30,0	316,1	1508
11016656	11016807	16 x 2 x 1	18	23,9 - 30,0	336,9	1529
11016657	11016808	20 x 2 x 1	18	26,5 - 33,3	419,8	2034
11016658	11016809	24 x 2 x 1	18	29,9 - 37,6	502,7	2247
11016659	11016810	30 x 2 x 1	18	31,5 - 39,6	627,2	2590
11016660	11016811	36 x 2 x 1	18	33,8 - 42,5	751,6	2964
11016661	11016812	1 x 3 x 1	18	10,7 - 12,9	36,2	309
11016662	11016813	2 x 3 x 1	18	14,2 - 17,5	67,3	518
11016663	11016814	3 x 3 x 1	18	15,0 - 18,6	98,4	576
11016669	11016820	1 x 4 x 1	18	11,4 - 13,9	46,5	343
11016670	11016821	2 x 4 x 1	18	16,7 - 20,8	88,0	659
11016678	11016829	1 x 2 x 1,5	16	11,3 - 13,4	36,2	310
11016679	11016830	2 x 2 x 1,5	16	14,7 - 17,5	67,3	507
11016680	11016831	4 x 2 x 1,5	16	16,4 - 19,7	129,5	651
11016681	11016832	5 x 2 x 1,5	16	17,5 - 21,1	160,6	754
11016682	11016833	6 x 2 x 1,5	16	19,6 - 23,6	191,7	1023
11016683	11016834	8 x 2 x 1,5	16	21,6 - 26,1	253,9	1135
11016684	11016835	10 x 2 x 1,5	16	23,9 - 28,9	316,1	1423
11016685	11016836	12 x 2 x 1,5	16	24,6 - 29,7	378,3	1465
11016686	11016837	15 x 2 x 1,5	16	27,2 - 33,0	471,6	1827
11016687	11016838	16 x 2 x 1,5	16	27,2 - 33,0	502,7	1828
11016688	11016839	20 x 2 x 1,5	16	30,8 - 37,2	627,2	2439
11016689	11016840	24 x 2 x 1,5	16	34,1 - 41,3	751,6	2685
11016690	11016841	30 x 2 x 1,5	16	36,0 - 43,7	938,2	3125
11016691	11016842	36 x 2 x 1,5	16	38,6 - 46,9	1124,8	3915
11016692	11016843	1 x 3 x 1,5	16	11,7 - 13,9	51,7	343
11016693	11016844	2 x 3 x 1,5	16	15,8 - 18,9	98,4	583
11016694	11016845	3 x 3 x 1,5	16	16,6 - 19,9	145,0	679
11016700	11016851	1 x 4 x 1,5	16	12,3 - 14,7	67,3	398
11016701	11016852	2 x 4 x 1,5	16	19,4 - 23,3	129,5	902
11016708	11016859	1 x 2 x 2,5	14	12,2 - 14,9	56,9	383
11016709	11016860	2 x 2 x 2,5	14	16,2 - 20,0	108,8	634
11016710	11016861	4 x 2 x 2,5	14	18,4 - 22,9	212,4	954
11016711	11016862	5 x 2 x 2,5	14	20,4 - 25,4	264,3	1129
11016712	11016863	6 x 2 x 2,5	14	22,1 - 27,5	316,1	1331
11016713	11016864	8 x 2 x 2,5	14	24,3 - 30,4	419,8	1485
11016714	11016865	10 x 2 x 2,5	14	27,3 - 34,2	523,5	2096
11016715	11016866	12 x 2 x 2,5	14	28,5 - 35,7	627,2	2159
11016716	11016867	15 x 2 x 2,5	14	32,1 - 40,2	782,7	2700
11016717	11016868	16 x 2 x 2,5	14	32,1 - 40,2	834,5	2700
11016718	11016869	20 x 2 x 2,5	14	35,6 - 44,7	1041,9	3272
11016719	11016870	24 x 2 x 2,5	14	39,2 - 49,3	1249,2	3929
11016720	11016871	30 x 2 x 2,5	14	42,2 - 53,0	1560,3	4607
11016721	11016872	36 x 2 x 2,5	14	45,6 - 57,4	1871,3	5356
11016722	11016873	1 x 3 x 2,5	14	12,7 - 15,5	82,8	429
11016723	11016874	2 x 3 x 2,5	14	17,5 - 21,8	160,6	872
11016724	11016875	3 x 3 x 2,5	14	19,3 - 23,9	238,4	1010
11016730	11016881	1 x 4 x 2,5	14	13,4 - 16,5	108,8	490
11016731	11016882	2 x 4 x 2,5	14	21,8 - 27,2	212,4	1204

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC IOSA 300

Instrumentation cable, PVC/IS/OS/PVC/SWA/PVC



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
max. 250 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-Y(St)YRY PiMF**
- Available also acc. to PAS 5308
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11015137		11015273	2 x 2 x 0,5	20	12,2 - 15,2	31,6	351
11015138		11015274	4 x 2 x 0,5	20	13,4 - 16,8	58,2	430
11015139		11015275	5 x 2 x 0,5	20	14,5 - 18,2	71,4	504
11015140		11015276	6 x 2 x 0,5	20	15,3 - 19,4	84,7	556
11015141		11015277	8 x 2 x 0,5	20	16,7 - 21,2	111,2	623
11015142		11015278	10 x 2 x 0,5	20	18,5 - 23,5	137,8	891
11015143		11015279	12 x 2 x 0,5	20	19,6 - 24,9	164,4	924
11015144		11015280	15 x 2 x 0,5	20	21,2 - 27,1	204,1	1113
11015145		11015281	16 x 2 x 0,5	20	21,2 - 27,1	217,4	1127
11015146		11015282	20 x 2 x 0,5	20	23,3 - 29,9	270,5	1311
11015147		11015283	24 x 2 x 0,5	20	25,7 - 33,0	323,6	1482
11015148		11015284	30 x 2 x 0,5	20	26,9 - 34,6	403,2	1720
11015149		11015285	36 x 2 x 0,5	20	29,0 - 37,3	482,9	2120
11015150		11015286	2 x 3 x 0,5	20	13,0 - 16,3	42,0	394
11015151		11015287	3 x 3 x 0,5	20	13,5 - 16,9	60,5	435
11015157		11015293	2 x 4 x 0,5	20	14,2 - 17,9	52,4	473
11015158		11015294	3 x 4 x 0,5	20	15,0 - 18,9	76,0	523

# HELUDATA® EN-50288-7 PVC/PVC IOSA 300

Instrumentation cable, PVC/IS/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11015164	11015300	2 x 2 x 0,75	19	12,8 - 15,5	42,0	389
11015165	11015301	4 x 2 x 0,75	19	14,4 - 17,5	78,9	500
11015166	11015302	5 x 2 x 0,75	19	15,3 - 18,7	97,3	558
11015167	11015303	6 x 2 x 0,75	19	16,3 - 19,9	115,8	624
11015168	11015304	8 x 2 x 0,75	19	18,0 - 22,0	152,7	731
11015169	11015305	10 x 2 x 0,75	19	20,5 - 25,0	189,6	1041
11015170	11015306	12 x 2 x 0,75	19	21,0 - 25,8	226,6	1086
11015171	11015307	15 x 2 x 0,75	19	23,0 - 28,2	281,9	1290
11015172	11015308	16 x 2 x 0,75	19	23,0 - 28,2	300,3	1310
11015173	11015309	20 x 2 x 0,75	19	25,3 - 31,0	374,2	1552
11015174	11015310	24 x 2 x 0,75	19	27,7 - 34,1	448,0	1753
11015175	11015311	30 x 2 x 0,75	19	30,0 - 37,0	558,7	2210
11015176	11015312	36 x 2 x 0,75	19	32,4 - 39,9	669,5	2516
11015177	11015313	2 x 3 x 0,75	19	13,7 - 16,7	57,6	440
11015178	11015314	3 x 3 x 0,75	19	14,5 - 17,7	83,8	511
11015184	11015320	2 x 4 x 0,75	19	15,3 - 18,6	73,1	528
11015185	11015321	3 x 4 x 0,75	19	16,0 - 19,5	107,1	594
11015191	11015327	2 x 2 x 1	18	13,2 - 16,3	52,4	424
11015192	11015328	4 x 2 x 1	18	14,8 - 18,4	99,7	552
11015193	11015329	5 x 2 x 1	18	15,8 - 19,7	123,2	625
11015194	11015330	6 x 2 x 1	18	16,8 - 21,1	146,9	720
11015195	11015331	8 x 2 x 1	18	18,6 - 23,3	194,2	945
11015196	11015332	10 x 2 x 1	18	21,1 - 26,6	241,5	1156
11015197	11015333	12 x 2 x 1	18	21,9 - 27,6	288,8	1211
11015198	11015334	15 x 2 x 1	18	23,8 - 30,1	359,6	1483
11015199	11015335	16 x 2 x 1	18	23,8 - 30,1	383,3	1507
11015200	11015336	20 x 2 x 1	18	26,3 - 33,3	477,9	1825
11015201	11015337	24 x 2 x 1	18	29,0 - 36,8	572,4	2192
11015202	11015338	30 x 2 x 1	18	31,1 - 39,5	714,2	2553
11015203	11015339	36 x 2 x 1	18	33,5 - 42,6	856,1	2906
11015204	11015340	2 x 3 x 1	18	14,1 - 17,5	73,1	502
11015205	11015341	3 x 3 x 1	18	14,9 - 18,5	107,1	560
11015211	11015347	2 x 4 x 1	18	15,7 - 19,6	93,9	591
11015212	11015348	3 x 4 x 1	18	16,5 - 20,7	138,2	678
11015219	11015355	2 x 2 x 1,5	16	15,3 - 18,4	73,1	528
11015220	11015356	4 x 2 x 1,5	16	17,2 - 20,8	141,2	700
11015221	11015357	5 x 2 x 1,5	16	19,3 - 23,2	175,1	920
11015222	11015358	6 x 2 x 1,5	16	20,6 - 24,9	209,1	1089
11015223	11015359	8 x 2 x 1,5	16	22,8 - 27,6	277,1	1223
11015224	11015360	10 x 2 x 1,5	16	25,7 - 31,0	345,2	1524
11015225	11015361	12 x 2 x 1,5	16	26,4 - 31,9	413,2	1572
11015226	11015362	15 x 2 x 1,5	16	29,8 - 36,1	515,2	2134
11015227	11015363	16 x 2 x 1,5	16	29,8 - 36,1	549,2	2139
11015228	11015364	20 x 2 x 1,5	16	33,0 - 40,0	685,3	2584
11015229	11015365	24 x 2 x 1,5	16	36,4 - 44,1	821,2	2869
11015230	11015366	30 x 2 x 1,5	16	38,4 - 46,7	1025,2	3680
11015231	11015367	36 x 2 x 1,5	16	42,1 - 51,1	1229,4	4209
11015232	11015368	2 x 3 x 1,5	16	16,5 - 19,9	104,2	623
11015233	11015369	3 x 3 x 1,5	16	17,4 - 20,9	153,8	715
11015239	11015375	2 x 4 x 1,5	16	18,6 - 22,5	135,3	873
11015240	11015376	3 x 4 x 1,5	16	20,2 - 24,4	200,4	1002

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 PVC/PVC IOSA 500

Instrumentation cable, PVC/IS/OS/PVC/SWA/PVC



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +70°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 100 MΩxkm
- **Mutual capacitance**  
single pair max. 250 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: PVC acc. to EN 50290-2-21
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-Y(St)YRY PiMF**
- Available also acc. to PAS 5308
- Suited for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11015409		11015545	2 x 2 x 0,5	20	13,5 - 16,7	31,6	409
11015410		11015546	4 x 2 x 0,5	20	15,2 - 18,9	58,2	523
11015411		11015547	5 x 2 x 0,5	20	16,2 - 20,2	71,4	589
11015412		11015548	6 x 2 x 0,5	20	17,3 - 21,6	84,7	676
11015413		11015549	8 x 2 x 0,5	20	19,8 - 24,7	111,2	887
11015414		11015550	10 x 2 x 0,5	20	22,0 - 27,6	137,8	1083
11015415		11015551	12 x 2 x 0,5	20	22,6 - 28,4	164,4	1124
11015416		11015552	15 x 2 x 0,5	20	24,5 - 30,9	204,1	1374
11015417		11015553	16 x 2 x 0,5	20	24,5 - 30,9	217,4	1391
11015418		11015554	20 x 2 x 0,5	20	27,2 - 34,3	270,5	1680
11015419		11015555	24 x 2 x 0,5	20	30,7 - 38,7	323,6	2018
11015420		11015556	30 x 2 x 0,5	20	32,5 - 41,1	403,2	2335
11015421		11015557	36 x 2 x 0,5	20	34,9 - 44,1	482,9	2645
11015422		11015558	2 x 3 x 0,5	20	14,7 - 18,2	42,0	480
11015423		11015559	3 x 3 x 0,5	20	15,3 - 19,0	60,5	527
11015429		11015565	2 x 4 x 0,5	20	16,2 - 20,1	52,4	562
11015430		11015566	3 x 4 x 0,5	20	16,9 - 21,2	76,0	634

# HELUDATA® EN-50288-7 PVC/PVC IOSA 500

Instrumentation cable, PVC/IS/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11015436	11015572	2 x 2 x 0,75	19	14,2 - 17,0	42,0	464
11015437	11015573	4 x 2 x 0,75	19	16,0 - 19,4	78,9	575
11015438	11015574	5 x 2 x 0,75	19	17,1 - 20,8	97,3	675
11015439	11015575	6 x 2 x 0,75	19	18,5 - 22,5	115,8	880
11015440	11015576	8 x 2 x 0,75	19	20,9 - 25,4	152,7	1099
11015441	11015577	10 x 2 x 0,75	19	23,3 - 28,4	189,6	1225
11015442	11015578	12 x 2 x 0,75	19	23,9 - 29,1	226,6	1274
11015443	11015579	15 x 2 x 0,75	19	26,5 - 32,2	281,9	1537
11015444	11015580	16 x 2 x 0,75	19	26,5 - 32,2	300,3	1557
11015445	11015581	20 x 2 x 0,75	19	30,0 - 36,5	374,2	2076
11015446	11015582	24 x 2 x 0,75	19	33,0 - 40,2	448,0	2308
11015447	11015583	30 x 2 x 0,75	19	34,8 - 42,5	558,7	2669
11015448	11015584	36 x 2 x 0,75	19	37,5 - 45,9	669,5	3046
11015449	11015585	2 x 3 x 0,75	19	15,4 - 18,6	57,6	529
11015450	11015586	3 x 3 x 0,75	19	16,1 - 19,5	83,8	585
11015456	11015592	2 x 4 x 0,75	19	17,1 - 20,7	73,1	643
11015457	11015593	3 x 4 x 0,75	19	18,1 - 21,9	107,1	838
11015463	11015599	2 x 2 x 1	18	14,7 - 18,1	52,4	497
11015464	11015600	4 x 2 x 1	18	16,4 - 20,2	99,7	640
11015465	11015601	5 x 2 x 1	18	17,6 - 21,7	123,2	858
11015466	11015602	6 x 2 x 1	18	19,7 - 24,3	146,9	966
11015467	11015603	8 x 2 x 1	18	21,7 - 27,0	194,2	1110
11015468	11015604	10 x 2 x 1	18	24,0 - 29,9	241,5	1374
11015469	11015605	12 x 2 x 1	18	24,6 - 30,7	288,8	1436
11015470	11015606	15 x 2 x 1	18	27,2 - 34,0	359,6	1943
11015471	11015607	16 x 2 x 1	18	27,2 - 34,0	383,3	1969
11015472	11015608	20 x 2 x 1	18	30,9 - 38,5	477,9	2354
11015473	11015609	24 x 2 x 1	18	34,2 - 42,8	572,4	2609
11015474	11015610	30 x 2 x 1	18	36,1 - 45,2	714,2	3015
11015475	11015611	36 x 2 x 1	18	38,7 - 48,5	856,1	3766
11015476	11015612	2 x 3 x 1	18	15,8 - 19,5	73,1	572
11015477	11015613	3 x 3 x 1	18	16,5 - 20,4	107,1	659
11015483	11015619	2 x 4 x 1	18	17,5 - 21,7	93,9	810
11015484	11015620	3 x 4 x 1	18	18,6 - 23,1	138,2	925
11015491	11015627	2 x 2 x 1,5	16	16,0 - 19,2	73,1	560
11015492	11015628	4 x 2 x 1,5	16	18,2 - 21,8	141,2	862
11015493	11015629	5 x 2 x 1,5	16	20,2 - 24,3	175,1	996
11015494	11015630	6 x 2 x 1,5	16	21,8 - 26,2	209,1	1152
11015495	11015631	8 x 2 x 1,5	16	24,0 - 28,9	277,1	1286
11015496	11015632	10 x 2 x 1,5	16	27,0 - 32,5	345,2	1626
11015497	11015633	12 x 2 x 1,5	16	27,8 - 33,5	413,2	1673
11015498	11015634	15 x 2 x 1,5	16	31,6 - 38,1	515,2	2326
11015499	11015635	16 x 2 x 1,5	16	31,6 - 38,1	549,2	2326
11015500	11015636	20 x 2 x 1,5	16	35,0 - 42,3	685,3	2801
11015501	11015637	24 x 2 x 1,5	16	38,5 - 46,7	821,2	3096
11015502	11015638	30 x 2 x 1,5	16	41,6 - 50,3	1025,2	3973
11015503	11015639	36 x 2 x 1,5	16	44,8 - 54,2	1229,4	4542
11015504	11015640	2 x 3 x 1,5	16	17,3 - 20,8	104,2	672
11015505	11015641	3 x 3 x 1,5	16	18,4 - 22,0	153,8	877
11015511	11015647	2 x 4 x 1,5	16	20,2 - 24,2	135,3	945
11015512	11015648	3 x 4 x 1,5	16	21,2 - 25,5	200,4	1072
11015518	11015654	2 x 2 x 2,5	14	17,7 - 21,8	114,6	816
11015519	11015655	4 x 2 x 2,5	14	20,9 - 25,9	224,1	1084
11015520	11015656	5 x 2 x 2,5	14	22,6 - 28,0	278,7	1261
11015521	11015657	6 x 2 x 2,5	14	24,3 - 30,3	333,5	1503
11015522	11015658	8 x 2 x 2,5	14	27,2 - 33,9	443,0	1662
11015523	11015659	10 x 2 x 2,5	14	31,5 - 39,3	552,5	2361
11015524	11015660	12 x 2 x 2,5	14	32,6 - 40,7	662,0	2437
11015525	11015661	15 x 2 x 2,5	14	36,0 - 45,0	826,2	3038
11015526	11015662	16 x 2 x 2,5	14	36,0 - 45,0	881,0	3045
11015527	11015663	20 x 2 x 2,5	14	40,8 - 51,0	1100,0	4027
11015528	11015664	24 x 2 x 2,5	14	45,0 - 56,3	1318,9	4485
11015529	11015665	30 x 2 x 2,5	14	47,7 - 59,7	1647,3	5712
11015530	11015666	36 x 2 x 2,5	14	52,5 - 65,7	1975,9	6606
11015531	11015667	2 x 3 x 2,5	14	20,0 - 24,8	166,4	978
11015532	11015668	3 x 3 x 2,5	14	21,0 - 26,1	247,1	1113
11015538	11015674	2 x 4 x 2,5	14	22,6 - 28,0	218,3	1251
11015539	11015675	3 x 4 x 2,5	14	23,8 - 29,6	324,9	1375

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC OS 300

Instrumentation cable, XLPE/OS/PVC



HELUDATA® EN-50288-7 XLPE/PVC OS 300 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)Y**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11013385		11013536	1 x 2 x 0,5	20	4,9 - 6,3	15,4	38
11013386		11013537	2 x 2 x 0,5	20	7,0 - 9,1	25,8	64
11013387		11013538	4 x 2 x 0,5	20	8,2 - 10,7	46,5	103
11013388		11013539	5 x 2 x 0,5	20	8,9 - 11,7	56,9	123
11013389		11013540	6 x 2 x 0,5	20	9,6 - 12,6	67,3	146
11013390		11013541	8 x 2 x 0,5	20	10,9 - 14,4	88,0	177
11013391		11013542	10 x 2 x 0,5	20	12,3 - 16,3	108,8	203
11013392		11013543	12 x 2 x 0,5	20	12,8 - 17,0	129,5	241
11013393		11013544	15 x 2 x 0,5	20	14,2 - 18,7	160,6	297
11013394		11013545	16 x 2 x 0,5	20	14,2 - 18,7	171,0	309
11013395		11013546	20 x 2 x 0,5	20	15,9 - 21,1	212,4	375
11013396		11013547	24 x 2 x 0,5	20	17,5 - 23,3	253,9	448
11013397		11013548	30 x 2 x 0,5	20	18,7 - 24,9	316,1	541
11013398		11013549	36 x 2 x 0,5	20	20,3 - 27,1	378,3	655
11013399		11013550	1 x 3 x 0,5	20	5,4 - 6,8	20,6	48
11013400		11013551	2 x 3 x 0,5	20	7,9 - 10,3	36,2	85
11013401		11013552	3 x 3 x 0,5	20	8,3 - 10,9	51,7	107
11013407		11013558	1 x 4 x 0,5	20	5,7 - 7,4	25,8	56
11013408		11013559	2 x 4 x 0,5	20	9,5 - 12,5	46,5	108
11013409		11013560	3 x 4 x 0,5	20	10,3 - 13,5	67,3	143



# HELUDATA® EN-50288-7 XLPE/PVC OS 300

Instrumentation cable, XLPE/OS/PVC

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11013415		11013566	1 x 2 x 0,75	19	5,5 - 6,7	20,6	47
11013416		11013567	2 x 2 x 0,75	19	7,8 - 9,7	36,2	81
11013417		11013568	4 x 2 x 0,75	19	9,0 - 11,1	67,3	126
11013418		11013569	5 x 2 x 0,75	19	9,7 - 12,2	82,8	152
11013419		11013570	6 x 2 x 0,75	19	10,7 - 13,4	98,4	188
11013420		11013571	8 x 2 x 0,75	19	12,0 - 15,0	129,5	222
11013421		11013572	10 x 2 x 0,75	19	13,7 - 17,1	160,6	264
11013422		11013573	12 x 2 x 0,75	19	14,1 - 17,7	191,7	305
11013423		11013574	15 x 2 x 0,75	19	15,8 - 19,8	238,4	387
11013424		11013575	16 x 2 x 0,75	19	15,8 - 19,8	253,9	404
11013425		11013576	20 x 2 x 0,75	19	17,5 - 22,0	316,1	490
11013426		11013577	24 x 2 x 0,75	19	19,5 - 24,6	378,3	574
11013427		11013578	30 x 2 x 0,75	19	20,9 - 26,2	471,6	710
11013428		11013579	36 x 2 x 0,75	19	22,5 - 28,4	564,9	860
11013429		11013580	1 x 3 x 0,75	19	5,8 - 7,1	28,4	57
11013430		11013581	2 x 3 x 0,75	19	8,6 - 10,7	51,7	103
11013431		11013582	3 x 3 x 0,75	19	9,1 - 11,3	75,1	132
11013437		11013588	1 x 4 x 0,75	19	6,2 - 7,6	36,2	67
11013438		11013589	2 x 4 x 0,75	19	10,6 - 13,2	67,3	138
11013439		11013590	3 x 4 x 0,75	19	11,2 - 14,0	98,4	177
11013445		11013596	1 x 2 x 1	18	5,7 - 7,2	25,8	53
11013446		11013597	2 x 2 x 1	18	8,1 - 10,4	46,5	95
11013447		11013598	4 x 2 x 1	18	9,3 - 12,0	88,0	150
11013448		11013599	5 x 2 x 1	18	10,3 - 13,3	108,8	190
11013449		11013600	6 x 2 x 1	18	11,2 - 14,4	129,5	227
11013450		11013601	8 x 2 x 1	18	12,7 - 16,4	171,0	277
11013451		11013602	10 x 2 x 1	18	14,3 - 18,5	212,4	324
11013452		11013603	12 x 2 x 1	18	14,8 - 19,2	253,9	375
11013453		11013604	15 x 2 x 1	18	16,5 - 21,5	316,1	476
11013454		11013605	16 x 2 x 1	18	16,5 - 21,5	336,9	498
11013455		11013606	20 x 2 x 1	18	18,5 - 24,1	419,8	606
11013456		11013607	24 x 2 x 1	18	20,6 - 26,9	502,7	725
11013457		11013608	30 x 2 x 1	18	21,8 - 28,5	627,2	897
11013458		11013609	36 x 2 x 1	18	23,7 - 31,0	751,6	1086
11013459		11013610	1 x 3 x 1	18	6,0 - 7,6	36,2	66
11013460		11013611	2 x 3 x 1	18	8,9 - 11,4	67,3	122
11013461		11013612	3 x 3 x 1	18	9,5 - 12,2	98,4	159
11013467		11013618	1 x 4 x 1	18	6,4 - 8,1	46,5	79
11013468		11013619	2 x 4 x 1	18	11,0 - 14,2	88,0	164
11013469		11013620	3 x 4 x 1	18	11,7 - 15,2	129,5	214
11013476		11013627	1 x 2 x 1,5	16	6,8 - 8,2	36,2	70
11013477		11013628	2 x 2 x 1,5	16	10,0 - 12,2	67,3	128
11013478		11013629	4 x 2 x 1,5	16	11,7 - 14,3	129,5	217
11013479		11013630	5 x 2 x 1,5	16	13,0 - 15,9	160,6	274
11013480		11013631	6 x 2 x 1,5	16	14,1 - 17,3	191,7	329
11013481		11013632	8 x 2 x 1,5	16	16,0 - 19,7	253,9	404
11013482		11013633	10 x 2 x 1,5	16	18,3 - 22,5	316,1	471
11013483		11013634	12 x 2 x 1,5	16	18,9 - 23,2	378,3	561
11013484		11013635	15 x 2 x 1,5	16	21,2 - 26,0	471,6	711
11013485		11013636	16 x 2 x 1,5	16	21,2 - 26,0	502,7	745
11013486		11013637	20 x 2 x 1,5	16	23,8 - 29,2	627,2	907
11013487		11013638	24 x 2 x 1,5	16	26,5 - 32,6	751,6	1083
11013488		11013639	30 x 2 x 1,5	16	28,3 - 34,8	938,2	1341
11013489		11013640	36 x 2 x 1,5	16	30,7 - 37,8	1124,8	1623
11013490		11013641	1 x 3 x 1,5	16	7,2 - 8,7	51,7	89
11013491		11013642	2 x 3 x 1,5	16	11,2 - 13,7	98,4	175
11013492		11013643	3 x 3 x 1,5	16	11,9 - 14,6	145,0	231
11013498		11013649	1 x 4 x 1,5	16	7,9 - 9,6	67,3	113
11013499		11013650	2 x 4 x 1,5	16	13,9 - 17,0	129,5	235
11013500		11013651	3 x 4 x 1,5	16	14,8 - 18,2	191,7	309

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC OS 500

Instrumentation cable, XLPE/OS/PVC



HELUDATA® EN-50288-7 XLPE/PVC OS 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range** flexing -5°C to +50°C fixed installation -30°C to +90°C
- **Nominal voltage** U AC 500 V
- **Test voltage** core/core 2000 V core/screen 2000 V
- **Minimum bending radius** fixed installation 7,5x outer Ø
- **Insulation resistance** > 5000 MΩxkm
- **Mutual capacitance** single pair max. 150 pF/m
- **Inductance** max. 1 mH /km
- **L/R (ratio)**
  - 0,5 mm<sup>2</sup> < 25 μH/Ω
  - 0,75 mm<sup>2</sup> < 25 μH/Ω
  - 1 mm<sup>2</sup> < 25 μH/Ω
  - 1,5 mm<sup>2</sup> < 40 μH/Ω
  - 2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification
  - pairs: BU, BK
  - triads: BU, BK, RD
  - quads: BU, BK, RD, GY
- blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV-resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-2X(St)Y**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
BK	BK	BU	mm <sup>2</sup>		min. - max.	per km	app. kg / km
					mm		
11013687		11013838	1 x 2 x 0,5	20	5,9 - 7,4	15,4	46
11013688		11013839	2 x 2 x 0,5	20	8,4 - 10,7	25,8	81
11013689		11013840	4 x 2 x 0,5	20	9,7 - 12,4	46,5	121
11013690		11013841	5 x 2 x 0,5	20	10,7 - 13,8	56,9	154
11013691		11013842	6 x 2 x 0,5	20	11,7 - 15,0	67,3	184
11013692		11013843	8 x 2 x 0,5	20	13,2 - 17,0	88,0	220
11013693		11013844	10 x 2 x 0,5	20	14,9 - 19,3	108,8	249
11013694		11013845	12 x 2 x 0,5	20	15,6 - 20,1	129,5	296
11013695		11013846	15 x 2 x 0,5	20	17,2 - 22,3	160,6	376
11013696		11013847	16 x 2 x 0,5	20	17,2 - 22,3	171,0	391
11013697		11013848	20 x 2 x 0,5	20	19,3 - 25,0	212,4	459
11013698		11013849	24 x 2 x 0,5	20	21,6 - 27,9	253,9	547
11013699		11013850	30 x 2 x 0,5	20	23,0 - 29,9	316,1	673
11013700		11013851	36 x 2 x 0,5	20	24,8 - 32,2	378,3	815
11013701		11013852	1 x 3 x 0,5	20	6,2 - 7,8	20,6	55
11013702		11013853	2 x 3 x 0,5	20	9,3 - 11,9	36,2	101
11013703		11013854	3 x 3 x 0,5	20	9,8 - 12,6	51,7	127
11013709		11013860	1 x 4 x 0,5	20	6,6 - 8,3	25,8	66
11013710		11013861	2 x 4 x 0,5	20	11,5 - 14,8	46,5	135
11013711		11013862	3 x 4 x 0,5	20	12,2 - 15,7	67,3	170

# HELUDATA® EN-50288-7 XLPE/PVC OS 500

Instrumentation cable, XLPE/OS/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11013717	11013868	1 x 2 x 0,75	19	6,2 - 7,6	20,6	53
11013718	11013869	2 x 2 x 0,75	19	9,0 - 11,1	36,2	94
11013719	11013870	4 x 2 x 0,75	19	10,6 - 13,1	67,3	152
11013720	11013871	5 x 2 x 0,75	19	11,6 - 14,2	82,8	185
11013721	11013872	6 x 2 x 0,75	19	12,8 - 15,7	98,4	229
11013722	11013873	8 x 2 x 0,75	19	14,3 - 17,7	129,5	267
11013723	11013874	10 x 2 x 0,75	19	16,3 - 20,1	160,6	315
11013724	11013875	12 x 2 x 0,75	19	16,8 - 20,9	191,7	363
11013725	11013876	15 x 2 x 0,75	19	18,8 - 23,3	238,4	463
11013726	11013877	16 x 2 x 0,75	19	18,8 - 23,3	253,9	482
11013727	11013878	20 x 2 x 0,75	19	21,1 - 26,2	316,1	582
11013728	11013879	24 x 2 x 0,75	19	23,6 - 29,2	378,3	694
11013729	11013880	30 x 2 x 0,75	19	24,9 - 30,9	471,6	854
11013730	11013881	36 x 2 x 0,75	19	27,1 - 33,7	564,9	1034
11013731	11013882	1 x 3 x 0,75	19	6,6 - 8,0	28,4	65
11013732	11013883	2 x 3 x 0,75	19	10,0 - 12,3	51,7	126
11013733	11013884	3 x 3 x 0,75	19	10,8 - 13,3	75,1	159
11013739	11013890	1 x 4 x 0,75	19	7,1 - 8,7	36,2	78
11013740	11013891	2 x 4 x 0,75	19	12,4 - 15,3	67,3	168
11013741	11013892	3 x 4 x 0,75	19	13,3 - 16,5	98,4	213
11013747	11013898	1 x 2 x 1	18	6,4 - 8,0	25,8	60
11013748	11013899	2 x 2 x 1	18	9,3 - 11,8	46,5	108
11013749	11013900	4 x 2 x 1	18	11,0 - 13,9	88,0	178
11013750	11013901	5 x 2 x 1	18	12,0 - 15,2	108,8	218
11013751	11013902	6 x 2 x 1	18	13,2 - 16,8	129,5	270
11013752	11013903	8 x 2 x 1	18	14,8 - 18,8	171,0	318
11013753	11013904	10 x 2 x 1	18	16,9 - 21,6	212,4	379
11013754	11013905	12 x 2 x 1	18	17,5 - 22,3	253,9	446
11013755	11013906	15 x 2 x 1	18	19,6 - 24,9	316,1	567
11013756	11013907	16 x 2 x 1	18	19,6 - 24,9	336,9	592
11013757	11013908	20 x 2 x 1	18	22,0 - 28,0	419,8	716
11013758	11013909	24 x 2 x 1	18	24,5 - 31,4	502,7	839
11013759	11013910	30 x 2 x 1	18	26,1 - 33,4	627,2	1036
11013760	11013911	36 x 2 x 1	18	28,4 - 36,3	751,6	1256
11013761	11013912	1 x 3 x 1	18	6,8 - 8,5	36,2	75
11013762	11013913	2 x 3 x 1	18	10,5 - 13,3	67,3	145
11013763	11013914	3 x 3 x 1	18	11,1 - 14,1	98,4	187
11013769	11013920	1 x 4 x 1	18	7,3 - 9,2	46,5	90
11013770	11013921	2 x 4 x 1	18	13,0 - 16,5	88,0	195
11013771	11013922	3 x 4 x 1	18	13,8 - 17,5	129,5	251
11013778	11013929	1 x 2 x 1,5	16	7,2 - 8,7	36,2	74
11013779	11013930	2 x 2 x 1,5	16	10,7 - 13,1	67,3	141
11013780	11013931	4 x 2 x 1,5	16	12,5 - 15,2	129,5	229
11013781	11013932	5 x 2 x 1,5	16	13,8 - 16,8	160,6	290
11013782	11013933	6 x 2 x 1,5	16	15,2 - 18,6	191,7	350
11013783	11013934	8 x 2 x 1,5	16	17,1 - 20,9	253,9	427
11013784	11013935	10 x 2 x 1,5	16	19,5 - 23,9	316,1	507
11013785	11013936	12 x 2 x 1,5	16	20,4 - 24,9	378,3	591
11013786	11013937	15 x 2 x 1,5	16	22,8 - 27,9	471,6	764
11013787	11013938	16 x 2 x 1,5	16	22,8 - 27,9	502,7	800
11013788	11013939	20 x 2 x 1,5	16	25,6 - 31,2	627,2	969
11013789	11013940	24 x 2 x 1,5	16	28,5 - 34,9	751,6	1157
11013790	11013941	30 x 2 x 1,5	16	30,4 - 37,2	938,2	1429
11013791	11013942	36 x 2 x 1,5	16	33,0 - 40,4	1124,8	1731
11013792	11013943	1 x 3 x 1,5	16	7,7 - 9,4	51,7	94
11013793	11013944	2 x 3 x 1,5	16	11,9 - 14,4	98,4	185
11013794	11013945	3 x 3 x 1,5	16	12,8 - 15,6	145,0	251
11013800	11013951	1 x 4 x 1,5	16	8,4 - 10,2	67,3	119
11013801	11013952	2 x 4 x 1,5	16	14,8 - 18,1	129,5	247
11013802	11013953	3 x 4 x 1,5	16	16,0 - 19,5	191,7	335
11013808	11013959	1 x 2 x 2,5	14	8,3 - 10,4	56,9	106
11013809	11013960	2 x 2 x 2,5	14	12,3 - 15,5	108,8	202
11013810	11013961	4 x 2 x 2,5	14	14,5 - 18,4	212,4	338
11013811	11013962	5 x 2 x 2,5	14	16,1 - 20,3	264,3	428
11013812	11013963	6 x 2 x 2,5	14	17,5 - 22,3	316,1	529
11013813	11013964	8 x 2 x 2,5	14	19,9 - 25,4	419,8	636
11013814	11013965	10 x 2 x 2,5	14	23,0 - 29,2	523,5	755
11013815	11013966	12 x 2 x 2,5	14	23,7 - 30,3	627,2	899
11013816	11013967	15 x 2 x 2,5	14	26,6 - 33,8	782,7	1157
11013817	11013968	16 x 2 x 2,5	14	26,6 - 33,8	834,5	1213
11013818	11013969	20 x 2 x 2,5	14	29,8 - 38,1	1041,9	1471
11013819	11013970	24 x 2 x 2,5	14	33,5 - 42,7	1249,2	1757
11013820	11013971	30 x 2 x 2,5	14	35,7 - 45,5	1560,3	2174
11013821	11013972	36 x 2 x 2,5	14	38,7 - 49,4	1871,3	2657
11013822	11013973	1 x 3 x 2,5	14	8,8 - 11,0	82,8	136
11013823	11013974	2 x 3 x 2,5	14	13,8 - 17,5	160,6	269
11013824	11013975	3 x 3 x 2,5	14	14,7 - 18,6	238,4	370
11013830	11013981	1 x 4 x 2,5	14	9,5 - 12,0	108,8	169
11013831	11013982	2 x 4 x 2,5	14	17,2 - 21,9	212,4	371
11013832	11013983	3 x 4 x 2,5	14	18,6 - 23,5	316,1	495

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC IOS 300

Instrumentation cable, XLPE/IS/OS/PVC



HELUDATA® EN-50288-7 XLPE/PVC IOS 300 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-2X(St)Y PIMF**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
BK	BU		mm <sup>2</sup>		min. - max.	per km	app. kg / km
					mm		
11012297	11012433		2 x 2 x 0,5	20	8,3 - 10,7	31,6	90
11012298	11012434		4 x 2 x 0,5	20	9,5 - 12,3	58,2	140
11012299	11012435		5 x 2 x 0,5	20	10,5 - 13,7	71,4	167
11012300	11012436		6 x 2 x 0,5	20	11,4 - 14,9	84,7	203
11012301	11012437		8 x 2 x 0,5	20	13,0 - 16,9	111,2	238
11012302	11012438		10 x 2 x 0,5	20	14,6 - 19,0	137,8	282
11012303	11012439		12 x 2 x 0,5	20	15,3 - 19,9	164,4	324
11012304	11012440		15 x 2 x 0,5	20	16,9 - 22,0	204,1	407
11012305	11012441		16 x 2 x 0,5	20	16,9 - 22,0	217,4	424
11012306	11012442		20 x 2 x 0,5	20	18,9 - 24,8	270,5	513
11012307	11012443		24 x 2 x 0,5	20	21,1 - 27,7	323,6	608
11012308	11012444		30 x 2 x 0,5	20	22,3 - 29,3	403,2	745
11012309	11012445		36 x 2 x 0,5	20	24,3 - 31,9	482,9	893
11012310	11012446		2 x 3 x 0,5	20	9,1 - 11,8	42,0	108
11012311	11012447		3 x 3 x 0,5	20	9,6 - 12,4	60,5	140
11012317	11012453		2 x 4 x 0,5	20	10,5 - 13,6	52,4	136
11012318	11012454		3 x 4 x 0,5	20	11,1 - 14,4	76,0	170

# HELUDATA® EN-50288-7 XLPE/PVC IOS 300

Instrumentation cable, XLPE/IS/OS/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11012324	11012460	2 x 2 x 0,75	19	8,9 - 11,0	42,0	104
11012325	11012461	4 x 2 x 0,75	19	10,5 - 13,1	78,9	165
11012326	11012462	5 x 2 x 0,75	19	11,4 - 14,2	97,3	204
11012327	11012463	6 x 2 x 0,75	19	12,4 - 15,4	115,8	242
11012328	11012464	8 x 2 x 0,75	19	14,1 - 17,5	152,7	293
11012329	11012465	10 x 2 x 0,75	19	16,1 - 20,0	189,6	339
11012330	11012466	12 x 2 x 0,75	19	16,6 - 20,8	226,6	400
11012331	11012467	15 x 2 x 0,75	19	18,6 - 23,2	281,9	503
11012332	11012468	16 x 2 x 0,75	19	18,6 - 23,2	300,3	524
11012333	11012469	20 x 2 x 0,75	19	20,9 - 26,0	374,2	635
11012334	11012470	24 x 2 x 0,75	19	23,3 - 29,1	448,0	753
11012335	11012471	30 x 2 x 0,75	19	24,6 - 30,8	558,7	923
11012336	11012472	36 x 2 x 0,75	19	26,8 - 33,5	669,5	1108
11012337	11012473	2 x 3 x 0,75	19	9,8 - 12,2	57,6	133
11012338	11012474	3 x 3 x 0,75	19	10,6 - 13,2	83,8	168
11012344	11012480	2 x 4 x 0,75	19	11,4 - 14,1	73,1	168
11012345	11012481	3 x 4 x 0,75	19	12,1 - 15,0	107,1	212
11012351	11012487	2 x 2 x 1	18	9,3 - 11,8	52,4	124
11012352	11012488	4 x 2 x 1	18	10,9 - 13,9	99,7	191
11012353	11012489	5 x 2 x 1	18	11,9 - 15,2	123,2	238
11012354	11012490	6 x 2 x 1	18	13,1 - 16,8	146,9	282
11012355	11012491	8 x 2 x 1	18	14,7 - 18,8	194,2	344
11012356	11012492	10 x 2 x 1	18	16,8 - 21,6	241,5	409
11012357	11012493	12 x 2 x 1	18	17,3 - 22,4	288,8	473
11012358	11012494	15 x 2 x 1	18	19,4 - 25,0	359,6	607
11012359	11012495	16 x 2 x 1	18	19,4 - 25,0	383,3	634
11012360	11012496	20 x 2 x 1	18	21,8 - 28,0	477,9	767
11012361	11012497	24 x 2 x 1	18	24,3 - 31,4	572,4	911
11012362	11012498	30 x 2 x 1	18	25,9 - 33,5	714,2	1118
11012363	11012499	36 x 2 x 1	18	28,1 - 36,4	856,1	1343
11012364	11012500	2 x 3 x 1	18	10,4 - 13,3	73,1	154
11012365	11012501	3 x 3 x 1	18	11,0 - 14,0	107,1	196
11012371	11012507	2 x 4 x 1	18	11,8 - 15,1	93,9	195
11012372	11012508	3 x 4 x 1	18	12,7 - 16,4	138,2	250
11012379	11012515	2 x 2 x 1,5	16	11,4 - 13,9	73,1	161
11012380	11012516	4 x 2 x 1,5	16	13,5 - 16,5	141,2	264
11012381	11012517	5 x 2 x 1,5	16	14,8 - 18,0	175,1	331
11012382	11012518	6 x 2 x 1,5	16	16,3 - 19,9	209,1	404
11012383	11012519	8 x 2 x 1,5	16	18,5 - 22,6	277,1	482
11012384	11012520	10 x 2 x 1,5	16	21,1 - 25,8	345,2	572
11012385	11012521	12 x 2 x 1,5	16	21,8 - 26,6	413,2	677
11012386	11012522	15 x 2 x 1,5	16	24,4 - 29,9	515,2	867
11012387	11012523	16 x 2 x 1,5	16	24,4 - 29,9	549,2	905
11012388	11012524	20 x 2 x 1,5	16	27,4 - 33,6	685,3	1095
11012389	11012525	24 x 2 x 1,5	16	30,8 - 37,7	821,2	1301
11012390	11012526	30 x 2 x 1,5	16	32,8 - 40,2	1025,2	1598
11012391	11012527	36 x 2 x 1,5	16	35,6 - 43,7	1229,4	1942
11012392	11012528	2 x 3 x 1,5	16	12,8 - 15,6	104,2	212
11012393	11012529	3 x 3 x 1,5	16	13,6 - 16,6	153,8	282
11012399	11012535	2 x 4 x 1,5	16	14,7 - 18,0	135,3	270
11012400	11012536	3 x 4 x 1,5	16	15,8 - 19,4	200,4	361

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC IOS 500

Instrumentation cable, XLPE/IS/OS/PVC



HELUDATA® EN-50288-7 XLPE/PVC IOS 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-2X(St)Y PIMF**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11012569	BK	BU	2 x 2 x 0,5	20	9,6 - 12,2	31,6	110
11012570			4 x 2 x 0,5	20	11,3 - 14,4	58,2	163
11012571			5 x 2 x 0,5	20	12,3 - 15,7	71,4	203
11012572			6 x 2 x 0,5	20	13,6 - 17,3	84,7	247
11012573			8 x 2 x 0,5	20	15,4 - 19,7	111,2	287
11012574			10 x 2 x 0,5	20	17,4 - 22,4	137,8	337
11012575			12 x 2 x 0,5	20	18,2 - 23,3	164,4	386
11012576			15 x 2 x 0,5	20	20,4 - 26,1	204,1	499
11012577			16 x 2 x 0,5	20	20,4 - 26,1	217,4	517
11012578			20 x 2 x 0,5	20	22,8 - 29,3	270,5	621
11012579			24 x 2 x 0,5	20	25,5 - 32,7	323,6	734
11012580			30 x 2 x 0,5	20	26,9 - 34,7	403,2	895
11012581			36 x 2 x 0,5	20	29,3 - 37,7	482,9	1074
11012582			2 x 3 x 0,5	20	10,8 - 13,7	42,0	132
11012583			3 x 3 x 0,5	20	11,4 - 14,6	60,5	170
11012589			2 x 4 x 0,5	20	12,3 - 15,6	52,4	167
11012590			3 x 4 x 0,5	20	13,2 - 16,9	76,0	207

# HELUDATA® EN-50288-7 XLPE/PVC IOS 500

Instrumentation cable, XLPE/IS/OS/PVC

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11012596		11012732	2 x 2 x 0,75	19	10,4 - 12,7	42,0	125
11012597		11012733	4 x 2 x 0,75	19	12,1 - 14,9	78,9	196
11012598		11012734	5 x 2 x 0,75	19	13,4 - 16,5	97,3	236
11012599		11012735	6 x 2 x 0,75	19	14,6 - 18,0	115,8	289
11012600		11012736	8 x 2 x 0,75	19	16,6 - 20,3	152,7	347
11012601		11012737	10 x 2 x 0,75	19	18,9 - 23,3	189,6	399
11012602		11012738	12 x 2 x 0,75	19	19,6 - 24,1	226,6	468
11012603		11012739	15 x 2 x 0,75	19	21,9 - 27,0	281,9	602
11012604		11012740	16 x 2 x 0,75	19	21,9 - 27,0	300,3	626
11012605		11012741	20 x 2 x 0,75	19	24,6 - 30,3	374,2	752
11012606		11012742	24 x 2 x 0,75	19	27,4 - 33,8	448,0	889
11012607		11012743	30 x 2 x 0,75	19	29,3 - 36,1	558,7	1087
11012608		11012744	36 x 2 x 0,75	19	31,8 - 39,3	669,5	1304
11012609		11012745	2 x 3 x 0,75	19	11,5 - 14,1	57,6	160
11012610		11012746	3 x 3 x 0,75	19	12,2 - 15,0	83,8	200
11012616		11012752	2 x 4 x 0,75	19	13,3 - 16,4	73,1	194
11012617		11012753	3 x 4 x 0,75	19	14,2 - 17,4	107,1	253
11012623		11012759	2 x 2 x 1	18	10,8 - 13,6	52,4	140
11012624		11012760	4 x 2 x 1	18	12,7 - 15,9	99,7	223
11012625		11012761	5 x 2 x 1	18	13,9 - 17,4	123,2	279
11012626		11012762	6 x 2 x 1	18	15,3 - 19,3	146,9	332
11012627		11012763	8 x 2 x 1	18	17,1 - 21,7	194,2	399
11012628		11012764	10 x 2 x 1	18	19,6 - 24,8	241,5	471
11012629		11012765	12 x 2 x 1	18	20,5 - 25,9	288,8	555
11012630		11012766	15 x 2 x 1	18	22,9 - 29,0	359,6	699
11012631		11012767	16 x 2 x 1	18	22,9 - 29,0	383,3	729
11012632		11012768	20 x 2 x 1	18	25,7 - 32,5	477,9	878
11012633		11012769	24 x 2 x 1	18	28,6 - 36,4	572,4	1057
11012634		11012770	30 x 2 x 1	18	30,5 - 38,7	714,2	1292
11012635		11012771	36 x 2 x 1	18	33,1 - 42,1	856,1	1552
11012636		11012772	2 x 3 x 1	18	11,9 - 15,0	73,1	182
11012637		11012773	3 x 3 x 1	18	12,8 - 16,2	107,1	230
11012643		11012779	2 x 4 x 1	18	13,8 - 17,4	93,9	230
11012644		11012780	3 x 4 x 1	18	14,7 - 18,6	138,2	292
11012651		11012787	2 x 2 x 1,5	16	12,1 - 14,7	73,1	177
11012652		11012788	4 x 2 x 1,5	16	14,3 - 17,3	141,2	287
11012653		11012789	5 x 2 x 1,5	16	15,8 - 19,3	175,1	358
11012654		11012790	6 x 2 x 1,5	16	17,3 - 21,0	209,1	427
11012655		11012791	8 x 2 x 1,5	16	19,6 - 23,9	277,1	518
11012656		11012792	10 x 2 x 1,5	16	22,4 - 27,3	345,2	613
11012657		11012793	12 x 2 x 1,5	16	23,4 - 28,5	413,2	724
11012658		11012794	15 x 2 x 1,5	16	26,2 - 31,9	515,2	912
11012659		11012795	16 x 2 x 1,5	16	26,2 - 31,9	549,2	952
11012660		11012796	20 x 2 x 1,5	16	29,4 - 35,8	685,3	1167
11012661		11012797	24 x 2 x 1,5	16	33,0 - 40,2	821,2	1383
11012662		11012798	30 x 2 x 1,5	16	34,9 - 42,6	1025,2	1697
11012663		11012799	36 x 2 x 1,5	16	38,1 - 46,5	1229,4	2063
11012664		11012800	2 x 3 x 1,5	16	13,6 - 16,5	104,2	223
11012665		11012801	3 x 3 x 1,5	16	14,5 - 17,5	153,8	297
11012671		11012807	2 x 4 x 1,5	16	15,8 - 19,2	135,3	295
11012672		11012808	3 x 4 x 1,5	16	16,8 - 20,4	200,4	380
11012678		11012814	2 x 2 x 2,5	14	13,9 - 17,5	114,6	245
11012679		11012815	4 x 2 x 2,5	14	16,5 - 20,9	224,1	405
11012680		11012816	5 x 2 x 2,5	14	18,2 - 23,0	278,7	508
11012681		11012817	6 x 2 x 2,5	14	19,9 - 25,3	333,5	622
11012682		11012818	8 x 2 x 2,5	14	22,8 - 28,9	443,0	756
11012683		11012819	10 x 2 x 2,5	14	26,1 - 33,1	552,5	893
11012684		11012820	12 x 2 x 2,5	14	27,0 - 34,2	662,0	1055
11012685		11012821	15 x 2 x 2,5	14	30,4 - 38,6	826,2	1348
11012686		11012822	16 x 2 x 2,5	14	30,4 - 38,6	881,0	1410
11012687		11012823	20 x 2 x 2,5	14	34,2 - 43,3	1100,0	1722
11012688		11012824	24 x 2 x 2,5	14	38,3 - 48,6	1318,9	2043
11012689		11012825	30 x 2 x 2,5	14	40,8 - 51,8	1647,3	2533
11012690		11012826	36 x 2 x 2,5	14	44,3 - 56,3	1975,9	3072
11012691		11012827	2 x 3 x 2,5	14	15,7 - 19,8	166,4	325
11012692		11012828	3 x 3 x 2,5	14	16,7 - 21,1	247,1	425
11012698		11012834	2 x 4 x 2,5	14	18,2 - 23,0	218,3	415
11012699		11012835	3 x 4 x 2,5	14	19,4 - 24,6	324,9	557

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC OSA 300

Instrumentation cable, XLPE/OS/PVC/SWA/PVC



HELUDATA® EN-50288-7 XLPE/PVC OSA 300 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)YRY**
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km
BK	BU		mm <sup>2</sup>		mm		
11013989	11014140		1 x 2 x 0,5	20	9,0 - 11,0	15,4	198
11013990	11014141		2 x 2 x 0,5	20	11,1 - 13,8	25,8	288
11013991	11014142		4 x 2 x 0,5	20	12,1 - 15,2	46,5	356
11013992	11014143		5 x 2 x 0,5	20	12,8 - 16,2	56,9	398
11013993	11014144		6 x 2 x 0,5	20	13,6 - 17,1	67,3	443
11013994	11014145		8 x 2 x 0,5	20	14,8 - 18,9	88,0	504
11013995	11014146		10 x 2 x 0,5	20	16,2 - 20,8	108,8	559
11013996	11014147		12 x 2 x 0,5	20	16,6 - 21,3	129,5	620
11013997	11014148		15 x 2 x 0,5	20	18,1 - 23,2	160,6	861
11013998	11014149		16 x 2 x 0,5	20	18,1 - 23,2	171,0	873
11013999	11014150		20 x 2 x 0,5	20	20,3 - 26,1	212,4	1006
11014000	11014151		24 x 2 x 0,5	20	22,1 - 28,6	253,9	1131
11014001	11014152		30 x 2 x 0,5	20	23,1 - 30,0	316,1	1293
11014002	11014153		36 x 2 x 0,5	20	24,5 - 31,9	378,3	1473
11014003	11014154		1 x 3 x 0,5	20	9,3 - 11,3	20,6	216
11014004	11014155		2 x 3 x 0,5	20	11,8 - 14,8	36,2	331
11014005	11014156		3 x 3 x 0,5	20	12,2 - 15,4	51,7	367
11014011	11014162		1 x 4 x 0,5	20	9,6 - 11,9	25,8	237
11014012	11014163		2 x 4 x 0,5	20	13,4 - 17,0	46,5	398



# HELUDATA® EN-50288-7 XLPE/PVC OSA 300

Instrumentation cable, XLPE/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11014019	11014170	1 x 2 x 0,75	19	9,4 - 11,2	20,6	221
11014020	11014171	2 x 2 x 0,75	19	11,7 - 14,2	36,2	326
11014021	11014172	4 x 2 x 0,75	19	12,9 - 15,6	67,3	400
11014022	11014173	5 x 2 x 0,75	19	13,6 - 16,7	82,8	449
11014023	11014174	6 x 2 x 0,75	19	14,7 - 17,9	98,4	516
11014024	11014175	8 x 2 x 0,75	19	15,9 - 19,5	129,5	579
11014025	11014176	10 x 2 x 0,75	19	17,4 - 21,4	160,6	652
11014026	11014177	12 x 2 x 0,75	19	18,0 - 22,1	191,7	843
11014027	11014178	15 x 2 x 0,75	19	20,2 - 24,8	238,4	1016
11014028	11014179	16 x 2 x 0,75	19	20,2 - 24,8	253,9	1033
11014029	11014180	20 x 2 x 0,75	19	22,1 - 27,3	316,1	1187
11014030	11014181	24 x 2 x 0,75	19	23,9 - 29,6	378,3	1338
11014031	11014182	30 x 2 x 0,75	19	25,2 - 31,2	471,6	1542
11014032	11014183	36 x 2 x 0,75	19	27,0 - 33,6	564,9	1963
11014033	11014184	1 x 3 x 0,75	19	9,7 - 11,6	28,4	238
11014034	11014185	2 x 3 x 0,75	19	12,5 - 15,2	51,7	365
11014035	11014186	3 x 3 x 0,75	19	13,0 - 15,8	75,1	408
11014041	11014192	1 x 4 x 0,75	19	10,1 - 12,1	36,2	257
11014042	11014193	2 x 4 x 0,75	19	14,5 - 17,7	67,3	465
11014049	11014200	1 x 2 x 1	18	9,6 - 11,7	25,8	235
11014050	11014201	2 x 2 x 1	18	12,0 - 14,9	46,5	349
11014051	11014202	4 x 2 x 1	18	13,2 - 16,5	88,0	440
11014052	11014203	5 x 2 x 1	18	14,1 - 17,5	108,8	516
11014053	11014204	6 x 2 x 1	18	15,1 - 18,9	129,5	577
11014054	11014205	8 x 2 x 1	18	16,4 - 20,7	171,0	657
11014055	11014206	10 x 2 x 1	18	18,2 - 23,0	212,4	871
11014056	11014207	12 x 2 x 1	18	19,3 - 24,4	253,9	952
11014057	11014208	15 x 2 x 1	18	20,9 - 26,5	316,1	1146
11014058	11014209	16 x 2 x 1	18	20,9 - 26,5	336,9	1168
11014059	11014210	20 x 2 x 1	18	22,9 - 29,1	419,8	1359
11014060	11014211	24 x 2 x 1	18	25,0 - 31,9	502,7	1544
11014061	11014212	30 x 2 x 1	18	26,4 - 33,7	627,2	1998
11014062	11014213	36 x 2 x 1	18	28,5 - 36,5	751,6	2291
11014063	11014214	1 x 3 x 1	18	9,9 - 12,1	36,2	255
11014064	11014215	2 x 3 x 1	18	12,8 - 15,9	67,3	398
11014065	11014216	3 x 3 x 1	18	13,4 - 16,7	98,4	450
11014071	11014222	1 x 4 x 1	18	10,3 - 12,6	46,5	282
11014072	11014223	2 x 4 x 1	18	14,9 - 18,7	88,0	507
11014080	11014231	1 x 2 x 1,5	16	10,7 - 12,7	36,2	274
11014081	11014232	2 x 2 x 1,5	16	13,9 - 16,7	67,3	425
11014082	11014233	4 x 2 x 1,5	16	15,6 - 18,8	129,5	567
11014083	11014234	5 x 2 x 1,5	16	16,7 - 20,2	160,6	659
11014084	11014235	6 x 2 x 1,5	16	18,0 - 21,8	191,7	879
11014085	11014236	8 x 2 x 1,5	16	20,4 - 24,7	253,9	994
11014086	11014237	10 x 2 x 1,5	16	22,7 - 27,5	316,1	1128
11014087	11014238	12 x 2 x 1,5	16	23,3 - 28,2	378,3	1269
11014088	11014239	15 x 2 x 1,5	16	25,7 - 31,2	471,6	1530
11014089	11014240	16 x 2 x 1,5	16	25,7 - 31,2	502,7	1564
11014090	11014241	20 x 2 x 1,5	16	28,5 - 34,7	627,2	2030
11014091	11014242	24 x 2 x 1,5	16	32,1 - 39,1	751,6	2311
11014092	11014243	30 x 2 x 1,5	16	33,6 - 41,0	938,2	2677
11014093	11014244	36 x 2 x 1,5	16	36,3 - 44,2	1124,8	3088
11014094	11014245	1 x 3 x 1,5	16	11,3 - 13,4	51,7	307
11014095	11014246	2 x 3 x 1,5	16	15,1 - 18,2	98,4	510
11014096	11014247	3 x 3 x 1,5	16	15,8 - 19,0	145,0	588
11014102	11014253	1 x 4 x 1,5	16	11,8 - 14,1	67,3	353
11014103	11014254	2 x 4 x 1,5	16	17,6 - 21,3	129,5	654

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC OSA 500

Instrumentation cable, XLPE/OS/PVC/SWA/PVC



HELUDATA® EN-50288-7 XLPE/PVC OSA 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-2X(St)YRY**
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
BK	BU	BU	mm <sup>2</sup>		min. - max. mm	per km	app. kg / km
11014291	11014442	11014442	1 x 2 x 0,5	20	9,8 - 11,9	15,4	229
11014292	11014443	11014443	2 x 2 x 0,5	20	12,3 - 15,2	25,8	341
11014293	11014444	11014444	4 x 2 x 0,5	20	13,6 - 16,9	46,5	412
11014294	11014445	11014445	5 x 2 x 0,5	20	14,7 - 18,3	56,9	482
11014295	11014446	11014446	6 x 2 x 0,5	20	15,6 - 19,5	67,3	541
11014296	11014447	11014447	8 x 2 x 0,5	20	16,9 - 21,3	88,0	606
11014297	11014448	11014448	10 x 2 x 0,5	20	19,5 - 24,5	108,8	800
11014298	11014449	11014449	12 x 2 x 0,5	20	19,9 - 25,1	129,5	886
11014299	11014450	11014450	15 x 2 x 0,5	20	21,8 - 27,5	160,6	1059
11014300	11014451	11014451	16 x 2 x 0,5	20	21,8 - 27,5	171,0	1074
11014301	11014452	11014452	20 x 2 x 0,5	20	23,7 - 30,1	212,4	1225
11014302	11014453	11014453	24 x 2 x 0,5	20	26,1 - 33,2	253,9	1379
11014303	11014454	11014454	30 x 2 x 0,5	20	27,4 - 34,9	316,1	1795
11014304	11014455	11014455	36 x 2 x 0,5	20	30,2 - 38,4	378,3	2041
11014305	11014456	11014456	1 x 3 x 0,5	20	10,1 - 12,3	20,6	245
11014306	11014457	11014457	2 x 3 x 0,5	20	13,2 - 16,4	36,2	383
11014307	11014458	11014458	3 x 3 x 0,5	20	13,7 - 17,1	51,7	424
11014313	11014464	11014464	1 x 4 x 0,5	20	10,5 - 12,8	25,8	269
11014314	11014465	11014465	2 x 4 x 0,5	20	15,4 - 19,3	46,5	485

# HELUDATA® EN-50288-7 XLPE/PVC OSA 500

Instrumentation cable, XLPE/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11014321	11014472	1 x 2 x 0,75	19	10,1 - 12,1	20,6	243
11014322	11014473	2 x 2 x 0,75	19	12,9 - 15,6	36,2	369
11014323	11014474	4 x 2 x 0,75	19	14,5 - 17,5	67,3	479
11014324	11014475	5 x 2 x 0,75	19	15,5 - 18,7	82,8	536
11014325	11014476	6 x 2 x 0,75	19	16,5 - 20,0	98,4	615
11014326	11014477	8 x 2 x 0,75	19	18,2 - 22,1	129,5	816
11014327	11014478	10 x 2 x 0,75	19	20,7 - 25,1	160,6	910
11014328	11014479	12 x 2 x 0,75	19	21,2 - 25,9	191,7	1007
11014329	11014480	15 x 2 x 0,75	19	23,2 - 28,4	238,4	1214
11014330	11014481	16 x 2 x 0,75	19	23,2 - 28,4	253,9	1233
11014331	11014482	20 x 2 x 0,75	19	25,7 - 31,5	316,1	1415
11014332	11014483	24 x 2 x 0,75	19	28,1 - 34,5	378,3	1814
11014333	11014484	30 x 2 x 0,75	19	30,3 - 37,1	471,6	2081
11014334	11014485	36 x 2 x 0,75	19	32,7 - 40,1	564,9	2366
11014335	11014486	1 x 3 x 0,75	19	10,5 - 12,5	28,4	267
11014336	11014487	2 x 3 x 0,75	19	13,9 - 16,8	51,7	438
11014337	11014488	3 x 3 x 0,75	19	14,7 - 17,8	75,1	487
11014343	11014494	1 x 4 x 0,75	19	11,2 - 13,4	36,2	301
11014344	11014495	2 x 4 x 0,75	19	16,3 - 19,8	67,3	546
11014351	11014502	1 x 2 x 1	18	10,3 - 12,5	25,8	262
11014352	11014503	2 x 2 x 1	18	13,2 - 16,3	46,5	397
11014353	11014504	4 x 2 x 1	18	14,9 - 18,4	88,0	520
11014354	11014505	5 x 2 x 1	18	15,9 - 19,7	108,8	589
11014355	11014506	6 x 2 x 1	18	16,9 - 21,1	129,5	683
11014356	11014507	8 x 2 x 1	18	19,4 - 24,1	171,0	894
11014357	11014508	10 x 2 x 1	18	21,5 - 26,9	212,4	1017
11014358	11014509	12 x 2 x 1	18	22,0 - 27,5	253,9	1129
11014359	11014510	15 x 2 x 1	18	23,9 - 30,0	316,1	1360
11014360	11014511	16 x 2 x 1	18	23,9 - 30,0	336,9	1385
11014361	11014512	20 x 2 x 1	18	26,5 - 33,3	419,8	1617
11014362	11014513	24 x 2 x 1	18	29,9 - 37,6	502,7	2006
11014363	11014514	30 x 2 x 1	18	31,5 - 39,6	627,2	2329
11014364	11014515	36 x 2 x 1	18	33,8 - 42,5	751,6	2677
11014365	11014516	1 x 3 x 1	18	10,7 - 12,9	36,2	291
11014366	11014517	2 x 3 x 1	18	14,2 - 17,5	67,3	473
11014367	11014518	3 x 3 x 1	18	15,0 - 18,6	98,4	531
11014373	11014524	1 x 4 x 1	18	11,4 - 13,9	46,5	321
11014374	11014525	2 x 4 x 1	18	16,7 - 20,8	88,0	600
11014382	11014533	1 x 2 x 1,5	16	11,3 - 13,4	36,2	292
11014383	11014534	2 x 2 x 1,5	16	14,7 - 17,5	67,3	462
11014384	11014535	4 x 2 x 1,5	16	16,4 - 19,7	129,5	595
11014385	11014536	5 x 2 x 1,5	16	17,5 - 21,1	160,6	703
11014386	11014537	6 x 2 x 1,5	16	19,6 - 23,6	191,7	927
11014387	11014538	8 x 2 x 1,5	16	21,6 - 26,1	253,9	1069
11014388	11014539	10 x 2 x 1,5	16	23,9 - 28,9	316,1	1204
11014389	11014540	12 x 2 x 1,5	16	24,6 - 29,7	378,3	1354
11014390	11014541	15 x 2 x 1,5	16	27,2 - 33,0	471,6	1653
11014391	11014542	16 x 2 x 1,5	16	27,2 - 33,0	502,7	1689
11014392	11014543	20 x 2 x 1,5	16	30,8 - 37,2	627,2	2194
11014393	11014544	24 x 2 x 1,5	16	34,1 - 41,3	751,6	2469
11014394	11014545	30 x 2 x 1,5	16	36,0 - 43,7	938,2	2890
11014395	11014546	36 x 2 x 1,5	16	38,6 - 46,9	1124,8	3642
11014396	11014547	1 x 3 x 1,5	16	11,7 - 13,9	51,7	325
11014397	11014548	2 x 3 x 1,5	16	15,8 - 18,9	98,4	541
11014398	11014549	3 x 3 x 1,5	16	16,6 - 19,9	145,0	629
11014404	11014555	1 x 4 x 1,5	16	12,3 - 14,7	67,3	372
11014405	11014556	2 x 4 x 1,5	16	19,4 - 23,3	129,5	812
11014412	11014563	1 x 2 x 2,5	14	12,2 - 14,9	56,9	360
11014413	11014564	2 x 2 x 2,5	14	16,2 - 20,0	108,8	581
11014414	11014565	4 x 2 x 2,5	14	18,4 - 22,9	212,4	914
11014415	11014566	5 x 2 x 2,5	14	20,4 - 25,4	264,3	1070
11014416	11014567	6 x 2 x 2,5	14	22,1 - 27,5	316,1	1226
11014417	11014568	8 x 2 x 2,5	14	24,3 - 30,4	419,8	1403
11014418	11014569	10 x 2 x 2,5	14	27,3 - 34,2	523,5	1602
11014419	11014570	12 x 2 x 2,5	14	28,5 - 35,7	627,2	2021
11014420	11014571	15 x 2 x 2,5	14	32,1 - 40,2	782,7	2468
11014421	11014572	16 x 2 x 2,5	14	32,1 - 40,2	834,5	2525
11014422	11014573	20 x 2 x 2,5	14	35,6 - 44,7	1041,9	2954
11014423	11014574	24 x 2 x 2,5	14	39,2 - 49,3	1249,2	3701
11014424	11014575	30 x 2 x 2,5	14	42,2 - 53,0	1560,3	4309
11014425	11014576	36 x 2 x 2,5	14	45,6 - 57,4	1871,3	4986
11014426	11014577	1 x 3 x 2,5	14	12,7 - 15,5	82,8	404
11014427	11014578	2 x 3 x 2,5	14	17,5 - 21,8	160,6	819
11014428	11014579	3 x 3 x 2,5	14	19,3 - 23,9	238,4	959
11014434	11014585	1 x 4 x 2,5	14	13,4 - 16,5	108,8	458
11014435	11014586	2 x 4 x 2,5	14	21,8 - 27,2	212,4	1065

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC IOSA 300

Instrumentation cable, XLPE/IS/OS/PVC/SWA/PVC



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)YRY PiMF**
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km
BK	BU	BU	mm <sup>2</sup>		mm		
11012841	11012977	11012977	2 x 2 x 0,5	20	12,2 - 15,2	31,6	326
11012842	11012978	11012978	4 x 2 x 0,5	20	13,4 - 16,8	58,2	418
11012843	11012979	11012979	5 x 2 x 0,5	20	14,5 - 18,2	71,4	467
11012844	11012980	11012980	6 x 2 x 0,5	20	15,3 - 19,4	84,7	518
11012845	11012981	11012981	8 x 2 x 0,5	20	16,7 - 21,2	111,2	597
11012846	11012982	11012982	10 x 2 x 0,5	20	18,5 - 23,5	137,8	663
11012847	11012983	11012983	12 x 2 x 0,5	20	19,6 - 24,9	164,4	869
11012848	11012984	11012984	15 x 2 x 0,5	20	21,2 - 27,1	204,1	1030
11012849	11012985	11012985	16 x 2 x 0,5	20	21,2 - 27,1	217,4	1046
11012850	11012986	11012986	20 x 2 x 0,5	20	23,3 - 29,9	270,5	1203
11012851	11012987	11012987	24 x 2 x 0,5	20	25,7 - 33,0	323,6	1349
11012852	11012988	11012988	30 x 2 x 0,5	20	26,9 - 34,6	403,2	1566
11012853	11012989	11012989	36 x 2 x 0,5	20	29,0 - 37,3	482,9	1977
11012854	11012990	11012990	2 x 3 x 0,5	20	13,0 - 16,3	42,0	373
11012855	11012991	11012991	3 x 3 x 0,5	20	13,5 - 16,9	60,5	420
11012861	11012997	11012997	2 x 4 x 0,5	20	14,2 - 17,9	52,4	436
11012862	11012998	11012998	3 x 4 x 0,5	20	15,0 - 18,9	76,0	484

# HELUDATA® EN-50288-7 XLPE/PVC IOSA 300

Instrumentation cable, XLPE/IS/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11012868	11013004	2 x 2 x 0,75	19	12,8 - 15,5	42,0	362
11012869	11013005	4 x 2 x 0,75	19	14,4 - 17,5	78,9	465
11012870	11013006	5 x 2 x 0,75	19	15,3 - 18,7	97,3	520
11012871	11013007	6 x 2 x 0,75	19	16,3 - 19,9	115,8	601
11012872	11013008	8 x 2 x 0,75	19	18,0 - 22,0	152,7	673
11012873	11013009	10 x 2 x 0,75	19	20,5 - 25,0	189,6	896
11012874	11013010	12 x 2 x 0,75	19	21,0 - 25,8	226,6	987
11012875	11013011	15 x 2 x 0,75	19	23,0 - 28,2	281,9	1181
11012876	11013012	16 x 2 x 0,75	19	23,0 - 28,2	300,3	1202
11012877	11013013	20 x 2 x 0,75	19	25,3 - 31,0	374,2	1389
11012878	11013014	24 x 2 x 0,75	19	27,7 - 34,1	448,0	1576
11012879	11013015	30 x 2 x 0,75	19	30,0 - 37,0	558,7	2041
11012880	11013016	36 x 2 x 0,75	19	32,4 - 39,9	669,5	2294
11012881	11013017	2 x 3 x 0,75	19	13,7 - 16,7	57,6	419
11012882	11013018	3 x 3 x 0,75	19	14,5 - 17,7	83,8	468
11012888	11013024	2 x 4 x 0,75	19	15,3 - 18,6	73,1	483
11012889	11013025	3 x 4 x 0,75	19	16,0 - 19,5	107,1	564
11012895	11013031	2 x 2 x 1	18	13,2 - 16,3	52,4	402
11012896	11013032	4 x 2 x 1	18	14,8 - 18,4	99,7	505
11012897	11013033	5 x 2 x 1	18	15,8 - 19,7	123,2	590
11012898	11013034	6 x 2 x 1	18	16,8 - 21,1	146,9	663
11012899	11013035	8 x 2 x 1	18	18,6 - 23,3	194,2	889
11012900	11013036	10 x 2 x 1	18	21,1 - 26,6	241,5	996
11012901	11013037	12 x 2 x 1	18	21,9 - 27,6	288,8	1108
11012902	11013038	15 x 2 x 1	18	23,8 - 30,1	359,6	1335
11012903	11013039	16 x 2 x 1	18	23,8 - 30,1	383,3	1362
11012904	11013040	20 x 2 x 1	18	26,3 - 33,3	477,9	1589
11012905	11013041	24 x 2 x 1	18	29,0 - 36,8	572,4	1995
11012906	11013042	30 x 2 x 1	18	31,1 - 39,5	714,2	2302
11012907	11013043	36 x 2 x 1	18	33,5 - 42,6	856,1	2631
11012908	11013044	2 x 3 x 1	18	14,1 - 17,5	73,1	455
11012909	11013045	3 x 3 x 1	18	14,9 - 18,5	107,1	512
11012915	11013051	2 x 4 x 1	18	15,7 - 19,6	93,9	548
11012916	11013052	3 x 4 x 1	18	16,5 - 20,7	138,2	624
11012923	11013059	2 x 2 x 1,5	16	15,3 - 18,4	73,1	477
11012924	11013060	4 x 2 x 1,5	16	17,2 - 20,8	141,2	639
11012925	11013061	5 x 2 x 1,5	16	19,3 - 23,2	175,1	875
11012926	11013062	6 x 2 x 1,5	16	20,6 - 24,9	209,1	990
11012927	11013063	8 x 2 x 1,5	16	22,8 - 27,6	277,1	1129
11012928	11013064	10 x 2 x 1,5	16	25,7 - 31,0	345,2	1276
11012929	11013065	12 x 2 x 1,5	16	26,4 - 31,9	413,2	1431
11012930	11013066	15 x 2 x 1,5	16	29,8 - 36,1	515,2	1932
11012931	11013067	16 x 2 x 1,5	16	29,8 - 36,1	549,2	1971
11012932	11013068	20 x 2 x 1,5	16	33,0 - 40,0	685,3	2282
11012933	11013069	24 x 2 x 1,5	16	36,4 - 44,1	821,2	2609
11012934	11013070	30 x 2 x 1,5	16	38,4 - 46,7	1025,2	3069
11012935	11013071	36 x 2 x 1,5	16	42,1 - 51,1	1229,4	3862
11012936	11013072	2 x 3 x 1,5	16	16,5 - 19,9	104,2	572
11012937	11013073	3 x 3 x 1,5	16	17,4 - 20,9	153,8	656
11012943	11013079	2 x 4 x 1,5	16	18,6 - 22,5	135,3	815
11012944	11013080	3 x 4 x 1,5	16	20,2 - 24,4	200,4	934

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/PVC IOSA 500

Instrumentation cable, XLPE/IS/OS/PVC/SWA/PVC



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: PVC acc. to EN 50290-2-22
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: PVC acc. to EN 50290-2-22
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)YRY PiMF**
- Suited for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km
BK	BU	BU	mm <sup>2</sup>		mm		
11013113		11013249	2 x 2 x 0,5	20	13,5 - 16,7	31,6	389
11013114		11013250	4 x 2 x 0,5	20	15,2 - 18,9	58,2	583
11013115		11013251	5 x 2 x 0,5	20	16,2 - 20,2	71,4	562
11013116		11013252	6 x 2 x 0,5	20	17,3 - 21,6	84,7	758
11013117		11013253	8 x 2 x 0,5	20	19,8 - 24,7	111,2	925
11013118		11013254	10 x 2 x 0,5	20	22,0 - 27,6	137,8	925
11013119		11013255	12 x 2 x 0,5	20	22,6 - 28,4	164,4	1120
11013120		11013256	15 x 2 x 0,5	20	24,5 - 30,9	204,1	1300
11013121		11013257	16 x 2 x 0,5	20	24,5 - 30,9	217,4	1321
11013122		11013258	20 x 2 x 0,5	20	27,2 - 34,3	270,5	1483
11013123		11013259	24 x 2 x 0,5	20	30,7 - 38,7	323,6	1869
11013124		11013260	30 x 2 x 0,5	20	32,5 - 41,1	403,2	2083
11013125		11013261	36 x 2 x 0,5	20	34,9 - 44,1	482,9	2383
11013126		11013262	2 x 3 x 0,5	20	14,7 - 18,2	42,0	541
11013127		11013263	3 x 3 x 0,5	20	15,3 - 19,0	60,5	591
11013133		11013269	2 x 4 x 0,5	20	16,2 - 20,1	52,4	612
11013134		11013270	3 x 4 x 0,5	20	16,9 - 21,2	76,0	678

# HELUDATA® EN-50288-7 XLPE/PVC IOSA 500

Instrumentation cable, XLPE/IS/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11013140	11013276	2 x 2 x 0,75	19	14,2 - 17,0	42,0	419
11013141	11013277	4 x 2 x 0,75	19	16,0 - 19,4	78,9	637
11013142	11013278	5 x 2 x 0,75	19	17,1 - 20,8	97,3	617
11013143	11013279	6 x 2 x 0,75	19	18,5 - 22,5	115,8	834
11013144	11013280	8 x 2 x 0,75	19	20,9 - 25,4	152,7	1025
11013145	11013281	10 x 2 x 0,75	19	23,3 - 28,4	189,6	1049
11013146	11013282	12 x 2 x 0,75	19	23,9 - 29,1	226,6	1259
11013147	11013283	15 x 2 x 0,75	19	26,5 - 32,2	281,9	1463
11013148	11013284	16 x 2 x 0,75	19	26,5 - 32,2	300,3	1489
11013149	11013285	20 x 2 x 0,75	19	30,0 - 36,5	374,2	1870
11013150	11013286	24 x 2 x 0,75	19	33,0 - 40,2	448,0	2124
11013151	11013287	30 x 2 x 0,75	19	34,8 - 42,5	558,7	2395
11013152	11013288	36 x 2 x 0,75	19	37,5 - 45,9	669,5	2738
11013153	11013289	2 x 3 x 0,75	19	15,4 - 18,6	57,6	586
11013154	11013290	3 x 3 x 0,75	19	16,1 - 19,5	83,8	651
11013160	11013296	2 x 4 x 0,75	19	17,1 - 20,7	73,1	670
11013161	11013297	3 x 4 x 0,75	19	18,1 - 21,9	107,1	749
11013167	11013303	2 x 2 x 1	18	14,7 - 18,1	52,4	448
11013168	11013304	4 x 2 x 1	18	16,4 - 20,2	99,7	689
11013169	11013305	5 x 2 x 1	18	17,6 - 21,7	123,2	667
11013170	11013306	6 x 2 x 1	18	19,7 - 24,3	146,9	1029
11013171	11013307	8 x 2 x 1	18	21,7 - 27,0	194,2	1022
11013172	11013308	10 x 2 x 1	18	24,0 - 29,9	241,5	1288
11013173	11013309	12 x 2 x 1	18	24,6 - 30,7	288,8	1385
11013174	11013310	15 x 2 x 1	18	27,2 - 34,0	359,6	1622
11013175	11013311	16 x 2 x 1	18	27,2 - 34,0	383,3	1654
11013176	11013312	20 x 2 x 1	18	30,9 - 38,5	477,9	2077
11013177	11013313	24 x 2 x 1	18	34,2 - 42,8	572,4	2371
11013178	11013314	30 x 2 x 1	18	36,1 - 45,2	714,2	2703
11013179	11013315	36 x 2 x 1	18	38,7 - 48,5	856,1	3409
11013180	11013316	2 x 3 x 1	18	15,8 - 19,5	73,1	629
11013181	11013317	3 x 3 x 1	18	16,5 - 20,4	107,1	701
11013187	11013323	2 x 4 x 1	18	17,5 - 21,7	93,9	724
11013188	11013324	3 x 4 x 1	18	18,6 - 23,1	138,2	936
11013195	11013331	2 x 2 x 1,5	16	16,0 - 19,2	73,1	523
11013196	11013332	4 x 2 x 1,5	16	18,2 - 21,8	141,2	675
11013197	11013333	5 x 2 x 1,5	16	20,2 - 24,3	175,1	931
11013198	11013334	6 x 2 x 1,5	16	21,8 - 26,2	209,1	1144
11013199	11013335	8 x 2 x 1,5	16	24,0 - 28,9	277,1	1197
11013200	11013336	10 x 2 x 1,5	16	27,0 - 32,5	345,2	1363
11013201	11013337	12 x 2 x 1,5	16	27,8 - 33,5	413,2	1534
11013202	11013338	15 x 2 x 1,5	16	31,6 - 38,1	515,2	2072
11013203	11013339	16 x 2 x 1,5	16	31,6 - 38,1	549,2	2112
11013204	11013340	20 x 2 x 1,5	16	35,0 - 42,3	685,3	2455
11013205	11013341	24 x 2 x 1,5	16	38,5 - 46,7	821,2	2796
11013206	11013342	30 x 2 x 1,5	16	41,6 - 50,3	1025,2	3587
11013207	11013343	36 x 2 x 1,5	16	44,8 - 54,2	1229,4	4134
11013208	11013344	2 x 3 x 1,5	16	17,3 - 20,8	104,2	605
11013209	11013345	3 x 3 x 1,5	16	18,4 - 22,0	153,8	829
11013215	11013351	2 x 4 x 1,5	16	20,2 - 24,2	135,3	934
11013216	11013352	3 x 4 x 1,5	16	21,2 - 25,5	200,4	1054
11013222	11013358	2 x 2 x 2,5	14	17,7 - 21,8	114,6	639
11013223	11013359	4 x 2 x 2,5	14	20,9 - 25,9	224,1	1082
11013224	11013360	5 x 2 x 2,5	14	22,6 - 28,0	278,7	1186
11013225	11013361	6 x 2 x 2,5	14	24,3 - 30,3	333,5	1417
11013226	11013362	8 x 2 x 2,5	14	27,2 - 33,9	443,0	1603
11013227	11013363	10 x 2 x 2,5	14	31,5 - 39,3	552,5	2084
11013228	11013364	12 x 2 x 2,5	14	32,6 - 40,7	662,0	2265
11013229	11013365	15 x 2 x 2,5	14	36,0 - 45,0	826,2	2759
11013230	11013366	16 x 2 x 2,5	14	36,0 - 45,0	881,0	2820
11013231	11013367	20 x 2 x 2,5	14	40,8 - 51,0	1100,0	3641
11013232	11013368	24 x 2 x 2,5	14	45,0 - 56,3	1318,9	4118
11013233	11013369	30 x 2 x 2,5	14	47,7 - 59,7	1647,3	4803
11013234	11013370	36 x 2 x 2,5	14	52,5 - 65,7	1975,9	6089
11013235	11013371	2 x 3 x 2,5	14	20,0 - 24,8	166,4	969
11013236	11013372	3 x 3 x 2,5	14	21,0 - 26,1	247,1	1109
11013242	11013378	2 x 4 x 2,5	14	22,6 - 28,0	218,3	1142
11013243	11013379	3 x 4 x 2,5	14	23,8 - 29,6	324,9	1316

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LS0H OS 300

Instrumentation cable, halogen-free, XLPE/OS/LS0H



HELUDATA® EN-50288-7 XLPE/LS0H OS 300 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: LS0H acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
  - Cable elements are produced of non-hygroscopic materials
- ### Tests
- Flame retardant acc. to  
DIN VDE 0482-332-1-2 /  
DIN EN 60332-1-2 / IEC 60332-1-2
  - Flame test on bunched wires acc. to  
DIN VDE 0482-332-3-22 /  
DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
  - Halogen-free acc. to  
DIN VDE 0482-754-1 /  
DIN EN 60754-1 / IEC 60754-1
  - Corrosiveness of combustion gases acc. to  
DIN VDE 0482-754-2 /  
DIN EN 60754-2 / IEC 60754-2
  - Smoke density acc. to  
DIN VDE 0482-1034-1+2 /  
DIN EN 61034-1+2 / IEC 61034-1+2
  - Oil resistant acc. to  
ICEA S-73-532 / NEMA WC 57
  - UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(S)tH**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour BK	Sheath colour BU	No. pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11011089		11011240	1 x 2 x 0,5	20	4,9 - 6,3	15,4	36
11011090		11011241	2 x 2 x 0,5	20	7,0 - 9,1	25,8	61
11011091		11011242	4 x 2 x 0,5	20	8,2 - 10,7	46,5	98
11011092		11011243	5 x 2 x 0,5	20	8,9 - 11,7	56,9	116
11011093		11011244	6 x 2 x 0,5	20	9,6 - 12,6	67,3	141
11011094		11011245	8 x 2 x 0,5	20	10,9 - 14,4	88,0	168
11011095		11011246	10 x 2 x 0,5	20	12,3 - 16,3	108,8	200
11011096		11011247	12 x 2 x 0,5	20	12,8 - 17,0	129,5	233
11011097		11011248	15 x 2 x 0,5	20	14,2 - 18,7	160,6	286
11011098		11011249	16 x 2 x 0,5	20	14,2 - 18,7	171,0	298
11011099		11011250	20 x 2 x 0,5	20	15,9 - 21,1	212,4	364
11011100		11011251	24 x 2 x 0,5	20	17,5 - 23,3	253,9	435
11011101		11011252	30 x 2 x 0,5	20	18,7 - 24,9	316,1	526
11011102		11011253	36 x 2 x 0,5	20	20,3 - 27,1	378,3	634
11011103		11011254	1 x 3 x 0,5	20	5,4 - 6,8	20,6	46
11011104		11011255	2 x 3 x 0,5	20	7,9 - 10,3	36,2	81
11011105		11011256	3 x 3 x 0,5	20	8,3 - 10,9	51,7	103
11011111		11011262	1 x 4 x 0,5	20	5,7 - 7,4	25,8	54
11011112		11011263	2 x 4 x 0,5	20	9,5 - 12,5	46,5	104
11011113		11011264	3 x 4 x 0,5	20	10,3 - 13,5	67,3	137



# HELUDATA® EN-50288-7 XLPE/LSOH OS 300

Instrumentation cable, halogen-free, XLPE/OS/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm²	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11011119	11011270	1 x 2 x 0,75	19	5,5 - 6,7	20,6	44
11011120	11011271	2 x 2 x 0,75	19	7,8 - 9,7	36,2	77
11011121	11011272	4 x 2 x 0,75	19	9,0 - 11,1	67,3	120
11011122	11011273	5 x 2 x 0,75	19	9,7 - 12,2	82,8	152
11011123	11011274	6 x 2 x 0,75	19	10,7 - 13,4	98,4	184
11011124	11011275	8 x 2 x 0,75	19	12,0 - 15,0	129,5	216
11011125	11011276	10 x 2 x 0,75	19	13,7 - 17,1	160,6	266
11011126	11011277	12 x 2 x 0,75	19	14,1 - 17,7	191,7	306
11011127	11011278	15 x 2 x 0,75	19	15,8 - 19,8	238,4	382
11011128	11011279	16 x 2 x 0,75	19	15,8 - 19,8	253,9	399
11011129	11011280	20 x 2 x 0,75	19	17,5 - 22,0	316,1	482
11011130	11011281	24 x 2 x 0,75	19	19,5 - 24,6	378,3	576
11011131	11011282	30 x 2 x 0,75	19	20,9 - 26,2	471,6	696
11011132	11011283	36 x 2 x 0,75	19	22,5 - 28,4	564,9	840
11011133	11011284	1 x 3 x 0,75	19	5,8 - 7,1	28,4	54
11011134	11011285	2 x 3 x 0,75	19	8,6 - 10,7	51,7	100
11011135	11011286	3 x 3 x 0,75	19	9,1 - 11,3	75,1	130
11011141	11011292	1 x 4 x 0,75	19	6,2 - 7,6	36,2	66
11011142	11011293	2 x 4 x 0,75	19	10,6 - 13,2	67,3	133
11011143	11011294	3 x 4 x 0,75	19	11,2 - 14,0	98,4	174
11011149	11011300	1 x 2 x 1	18	5,7 - 7,2	25,8	51
11011150	11011301	2 x 2 x 1	18	8,1 - 10,4	46,5	91
11011151	11011302	4 x 2 x 1	18	9,3 - 12,0	88,0	145
11011152	11011303	5 x 2 x 1	18	10,3 - 13,3	108,8	184
11011153	11011304	6 x 2 x 1	18	11,2 - 14,4	129,5	225
11011154	11011305	8 x 2 x 1	18	12,7 - 16,4	171,0	270
11011155	11011306	10 x 2 x 1	18	14,3 - 18,5	212,4	326
11011156	11011307	12 x 2 x 1	18	14,8 - 19,2	253,9	377
11011157	11011308	15 x 2 x 1	18	16,5 - 21,5	316,1	473
11011158	11011309	16 x 2 x 1	18	16,5 - 21,5	336,9	496
11011159	11011310	20 x 2 x 1	18	18,5 - 24,1	419,8	600
11011160	11011311	24 x 2 x 1	18	20,6 - 26,9	502,7	717
11011161	11011312	30 x 2 x 1	18	21,8 - 28,5	627,2	876
11011162	11011313	36 x 2 x 1	18	23,7 - 31,0	751,6	1057
11011163	11011314	1 x 3 x 1	18	6,0 - 7,6	36,2	64
11011164	11011315	2 x 3 x 1	18	8,9 - 11,4	67,3	120
11011165	11011316	3 x 3 x 1	18	9,5 - 12,2	98,4	158
11011171	11011322	1 x 4 x 1	18	6,4 - 8,1	46,5	79
11011172	11011323	2 x 4 x 1	18	11,0 - 14,2	88,0	160
11011173	11011324	3 x 4 x 1	18	11,7 - 15,2	129,5	212
11011180	11011331	1 x 2 x 1,5	16	6,8 - 8,2	36,2	68
11011181	11011332	2 x 2 x 1,5	16	10,0 - 12,2	67,3	123
11011182	11011333	4 x 2 x 1,5	16	11,7 - 14,3	129,5	209
11011183	11011334	5 x 2 x 1,5	16	13,0 - 15,9	160,6	261
11011184	11011335	6 x 2 x 1,5	16	14,1 - 17,3	191,7	320
11011185	11011336	8 x 2 x 1,5	16	16,0 - 19,7	253,9	388
11011186	11011337	10 x 2 x 1,5	16	18,3 - 22,5	316,1	467
11011187	11011338	12 x 2 x 1,5	16	18,9 - 23,2	378,3	548
11011188	11011339	15 x 2 x 1,5	16	21,2 - 26,0	471,6	690
11011189	11011340	16 x 2 x 1,5	16	21,2 - 26,0	502,7	724
11011190	11011341	20 x 2 x 1,5	16	23,8 - 29,2	627,2	887
11011191	11011342	24 x 2 x 1,5	16	26,5 - 32,6	751,6	1060
11011192	11011343	30 x 2 x 1,5	16	28,3 - 34,8	938,2	1312
11011193	11011344	36 x 2 x 1,5	16	30,7 - 37,8	1124,8	1583
11011194	11011345	1 x 3 x 1,5	16	7,2 - 8,7	51,7	87
11011195	11011346	2 x 3 x 1,5	16	11,2 - 13,7	98,4	169
11011196	11011347	3 x 3 x 1,5	16	11,9 - 14,6	145,0	225
11011202	11011353	1 x 4 x 1,5	16	7,9 - 9,6	67,3	110
11011203	11011354	2 x 4 x 1,5	16	13,9 - 17,0	129,5	226
11011204	11011355	3 x 4 x 1,5	16	14,8 - 18,2	191,7	300

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LS0H OS 500

Instrumentation cable, halogen-free, XLPE/OS/LS0H



HELUDATA® EN-50288-7 XLPE/LS0H OS 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: LS0H compound acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination: **RE-2X(St)H**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands **HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km
BK	BU	BU	mm <sup>2</sup>		mm		
11011391		11011542	1 x 2 x 0,5	20	5,9 - 7,4	15,4	44
11011392		11011543	2 x 2 x 0,5	20	8,4 - 10,7	25,8	76
11011393		11011544	4 x 2 x 0,5	20	9,7 - 12,4	46,5	115
11011394		11011545	5 x 2 x 0,5	20	10,7 - 13,8	56,9	145
11011395		11011546	6 x 2 x 0,5	20	11,7 - 15,0	67,3	178
11011396		11011547	8 x 2 x 0,5	20	13,2 - 17,0	88,0	208
11011397		11011548	10 x 2 x 0,5	20	14,9 - 19,3	108,8	248
11011398		11011549	12 x 2 x 0,5	20	15,6 - 20,1	129,5	285
11011399		11011550	15 x 2 x 0,5	20	17,2 - 22,3	160,6	360
11011400		11011551	16 x 2 x 0,5	20	17,2 - 22,3	171,0	375
11011401		11011552	20 x 2 x 0,5	20	19,3 - 25,0	212,4	444
11011402		11011553	24 x 2 x 0,5	20	21,6 - 27,9	253,9	530
11011403		11011554	30 x 2 x 0,5	20	23,0 - 29,9	316,1	652
11011404		11011555	36 x 2 x 0,5	20	24,8 - 32,2	378,3	786
11011405		11011556	1 x 3 x 0,5	20	6,2 - 7,8	20,6	53
11011406		11011557	2 x 3 x 0,5	20	9,3 - 11,9	36,2	96
11011407		11011558	3 x 3 x 0,5	20	9,8 - 12,6	51,7	123
11011413		11011564	1 x 4 x 0,5	20	6,6 - 8,3	25,8	63
11011414		11011565	2 x 4 x 0,5	20	11,5 - 14,8	46,5	129
11011415		11011566	3 x 4 x 0,5	20	12,2 - 15,7	67,3	164

# HELUDATA® EN-50288-7 XLPE/LSOH OS 500

Instrumentation cable, halogen-free, XLPE/OS/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11011421	11011572	1 x 2 x 0,75	19	6,2 - 7,6	20,6	51
11011422	11011573	2 x 2 x 0,75	19	9,0 - 11,1	36,2	91
11011423	11011574	4 x 2 x 0,75	19	10,6 - 13,1	67,3	145
11011424	11011575	5 x 2 x 0,75	19	11,6 - 14,2	82,8	182
11011425	11011576	6 x 2 x 0,75	19	12,8 - 15,7	98,4	223
11011426	11011577	8 x 2 x 0,75	19	14,3 - 17,7	129,5	257
11011427	11011578	10 x 2 x 0,75	19	16,3 - 20,1	160,6	317
11011428	11011579	12 x 2 x 0,75	19	16,8 - 20,9	191,7	363
11011429	11011580	15 x 2 x 0,75	19	18,8 - 23,3	238,4	458
11011430	11011581	16 x 2 x 0,75	19	18,8 - 23,3	253,9	478
11011431	11011582	20 x 2 x 0,75	19	21,1 - 26,2	316,1	574
11011432	11011583	24 x 2 x 0,75	19	23,6 - 29,2	378,3	688
11011433	11011584	30 x 2 x 0,75	19	24,9 - 30,9	471,6	830
11011434	11011585	36 x 2 x 0,75	19	27,1 - 33,7	564,9	1005
11011435	11011586	1 x 3 x 0,75	19	6,6 - 8,0	28,4	64
11011436	11011587	2 x 3 x 0,75	19	10,0 - 12,3	51,7	120
11011437	11011588	3 x 3 x 0,75	19	10,8 - 13,3	75,1	154
11011443	11011594	1 x 4 x 0,75	19	7,1 - 8,7	36,2	77
11011444	11011595	2 x 4 x 0,75	19	12,4 - 15,3	67,3	160
11011445	11011596	3 x 4 x 0,75	19	13,3 - 16,5	98,4	207
11011451	11011602	1 x 2 x 1	18	6,4 - 8,0	25,8	59
11011452	11011603	2 x 2 x 1	18	9,3 - 11,8	46,5	105
11011453	11011604	4 x 2 x 1	18	11,0 - 13,9	88,0	170
11011454	11011605	5 x 2 x 1	18	12,0 - 15,2	108,8	216
11011455	11011606	6 x 2 x 1	18	13,2 - 16,8	129,5	269
11011456	11011607	8 x 2 x 1	18	14,8 - 18,8	171,0	312
11011457	11011608	10 x 2 x 1	18	16,9 - 21,6	212,4	381
11011458	11011609	12 x 2 x 1	18	17,5 - 22,3	253,9	439
11011459	11011610	15 x 2 x 1	18	19,6 - 24,9	316,1	551
11011460	11011611	16 x 2 x 1	18	19,6 - 24,9	336,9	577
11011461	11011612	20 x 2 x 1	18	22,0 - 28,0	419,8	699
11011462	11011613	24 x 2 x 1	18	24,5 - 31,4	502,7	836
11011463	11011614	30 x 2 x 1	18	26,1 - 33,4	627,2	1012
11011464	11011615	36 x 2 x 1	18	28,4 - 36,3	751,6	1230
11011465	11011616	1 x 3 x 1	18	6,8 - 8,5	36,2	92
11011466	11011617	2 x 3 x 1	18	10,5 - 13,3	67,3	139
11011467	11011618	3 x 3 x 1	18	11,1 - 14,1	98,4	184
11011473	11011624	1 x 4 x 1	18	7,3 - 9,2	46,5	91
11011474	11011625	2 x 4 x 1	18	13,0 - 16,5	88,0	188
11011475	11011626	3 x 4 x 1	18	13,8 - 17,5	129,5	247
11011482	11011633	1 x 2 x 1,5	16	7,2 - 8,7	36,2	71
11011483	11011634	2 x 2 x 1,5	16	10,7 - 13,1	67,3	135
11011484	11011635	4 x 2 x 1,5	16	12,5 - 15,2	129,5	220
11011485	11011636	5 x 2 x 1,5	16	13,8 - 16,8	160,6	277
11011486	11011637	6 x 2 x 1,5	16	15,2 - 18,6	191,7	347
11011487	11011638	8 x 2 x 1,5	16	17,1 - 20,9	253,9	409
11011488	11011639	10 x 2 x 1,5	16	19,5 - 23,9	316,1	498
11011489	11011640	12 x 2 x 1,5	16	20,4 - 24,9	378,3	576
11011490	11011641	15 x 2 x 1,5	16	22,8 - 27,9	471,6	739
11011491	11011642	16 x 2 x 1,5	16	22,8 - 27,9	502,7	775
11011492	11011643	20 x 2 x 1,5	16	25,6 - 31,2	627,2	982
11011493	11011644	24 x 2 x 1,5	16	28,5 - 34,9	751,6	1131
11011494	11011645	30 x 2 x 1,5	16	30,4 - 37,2	938,2	1397
11011495	11011646	36 x 2 x 1,5	16	33,0 - 40,4	1124,8	1684
11011496	11011647	1 x 3 x 1,5	16	7,7 - 9,4	51,7	92
11011497	11011648	2 x 3 x 1,5	16	11,9 - 14,4	98,4	178
11011498	11011649	3 x 3 x 1,5	16	12,8 - 15,6	145,0	243
11011504	11011655	1 x 4 x 1,5	16	8,4 - 10,2	67,3	115
11011505	11011656	2 x 4 x 1,5	16	14,8 - 18,1	129,5	239
11011506	11011657	3 x 4 x 1,5	16	16,0 - 19,5	191,7	325
11011512	11011663	1 x 2 x 2,5	14	8,3 - 10,4	56,9	102
11011513	11011664	2 x 2 x 2,5	14	12,3 - 15,5	108,8	195
11011514	11011665	4 x 2 x 2,5	14	14,5 - 18,4	212,4	326
11011515	11011666	5 x 2 x 2,5	14	16,1 - 20,3	264,3	411
11011516	11011667	6 x 2 x 2,5	14	17,5 - 22,3	316,1	509
11011517	11011668	8 x 2 x 2,5	14	19,9 - 25,4	419,8	612
11011518	11011669	10 x 2 x 2,5	14	23,0 - 29,2	523,5	747
11011519	11011670	12 x 2 x 2,5	14	23,7 - 30,3	627,2	879
11011520	11011671	15 x 2 x 2,5	14	26,6 - 33,8	782,7	1122
11011521	11011672	16 x 2 x 2,5	14	26,6 - 33,8	834,5	1178
11011522	11011673	20 x 2 x 2,5	14	29,8 - 38,1	1041,9	1440
11011523	11011674	24 x 2 x 2,5	14	33,5 - 42,7	1249,2	1721
11011524	11011675	30 x 2 x 2,5	14	35,7 - 45,5	1560,3	2130
11011525	11011676	36 x 2 x 2,5	14	38,7 - 49,4	1871,3	2591
11011526	11011677	1 x 3 x 2,5	14	8,8 - 11,0	82,8	132
11011527	11011678	2 x 3 x 2,5	14	13,8 - 17,5	160,6	261
11011528	11011679	3 x 3 x 2,5	14	14,7 - 18,6	238,4	360
11011534	11011685	1 x 4 x 2,5	14	9,5 - 12,0	108,8	164
11011535	11011686	2 x 4 x 2,5	14	17,2 - 21,9	212,4	358
11011536	11011687	3 x 4 x 2,5	14	18,6 - 23,5	316,1	481

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LSOH IOS 300

Instrumentation cable, halogen-free, XLPE/IS/OS/LSOH



HELUDATA® EN-50288-7 XLPE/LSOH IOS 300 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: LSOH compound acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to IEC 60332-3-22 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)H PiMF**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016891		11017027	2 x 2 x 0,5	20	8,3 - 10,7	31,6	85
11016892		11017028	4 x 2 x 0,5	20	9,5 - 12,3	58,2	133
11016893		11017029	5 x 2 x 0,5	20	10,5 - 13,7	71,4	158
11016894		11017030	6 x 2 x 0,5	20	11,4 - 14,9	84,7	190
11016895		11017031	8 x 2 x 0,5	20	13,0 - 16,9	111,2	227
11016896		11017032	10 x 2 x 0,5	20	14,6 - 19,0	137,8	272
11016897		11017033	12 x 2 x 0,5	20	15,3 - 19,9	164,4	313
11016898		11017034	15 x 2 x 0,5	20	16,9 - 22,0	204,1	391
11016899		11017035	16 x 2 x 0,5	20	16,9 - 22,0	217,4	408
11016900		11017036	20 x 2 x 0,5	20	18,9 - 24,8	270,5	496
11016901		11017037	24 x 2 x 0,5	20	21,1 - 27,7	323,6	589
11016902		11017038	30 x 2 x 0,5	20	22,3 - 29,3	403,2	722
11016903		11017039	36 x 2 x 0,5	20	24,3 - 31,9	482,9	863
11016904		11017040	2 x 3 x 0,5	20	9,1 - 11,8	42,0	103
11016905		11017041	3 x 3 x 0,5	20	9,6 - 12,4	60,5	134
11016911		11017047	2 x 4 x 0,5	20	10,5 - 13,6	52,4	129
11016912		11017048	3 x 4 x 0,5	20	11,1 - 14,4	76,0	162

# HELUDATA® EN-50288-7 XLPE/LSOH IOS 300

Instrumentation cable, halogen-free, XLPE/IS/OS/LSOH

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11016918		11017054	2 x 2 x 0,75	19	8,9 - 11,0	42,0	99
11016919		11017055	4 x 2 x 0,75	19	10,5 - 13,1	78,9	157
11016920		11017056	5 x 2 x 0,75	19	11,4 - 14,2	97,3	193
11016921		11017057	6 x 2 x 0,75	19	12,4 - 15,4	115,8	234
11016922		11017058	8 x 2 x 0,75	19	14,1 - 17,5	152,7	279
11016923		11017059	10 x 2 x 0,75	19	16,1 - 20,0	189,6	340
11016924		11017060	12 x 2 x 0,75	19	16,6 - 20,8	226,6	393
11016925		11017061	15 x 2 x 0,75	19	18,6 - 23,2	281,9	492
11016926		11017062	16 x 2 x 0,75	19	18,6 - 23,2	300,3	516
11016927		11017063	20 x 2 x 0,75	19	20,9 - 26,0	374,2	625
11016928		11017064	24 x 2 x 0,75	19	23,3 - 29,1	448,0	748
11016929		11017065	30 x 2 x 0,75	19	24,6 - 30,8	558,7	907
11016930		11017066	36 x 2 x 0,75	19	26,8 - 33,5	669,5	1095
11016931		11017067	2 x 3 x 0,75	19	9,8 - 12,2	57,6	127
11016932		11017068	3 x 3 x 0,75	19	10,6 - 13,2	83,8	161
11016938		11017074	2 x 4 x 0,75	19	11,4 - 14,1	73,1	159
11016939		11017075	3 x 4 x 0,75	19	12,1 - 15,0	107,1	203
11016945		11017081	2 x 2 x 1	18	9,3 - 11,8	52,4	117
11016946		11017082	4 x 2 x 1	18	10,9 - 13,9	99,7	183
11016947		11017083	5 x 2 x 1	18	11,9 - 15,2	123,2	226
11016948		11017084	6 x 2 x 1	18	13,1 - 16,8	146,9	277
11016949		11017085	8 x 2 x 1	18	14,7 - 18,8	194,2	333
11016950		11017086	10 x 2 x 1	18	16,8 - 21,6	241,5	396
11016951		11017087	12 x 2 x 1	18	17,3 - 22,4	288,8	471
11016952		11017088	15 x 2 x 1	18	19,4 - 25,0	359,6	590
11016953		11017089	16 x 2 x 1	18	19,4 - 25,0	383,3	619
11016954		11017090	20 x 2 x 1	18	21,8 - 28,0	477,9	752
11016955		11017091	24 x 2 x 1	18	24,3 - 31,4	572,4	900
11016956		11017092	30 x 2 x 1	18	25,9 - 33,5	714,2	1095
11016957		11017093	36 x 2 x 1	18	28,1 - 36,4	856,1	1323
11016958		11017094	2 x 3 x 1	18	10,4 - 13,3	73,1	147
11016959		11017095	3 x 3 x 1	18	11,0 - 14,0	107,1	189
11016965		11017101	2 x 4 x 1	18	11,8 - 15,1	93,9	187
11016966		11017102	3 x 4 x 1	18	12,7 - 16,4	138,2	241
11016973		11017109	2 x 2 x 1,5	16	11,4 - 13,9	73,1	154
11016974		11017110	4 x 2 x 1,5	16	13,5 - 16,5	141,2	253
11016975		11017111	5 x 2 x 1,5	16	14,8 - 18,0	175,1	314
11016976		11017112	6 x 2 x 1,5	16	16,3 - 19,9	209,1	381
11016977		11017113	8 x 2 x 1,5	16	18,5 - 22,6	277,1	462
11016978		11017114	10 x 2 x 1,5	16	21,1 - 25,8	345,2	562
11016979		11017115	12 x 2 x 1,5	16	21,8 - 26,6	413,2	658
11016980		11017116	15 x 2 x 1,5	16	24,4 - 29,9	515,2	837
11016981		11017117	16 x 2 x 1,5	16	24,4 - 29,9	549,2	875
11016982		11017118	20 x 2 x 1,5	16	27,4 - 33,6	685,3	1065
11016983		11017119	24 x 2 x 1,5	16	30,8 - 37,7	821,2	1267
11016984		11017120	30 x 2 x 1,5	16	32,8 - 40,2	1025,2	1557
11016985		11017121	36 x 2 x 1,5	16	35,6 - 43,7	1229,4	1886
11016986		11017122	2 x 3 x 1,5	16	12,8 - 15,6	104,2	203
11016987		11017123	3 x 3 x 1,5	16	13,6 - 16,6	153,8	272
11016993		11017129	2 x 4 x 1,5	16	14,7 - 18,0	135,3	259
11016994		11017130	3 x 4 x 1,5	16	15,8 - 19,4	200,4	348

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LS0H IOS 500

Instrumentation cable, halogen-free, XLPE/IS/OS/LS0H



HELUDATA® EN-50288-7 XLPE/LS0H IOS 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 7,5x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 µH/Ω  
0,75 mm<sup>2</sup> < 25 µH/Ω  
1 mm<sup>2</sup> < 25 µH/Ω  
1,5 mm<sup>2</sup> < 40 µH/Ω  
2,5 mm<sup>2</sup> < 60 µH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Outer sheath: LS0H acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)H PiMF**
- Not suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11010273	11010409	2 x 2 x 0,5	20	9,6 - 12,2	31,6	103
11010274	11010410	4 x 2 x 0,5	20	11,3 - 14,4	58,2	154
11010275	11010411	5 x 2 x 0,5	20	12,3 - 15,7	71,4	190
11010276	11010412	6 x 2 x 0,5	20	13,6 - 17,3	84,7	230
11010277	11010413	8 x 2 x 0,5	20	15,4 - 19,7	111,2	272
11010278	11010414	10 x 2 x 0,5	20	17,4 - 22,4	137,8	328
11010279	11010415	12 x 2 x 0,5	20	18,2 - 23,3	164,4	375
11010280	11010416	15 x 2 x 0,5	20	20,4 - 26,1	204,1	476
11010281	11010417	16 x 2 x 0,5	20	20,4 - 26,1	217,4	495
11010282	11010418	20 x 2 x 0,5	20	22,8 - 29,3	270,5	599
11010283	11010419	24 x 2 x 0,5	20	25,5 - 32,7	323,6	710
11010284	11010420	30 x 2 x 0,5	20	26,9 - 34,7	403,2	865
11010285	11010421	36 x 2 x 0,5	20	29,3 - 37,7	482,9	1036
11010286	11010422	2 x 3 x 0,5	20	10,8 - 13,7	42,0	125
11010287	11010423	3 x 3 x 0,5	20	11,4 - 14,6	60,5	162
11010293	11010429	2 x 4 x 0,5	20	12,3 - 15,6	52,4	158
11010294	11010430	3 x 4 x 0,5	20	13,2 - 16,9	76,0	198

# HELUDATA® EN-50288-7 XLPE/LSOH IOS 500

Instrumentation cable, halogen-free, XLPE/IS/OS/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11010300	11010436	2 x 2 x 0,75	19	10,4 - 12,7	42,0	118
11010301	11010437	4 x 2 x 0,75	19	12,1 - 14,9	78,9	186
11010302	11010438	5 x 2 x 0,75	19	13,4 - 16,5	97,3	226
11010303	11010439	6 x 2 x 0,75	19	14,6 - 18,0	115,8	281
11010304	11010440	8 x 2 x 0,75	19	16,6 - 20,3	152,7	329
11010305	11010441	10 x 2 x 0,75	19	18,9 - 23,3	189,6	401
11010306	11010442	12 x 2 x 0,75	19	19,6 - 24,1	226,6	461
11010307	11010443	15 x 2 x 0,75	19	21,9 - 27,0	281,9	579
11010308	11010444	16 x 2 x 0,75	19	21,9 - 27,0	300,3	606
11010309	11010445	20 x 2 x 0,75	19	24,6 - 30,3	374,2	735
11010310	11010446	24 x 2 x 0,75	19	27,4 - 33,8	448,0	879
11010311	11010447	30 x 2 x 0,75	19	29,3 - 36,1	558,7	1063
11010312	11010448	36 x 2 x 0,75	19	31,8 - 39,3	669,5	1291
11010313	11010449	2 x 3 x 0,75	19	11,5 - 14,1	57,6	152
11010314	11010450	3 x 3 x 0,75	19	12,2 - 15,0	83,8	191
11010320	11010456	2 x 4 x 0,75	19	13,3 - 16,4	73,1	184
11010321	11010457	3 x 4 x 0,75	19	14,2 - 17,4	107,1	242
11010327	11010463	2 x 2 x 1	18	10,8 - 13,6	52,4	133
11010328	11010464	4 x 2 x 1	18	12,7 - 15,9	99,7	212
11010329	11010465	5 x 2 x 1	18	13,9 - 17,4	123,2	263
11010330	11010466	6 x 2 x 1	18	15,3 - 19,3	146,9	329
11010331	11010467	8 x 2 x 1	18	17,1 - 21,7	194,2	387
11010332	11010468	10 x 2 x 1	18	19,6 - 24,8	241,5	474
11010333	11010469	12 x 2 x 1	18	20,5 - 25,9	288,8	548
11010334	11010470	15 x 2 x 1	18	22,9 - 29,0	359,6	690
11010335	11010471	16 x 2 x 1	18	22,9 - 29,0	383,3	722
11010336	11010472	20 x 2 x 1	18	25,7 - 32,5	477,9	874
11010337	11010473	24 x 2 x 1	18	28,6 - 36,4	572,4	1049
11010338	11010474	30 x 2 x 1	18	30,5 - 38,7	714,2	1273
11010339	11010475	36 x 2 x 1	18	33,1 - 42,1	856,1	1544
11010340	11010476	2 x 3 x 1	18	11,9 - 15,0	73,1	173
11010341	11010477	3 x 3 x 1	18	12,8 - 16,2	107,1	221
11010347	11010483	2 x 4 x 1	18	13,8 - 17,4	93,9	219
11010348	11010484	3 x 4 x 1	18	14,7 - 18,6	138,2	281
11010355	11010491	2 x 2 x 1,5	16	12,1 - 14,7	73,1	168
11010356	11010492	4 x 2 x 1,5	16	14,3 - 17,3	141,2	274
11010357	11010493	5 x 2 x 1,5	16	15,8 - 19,3	175,1	339
11010358	11010494	6 x 2 x 1,5	16	17,3 - 21,0	209,1	410
11010359	11010495	8 x 2 x 1,5	16	19,6 - 23,9	277,1	495
11010360	11010496	10 x 2 x 1,5	16	22,4 - 27,3	345,2	596
11010361	11010497	12 x 2 x 1,5	16	23,4 - 28,5	413,2	702
11010362	11010498	15 x 2 x 1,5	16	26,2 - 31,9	515,2	879
11010363	11010499	16 x 2 x 1,5	16	26,2 - 31,9	549,2	919
11010364	11010500	20 x 2 x 1,5	16	29,4 - 35,8	685,3	1134
11010365	11010501	24 x 2 x 1,5	16	33,0 - 40,2	821,2	1346
11010366	11010502	30 x 2 x 1,5	16	34,9 - 42,6	1025,2	1652
11010367	11010503	36 x 2 x 1,5	16	38,1 - 46,5	1229,4	2000
11010368	11010504	2 x 3 x 1,5	16	13,6 - 16,5	104,2	214
11010369	11010505	3 x 3 x 1,5	16	14,5 - 17,5	153,8	286
11010375	11010511	2 x 4 x 1,5	16	15,8 - 19,2	135,3	282
11010376	11010512	3 x 4 x 1,5	16	16,8 - 20,4	200,4	367
11010382	11010518	2 x 2 x 2,5	14	13,9 - 17,5	114,6	234
11010383	11010519	4 x 2 x 2,5	14	16,5 - 20,9	224,1	388
11010384	11010520	5 x 2 x 2,5	14	18,2 - 23,0	278,7	482
11010385	11010521	6 x 2 x 2,5	14	19,9 - 25,3	333,5	591
11010386	11010522	8 x 2 x 2,5	14	22,8 - 28,9	443,0	724
11010387	11010523	10 x 2 x 2,5	14	26,1 - 33,1	552,5	867
11010388	11010524	12 x 2 x 2,5	14	27,0 - 34,2	662,0	1026
11010389	11010525	15 x 2 x 2,5	14	30,4 - 38,6	826,2	1302
11010390	11010526	16 x 2 x 2,5	14	30,4 - 38,6	881,0	1363
11010391	11010527	20 x 2 x 2,5	14	34,2 - 43,3	1100,0	1676
11010392	11010528	24 x 2 x 2,5	14	38,3 - 48,6	1318,9	1991
11010393	11010529	30 x 2 x 2,5	14	40,8 - 51,8	1647,3	2468
11010394	11010530	36 x 2 x 2,5	14	44,3 - 56,3	1975,9	2982
11010395	11010531	2 x 3 x 2,5	14	15,7 - 19,8	166,4	312
11010396	11010532	3 x 3 x 2,5	14	16,7 - 21,1	247,1	411
11010402	11010538	2 x 4 x 2,5	14	18,2 - 23,0	218,3	399
11010403	11010539	3 x 4 x 2,5	14	19,4 - 24,6	324,9	539

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LSOH OSA 300

Instrumentation cable, halogen-free, XLPE/OS/LSOH/SWA/LSOH



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: LSOH compound acc. to EN 50290-2-27
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: LSOH compound acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)HRH**
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km
BK	BU		mm <sup>2</sup>		mm		
11011693	11011844		1 x 2 x 0,5	20	9,0 - 11,0	15,4	201
11011694	11011845		2 x 2 x 0,5	20	11,1 - 13,8	25,8	281
11011695	11011846		4 x 2 x 0,5	20	12,1 - 15,2	46,5	348
11011696	11011847		5 x 2 x 0,5	20	12,8 - 16,2	56,9	388
11011697	11011848		6 x 2 x 0,5	20	13,6 - 17,1	67,3	430
11011698	11011849		8 x 2 x 0,5	20	14,8 - 18,9	88,0	492
11011699	11011850		10 x 2 x 0,5	20	16,2 - 20,8	108,8	551
11011700	11011851		12 x 2 x 0,5	20	16,6 - 21,3	129,5	609
11011701	11011852		15 x 2 x 0,5	20	18,1 - 23,2	160,6	844
11011702	11011853		16 x 2 x 0,5	20	18,1 - 23,2	171,0	857
11011703	11011854		20 x 2 x 0,5	20	20,3 - 26,1	212,4	990
11011704	11011855		24 x 2 x 0,5	20	22,1 - 28,6	253,9	1114
11011705	11011856		30 x 2 x 0,5	20	23,1 - 30,0	316,1	1273
11011706	11011857		36 x 2 x 0,5	20	24,5 - 31,9	378,3	1448
11011707	11011858		1 x 3 x 0,5	20	9,3 - 11,3	20,6	211
11011708	11011859		2 x 3 x 0,5	20	11,8 - 14,8	36,2	323
11011709	11011860		3 x 3 x 0,5	20	12,2 - 15,4	51,7	359
11011715	11011866		1 x 4 x 0,5	20	9,6 - 11,9	25,8	232
11011716	11011867		2 x 4 x 0,5	20	13,4 - 17,0	46,5	389



# HELUDATA® EN-50288-7 XLPE/LSOH OSA 300

Instrumentation cable, halogen-free, XLPE/OS/LSOH/SWA/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11011723	11011874	1 x 2 x 0,75	19	9,4 - 11,2	20,6	216
11011724	11011875	2 x 2 x 0,75	19	11,7 - 14,2	36,2	319
11011725	11011876	4 x 2 x 0,75	19	12,9 - 15,6	67,3	391
11011726	11011877	5 x 2 x 0,75	19	13,6 - 16,7	82,8	438
11011727	11011878	6 x 2 x 0,75	19	14,7 - 17,9	98,4	501
11011728	11011879	8 x 2 x 0,75	19	15,9 - 19,5	129,5	565
11011729	11011880	10 x 2 x 0,75	19	17,4 - 21,4	160,6	654
11011730	11011881	12 x 2 x 0,75	19	18,0 - 22,1	191,7	830
11011731	11011882	15 x 2 x 0,75	19	20,2 - 24,8	238,4	997
11011732	11011883	16 x 2 x 0,75	19	20,2 - 24,8	253,9	1014
11011733	11011884	20 x 2 x 0,75	19	22,1 - 27,3	316,1	1169
11011734	11011885	24 x 2 x 0,75	19	23,9 - 29,6	378,3	1318
11011735	11011886	30 x 2 x 0,75	19	25,2 - 31,2	471,6	1519
11011736	11011887	36 x 2 x 0,75	19	27,0 - 33,6	564,9	1933
11011737	11011888	1 x 3 x 0,75	19	9,7 - 11,6	28,4	232
11011738	11011889	2 x 3 x 0,75	19	12,5 - 15,2	51,7	357
11011739	11011890	3 x 3 x 0,75	19	13,0 - 15,8	75,1	400
11011745	11011896	1 x 4 x 0,75	19	10,1 - 12,1	36,2	251
11011746	11011897	2 x 4 x 0,75	19	14,5 - 17,7	67,3	455
11011753	11011904	1 x 2 x 1	18	9,6 - 11,7	25,8	230
11011754	11011905	2 x 2 x 1	18	12,0 - 14,9	46,5	341
11011755	11011906	4 x 2 x 1	18	13,2 - 16,5	88,0	430
11011756	11011907	5 x 2 x 1	18	14,1 - 17,5	108,8	503
11011757	11011908	6 x 2 x 1	18	15,1 - 18,9	129,5	560
11011758	11011909	8 x 2 x 1	18	16,4 - 20,7	171,0	642
11011759	11011910	10 x 2 x 1	18	18,2 - 23,0	212,4	857
11011760	11011911	12 x 2 x 1	18	19,3 - 24,4	253,9	938
11011761	11011912	15 x 2 x 1	18	20,9 - 26,5	316,1	1126
11011762	11011913	16 x 2 x 1	18	20,9 - 26,5	336,9	1148
11011763	11011914	20 x 2 x 1	18	22,9 - 29,1	419,8	1339
11011764	11011915	24 x 2 x 1	18	25,0 - 31,9	502,7	1523
11011765	11011916	30 x 2 x 1	18	26,4 - 33,7	627,2	1972
11011766	11011917	36 x 2 x 1	18	28,5 - 36,5	751,6	2257
11011767	11011918	1 x 3 x 1	18	9,9 - 12,1	36,2	249
11011768	11011919	2 x 3 x 1	18	12,8 - 15,9	67,3	390
11011769	11011920	3 x 3 x 1	18	13,4 - 16,7	98,4	441
11011775	11011926	1 x 4 x 1	18	10,3 - 12,6	46,5	279
11011776	11011927	2 x 4 x 1	18	14,9 - 18,7	88,0	497
11011784	11011935	1 x 2 x 1,5	16	10,7 - 12,7	36,2	271
11011785	11011936	2 x 2 x 1,5	16	13,9 - 16,7	67,3	416
11011786	11011937	4 x 2 x 1,5	16	15,6 - 18,8	129,5	555
11011787	11011938	5 x 2 x 1,5	16	16,7 - 20,2	160,6	643
11011788	11011939	6 x 2 x 1,5	16	18,0 - 21,8	191,7	855
11011789	11011940	8 x 2 x 1,5	16	20,4 - 24,7	253,9	975
11011790	11011941	10 x 2 x 1,5	16	22,7 - 27,5	316,1	1122
11011791	11011942	12 x 2 x 1,5	16	23,3 - 28,2	378,3	1252
11011792	11011943	15 x 2 x 1,5	16	25,7 - 31,2	471,6	1504
11011793	11011944	16 x 2 x 1,5	16	25,7 - 31,2	502,7	1538
11011794	11011945	20 x 2 x 1,5	16	28,5 - 34,7	627,2	2004
11011795	11011946	24 x 2 x 1,5	16	32,1 - 39,1	751,6	2283
11011796	11011947	30 x 2 x 1,5	16	33,6 - 41,0	938,2	2645
11011797	11011948	36 x 2 x 1,5	16	36,3 - 44,2	1124,8	3044
11011798	11011949	1 x 3 x 1,5	16	11,3 - 13,4	51,7	300
11011799	11011950	2 x 3 x 1,5	16	15,1 - 18,2	98,4	500
11011800	11011951	3 x 3 x 1,5	16	15,8 - 19,0	145,0	577
11011806	11011957	1 x 4 x 1,5	16	11,8 - 14,1	67,3	345
11011807	11011958	2 x 4 x 1,5	16	17,6 - 21,3	129,5	641

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LSOH OSA 500

Instrumentation cable, halogen-free, XLPE/OS/LSOH/SWA/LSOH



HELUDATA® EN-50288-7 XLPE/LSOH OSA 500 CE

## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair max. 150 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: LSOH compound acc. to EN 50290-2-27
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: LSOH compound acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)HRH**
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø	Cu factor	Weight
	BK	BU	mm <sup>2</sup>		min. - max.	per km	app. kg / km
					mm		
11011995		11012146	1 x 2 x 0,5	20	9,8 - 11,9	15,4	223
11011996		11012147	2 x 2 x 0,5	20	12,3 - 15,2	25,8	333
11011997		11012148	4 x 2 x 0,5	20	13,6 - 16,9	46,5	402
11011998		11012149	5 x 2 x 0,5	20	14,7 - 18,3	56,9	468
11011999		11012150	6 x 2 x 0,5	20	15,6 - 19,5	67,3	523
11012000		11012151	8 x 2 x 0,5	20	16,9 - 21,3	88,0	591
11012001		11012152	10 x 2 x 0,5	20	19,5 - 24,5	108,8	794
11012002		11012153	12 x 2 x 0,5	20	19,9 - 25,1	129,5	871
11012003		11012154	15 x 2 x 0,5	20	21,8 - 27,5	160,6	1039
11012004		11012155	16 x 2 x 0,5	20	21,8 - 27,5	171,0	1054
11012005		11012156	20 x 2 x 0,5	20	23,7 - 30,1	212,4	1205
11012006		11012157	24 x 2 x 0,5	20	26,1 - 33,2	253,9	1357
11012007		11012158	30 x 2 x 0,5	20	27,4 - 34,9	316,1	1769
11012008		11012159	36 x 2 x 0,5	20	30,2 - 38,4	378,3	2007
11012009		11012160	1 x 3 x 0,5	20	10,1 - 12,3	20,6	239
11012010		11012161	2 x 3 x 0,5	20	13,2 - 16,4	36,2	375
11012011		11012162	3 x 3 x 0,5	20	13,7 - 17,1	51,7	415
11012017		11012168	1 x 4 x 0,5	20	10,5 - 12,8	25,8	264
11012018		11012169	2 x 4 x 0,5	20	15,4 - 19,3	46,5	475

# HELUDATA® EN-50288-7 XLPE/LSOH OSA 500

Instrumentation cable, halogen-free, XLPE/OS/LSOH/SWA/LSOH

Part no.	Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11012025		11012176	1 x 2 x 0,75	19	10,1 - 12,1	20,6	239
11012026		11012177	2 x 2 x 0,75	19	12,9 - 15,6	36,2	361
11012027		11012178	4 x 2 x 0,75	19	14,5 - 17,5	67,3	467
11012028		11012179	5 x 2 x 0,75	19	15,5 - 18,7	82,8	521
11012029		11012180	6 x 2 x 0,75	19	16,5 - 20,0	98,4	596
11012030		11012181	8 x 2 x 0,75	19	18,2 - 22,1	129,5	798
11012031		11012182	10 x 2 x 0,75	19	20,7 - 25,1	160,6	912
11012032		11012183	12 x 2 x 0,75	19	21,2 - 25,9	191,7	990
11012033		11012184	15 x 2 x 0,75	19	23,2 - 28,4	238,4	1190
11012034		11012185	16 x 2 x 0,75	19	23,2 - 28,4	253,9	1210
11012035		11012186	20 x 2 x 0,75	19	25,7 - 31,5	316,1	1393
11012036		11012187	24 x 2 x 0,75	19	28,1 - 34,5	378,3	1789
11012037		11012188	30 x 2 x 0,75	19	30,3 - 37,1	471,6	2052
11012038		11012189	36 x 2 x 0,75	19	32,7 - 40,1	564,9	2329
11012039		11012190	1 x 3 x 0,75	19	10,5 - 12,5	28,4	261
11012040		11012191	2 x 3 x 0,75	19	13,9 - 16,8	51,7	428
11012041		11012192	3 x 3 x 0,75	19	14,7 - 17,8	75,1	477
11012047		11012198	1 x 4 x 0,75	19	11,2 - 13,4	36,2	294
11012048		11012199	2 x 4 x 0,75	19	16,3 - 19,8	67,3	535
11012055		11012206	1 x 2 x 1	18	10,3 - 12,5	25,8	256
11012056		11012207	2 x 2 x 1	18	13,2 - 16,3	46,5	388
11012057		11012208	4 x 2 x 1	18	14,9 - 18,4	88,0	508
11012058		11012209	5 x 2 x 1	18	15,9 - 19,7	108,8	574
11012059		11012210	6 x 2 x 1	18	16,9 - 21,1	129,5	661
11012060		11012211	8 x 2 x 1	18	19,4 - 24,1	171,0	876
11012061		11012212	10 x 2 x 1	18	21,5 - 26,9	212,4	1001
11012062		11012213	12 x 2 x 1	18	22,0 - 27,5	253,9	1112
11012063		11012214	15 x 2 x 1	18	23,9 - 30,0	316,1	1335
11012064		11012215	16 x 2 x 1	18	23,9 - 30,0	336,9	1360
11012065		11012216	20 x 2 x 1	18	26,5 - 33,3	419,8	1594
11012066		11012217	24 x 2 x 1	18	29,9 - 37,6	502,7	1980
11012067		11012218	30 x 2 x 1	18	31,5 - 39,6	627,2	2298
11012068		11012219	36 x 2 x 1	18	33,8 - 42,5	751,6	2634
11012069		11012220	1 x 3 x 1	18	10,7 - 12,9	36,2	286
11012070		11012221	2 x 3 x 1	18	14,2 - 17,5	67,3	463
11012071		11012222	3 x 3 x 1	18	15,0 - 18,6	98,4	520
11012077		11012228	1 x 4 x 1	18	11,4 - 13,9	46,5	314
11012078		11012229	2 x 4 x 1	18	16,7 - 20,8	88,0	588
11012086		11012237	1 x 2 x 1,5	16	11,3 - 13,4	36,2	285
11012087		11012238	2 x 2 x 1,5	16	14,7 - 17,5	67,3	452
11012088		11012239	4 x 2 x 1,5	16	16,4 - 19,7	129,5	582
11012089		11012240	5 x 2 x 1,5	16	17,5 - 21,1	160,6	685
11012090		11012241	6 x 2 x 1,5	16	19,6 - 23,6	191,7	901
11012091		11012242	8 x 2 x 1,5	16	21,6 - 26,1	253,9	1046
11012092		11012243	10 x 2 x 1,5	16	23,9 - 28,9	316,1	1205
11012093		11012244	12 x 2 x 1,5	16	24,6 - 29,7	378,3	1334
11012094		11012245	15 x 2 x 1,5	16	27,2 - 33,0	471,6	1624
11012095		11012246	16 x 2 x 1,5	16	27,2 - 33,0	502,7	1660
11012096		11012247	20 x 2 x 1,5	16	30,8 - 37,2	627,2	2166
11012097		11012248	24 x 2 x 1,5	16	34,1 - 41,3	751,6	2440
11012098		11012249	30 x 2 x 1,5	16	36,0 - 43,7	938,2	2855
11012099		11012250	36 x 2 x 1,5	16	38,6 - 46,9	1124,8	3592
11012100		11012251	1 x 3 x 1,5	16	11,7 - 13,9	51,7	318
11012101		11012252	2 x 3 x 1,5	16	15,8 - 18,9	98,4	530
11012102		11012253	3 x 3 x 1,5	16	16,6 - 19,9	145,0	618
11012108		11012259	1 x 4 x 1,5	16	12,3 - 14,7	67,3	364
11012109		11012260	2 x 4 x 1,5	16	19,4 - 23,3	129,5	798
11012116		11012267	1 x 2 x 2,5	14	12,2 - 14,9	56,9	352
11012117		11012268	2 x 2 x 2,5	14	16,2 - 20,0	108,8	570
11012118		11012269	4 x 2 x 2,5	14	18,4 - 22,9	212,4	897
11012119		11012270	5 x 2 x 2,5	14	20,4 - 25,4	264,3	1045
11012120		11012271	6 x 2 x 2,5	14	22,1 - 27,5	316,1	1192
11012121		11012272	8 x 2 x 2,5	14	24,3 - 30,4	419,8	1373
11012122		11012273	10 x 2 x 2,5	14	27,3 - 34,2	523,5	1580
11012123		11012274	12 x 2 x 2,5	14	28,5 - 35,7	627,2	1996
11012124		11012275	15 x 2 x 2,5	14	32,1 - 40,2	782,7	2430
11012125		11012276	16 x 2 x 2,5	14	32,1 - 40,2	834,5	2487
11012126		11012277	20 x 2 x 2,5	14	35,6 - 44,7	1041,9	2920
11012127		11012278	24 x 2 x 2,5	14	39,2 - 49,3	1249,2	3662
11012128		11012279	30 x 2 x 2,5	14	42,2 - 53,0	1560,3	4262
11012129		11012280	36 x 2 x 2,5	14	45,6 - 57,4	1871,3	4919
11012130		11012281	1 x 3 x 2,5	14	12,7 - 15,5	82,8	396
11012131		11012282	2 x 3 x 2,5	14	17,5 - 21,8	160,6	805
11012132		11012283	3 x 3 x 2,5	14	19,3 - 23,9	238,4	944
11012138		11012289	1 x 4 x 2,5	14	13,4 - 16,5	108,8	450
11012139		11012290	2 x 4 x 2,5	14	21,8 - 27,2	212,4	1048

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LSOH IOSA 300

Instrumentation cable, halogen-free, XLPE/IS/OS/LSOH/SWA/LSOH



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1500 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
max. 150 pF/m
- **Inductance**  
max. 1 mH/km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: WH, BK  
triads: WH, BK, RD  
quads: WH, BK, RD, GY  
white cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: LSOH acc. to EN 50290-2-27
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: LSOH acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)HRH PiMF**
- Suitable for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11010545	BK	BU	2 x 2 x 0,5	20	12,2 - 15,2	31,6	318
11010546			4 x 2 x 0,5	20	13,4 - 16,8	58,2	408
11010547			5 x 2 x 0,5	20	14,5 - 18,2	71,4	455
11010548			6 x 2 x 0,5	20	15,3 - 19,4	84,7	503
11010549			8 x 2 x 0,5	20	16,7 - 21,2	111,2	583
11010550			10 x 2 x 0,5	20	18,5 - 23,5	137,8	652
11010551			12 x 2 x 0,5	20	19,6 - 24,9	164,4	854
11010552			15 x 2 x 0,5	20	21,2 - 27,1	204,1	1011
11010553			16 x 2 x 0,5	20	21,2 - 27,1	217,4	1027
11010554			20 x 2 x 0,5	20	23,3 - 29,9	270,5	1184
11010555			24 x 2 x 0,5	20	25,7 - 33,0	323,6	1329
11010556			30 x 2 x 0,5	20	26,9 - 34,6	403,2	1543
11010557			36 x 2 x 0,5	20	29,0 - 37,3	482,9	1946
11010558			2 x 3 x 0,5	20	13,0 - 16,3	42,0	364
11010559			3 x 3 x 0,5	20	13,5 - 16,9	60,5	410
11010565			2 x 4 x 0,5	20	14,2 - 17,9	52,4	426
11010566			3 x 4 x 0,5	20	15,0 - 18,9	76,0	474

# HELUDATA® EN-50288-7 XLPE/LS0H IOSA 300

Instrumentation cable, halogen-free, XLPE/IS/OS/LS0H/SWA/LS0H

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11010572	11010708	2 x 2 x 0,75	19	12,8 - 15,5	42,0	354
11010573	11010709	4 x 2 x 0,75	19	14,4 - 17,5	78,9	454
11010574	11010710	5 x 2 x 0,75	19	15,3 - 18,7	97,3	506
11010575	11010711	6 x 2 x 0,75	19	16,3 - 19,9	115,8	583
11010576	11010712	8 x 2 x 0,75	19	18,0 - 22,0	152,7	657
11010577	11010713	10 x 2 x 0,75	19	20,5 - 25,0	189,6	888
11010578	11010714	12 x 2 x 0,75	19	21,0 - 25,8	226,6	971
11010579	11010715	15 x 2 x 0,75	19	23,0 - 28,2	281,9	1159
11010580	11010716	16 x 2 x 0,75	19	23,0 - 28,2	300,3	1180
11010581	11010717	20 x 2 x 0,75	19	25,3 - 31,0	374,2	1368
11010582	11010718	24 x 2 x 0,75	19	27,7 - 34,1	448,0	1553
11010583	11010719	30 x 2 x 0,75	19	30,0 - 37,0	558,7	2013
11010584	11010720	36 x 2 x 0,75	19	32,4 - 39,9	669,5	2260
11010585	11010721	2 x 3 x 0,75	19	13,7 - 16,7	57,6	410
11010586	11010722	3 x 3 x 0,75	19	14,5 - 17,7	83,8	459
11010592	11010728	2 x 4 x 0,75	19	15,3 - 18,6	73,1	472
11010593	11010729	3 x 4 x 0,75	19	16,0 - 19,5	107,1	553
11010599	11010735	2 x 2 x 1	18	13,2 - 16,3	52,4	393
11010600	11010736	4 x 2 x 1	18	14,8 - 18,4	99,7	494
11010601	11010737	5 x 2 x 1	18	15,8 - 19,7	123,2	575
11010602	11010738	6 x 2 x 1	18	16,8 - 21,1	146,9	644
11010603	11010739	8 x 2 x 1	18	18,6 - 23,3	194,2	870
11010604	11010740	10 x 2 x 1	18	21,1 - 26,6	241,5	980
11010605	11010741	12 x 2 x 1	18	21,9 - 27,6	288,8	1092
11010606	11010742	15 x 2 x 1	18	23,8 - 30,1	359,6	1312
11010607	11010743	16 x 2 x 1	18	23,8 - 30,1	383,3	1339
11010608	11010744	20 x 2 x 1	18	26,3 - 33,3	477,9	1566
11010609	11010745	24 x 2 x 1	18	29,0 - 36,8	572,4	1968
11010610	11010746	30 x 2 x 1	18	31,1 - 39,5	714,2	2273
11010611	11010747	36 x 2 x 1	18	33,5 - 42,6	856,1	2592
11010612	11010748	2 x 3 x 1	18	14,1 - 17,5	73,1	445
11010613	11010749	3 x 3 x 1	18	14,9 - 18,5	107,1	502
11010619	11010755	2 x 4 x 1	18	15,7 - 19,6	93,9	536
11010620	11010756	3 x 4 x 1	18	16,5 - 20,7	138,2	612
11010627	11010763	2 x 2 x 1,5	16	15,3 - 18,4	73,1	467
11010628	11010764	4 x 2 x 1,5	16	17,2 - 20,8	141,2	625
11010629	11010765	5 x 2 x 1,5	16	19,3 - 23,2	175,1	855
11010630	11010766	6 x 2 x 1,5	16	20,6 - 24,9	209,1	964
11010631	11010767	8 x 2 x 1,5	16	22,8 - 27,6	277,1	1106
11010632	11010768	10 x 2 x 1,5	16	25,7 - 31,0	345,2	1275
11010633	11010769	12 x 2 x 1,5	16	26,4 - 31,9	413,2	1411
11010634	11010770	15 x 2 x 1,5	16	29,8 - 36,1	515,2	1902
11010635	11010771	16 x 2 x 1,5	16	29,8 - 36,1	549,2	1941
11010636	11010772	20 x 2 x 1,5	16	33,0 - 40,0	685,3	2254
11010637	11010773	24 x 2 x 1,5	16	36,4 - 44,1	821,2	2577
11010638	11010774	30 x 2 x 1,5	16	38,4 - 46,7	1025,2	3031
11010639	11010775	36 x 2 x 1,5	16	42,1 - 51,1	1229,4	3809
11010640	11010776	2 x 3 x 1,5	16	16,5 - 19,9	104,2	561
11010641	11010777	3 x 3 x 1,5	16	17,4 - 20,9	153,8	644
11010647	11010783	2 x 4 x 1,5	16	18,6 - 22,5	135,3	800
11010648	11010784	3 x 4 x 1,5	16	20,2 - 24,4	200,4	919

Dimensions and specifications may be changed without prior notice.

# HELUDATA® EN-50288-7 XLPE/LSOH IOSA 500

Instrumentation cable, halogen-free, XLPE/IS/OS/LSOH/SWA/LSOH



## Technical data

- Instrumentation cable acc. to EN 50288-7
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U AC 500 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
fixed installation 10x outer Ø
- **Insulation resistance**  
> 5000 MΩxkm
- **Mutual capacitance**  
single pair: max. 150 pF/m
- **Inductance**  
max. 1 mH /km
- **L/R (ratio)**  
0,5 mm<sup>2</sup> < 25 μH/Ω  
0,75 mm<sup>2</sup> < 25 μH/Ω  
1 mm<sup>2</sup> < 25 μH/Ω  
1,5 mm<sup>2</sup> < 40 μH/Ω  
2,5 mm<sup>2</sup> < 60 μH/Ω

## Cable structure

- Bare copper conductor, multiple wired acc. to DIN VDE 0295 cl.2 / IEC 60228 cl.2
- Core insulation: XLPE acc. to EN 50290-2-29
- Cores stranded in pairs, triads or quads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: BU, BK  
triads: BU, BK, RD  
quads: BU, BK, RD, GY  
blue cores with continuous black numbering
- Individual screen: pairs, triads or quads indiv. screened with AL/PE tape over tinned copper drain wire (solid 0,6 mm)
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire (7x0,3 mm)
- Inner sheath: LSOH acc. to EN 50290-2-27
- Armouring: single layer of galvanised round steel wires acc. to EN 10257-1
- Outer sheath: LSOH acc. to EN 50290-2-27
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- UV resistant acc. to UL 1581 section 1200

## Note

- Alternative denomination:  
**RE-2X(St)HRH PiMF**
- Suited for direct burial
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	Sheath colour	Sheath colour	No.pairs x cross-sec.	AWG-No.	Outer Ø min. - max.	Cu factor per km	Weight app. kg / km
BK	BU	BU	mm <sup>2</sup>		mm		
11010817	11010953	11010953	2 x 2 x 0,5	20	13,5 - 16,7	31,6	380
11010818	11010954	11010954	4 x 2 x 0,5	20	15,2 - 18,9	58,2	467
11010819	11010955	11010955	5 x 2 x 0,5	20	16,2 - 20,2	71,4	546
11010820	11010956	11010956	6 x 2 x 0,5	20	17,3 - 21,6	84,7	608
11010821	11010957	11010957	8 x 2 x 0,5	20	19,8 - 24,7	111,2	824
11010822	11010958	11010958	10 x 2 x 0,5	20	22,0 - 27,6	137,8	927
11010823	11010959	11010959	12 x 2 x 0,5	20	22,6 - 28,4	164,4	1016
11010824	11010960	11010960	15 x 2 x 0,5	20	24,5 - 30,9	204,1	1206
11010825	11010961	11010961	16 x 2 x 0,5	20	24,5 - 30,9	217,4	1224
11010826	11010962	11010962	20 x 2 x 0,5	20	27,2 - 34,3	270,5	1433
11010827	11010963	11010963	24 x 2 x 0,5	20	30,7 - 38,7	323,6	1825
11010828	11010964	11010964	30 x 2 x 0,5	20	32,5 - 41,1	403,2	2053
11010829	11010965	11010965	36 x 2 x 0,5	20	34,9 - 44,1	482,9	2343
11010830	11010966	11010966	2 x 3 x 0,5	20	14,7 - 18,2	42,0	430
11010831	11010967	11010967	3 x 3 x 0,5	20	15,3 - 19,0	60,5	475
11010837	11010973	11010973	2 x 4 x 0,5	20	16,2 - 20,1	52,4	514
11010838	11010974	11010974	3 x 4 x 0,5	20	16,9 - 21,2	76,0	570

# HELUDATA® EN-50288-7 XLPE/LSOH IOSA 500

Instrumentation cable, halogen-free, XLPE/IS/OS/LSOH/SWA/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km
11010844	11010980	2 x 2 x 0,75	19	14,2 - 17,0	42,0	410
11010845	11010981	4 x 2 x 0,75	19	16,0 - 19,4	78,9	535
11010846	11010982	5 x 2 x 0,75	19	17,1 - 20,8	97,3	600
11010847	11010983	6 x 2 x 0,75	19	18,5 - 22,5	115,8	811
11010848	11010984	8 x 2 x 0,75	19	20,9 - 25,4	152,7	912
11010849	11010985	10 x 2 x 0,75	19	23,3 - 28,4	189,6	1051
11010850	11010986	12 x 2 x 0,75	19	23,9 - 29,1	226,6	1139
11010851	11010987	15 x 2 x 0,75	19	26,5 - 32,2	281,9	1384
11010852	11010988	16 x 2 x 0,75	19	26,5 - 32,2	300,3	1408
11010853	11010989	20 x 2 x 0,75	19	30,0 - 36,5	374,2	1843
11010854	11010990	24 x 2 x 0,75	19	33,0 - 40,2	448,0	2046
11010855	11010991	30 x 2 x 0,75	19	34,8 - 42,5	558,7	2361
11010856	11010992	36 x 2 x 0,75	19	37,5 - 45,9	669,5	2693
11010857	11010993	2 x 3 x 0,75	19	15,4 - 18,6	57,6	465
11010858	11010994	3 x 3 x 0,75	19	16,1 - 19,5	83,8	547
11010864	11011000	2 x 4 x 0,75	19	17,1 - 20,7	73,1	562
11010865	11011001	3 x 4 x 0,75	19	18,1 - 21,9	107,1	635
11010871	11011007	2 x 2 x 1	18	14,7 - 18,1	52,4	438
11010872	11011008	4 x 2 x 1	18	16,4 - 20,2	99,7	576
11010873	11011009	5 x 2 x 1	18	17,6 - 21,7	123,2	650
11010874	11011010	6 x 2 x 1	18	19,7 - 24,3	146,9	879
11010875	11011011	8 x 2 x 1	18	21,7 - 27,0	194,2	1001
11010876	11011012	10 x 2 x 1	18	24,0 - 29,9	241,5	1131
11010877	11011013	12 x 2 x 1	18	24,6 - 30,7	288,8	1264
11010878	11011014	15 x 2 x 1	18	27,2 - 34,0	359,6	1521
11010879	11011015	16 x 2 x 1	18	27,2 - 34,0	383,3	1550
11010880	11011016	20 x 2 x 1	18	30,9 - 38,5	477,9	2029
11010881	11011017	24 x 2 x 1	18	34,2 - 42,8	572,4	2293
11010882	11011018	30 x 2 x 1	18	36,1 - 45,2	714,2	2666
11010883	11011019	36 x 2 x 1	18	38,7 - 48,5	856,1	3359
11010884	11011020	2 x 3 x 1	18	15,8 - 19,5	73,1	523
11010885	11011021	3 x 3 x 1	18	16,5 - 20,4	107,1	592
11010891	11011027	2 x 4 x 1	18	17,5 - 21,7	93,9	606
11010892	11011028	3 x 4 x 1	18	18,6 - 23,1	138,2	846
11010899	11011035	2 x 2 x 1,5	16	16,0 - 19,2	73,1	511
11010900	11011036	4 x 2 x 1,5	16	18,2 - 21,8	141,2	660
11010901	11011037	5 x 2 x 1,5	16	20,2 - 24,3	175,1	910
11010902	11011038	6 x 2 x 1,5	16	21,8 - 26,2	209,1	1033
11010903	11011039	8 x 2 x 1,5	16	24,0 - 28,9	277,1	1171
11010904	11011040	10 x 2 x 1,5	16	27,0 - 32,5	345,2	1365
11010905	11011041	12 x 2 x 1,5	16	27,8 - 33,5	413,2	1512
11010906	11011042	15 x 2 x 1,5	16	31,6 - 38,1	515,2	2038
11010907	11011043	16 x 2 x 1,5	16	31,6 - 38,1	549,2	2079
11010908	11011044	20 x 2 x 1,5	16	35,0 - 42,3	685,3	2423
11010909	11011045	24 x 2 x 1,5	16	38,5 - 46,7	821,2	2760
11010910	11011046	30 x 2 x 1,5	16	41,6 - 50,3	1025,2	3543
11010911	11011047	36 x 2 x 1,5	16	44,8 - 54,2	1229,4	4075
11010912	11011048	2 x 3 x 1,5	16	17,3 - 20,8	104,2	592
11010913	11011049	3 x 3 x 1,5	16	18,4 - 22,0	153,8	815
11010919	11011055	2 x 4 x 1,5	16	20,2 - 24,2	135,3	852
11010920	11011056	3 x 4 x 1,5	16	21,2 - 25,5	200,4	965
11010926	11011062	2 x 2 x 2,5	14	17,7 - 21,8	114,6	627
11010927	11011063	4 x 2 x 2,5	14	20,9 - 25,9	224,1	1008
11010928	11011064	5 x 2 x 2,5	14	22,6 - 28,0	278,7	1158
11010929	11011065	6 x 2 x 2,5	14	24,3 - 30,3	333,5	1326
11010930	11011066	8 x 2 x 2,5	14	27,2 - 33,9	443,0	1546
11010931	11011067	10 x 2 x 2,5	14	31,5 - 39,3	552,5	2002
11010932	11011068	12 x 2 x 2,5	14	32,6 - 40,7	662,0	2212
11010933	11011069	15 x 2 x 2,5	14	36,0 - 45,0	826,2	2714
11010934	11011070	16 x 2 x 2,5	14	36,0 - 45,0	881,0	2776
11010935	11011071	20 x 2 x 2,5	14	40,8 - 51,0	1100,0	3599
11010936	11011072	24 x 2 x 2,5	14	45,0 - 56,3	1318,9	4072
11010937	11011073	30 x 2 x 2,5	14	47,7 - 59,7	1647,3	4747
11010938	11011074	36 x 2 x 2,5	14	52,5 - 65,7	1975,9	6011
11010939	11011075	2 x 3 x 2,5	14	20,0 - 24,8	166,4	895
11010940	11011076	3 x 3 x 2,5	14	21,0 - 26,1	247,1	1043
11010946	11011082	2 x 4 x 2,5	14	22,6 - 28,0	218,3	1075
11010947	11011083	3 x 4 x 2,5	14	23,8 - 29,6	324,9	1266

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 PVC/PVC OS 300

Instrumentation cable, PVC/OS/PVC



HELUDATA® PLTC UL13 PVC/PVC OS 300 CE

## Technical data

- Instrumentation cable acc. to
  - UL 13 PLTC
  - NEC Art. 725 (PLTC)
  - NEC Art. 727 (ITC)
  - ASTM D1239
- **Temperature range**
  - flexing -5°C to +50°C
  - fixed -30°C to +80°C
- **Permissible operating temperature of the conductor** -30°C to +105°C
- **Nominal voltage**  
U 300 V
- **Test voltage**
  - core/core 2000 V
  - core/screen 2000 V
- **Minimum bending radius**  
8x Outer-Ø

## Approvals

- for class 1 and 2 Div. 2 explosive environments acc. to NEC Art. 501

## Cable structure

- Copper wire bare, finely stranded acc. to ASTM B3
- Core insulation: heat resistant PVC
- Core identification:
  - pairs: wh, bk
  - triads: wh, bk, rd
  - white cores with consecutive labeling in black digits
- Cores stranded in pairs / triads, cores stranded in cable elements with optimal lay lengths
- Cable elements are stranded with optimal lay length
- Overall screen: AL/PET tape over tinned copper stranded drain wire
- Outer sheath: PVC
- Outer sheath colour: black or blue
- Length marking: in metres

## Properties

- **Low Smoke Low Halogen** (LSLH)
- resistant to hydrocarbons
- low level of line attenuations and low mutual capacitances enable long transmission distances
- cable elements are produced of non-hygroscopic materials

## Tests

- flame-retardant acc. to
  - DIN VDE 0482-332-1-2 /
  - DIN EN 60332-1-2 / IEC 60332-1-2 /
  - UL VW-1 / UL 1581 sec. 1060 (FT1)
- bundle fire test acc. to
  - DIN VDE 0482-332-3-22 /
  - DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A, 40 min.)
- bundle fire test acc. to
  - UL 1685 FT4 / IEEE 1202
- low amount of halogen acid gas acc. to
  - DIN VDE 0482-754-1 / DIN EN 60754-1 /
  - IEC 60754-1 (max. 1.3 %)
- corrosiveness of combustion gases acc. to
  - DIN VDE 0482-754-2 /
  - DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to
  - ISO 4589-2 (min. 30 %)
- smoke density acc. to
  - DIN VDE 0482-1034-1 /
  - DIN EN 61034-1 / IEC 61034-1
- oil-resistant acc. to
  - ICEA S-73-532 / NEMA WC 57 / IRAM IAP
- sunlight resistant /  
UV-resistant acc. to UL 1581 sec. 1200
- Installation in explosion-endangered areas acc. to IEC 60079-14 Annex E, but only with the correct ATEX conform accessories

## Note

- alternative denomination:  
**RE-Y(St)Y**
- not suitable for direct burial
- we also offer cable glands:  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.  
CE = Product conforms with Low-Voltage Directive 2014/35/EU.



# HELUDATA® PLTC UL13 PVC/PVC OS 300

Instrumentation cable, PVC/OS/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11014702	11015266	1 x 2 x 18	6,2	17,7	62,0
11014703	11015267	2 x 2 x 18	8,3	33,7	100,0
11014704	11015382	3 x 2 x 18	8,8	49,8	129,0
11014705	11015383	4 x 2 x 18	9,6	65,8	160,0
11014706	11015384	5 x 2 x 18	14,3	81,8	330,0
11014707	11015385	6 x 2 x 18	15,2	97,8	372,0
11014708	11015386	7 x 2 x 18	15,2	113,8	397,0
11014709	11015387	8 x 2 x 18	16,3	129,8	443,0
11014710	11015388	10 x 2 x 18	18,2	161,9	528,0
11014711	11015389	12 x 2 x 18	18,7	194,0	587,0
11014712	11015390	16 x 2 x 18	20,3	258,0	719,0
11014713	11015391	19 x 2 x 18	21,3	306,0	813,0
11018972	11018973	20 x 2 x 18	22,4	322,0	858,0
11014714	11015392	24 x 2 x 18	24,3	386,1	994,0
11014715	11015393	36 x 2 x 18	27,9	578,3	1397,0
11014716	11015394	1 x 3 x 18	6,5	25,7	76,0
11014722	11015395	2 x 3 x 18	9,6	49,7	134,0
11014723	11015396	3 x 3 x 18	14,0	73,8	314,0
11014838	11015402	4 x 3 x 18	15,0	97,8	369,0
11014839	11015403	6 x 3 x 18	17,2	145,8	484,0
11011233	11017141	8 x 3 x 18	18,5	194,0	585,0
11011234	11017142	12 x 3 x 18	21,5	290,0	790,0
11014840	11017143	16 x 3 x 18	23,5	386,1	979,0
11014841	11017000	1 x 2 x 16	6,8	27,1	77,0
11014842	11017001	2 x 2 x 16	9,2	52,5	130,0
11014843	11017002	3 x 2 x 16	13,6	77,9	303,0
11014844	11017003	4 x 2 x 16	14,5	103,3	356,0
11014845	11017004	5 x 2 x 16	15,5	128,6	411,0
11014846	11017005	6 x 2 x 16	16,6	154,0	468,0
11014847	11017006	7 x 2 x 16	16,6	179,4	505,0
11014848	11017007	8 x 2 x 16	17,9	204,8	565,0
11014849	11017008	10 x 2 x 16	20,1	255,6	679,0
11014850	11017009	12 x 2 x 16	20,6	306,4	763,0
11014851	11017010	16 x 2 x 16	22,5	407,9	947,0
11014852	11017011	19 x 2 x 16	23,6	484,1	1078,0
11018970	11018974	20 x 2 x 16	24,9	509,5	1139,0
11014858	11017012	24 x 2 x 16	27,6	611,1	1370,0
11014859	11017013	36 x 2 x 16	31,1	915,7	1885,0
11015246	11017014	1 x 3 x 16	7,1	39,8	98,0
11015247	11017020	2 x 3 x 16	14,6	77,9	320,0
11015248	11017021	3 x 3 x 16	15,2	116,0	388,0
11015249	11017136	4 x 3 x 16	16,3	154,0	464,0
11015250	11017137	6 x 3 x 16	18,8	230,2	620,0
11015251	11017138	8 x 3 x 16	20,4	306,4	760,0
11015252	11017139	12 x 3 x 16	23,8	458,7	1045,0
11015253	11017140	16 x 3 x 16	26,6	611,0	1351,0
11015254	11018971	1 x 2 x 14	8,0	42,4	107,0
11015255	11017144	2 x 2 x 14	14,9	83,0	332,0
11015256	11017145	3 x 2 x 14	15,5	123,7	404,0
11015257	11017146	5 x 2 x 14	17,9	205,0	565,0
11015258	11017147	1 x 3 x 14	8,4	62,7	140,0
11015259	11017148	2 x 3 x 14	16,8	123,7	426,0
11015260	11017149	3 x 3 x 14	17,6	184,7	530,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 PVC/PVC IOS 300

Instrumentation cable, PVC/IS/OS/PVC



HELUDATA® PLTC UL13 PVC/PVC IOS 300 CE

## Technical data

- Instrumentation cable acc. to UL 13 PLTC
- in compliance with NEC code, sec. 725 PLTC
- acc. to ASTM 1239
- in compliance with NEC article 336, for use in hazardous classified locations class I & II division 2 acc. to NEC 501
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +80°C  
permissible operating temperature of the conductor -30°C to +105°C
- **Nominal voltage**  
U 300 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
8x outer Ø

## Cable structure

- Class B stranded annealed bare copper per ASTM B3 and B8
- Core insulation: heat resistant PVC
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: white, black  
triads: white, black, red  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Individual screen: AL/PE tape over tinned copper drain wire
- Overall screen: AL/PE tape over tinned copper drain wire
- Outer sheath: PVC
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low Smoke Low Halogen (LSLH)
- Resistant to hydrocarbons
- Low level of line attenuations enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame test on bunched wires acc. to UL 1685 FT4 / IEEE 1202
- UV and sunlight resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 and UL VW-1 / UL 1581 sec. 1060 (FT1)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to ISO 4589-2: min. 30%
- Smoke density acc. to DIN VDE 0482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1 (max. 1.3%)
- Oil resistant acc. to IEC 60332-3-22 / NEMA WC 57
- Installation in hazardous areas acc. to IEC 60079-14 ANNEX E, but only using the correct ATEX conform accessories.

## Note

- Alternative denomination:  
**RE-Y(St)Y PimF**
- Not suitable for direct burial
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUDATA® PLTC UL13 PVC/PVC IOS 300

Instrumentation cable, PVC/IS/OS/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11017150	11011211	2 x 2 x 18	8,6	37,1	111,0
11017156	11011212	3 x 2 x 18	9,0	54,8	145,0
11017157	11011213	4 x 2 x 18	13,7	72,5	314,0
11011814	11011214	5 x 2 x 18	14,6	90,3	360,0
11011815	11011215	6 x 2 x 18	15,5	108,0	407,0
11018975	11011216	7 x 2 x 18	15,5	125,7	437,0
11011816	11011217	8 x 2 x 18	16,7	143,4	488,0
11011817	11011218	10 x 2 x 18	18,7	178,8	584,0
11011818	11011219	12 x 2 x 18	19,2	214,2	655,0
11011819	11011220	16 x 2 x 18	20,9	285,1	805,0
11011820	11011221	19 x 2 x 18	21,9	338,2	913,0
11011821	11011222	24 x 2 x 18	25,6	426,8	1161,0
11011822	11011223	36 x 2 x 18	28,8	639,3	1585,0
11011823	11011224	2 x 3 x 18	13,7	53,1	279,0
11011824	11011225	3 x 3 x 18	14,3	78,9	332,0
11011825	11011226	4 x 3 x 18	15,3	104,6	394,0
11011826	11011232	6 x 3 x 18	17,6	156,0	520,0
11011827	11011361	8 x 3 x 18	19,0	207,5	631,0
11011828	11011362	12 x 3 x 18	22,0	310,3	857,0
11011829	11011363	16 x 3 x 18	24,1	413,2	1067,0
11011830	11011364	2 x 2 x 16	9,5	55,9	141,0
11011836	11011365	3 x 2 x 16	13,8	83,0	321,0
11011837	11011366	4 x 2 x 16	14,8	110,0	381,0
11011838	11011367	5 x 2 x 16	15,8	137,1	441,0
11011965	11011368	6 x 2 x 16	16,9	164,2	503,0
11011966	11011369	7 x 2 x 16	16,9	191,3	545,0
11011967	11011370	8 x 2 x 16	18,3	218,4	611,0
11011968	11011371	10 x 2 x 16	20,6	272,6	735,0
11011969	11011372	12 x 2 x 16	21,1	326,7	831,0
11011970	11011373	16 x 2 x 16	23,1	435,1	1033,0
11011971	11011374	19 x 2 x 16	24,2	516,3	1179,0
11011972	11011375	24 x 2 x 16	28,4	651,8	1498,0
11011973	11011376	36 x 2 x 16	32,0	976,8	2074,0
11011974	11011377	2 x 3 x 16	14,8	81,3	336,0
11011975	11011383	3 x 3 x 16	15,5	121,1	409,0
11011976	11011384	4 x 3 x 16	16,7	160,8	492,0
11011977	11011385	6 x 3 x 16	19,3	240,4	660,0
11011978	11010654	8 x 3 x 16	20,9	319,9	813,0
11011979	11010655	12 x 3 x 16	24,4	479,1	1121,0
11011980	11010656	16 x 3 x 16	27,3	638,2	1451,0
11011981	11010657	2 x 2 x 14	15,1	84,6	348,0
11011987	11010658	3 x 2 x 14	15,8	128,8	425,0
11011988	11010659	5 x 2 x 14	18,3	213,5	598,0
11011989	11018818	2 x 3 x 14	17,0	127,1	442,0
11011210	11018819	3 x 3 x 14	17,9	189,7	553,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 PVC/PVC OSA 300

Instrumentation cable, PVC/OS/PVC/SWA/PVC



## Technical data

- Instrumentation cable acc. to UL 13 PLTC
- in compliance with NEC code, sec. 725 PLTC
- acc. to ASTM 1239
- in compliance with NEC article 336, for use in hazardous classified locations class I & II division 2 acc. to NEC 501
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +80°C  
permissible operating temperature of the conductor -30°C to +105°C
- **Nominal voltage**  
U 300 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
14x outer Ø

## Cable structure

- Class B stranded annealed bare copper per ASTM B3 and B8
- Core insulation: heat resistant PVC
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: white, black  
triads: white, black, red  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire
- Inner sheath: PVC
- Inner sheath colour: like outer sheath
- Armouring: galvanized steel wire
- Outer sheath: PVC
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low Smoke Low Halogen (LSLH)
- Resistant to hydrocarbons
- Low level of line attenuations enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame test on bunched wires acc. to UL 1685 FT4 / IEEE 1202
- UV and sunlight resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 and UL VW-1 / UL 1581 sec. 1060 (FT1)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to ISO 4589-2: min. 30%
- Smoke density acc. to DIN VDE 0482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1 (max. 1.3%)
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- Installation in hazardous areas acc. to IEC 60079-14 ANNEX E, but only using the correct ATEX conform accessories.

## Note

- Alternative denomination:  
**RE-Y(St)YRY**
- Suitable for direct burial
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUDATA® PLTC UL13 PVC/PVC OSA 300

Instrumentation cable, PVC/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11010660	11014264	1 x 2 x 18	13,5	17,7	347,0
11010661	11014265	2 x 2 x 18	15,9	33,7	470,0
11010662	11014266	3 x 2 x 18	16,4	49,7	514,0
11010663	11014267	4 x 2 x 18	17,2	65,8	571,0
11010664	11014268	5 x 2 x 18	18,6	81,8	662,0
11010665	11014269	6 x 2 x 18	19,5	97,8	726,0
11010666	11014270	7 x 2 x 18	19,5	113,8	751,0
11010667	11014271	8 x 2 x 18	20,6	129,8	823,0
11010668	11014272	10 x 2 x 18	23,2	161,9	1068,0
11010674	11014273	12 x 2 x 18	24,2	193,9	1185,0
11010675	11014274	16 x 2 x 18	26,4	258,0	1407,0
11010790	11014275	19 x 2 x 18	27,3	306,0	1529,0
11010791	11014276	24 x 2 x 18	31,0	386,1	1970,0
11010792	11014277	36 x 2 x 18	35,1	578,3	2562,0
11010793	11014283	1 x 3 x 18	13,8	25,7	372,0
11010794	11014284	2 x 3 x 18	17,3	49,7	548,0
11010795	11014285	3 x 3 x 18	18,3	73,8	640,0
11010796	11013506	4 x 3 x 18	19,3	97,8	718,0
11010797	11013507	6 x 3 x 18	21,5	145,8	883,0
11010798	11013508	8 x 3 x 18	23,5	193,9	1134,0
11010799	11013509	12 x 3 x 18	27,5	290,0	1514,0
11014125	11013510	16 x 3 x 18	30,2	386,1	1923,0
11010800	11013511	1 x 2 x 16	14,1	27,1	382,0
11010801	11013512	2 x 2 x 16	16,9	52,5	529,0
11010802	11013513	3 x 2 x 16	17,9	77,9	619,0
11010803	11013514	4 x 2 x 16	18,8	103,3	694,0
11010804	11013515	5 x 2 x 16	19,8	128,7	772,0
11010810	11013516	6 x 2 x 16	20,9	154,0	854,0
11010811	11013517	7 x 2 x 16	20,9	179,4	891,0
11014110	11013518	8 x 2 x 16	22,9	204,8	1095,0
11014111	11013519	10 x 2 x 16	26,1	255,6	1357,0
11014112	11013520	12 x 2 x 16	26,7	306,4	1461,0
11014113	11013521	16 x 2 x 16	29,3	407,9	1855,0
11014114	11013522	19 x 2 x 16	30,3	484,1	2026,0
11014115	11013528	24 x 2 x 16	34,8	611,0	2523,0
11014116	11013529	36 x 2 x 16	39,1	915,7	3417,0
11014117	11013530	1 x 3 x 16	14,5	39,8	415,0
11014118	11013657	2 x 3 x 16	18,9	77,9	660,0
11014119	11013658	3 x 3 x 16	19,5	116,0	743,0
11014120	11013659	4 x 3 x 16	20,7	154,0	845,0
11014121	11013660	6 x 3 x 16	24,4	230,2	1221,0
11014122	11013661	8 x 3 x 16	26,5	306,4	1451,0
11014123	11013662	12 x 3 x 16	30,5	458,7	2001,0
11014124	11013663	16 x 3 x 16	33,4	611,0	2416,0
11014126	11018969	1 x 2 x 14	15,6	42,4	464,0
11014132	11013664	2 x 2 x 14	19,2	83,0	679,0
11014133	11013665	3 x 2 x 14	19,9	123,7	766,0
11014134	11013666	5 x 2 x 14	23,0	205,0	1098,0
11014261	11013667	1 x 3 x 14	16,0	62,7	512,0
11014262	11013668	2 x 3 x 14	21,1	123,7	816,0
11014263	11013669	3 x 3 x 14	22,6	184,7	1052,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 PVC/PVC IOSA 300

Instrumentation cable, PVC/IS/OS/PVC/SWA/PVC



## Technical data

- Instrumentation cable acc. to UL 13 PLTC
- in compliance with NEC code, sec. 725 PLTC
- acc. to ASTM 1239
- in compliance with NEC article 336, for use in hazardous classified locations class I & II division 2 acc. to NEC 501
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +80°C  
permissible operating temperature of the conductor -30°C to +105°C
- **Nominal voltage**  
U 300 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
14x outer Ø

## Cable structure

- Class B stranded annealed bare copper per ASTM B3 and B8
- Core insulation: heat resistant PVC
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: white, black  
triads: white, black, red  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Individual screen: AL/PE tape over tinned copper drain wire
- Overall screen: AL/PE tape over tinned copper drain wire
- Inner sheath: PVC
- Inner sheath colour: like outer sheath
- Armouring: galvanized steel wire
- Outer sheath: PVC
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low Smoke Low Halogen (LSLH)
- Resistant to hydrocarbons
- Low level of line attenuations and low mutual capacitances enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame test on bunched wires acc. to UL 1685 FT4 / IEEE 1202
- UV and sunlight resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 and UL VW-1 / UL 1581 sec. 1060 (FT1)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to ISO 4589-2: min. 30%
- Smoke density acc. to DIN VDE 0482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1 (max. 1.3%)
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- Installation in hazardous areas acc. to IEC 60079-14 ANNEX E, but only using the correct ATEX conform accessories.

## Note

- Alternative denomination:  
**RE-Y(St)YRY PimF**
- Suitable for direct burial
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUDATA® PLTC UL13 PVC/PVC IOSA 300

Instrumentation cable, PVC/IS/OS/PVC/SWA/PVC

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11013670	11012410	2 x 2 x 18	16,2	37,1	490,0
11013671	11012411	3 x 2 x 18	16,7	54,8	539,0
11013672	11012412	4 x 2 x 18	18,0	72,5	634,0
11013673	11012413	5 x 2 x 18	18,9	90,3	701,0
11013679	11012414	6 x 2 x 18	19,9	108,0	770,0
11013680	11012415	7 x 2 x 18	19,9	125,7	800,0
11013681	11012416	8 x 2 x 18	21,0	143,4	879,0
11012950	11012417	10 x 2 x 18	24,2	178,8	1183,0
11012951	11012418	12 x 2 x 18	24,8	214,2	1268,0
11012952	11012419	16 x 2 x 18	27,0	285,1	1514,0
11012953	11012420	19 x 2 x 18	27,9	338,2	1652,0
11012954	11012426	24 x 2 x 18	32,3	426,8	2187,0
11012955	11012427	36 x 2 x 18	36,8	639,3	3009,0
11012956	11012542	2 x 3 x 18	18,1	53,1	600,0
11012957	11012543	3 x 3 x 18	18,7	78,9	668,0
11012958	11012544	4 x 3 x 18	19,7	104,6	751,0
11012959	11012545	6 x 3 x 18	22,6	156,0	1042,0
11012960	11012546	8 x 3 x 18	24,5	207,5	1238,0
11012961	11012547	12 x 3 x 18	28,8	310,3	1748,0
11012962	11012548	16 x 3 x 18	30,9	413,2	2037,0
11012963	11012549	2 x 2 x 16	17,1	55,9	549,0
11012964	11012550	3 x 2 x 16	18,2	83,0	646,0
11012970	11012551	4 x 2 x 16	19,1	110,0	726,0
11012971	11012552	5 x 2 x 16	20,2	137,1	811,0
11013086	11012553	6 x 2 x 16	21,3	164,2	898,0
11013087	11012554	7 x 2 x 16	21,3	191,3	939,0
11013088	11012555	8 x 2 x 16	23,3	218,4	1153,0
11013089	11012556	10 x 2 x 16	26,6	272,6	1431,0
11013090	11012562	12 x 2 x 16	27,2	326,7	1544,0
11013091	11012563	16 x 2 x 16	29,9	435,1	1965,0
11013092	11015957	19 x 2 x 16	31,0	516,3	2153,0
11013093	11015958	24 x 2 x 16	36,4	651,8	2902,0
11013094	11015959	36 x 2 x 16	40,0	976,8	3648,0
11013095	11015960	2 x 3 x 16	19,2	81,3	683,0
11013096	11015961	3 x 3 x 16	19,9	121,0	772,0
11013097	11015962	4 x 3 x 16	21,0	160,8	881,0
11013098	11015963	6 x 3 x 16	24,8	240,4	1276,0
11013099	11015964	8 x 3 x 16	27,0	319,9	1519,0
11013100	11015965	12 x 3 x 16	31,1	479,1	2101,0
11013106	11015966	16 x 3 x 16	34,0	638,2	2543,0
11013107	11015967	2 x 2 x 14	19,4	86,4	700,0
11012406	11015968	3 x 2 x 14	20,1	128,8	793,0
11012407	11015969	5 x 2 x 14	23,3	213,5	1141,0
11012408	11015975	2 x 3 x 14	21,4	127,1	840,0
11012409	11015976	3 x 3 x 14	22,9	189,7	1086,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 XLPE/LS0H OS 300

Instrumentation cable, XLPE/OS/LS0H



HELUDATA® PLTC UL13 XLPE/LS0H OS 300 CE

## Technical data

- Instrumentation cable acc. to
  - UL 13 PLTC
  - NEC Art. 725 (PLTC)
  - NEC Art. 727 (ITC)
  - ASTM D1239
- **Temperature range**
  - flexing -5°C to +50°C
  - fixed -30°C to +75°C
- **Permissible operating temperature of the conductor** -30°C to +90°C
- **Nominal voltage**
  - U 300 V
- **Test voltage**
  - core/core 2000 V
  - core/screen 2000 V
- **Minimum bending radius**
  - 8x Outer-Ø

## Approvals

- for class 1 and 2 Div. 2 explosive environments acc. to NEC Art. 501

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

## Cable structure

- Copper wire bare, finely stranded acc. to ASTM B3
- Core insulation: XLPE
- Core identification:
  - pairs: wh, bk
  - triads: wh, bk, rd
  - white cores with consecutive labeling in black digits
- Cores stranded in pairs / triads, cores stranded in cable elements with optimal lay lengths
- Cable elements are stranded with optimal lay length
- Overall screen: AL/PET tape over tinned copper stranded drain wire
- Outer sheath: LS0H
- Outer sheath colour: black or blue
- Length marking: in metres

## Properties

- **Low Smoke Zero Halogen** (LS0H)
- resistant to hydrocarbons
- low level of line attenuations and low mutual capacitances enable long transmission distances
- cable elements are produced of non-hygroscopic materials

## Tests

- flame-retardant acc. to
  - DIN VDE 0482-332-1-2 /
  - DIN EN 60332-1-2 / IEC 60332-1-2 /
  - UL VW-1 / UL 1581 sec. 1060 (FT1)
- bundle fire test acc. to
  - DIN VDE 0482-332-3-22 /
  - DIN EN 60332-3-22 / IEC 60332-3-22
  - (Cat. A, 40 min.)
- bundle fire test acc. to
  - UL 1685 FT4 / IEEE 1202
- halogen-free acc. to
  - DIN VDE 0482-754-1 / DIN EN 60754-1 /
  - IEC 60754-1 (max. 0.5 %)
- corrosiveness of combustion gases acc. to
  - DIN VDE 0482-754-2 /
  - DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to
  - ISO 4589-2 (min. 37 %)
- smoke density acc. to
  - DIN VDE 0482-1034-1 /
  - DIN EN 61034-1 / IEC 61034-1
- oil-resistant acc. to
  - ICEA S-73-532 / NEMA WC 57 / IRAM IAP
- sunlight resistant /
  - UV-resistant acc. to UL 1581 sec. 1200
- Installation in explosion-endangered areas acc. to IEC 60079-14 Annex E, but only with the correct ATEX conform accessories

## Note

- alternative denomination:
  - RE-2X(St)H**
- not suitable for direct burial
- we also offer cable glands:
  - HELUTOP® HT-MS-EX-d**



# HELUDATA® PLTC UL13 XLPE/LSOH OS 300

Instrumentation cable, XLPE/OS/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11018400	11018451	1 x 2 x 18	6,2	17,7	56,0
11018401	11018452	2 x 2 x 18	8,7	33,7	95,0
11018402	11018453	3 x 2 x 18	9,2	49,7	120,0
11018403	11018454	4 x 2 x 18	13,9	65,8	274,0
11018404	11018455	5 x 2 x 18	14,8	81,8	312,0
11018405	11018456	6 x 2 x 18	15,8	97,8	351,0
11018406	11018457	7 x 2 x 18	15,8	113,8	374,0
11018407	11018458	8 x 2 x 18	17,0	129,8	417,0
11018408	11018459	10 x 2 x 18	19,0	161,9	496,0
11018409	11018460	12 x 2 x 18	19,5	193,9	550,0
11018410	11018461	16 x 2 x 18	21,3	258,0	671,0
11018411	11018462	19 x 2 x 18	22,2	306,0	756,0
11018412	11018463	24 x 2 x 18	26,0	386,1	960,0
11018413	11018464	36 x 2 x 18	29,3	578,3	1294,0
11018414	11018465	1 x 3 x 18	6,5	25,7	69,0
11018415	11018466	2 x 3 x 18	9,6	49,7	123,0
11018416	11018467	3 x 3 x 18	14,0	73,8	288,0
11018417	11018468	4 x 3 x 18	15,0	97,8	338,0
11018418	11018469	6 x 3 x 18	17,2	145,8	442,0
11018419	11018498	8 x 3 x 18	18,5	193,9	535,0
11018420	11018499	12 x 3 x 18	21,5	290,0	719,0
11018421	11015977	16 x 3 x 18	23,5	386,1	890,0
11018422	11018470	1 x 2 x 16	6,8	27,1	72,0
11018423	11018471	2 x 2 x 16	13,5	52,5	244,0
11018424	11018472	3 x 2 x 16	14,1	77,9	288,0
11018425	11018473	4 x 2 x 16	15,1	103,3	339,0
11018426	11018474	5 x 2 x 16	16,1	128,6	391,0
11018427	11018475	6 x 2 x 16	17,2	154,0	443,0
11018428	11018476	7 x 2 x 16	17,2	179,4	477,0
11018429	11018477	8 x 2 x 16	18,6	204,8	535,0
11018430	11018478	10 x 2 x 16	21,0	255,6	642,0
11018431	11018479	12 x 2 x 16	21,6	306,4	721,0
11018432	11018480	16 x 2 x 16	23,6	407,9	890,0
11018433	11018481	19 x 2 x 16	24,7	484,1	1012,0
11018434	11018482	24 x 2 x 16	29,0	611,0	1286,0
11018435	11018483	36 x 2 x 16	32,7	915,7	1763,0
11018436	11018484	1 x 3 x 16	7,1	39,8	91,0
11018437	11018485	2 x 3 x 16	14,6	77,9	297,0
11018438	11018486	3 x 3 x 16	15,2	116,0	359,0
11018439	11018487	4 x 3 x 16	16,3	154,0	429,0
11018440	11018488	6 x 3 x 16	18,8	230,2	572,0
11018441	11018489	8 x 3 x 16	20,4	306,4	701,0
11018442	11018490	12 x 3 x 16	23,8	458,7	963,0
11018443	11018491	16 x 3 x 16	26,6	611,0	1244,0
11018444	11018492	1 x 2 x 14	7,6	42,4	95,0
11018445	11018493	2 x 2 x 14	14,8	83,0	303,0
11018446	11018494	3 x 2 x 14	15,4	123,7	365,0
11018447	11018495	5 x 2 x 14	17,8	205,0	509,0
11018448	11018399	1 x 3 x 14	8,0	62,7	123,0
11018449	11018496	2 x 3 x 14	16,0	123,7	375,0
11018450	11018497	3 x 3 x 14	16,8	184,7	466,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 XLPE/LS0H IOS 300

Instrumentation cable, XLPE/IS/OS/LS0H



HELUDATA® PLTC UL13 XLPE/LS0H IOS 300 CE

## Technical data

- Instrumentation cable acc. to UL 13 PLTC
- in compliance with NEC code, sec. 725 PLTC
- acc. to ASTM 1239
- in compliance with NEC article 336, for use in hazardous classified locations class I & II division 2 acc. to NEC 501
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +75°C  
permissible operating temperature of the conductor -30°C to +90°C
- **Nominal voltage**  
U 300 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
8x outer Ø

## Cable structure

- Class B stranded annealed bare copper per ASTM B3 and B8
- Core insulation: XLPE
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: white, black  
triads: white, black, red  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Individual screen: AL/PE foil over tinned copper drain wire
- Overall screen: AL/PE tape over tinned copper drain wire
- Outer sheath: LS0H
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low Smoke Zero Halogen (LS0H)
- Resistant to hydrocarbons
- Low level of line attenuations enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame test on bunched wires acc. to UL 1685 FT4 / IEEE 1202
- UV and sunlight resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 and UL VW-1 / UL 1581 sec. 1060 (FT1)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to ISO 4589-2: min. 30%
- Smoke density acc. to DIN VDE 0482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1 (max. 0.5%)
- Oil resistant acc. to ICEA S-73-532 / NEMA WC 57
- Installation in hazardous areas acc. to IEC 60079-14 ANNEX E, but only using the correct ATEX conform accessories.

## Note

- Alternative denomination:  
**RE-2X(St)H PimF**
- Not suitable for direct burial
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUDATA® PLTC UL13 XLPE/LS0H IOS 300

Instrumentation cable, XLPE/IS/OS/LS0H

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11018570	11018525	2 x 2 x 18	9,0	37,1	106,0
11018571	11018526	3 x 2 x 18	9,5	54,8	136,0
11018572	11018527	4 x 2 x 18	14,2	72,5	298,0
11018573	11018528	5 x 2 x 18	15,1	90,3	341,0
11018574	11018529	6 x 2 x 18	16,1	108,0	386,0
11018575	11018530	7 x 2 x 18	16,1	125,7	414,0
11018576	11018531	8 x 2 x 18	17,4	143,4	462,0
11018577	11018532	10 x 2 x 18	19,5	178,8	552,0
11018578	11018533	12 x 2 x 18	20,1	214,2	616,0
11018579	11018534	16 x 2 x 18	21,9	285,1	757,0
11018580	11018535	19 x 2 x 18	22,9	338,2	857,0
11018581	11018976	20 x 2 x 18	24,2	355,9	905,0
11018582	11018536	24 x 2 x 18	26,8	426,8	1089,0
11018583	11018537	36 x 2 x 18	30,2	639,3	1482,0
11018584	11018538	2 x 3 x 18	13,7	53,1	257,0
11018585	11018539	3 x 3 x 18	14,3	78,9	307,0
11018586	11018540	4 x 3 x 18	15,3	104,6	362,0
11018395	11018541	6 x 3 x 18	17,6	156,0	479,0
11018396	11018542	8 x 3 x 18	19,0	207,5	580,0
11018397	11018543	12 x 3 x 18	22,0	310,3	787,0
11018398	11018544	16 x 3 x 18	24,1	413,2	977,0
11018500	11018545	2 x 2 x 16	13,8	55,9	259,0
11018501	11018546	3 x 2 x 16	14,4	83,0	307,0
11018502	11018547	4 x 2 x 16	15,4	110,0	363,0
11018503	11018548	5 x 2 x 16	16,5	137,1	420,0
11018504	11018549	6 x 2 x 16	17,6	164,2	479,0
11018505	11018550	7 x 2 x 16	17,6	191,3	517,0
11018506	11018551	8 x 2 x 16	19,1	218,4	580,0
11018507	11018552	10 x 2 x 16	21,5	272,6	697,0
11018508	11018553	12 x 2 x 16	22,1	326,7	787,0
11018509	11018554	16 x 2 x 16	24,2	435,1	977,0
11018510	11018555	19 x 2 x 16	25,9	516,3	1150,0
11018511	11018556	24 x 2 x 16	29,8	651,8	1414,0
11018512	11018557	36 x 2 x 16	33,6	976,8	1950,0
11018513	11018558	2 x 3 x 16	14,8	81,3	312,0
11018514	11018559	3 x 3 x 16	15,5	121,0	380,0
11018515	11018560	4 x 3 x 16	16,7	160,8	455,0
11018516	11018561	6 x 3 x 16	19,3	240,4	612,0
11018517	11018562	8 x 3 x 16	20,9	319,9	752,0
11018518	11018563	12 x 3 x 16	24,4	479,1	1037,0
11018519	11018564	16 x 3 x 16	27,3	638,2	1343,0
11018520	11018565	2 x 2 x 14	15,0	86,4	317,0
11018521	11018566	3 x 2 x 14	15,7	128,8	386,0
11018522	11018567	5 x 2 x 14	18,2	213,5	542,0
11018523	11018568	2 x 3 x 14	16,3	127,1	391,0
11018524	11018569	3 x 3 x 14	17,1	189,7	487,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 XLPE/LSOH OSA 300

Instrumentation cable, XLPE/OS/LSOH/SWA/LSOH



## Technical data

- Instrumentation cable acc. to UL 13 PLTC
- in compliance with NEC code, sec. 725 PLTC
- acc. to ASTM 1239
- in compliance with NEC article 336, for use in hazardous classified locations class I & II division 2 acc. to NEC 501
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +75°C  
permissible operating temperature of the conductor -30°C to +90°C
- **Nominal voltage**  
U 300 V
- **Test voltage**  
core/core 2000 V  
core/screen 2000 V
- **Minimum bending radius**  
14x outer Ø

## Cable structure

- Class B stranded annealed bare copper per ASTM B3 and B8
- Core insulation: XLPE
- Cores stranded in pairs or triads
- Cores twisted together in cable elements in optimal lay length
- Core identification  
pairs: white, black  
triads: white, black, red  
white cores with continuous black numbering
- Cable elements are stranded in optimal lay length
- Overall screen: AL/PE tape over tinned copper drain wire
- Inner sheath: LSOH
- Innersheath colour: like outer sheath
- Armouring: galvanized steel wire
- Outer sheath: LSOH
- Outer sheath colour: black or blue
- With meter marking

## Properties

- Low Smoke Zero Halogen (LSOH)
- Resistant to hydrocarbons
- Low level of line attenuations enable long transmission distances
- Cable elements are produced of non-hygroscopic materials

## Tests

- Flame test on bunched wires acc. to UL 1685 FT4 / IEEE 1202
- UV and sunlight resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2 and UL VW-1 / UL 1581 sec. 1060 (FT1)
- Flame test on bunched wires acc. to DIN VDE 0482-332-3-22 / DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A)
- Corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to ISO 4589-2: min. 30%
- Smoke density acc. to DIN VDE 0482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1 (max. 0.5%)
- Oil resistant acc. to IEC 60754-1 / IEC 60754-1 (max. 0.5%)
- Oil resistant acc. to IEC 60754-1 / IEC 60754-1 (max. 0.5%)
- NEMA WC 57
- Installation in hazardous areas acc. to IEC 60079-14 ANNEX E, but only using the correct ATEX conform accessories.

## Note

- Alternative denomination:  
**RE-2X(St)HRH**
- Suitable for direct burial
- We also offer cable glands  
**HELUTOP® HT-MS-EX-d / e4**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUDATA® PLTC UL13 XLPE/LSOH OSA 300

Instrumentation cable, XLPE/OS/LSOH/SWA/LSOH

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11018600	11018651	1 x 2 x 18	13,5	17,7	330,0
11018601	11018652	2 x 2 x 18	16,3	33,7	460,0
11018602	11018653	3 x 2 x 18	16,8	49,7	503,0
11018603	11018654	4 x 2 x 18	18,2	65,8	587,0
11018604	11018655	5 x 2 x 18	19,1	81,8	647,0
11018605	11018656	6 x 2 x 18	20,1	97,8	707,0
11018606	11018657	7 x 2 x 18	20,1	113,8	730,0
11018607	11018658	8 x 2 x 18	21,3	129,8	800,0
11018608	11018659	10 x 2 x 18	24,5	161,9	1087,0
11018609	11018660	12 x 2 x 18	25,6	193,9	1192,0
11018610	11018661	16 x 2 x 18	27,3	258,0	1368,0
11018611	11018662	19 x 2 x 18	29,0	306,0	1631,0
11018612	11018663	24 x 2 x 18	32,7	386,1	1978,0
11018613	11018664	36 x 2 x 18	37,3	578,3	2707,0
11018614	11018665	1 x 3 x 18	13,8	25,7	352,0
11018615	11018666	2 x 3 x 18	17,3	49,7	518,0
11018616	11018667	3 x 3 x 18	18,3	73,8	605,0
11018617	11018668	4 x 3 x 18	19,3	97,8	677,0
11018618	11018669	6 x 3 x 18	21,5	145,8	831,0
11018619	11018670	8 x 3 x 18	23,5	193,9	1069,0
11018620	11018587	12 x 3 x 18	27,5	290,0	1423,0
11018621	11018588	16 x 3 x 18	30,2	386,1	1812,0
11018900	11018622	1 x 2 x 16	14,1	27,1	363,0
11018901	11018623	2 x 2 x 16	17,8	52,5	550,0
11018902	11018624	3 x 2 x 16	18,4	77,9	606,0
11018903	11018625	4 x 2 x 16	19,4	103,3	679,0
11018904	11018626	5 x 2 x 16	20,4	128,6	755,0
11018905	11018627	6 x 2 x 16	21,5	154,0	833,0
11018906	11018628	7 x 2 x 16	21,5	179,4	867,0
11018907	11018629	8 x 2 x 16	24,1	204,8	1113,0
11018908	11018630	10 x 2 x 16	27,0	255,6	1330,0
11018909	11018631	12 x 2 x 16	27,6	306,4	1427,0
11018910	11018632	16 x 2 x 16	30,3	407,9	1816,0
11018911	11018633	19 x 2 x 16	31,4	484,1	1980,0
11018977	11018634	20 x 2 x 16	33,3	509,5	2146,0
11018912	11018635	24 x 2 x 16	37,0	611,0	2685,0
11018913	11018636	36 x 2 x 16	40,7	915,7	3334,0
11018914	11018637	1 x 3 x 16	14,5	39,8	394,0
11018915	11018638	2 x 3 x 16	18,9	77,9	626,0
11018916	11018639	3 x 3 x 16	19,5	116,0	703,0
11018917	11018640	4 x 3 x 16	20,7	154,0	799,0
11018918	11018641	6 x 3 x 16	24,4	230,2	1157,0
11018919	11018642	8 x 3 x 16	26,5	306,4	1372,0
11018920	11018643	12 x 3 x 16	30,5	458,7	1896,0
11018599	11018961	16 x 3 x 16	33,4	611,0	2284,0
11018644	11018962	1 x 2 x 14	15,2	42,4	424,0
11018645	11018963	2 x 2 x 14	19,1	83,0	636,0
11018646	11018964	3 x 2 x 14	19,8	123,7	715,0
11018647	11018965	5 x 2 x 14	22,8	205,0	1025,0
11018648	11018966	1 x 3 x 14	15,6	62,7	465,0
11018649	11018967	2 x 3 x 14	20,3	123,7	737,0
11018650	11018968	3 x 3 x 14	21,1	184,7	846,0

Dimensions and specifications may be changed without prior notice.

# HELUDATA® PLTC UL13 XLPE/LSOH IOSA 300

Instrumentation cable, XLPE/IS/OS/LSOH/SWA/LSOH



## Technical data

- Instrumentation cable acc. to
  - UL 13 PLTC
  - NEC Art. 725 (PLTC)
  - NEC Art. 727 (ITC)
  - ASTM D1239
- **Temperature range**
  - flexing -5°C to +50°C
  - fixed -30°C to +75°C
- **Permissible operating temperature of the conductor** -30°C to +90°C
- **Nominal voltage**  
U 300 V
- **Test voltage**
  - core/core 2000 V
  - core/screen 2000 V
- **Minimum bending radius**  
14x Outer-Ø

## Approvals

- for class 1 and 2 Div. 2 explosive environments acc. to NEC Art. 501

## Cable structure

- Copper wire bare, finely stranded acc. to ASTM B3
- Core insulation: XLPE
- Core identification:
  - pairs: wh, bk
  - triads: wh, bk, rd
  - white cores with consecutive labeling in black digits
- Cores stranded in pairs / triads, cores stranded in cable elements with optimal lay lengths
- Individual screen: pairs / triads, indiv. screened with AL/PET tape over tinned copper stranded drain wire
- Cable elements are stranded with optimal lay length
- Overall screen: AL/PET tape over tinned copper stranded drain wire
- Inner sheath: PVC
- Inner sheath colour: like outer sheath
- Armouring: single layer of galvanised round steel wires (GSWA)
- Outer sheath: LSOH
- Outer sheath colour: black or blue
- Length marking: in metres

## Properties

- **Low Smoke Zero Halogen** (LSOH)
- resistant to hydrocarbons
- low level of line attenuations and low mutual capacitances enable long transmission distances
- cable elements are produced of non-hygroscopic materials

## Tests

- flame-retardant acc. to
  - DIN VDE 0482-332-1-2 /
  - DIN EN 60332-1-2 / IEC 60332-1-2 /
  - UL VW-1 / UL 1581 sec. 1060 (FT1)
- bundle fire test acc. to
  - DIN VDE 0482-332-3-22 /
  - DIN EN 60332-3-22 / IEC 60332-3-22 (Cat. A, 40 min.)
- bundle fire test acc. to
  - UL 1685 FT4 / IEEE 1202
- halogen-free acc. to
  - DIN VDE 0482-754-1 / DIN EN 60754-1 /
  - IEC 60754-1 (max. 0.5 %)
- corrosiveness of combustion gases acc. to
  - DIN VDE 0482-754-2 /
  - DIN EN 60754-2 / IEC 60754-2
- Limiting Oxygen Index (LOI) acc. to
  - ISO 4589-2 (min. 37 %)
- smoke density acc. to
  - DIN VDE 0482-1034-1 /
  - DIN EN 61034-1 / IEC 61034-1
- oil-resistant acc. to
  - ICEA S-73-532 / NEMA WC 57 / IRAM IAP
- sunlight resistant /  
UV-resistant acc. to UL 1581 sec. 1200
- Installation in explosion-endangered areas acc. to IEC 60079-14 Annex E, but only with the correct ATEX conform accessories

## Note

- alternative denomination:  
**RE-2X(St)HRH PiMF**
- suitable for direct burial
- we also offer cable glands:  
**HELUTOP® HT-MS-EX-d / e4**  
**PEPPERS UL-C**

## Application

For the transmission of digital and analog signals in harsh environments like oil, gas and petrochemical industries. The cables are suitable for fixed installation in dry and damp locations, open spaces and in underground networks.  
CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Continuation ►

# HELUDATA® PLTC UL13 XLPE/LS0H IOSA 300

Instrumentation cable, XLPE/IS/OS/LS0H/SWA/LS0H

Part no. Sheath colour BK	Sheath colour BU	No.pairs x cross-sec. AWG-no.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11018870	11018820	2 x 2 x 18	16,6	37,1	481,0
11018871	11018821	3 x 2 x 18	17,1	54,8	528,0
11018872	11018822	4 x 2 x 18	18,5	72,5	619,0
11018873	11018823	5 x 2 x 18	19,5	90,3	684,0
11018874	11018824	6 x 2 x 18	20,5	108,0	752,0
11018875	11018825	7 x 2 x 18	20,5	125,7	780,0
11018876	11018826	8 x 2 x 18	22,4	143,4	966,0
11018877	11018827	10 x 2 x 18	25,6	178,8	1196,0
11018878	11018828	12 x 2 x 18	26,1	214,2	1277,0
11018879	11018829	16 x 2 x 18	28,0	285,1	1475,0
11018880	11018830	19 x 2 x 18	29,7	338,2	1759,0
11018881	11018831	24 x 2 x 18	33,6	426,8	2138,0
11018882	11018832	36 x 2 x 18	38,3	639,3	2939,0
11018883	11018833	2 x 3 x 18	18,1	53,1	569,0
11018884	11018834	3 x 3 x 18	18,7	78,9	631,0
11018885	11018835	4 x 3 x 18	19,7	104,6	710,0
11018886	11018836	6 x 3 x 18	22,6	156,0	988,0
11018887	11018837	8 x 3 x 18	24,5	207,5	1170,0
11018888	11018838	12 x 3 x 18	28,8	310,3	1656,0
11018889	11018839	16 x 3 x 18	30,9	413,2	1925,0
11018850	11018840	2 x 2 x 16	18,1	55,9	570,0
11018851	11018841	3 x 2 x 16	18,7	83,0	633,0
11018852	11018842	4 x 2 x 16	19,7	110,0	711,0
11018853	11018843	5 x 2 x 16	20,8	137,1	793,0
11018854	11018844	6 x 2 x 16	22,7	164,2	989,0
11018855	11018845	7 x 2 x 16	22,7	191,3	1029,0
11018856	11018846	8 x 2 x 16	24,6	218,4	1173,0
11018857	11018847	10 x 2 x 16	27,6	272,6	1404,0
11018858	11018848	12 x 2 x 16	28,9	326,7	1659,0
11018859	11018849	16 x 2 x 16	31,0	435,1	1927,0
11018860	11018890	19 x 2 x 16	32,7	516,3	2164,0
11018861	11018891	24 x 2 x 16	37,8	651,8	2852,0
11018862	11018892	36 x 2 x 16	41,7	976,8	3567,0
11018863	11018893	2 x 3 x 16	19,2	81,3	649,0
11018864	11018894	3 x 3 x 16	19,9	121,0	732,0
11018865	11018895	4 x 3 x 16	21,0	160,8	834,0
11018866	11018896	6 x 3 x 16	24,8	240,4	1211,0
11018867	11018897	8 x 3 x 16	27,0	319,9	1440,0
11018868	11018898	12 x 3 x 16	31,1	479,1	1994,0
11018869	11018899	16 x 3 x 16	34,0	638,2	2409,0
11018589	11018594	2 x 2 x 14	19,4	86,4	658,0
11018590	11018595	3 x 2 x 14	20,1	128,8	743,0
11018591	11018596	5 x 2 x 14	23,2	213,5	1069,0
11018592	11018597	2 x 3 x 14	20,6	127,1	760,0
11018593	11018598	3 x 3 x 14	21,4	189,7	875,0

Dimensions and specifications may be changed without prior notice.

# HELUTHERM® PLTC UL 13 / ANSI MC 96.1 PVC/PVC

## Thermocouple extension cable



### Technical data

- PVC thermocouple extension cable acc. to PLTC UL13 & ANSI MC 96.1 and ASTM D 1239
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +105°C
- **Nominal voltage**  
U<sub>ac</sub> 300 V
- **Test voltage**  
2000 V
- **Insulation resistance**  
> 25 MOhm x km @ +20°C
- **Minimum bending radius**  
fixed 8 x cable Ø

### Cable structure

- Special solid alloys acc. to ANSI MC 96.1
- Type K/KX = NiCr(+) / Cu-Ni(-)  
Core coding: red, yellow
- Type J/JX = Fe(+) / Cu-Ni(-)  
Core coding: red, white
- Type T/TX = Cu(+) / Cu-Ni(-)  
Core coding: red, blue
- Type E/EX = NiCr(+) / Cu-Ni(-)  
Core coding: violet, red
- Core insulation: PVC
- Core coding acc. to ANSI MC 96.1
- Overall screen: AL/PE tape over tinned copper drain wire
- Outer sheath: PVC
- Outer sheath colour acc. to ANSI MC 96.1

### Properties

- Low Smoke Low Halogen (LSLH)
- Installation in classified areas acc. to NEC 725 PLTC section 501 Cl. 1 Div. 2 & Cl. 2 Div. 2

### Tests

- Flame test on bunched wires acc. to UL 1685
- UV resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to IEC 60332-3-24 (Cat. C) & IEC 60332-3-22 (Cat. A)
- Acidity (ph value) and conductivity acc. to DIN EN 60754-2 / IEC 60754-2
- ISO 4589-2: 2017  
Limiting Oxygen Index (LOI) (min. 30%)
- Smoke density acc. to DIN VDE 482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Low amount of halogen acid gas acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC60754-1 (max. 1.3%)
- Hydrocarbon resistant acc. to IRAM IAP

### Application

Thermocouple extension cables are used for measurement of temperatures.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	Description	Thermocouple type	Armour	No.pairs x cross-sec. AWG	Outer sheath colour	Outer Ø app. mm	Weight app. kg / km
17001401	PVC/PVC OS 300 Type KX	K	no	1 x 2 x 18	YE	5,9	58
17001391	PVC/PVC OS 300 Type JX	J	no	1 x 2 x 18	BK	5,9	58
17001392	PVC/PVC OS 300 Type EX	E	no	1 x 2 x 18	VT	5,9	58
17001393	PVC/PVC OS 300 Type TX	T	no	1 x 2 x 18	BU	5,9	58
17001402	PVC/PVC OSB 300 Type KX	K	galvanised steel wire braid	1 x 2 x 18	YE	8,8	179
17001403	PVC/PVC OSA 300 Type KX	K	galvanised steel wire armour	1 x 2 x 18	YE	9,0	211
17001601	PVC/PVC OS 300 Type KX	K	no	1 x 2 x 16	YE	6,4	73
17001604	PVC/PVC OS 300 Type JX	J	no	1 x 2 x 16	BK	6,4	73
17001605	PVC/PVC OS 300 Type EX	E	no	1 x 2 x 16	VT	6,4	73
17001606	PVC/PVC OS 300 Type TX	T	no	1 x 2 x 16	BU	6,4	73
17001602	PVC/PVC OSB 300 Type KX	K	galvanised steel wire braid	1 x 2 x 16	YE	9,3	202
17001603	PVC/PVC OSA 300 Type KX	K	galvanised steel wire armour	1 x 2 x 16	YE	13,7	375

Dimensions and specifications may be changed without prior notice.



# HELUTHERM® PLTC UL 13 / ANSI MC 96.1 XLPE/LSOH

Thermocouple extension cable, halogen-free



## Technical data

- LSOH thermocouple extension cable acc. to PLTC UL13 & ANSI MC 96.1 and ASTM D 1239
- **Temperature range**  
flexing -5°C to +50°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U<sub>ac</sub> 300 V
- **Test voltage**  
2000 V
- **Insulation resistance**  
> 5000 MOhm x km @ +20°C
- **Minimum bending radius**  
fixed 8 x cable Ø

## Cable structure

- Special solid alloys acc. to ANSI MC 96.1
- Type K/KX = NiCr(+) / Cu-Ni(-)  
Core coding: red, yellow
- Type J/JX = Fe(+) / Cu-Ni(-)  
Core coding: red, white
- Type T/TX = Cu(+) / Cu-Ni(-)  
Core coding: red, blue
- Type E/EX = NiCr(+) / Cu-Ni(-)  
Core coding: violet, red
- Core insulation: XLPE
- Core coding acc. to ANSI MC 96.1
- Overall screen: AL/PE tape over tinned copper drain wire
- Outer sheath: LSOH
- Outer sheath colour acc. to ANSI MC 96.1

## Properties

- Low Smoke Zero Halogen (LSOH)
- Installation in classified areas acc. to NEC 725 PLTC section 501 Cl. 1 Div. 2 & Cl. 2 Div. 2
- **Tests**
- Flame test on bunched wires acc. to UL 1685
- UV and sunlight resistant acc. to UL 1581 section 1200
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- Flame test on bunched wires acc. to IEC 60332-3-24 (Cat. C) & IEC 60332-3-22 (Cat. A)
- Acidity (ph value) and conductivity acc. to DIN EN 60754-2 / IEC 60754-2
- ISO 4589-2: 2017  
Limiting Oxygen Index (LOI) (min. 37%)
- Low smoke conformity acc. to DIN VDE 0482-1034-1 / DIN EN 61034-1 / IEC 61034-1
- Halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1 (max. 0.5%)
- Hydrocarbon resistant acc. to IRAM IAP

## Application

Thermocouple extension cables are used for measurement of temperatures.

CE = Product complies to the Low-Voltage Directive 2014/35/EU.

Part no.	Description	Thermocouple type	Armour	No.pairs x cross-sec. AWG	Outer sheath colour	Outer Ø app. mm	Weight app. kg / km
17001400	XLPE/LSOH OS 300 Type KX	K	no	1 x 2 x 18	YE	5,8	59
17001607	XLPE/LSOH OS 300 Type JX	J	no	1 x 2 x 18	BK	5,8	59
17001608	XLPE/LSOH OS 300 Type EX	E	no	1 x 2 x 18	VT	5,8	59
17001609	XLPE/LSOH OS 300 Type TX	T	galvanised steel wire braid	1 x 2 x 18	BU	5,8	59
17001610	XLPE/LSOH OSB 300 Type KX	K	galvanised steel wire armour	1 x 2 x 18	YE	8,9	165
17001611	XLPE/LSOH OSA 300 Type KX	K	no	1 x 2 x 16	YE	9,5	199
17001600	XLPE/LSOH OS 300 Type KX	K	no	1 x 2 x 16	YE	6,3	77
17001612	XLPE/LSOH OS 300 Type JX	J	no	1 x 2 x 16	BK	6,3	77
17001613	XLPE/LSOH OS 300 Type EX	E	no	1 x 2 x 16	VT	6,3	77
17001614	XLPE/LSOH OS 300 Type TX	T	galvanised steel wire braid	1 x 2 x 16	BU	6,3	77
17001615	XLPE/LSOH OSB 300 Type KX	K	galvanised steel wire armour	1 x 2 x 16	YE	9,4	185
17001616	XLPE/LSOH OSA 300 Type KX	K	no	1 x 2 x 16	YE	13,8	349

Dimensions and specifications may be changed without prior notice.

# HELUDATA® 2092 PE/PVC-TP 300 GREY

UL Style 2092, 300 V, 60°C



## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2092

Temperature range	fixed -30°C to +60°C
Peak operating voltage	300 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Minimum bending radius	fixed 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, stranded, AWG sizes
- Core insulation: PE
- Core identification: black, natural
- x = without protective conductor
- Cores stranded with optimal lay lengths
- Screen: plastic-coated aluminium foil (St)
- Drain wire, tinned copper
- Outer sheath: PVC

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11000611	2 x 22	4.2 - 4.8	10.3	29.0
18024899	2 x 20	5.0 - 5.4	16.2	35.0

- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- low capacitance

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1

## ■ APPLICATION

UL-approved data cable for applications in industrial automation and process control; for fixed installation in dry or damp environments.

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11000612	2 x 18	5.4 - 6.0	20.7	45.0
18024890	2 x 16	6.5 - 6.9	33.9	63.5

# HELUDATA® UL 2919 PVC-TP-C GREY

PE multi-pairs, foiled and braided, PVC outer sheath



## Technical data

- Data cable approved to UL style 2919
- **Temperature range**  
fixed installation -30°C to +80°C
- **Nominal voltage**  
30 V
- **Test voltage**  
1000 V
- **Insulation resistance**  
min. 5 GOhm x km
- **Minimum bending radius**  
flexing 20 x cable Ø  
fixed 15 x cable Ø

## Cable structure

- Tinned annealed copper wires class 2
- Core insulation PE
- Core identification 1P = WH/BU & BU/WH
- Core identification 2P = WH/OG & OG/WH
- Cores twisted together in pairs with 100 % aluminium foiling
- Tinned annealed copper drain wire
- Tinned annealed copper braiding
- PVC outer sheath pebble grey (RAL 7032)

## Properties

- 100 % foil screen coverage

### Tests

- PVC self-extinguishing and flame retardant acc. to IEC 60332-1-2 / VW-1

### Note

- For use in damp and dry conditons within buildings
- UL approved

## Application

Ideal for wiring of data systems with high transmission rates, CAD/CAM systems. It is designed for use as Data Highway in (DH) RS 232, RS 422 and RS 485 interfaces and also suitable as control and instrumentation cable in industrial equipment. Suitable for flexible and static installation in dry and damp locations.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No.pairs	No. cores	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11005140	1	2	24	5,9	21,3	46

Part no.	No.pairs	No. cores	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
11005141	2	4	24	8,8	33,0	86

Dimensions and specifications may be changed without prior notice.

# HELUDATA® 20276 PE/PVC-TP 30 GREY



UL Style 20276, 30 V, 60°C



HELUDATA® 20276 PE/PVC-TP 30 GREY E170315 AWM Style 20276 60°C 30V

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 20276

Temperature range	fixed -20°C to +60°C
Peak operating voltage	30 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Mutual capacitance core/core	at 800 Hz, approx. 115 pF/m
Mutual capacitance core/screen	at 800 Hz, approx. 203 pF/m
Characteristic impedance	45 Ohm, (approx. value)
Inductance	approx. 0.55 mH/km
Minimum bending radius	fixed 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, stranded, AWG sizes
- Core insulation: PE
- Core identification: colour coded, pairs:
  - No. 1: black / red
  - No. 2: green / white
  - No. 3: yellow / blue
  - No. 4: pink / grey
- x = without protective conductor

- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded with optimal lay lengths
- Drain wire, tinned copper
- Outer sheath: PVC
- Sheath colour: grey (RAL 7005)
- Length marking: in metres

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1

## ■ APPLICATION

UL-approved data cable for wiring data processing systems; for fixed installation in dry or damp environments.

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11000630	2 x 2 x 22	4.3	20.5	28.4

Part no.	No. cores x AWG-No.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
18024862	4 x 2 x 22	6.5	30.5	57.9

# HELUDATA® 2464 PVC/PVC-TP 300 BLACK

UL Style 2464, 300 V, 80°C



## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2464

Temperature range	fixed -30°C to +80°C
Peak operating voltage	300 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Mutual capacitance core/core	at 800 Hz, approx. 200 pF/m
Mutual capacitance core/screen	at 800 Hz, approx. 370 pF/m
Characteristic impedance	45 Ohm, (approx. value)
Inductance	approx. 0.65 mH/km
Minimum bending radius	fixed 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, stranded, AWG sizes
- Core insulation: semirigid PVC
- Core identification: colour coded, pairs: No. 1: black / white
- x = without protective conductor

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
11000620	1 x 2 x 16	6.5 - 6.9	28.8	70.1

- Cores stranded in pairs with optimal lay lengths
- Screen: plastic-coated aluminium foil (St)
- Drain wire, tinned copper
- Outer sheath: PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1

## ■ APPLICATION

UL-approved data cable for applications in industrial automation and process control; for fixed installation in dry or damp environments.

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
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# HELUDATA® 2919 PE/PVC-TP 30 GREY

UL Style 2919, 30 V, 80°C



HELUDATA® 2919 PE/PVC-TP 30 GREY E170315 AWM Style 2919 80°C 30V

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2919

Temperature range	fixed -30°C to +80°C
Peak operating voltage	30 V (not for high power current installation purposes)
Test voltage core/core	1000 V
Mutual capacitance core/core	at 800 Hz, approx. 43 pF/m
Mutual capacitance core/screen	at 800 Hz, approx. 72 pF/m
Characteristic impedance	100 Ohm, (approx. value)
Inductance	approx. 0.70 mH/km
Minimum bending radius	fixed 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, stranded, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue-white
  - No. 2: white-orange / orange-white
  - No. 3: white-green / green-white
  - No. 4: white-brown / brown-white
- x = without protective conductor

- Cores stranded in pairs with optimal lay lengths
- Screen: plastic-coated aluminium foil (St)
- Drain wire, tinned copper
- Outer sheath: PVC
- Sheath colour: grey (RAL 7005)
- Length marking: in metres

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- low capacitance

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1

## ■ APPLICATION

UL-approved data cable for applications in industrial automation and process control; for fixed installation in dry or damp environments.

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
18024379	2 x 2 x 24	6.0 - 6.6	10.5	44.9

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
18024380	4 x 2 x 24	6.8 - 7.4	19.0	55.0

# HELUDATA® 2095 PE/PVC 300 GREY

UL Style 2095, 300 V, 80°C



HELUDATA® 2095 PE/PVC 300 GREY E170315 AWM Style 2095 80°C 300V

## TECHNICAL DATA

PVC data cable acc. to UL-Std. 758 (AWM) Style 2095

<b>Temperature range</b>	fixed -20°C to +80°C
<b>Peak operating voltage</b>	300 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1000 V
<b>Mutual capacitance core/core</b>	at 800 Hz 18 AWG: approx. 79 pF/m 20 AWG: approx. 90 pF/m
<b>Mutual capacitance core/screen</b>	at 800 Hz 18 AWG: approx. 158 pF/m 20 AWG: approx. 160 pF/m
<b>Characteristic impedance</b>	100 Ohm, (approx. value)
<b>Inductance</b>	approx. 0.65 mH/km
<b>Minimum bending radius</b>	fixed 15x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, stranded, AWG sizes
- Core insulation: PE

- Core identification: black, red, natural
- x = without protective conductor
- Cores stranded with optimal lay lengths
- Screen: plastic-coated aluminium foil (St)
- Drain wire, tinned copper
- Outer sheath: PVC
- Sheath colour: grey (RAL 7032)
- Length marking: in metres

## ■ PROPERTIES

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

UL approved data cable for use as a signal and measuring cable; for fixed installation in dry or damp environments.

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
18024750	3 x 20	5.3 - 5.7	21.4	46.0

Part no.	No. cores x AWG-No.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
18024751	3 x 18	6.0 - 6.4	28.9	50.0

# HELUDATA® UL 2095 PVC-TP GREY

PVC insulated, pairs individually geschirmt, PVC outer sheath



HELUKABEL HELUDATA UL 2095 PVC

## Technical data

- Data cable approved to UL style 2095
- **Temperature range**  
flexing -20°C to +80°C  
fixed installation -20°C to +80°C
- **Nominal voltage**  
U 300 V
- **Test voltage**  
1000 V
- **Minimum bending radius**  
flexing 20x cable Ø  
fixed 15x cable Ø

## Cable structure

- Bare annealed copper acc.to UL 758
- Core insulation: PVC
- Core identification:  
1P = BK & RD  
2P = BK & WH
- Filler: PP string
- Cores twisted together in pairs with  
100 % aluminium foiling
- Drain wire: tinned annealed copper
- Outer sheath: PVC
- Outer sheath colour: pebble grey (RAL 7032)

## Properties

- 100% foil screen coverage

### Tests

- PVC self-extinguishing and flame retardant  
acc. to IEC 60332-1-2 / VW-1

### Note

- For use in damp and dry conditons within  
buildings
- UL approved

## Application

Data transmission cable for indoor use in dry and damp areas. Ideal for security, data network & alarm systems. Its 100 % foil screening enables an error-free transmission of medium and high frequencies.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No.pairs	No. cores	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
18024700	2	2	18	6,7	39,3	74,1

Dimensions and specifications may be changed without prior notice.

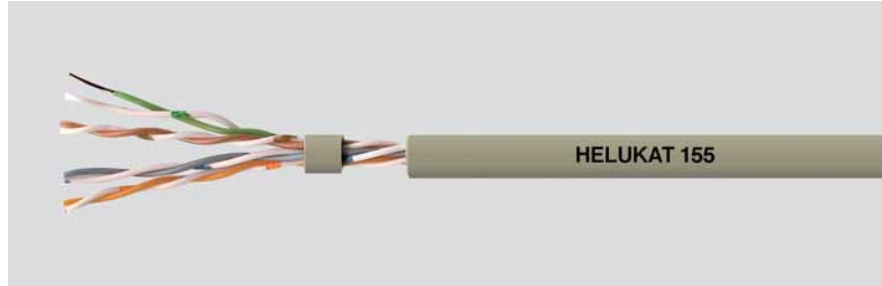
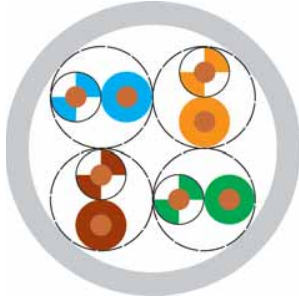


# LAN Cable

Category 5e

**HELUKAT®** 155 

U/UTP



## Cable structure

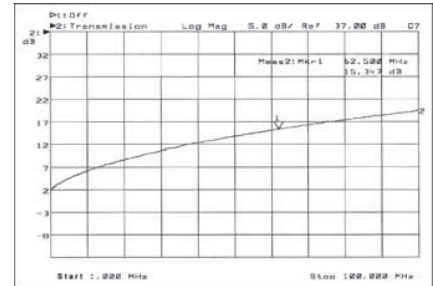
Inner conductor Ø:  
 Conductor material:  
 Core insulation:  
 Core colours:  
 Separator:  
 Screen over stranding element:  
 Screen 1 over stranding:  
 Screen 2 over stranding:  
 Outer sheath material:  
 Outer diameter:  
 Outer sheath colour:

## U/UTP 4x2xAWG 24/ 1 PVC

0,49 mm  
 Copper, bare  
 PE  
 whbu/bu, whog/og, whgn/gn, whbn/bn  
 -  
 -  
 -  
 PVC  
 app. 4,9 mm  
 Grey

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 155 MHz  
 190 Ohm/km max.  
 Loop resistance: 50 nF/km nom.  
 Mutual capacitance:  
 Rel. propagation velocity: 66 %



## Typical values

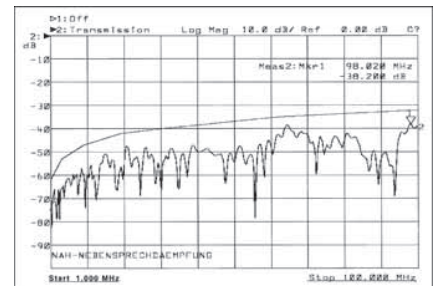
Frequency (MHz)	10	16	62,5	100	155
Attenuation (dB/100m)	6,3	8,0	16,5	21,3	26,8
Next (db)	50,3	47,3	38,4	35,3	33,0
ACR (db)	44,0	39,3	21,9	14,0	6,2

## Technical data

Weight: app. 26 kg/km  
 bending radius, repeated: 40 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 0,40 MJ/m  
 Copper weight: 17,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e



## Application

HELUKAT®155 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**80053**, U/UTP 4x2xAWG24/1 PVC (UTP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6

**HELUKAT**® 300   
U/UTP UL

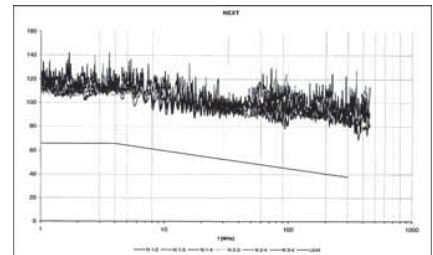


## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## U/UTP 4x2xAWG 24/ 1 PVC, UL

0,55 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
Polyester foil over stranded bundle  
-  
-  
PVC  
app. 6,3 mm  
Grey



## Electrical data

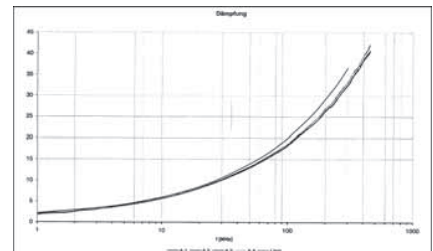
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 300 MHz  
Loop resistance: 190 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Rel. propagation velocity: 67 %

## Typical values

Frequency (MHz)	10	16	62,5	100	155	200	300
Attenuation (db/100m)	5,6	7,0	14,3	18,2	22,9	26,0	32,5
Next (db)	72,0	70,0	65,0	63,0	60,0	57,0	55,0
ACR (db)	66,4	63,0	50,7	44,8	37,1	31,0	22,5

## Technical data

Weight: app. 46 kg/km  
bending radius, repeated: 55 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,68 MJ/m  
Copper weight: 20,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, CMX 444

## Application

HELUKAT® 300 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction. This type is certified according UL because of the special PVC jacket

## Part no.

**802172**, U/UTP 4x2xAWG24/1 PVC UL (UTP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6

**HELUKAT®** 300   
U/UTP FRNC

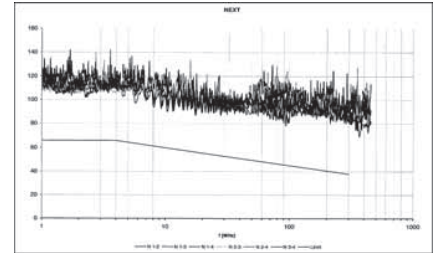


## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## U/UTP 4x2xAWG 24/ 1 FRNC

0,55 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
Polyester foil over stranded bundle  
-  
-  
FRNC  
app. 6,8 mm  
Green similar to RAL 6018



## Electrical data

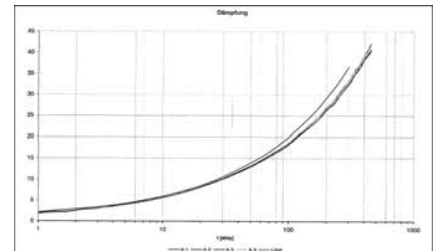
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 300 MHz  
Loop resistance: 190 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Rel. propagation velocity: 67 %

## Typical values

Frequency (MHz)	10	16	62,5	100	155	200	300
Attenuation (db/100m)	5,6	7,0	14,3	18,2	22,9	26,0	32,5
Next (db)	72,0	70,0	65,0	63,0	60,0	57,0	55,0
ACR (db)	66,4	63,0	50,7	44,8	37,1	31,0	22,5

## Technical data

Weight: app. 46 kg/km  
bending radius, repeated: 55 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,125 MJ/m  
Copper weight: 20,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

## Application

HELUKAT®300 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**804766**, U/UTP 4x2xAWG24/1 FRNC (UTP)

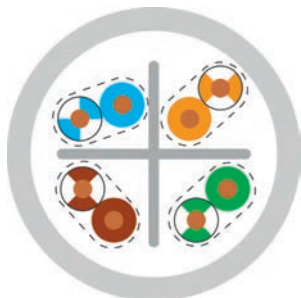
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6a

**HELUKAT® 600**

U/UTP FRNC

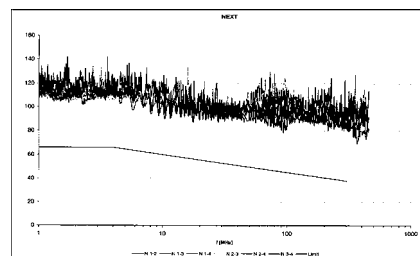


## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## U/UTP 4x2xAWG 23/1 FRNC

0,56 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
Polyester foil over stranded bundle  
-  
-  
FRNC  
app. 6,5 mm  
Grey similar to RAL 7035



## Electrical data

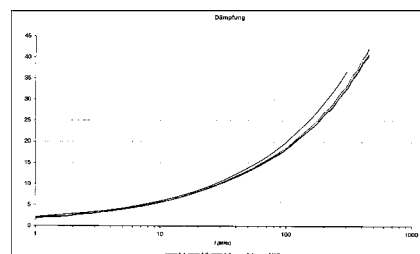
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 600 MHz  
150 Ohm/km max.  
Loop resistance: 50 nF/km nom.  
Mutual capacitance: 67 %  
Rel. propagation velocity:

## Typical values

Frequency (MHz)	10	16	62,5	100	155	200	300	500	600
Attenuation (db/100m)	5,5	6,9	14,3	18,0	22,1	25,3	31,8	39,8	44,1
Next (db)	72,0	70,0	65,0	63,0	60,0	57,0	55,0	53,0	49,0
ACR (db)	66,5	63,1	50,7	45,0	37,9	31,7	23,2	13,2	4,9

## Technical data

Weight: app. 52 kg/km  
bending radius, repeated: 55 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,135 MJ/m  
Copper weight: 20,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6a, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, CMX 444

## Application

HELUKAT® 600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**805179**, U/UTP 4x2xAWG23/1 FRNC (UTP)

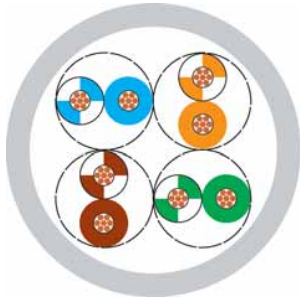
Dimensions and specifications may be changed without prior notice.

# LAN-Cable

Category 5

**HELUKAT® 100**

U/UTP flex



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

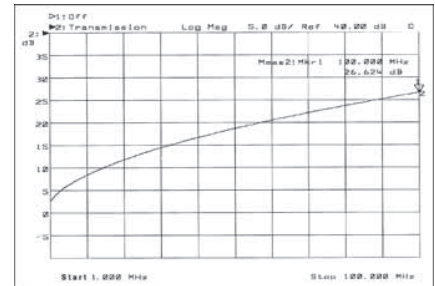
## U/UTP 4x2xAWG 26/7 PVC

0,48 mm  
Copper, bare  
PO  
whbu/bu, whog/og, whgn/gn, whbn/bn  
-  
-  
-  
PVC  
app. 4,5 mm  
Grey similar to RAL 7035

## Electrical data

Characteristic impedance:  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
290 Ohm/km max.  
50 nF/km nom.  
74 %

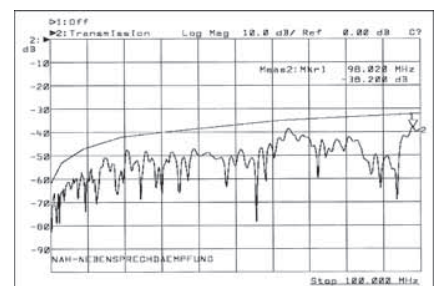


## Typical values

Frequency (MHz)	10	16	62,5	100
Attenuation (dB/10m)	0,9	1,2	2,4	3,1
Next (db)	53,0	50,0	41,0	38,0
ACR (db)	52,1	48,8	38,6	34,9

## Technical data

Weight: app. 17 kg/km  
bending radius, repeated: 35 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,527 MJ/m  
Copper weight: 11,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5

## Application

HELUKAT®100 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®100 series can be manufactured quickly and easily with all common RJ45 plugs.

## Part no.

**80055**, U/UTP 4x2xAWG 26/7 PVC (UTP)

Dimensions and specifications may be changed without prior notice.

# LAN-Cable

Category 6

**HELUKAT® 300**

U/UTP flex



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## U/UTP 4x2xAWG 24/7 FRNC

0,61 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
Polyester foil over stranded bundle  
-  
-  
FRNC  
app. 6,0 mm  
Grey similar to RAL 7035

## Electrical data

Characteristic impedance:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 300 MHz  
180 Ohm/km max.

Loop resistance:

50 nF/km nom.

Mutual capacitance:

Rel. propagation velocity:

67 %

## Typical values

Frequency (MHz)	10	16	62,5	100	155	200	300
Attenuation (db/10m)	0,8	1,0	2,0	2,6	3,3	3,7	4,7
Next (db)	75,0	71,0	65,0	63,0	60,0	57,0	56,0
ACR (db)	74,2	70,0	63,0	60,4	56,7	53,2	51,3

## Technical data

Weight: app. 38 kg/km  
bending radius, repeated: 50 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,11 MJ/m  
Copper weight: 19,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

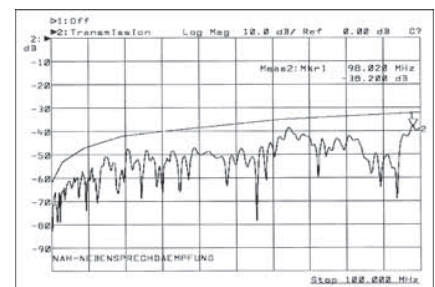
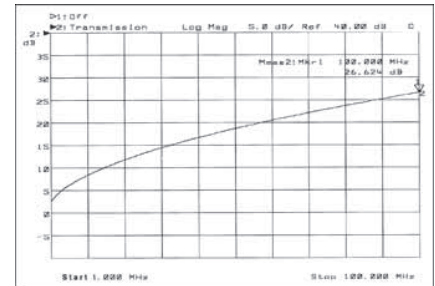
## Application

HELUKAT® 300 unshielded data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT® 300 series can be manufactured quickly and easily with many common RJ45 plugs.

## Part no.

**804996**, U/UTP 4x2xAWG 24/7 FRNC (UTP)

Dimensions and specifications may be changed without prior notice.





# LAN-Cable, Outdoor

Category 6

**HELUKAT® 300A**

U/UTP, outdoor

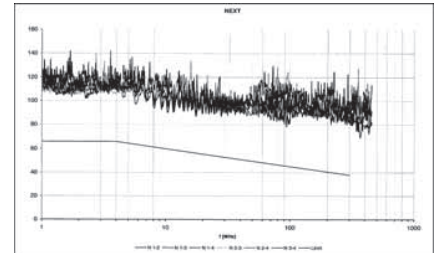


## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## U/UTP 4x2xAWG 24/ 1 PE

0,55 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
Polyester foil over stranded bundle  
-  
-  
PE  
app. 6,4 mm  
Black similar to RAL 9005



## Electrical data

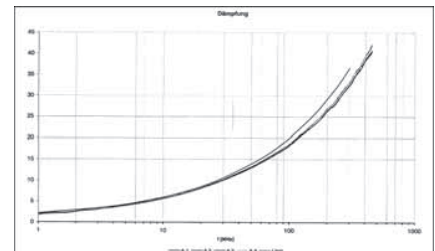
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 300 MHz  
Loop resistance: 190 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Rel. propagation velocity: 67 %

## Typical values

Frequency (MHz)	10	16	62,5	100	155	200	300
Attenuation (db/100m)	5,6	7,0	14,3	18,2	22,9	26,0	32,5
Next (db)	72,0	70,0	65,0	63,0	60,0	57,0	55,0
ACR (db)	66,4	63,0	50,7	44,8	37,1	31,0	22,5

## Technical data

Weight: app. 47 kg/km  
bending radius, repeated: 52 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,30 MJ/m  
Copper weight: 19,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Halogen-free acc. to 60754-2

## Application

HELUKAT® 300A outdoor data cables are used in the tertiary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in ducts or along buildings due to their optimized construction.

## Part no.

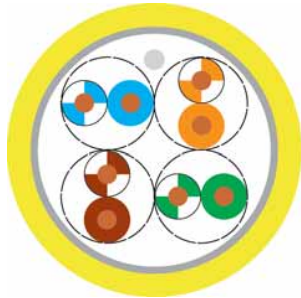
**805683**, U/UTP 4x2xAWG24/1 PE (UTP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 5e

**HELUKAT**® 155   
F/UTP



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Drain wire:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## F/UTP 4x2xAWG 24/1 PVC

0,51 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
Polyester foil over stranded bundle  
-  
Al-Foil  
-  
yes  
PVC  
app. 5,9 mm  
Yellow similar to RAL 1021

## Electrical data

Characteristic impedance:  
  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 155 MHz  
170 Ohm/km max.  
50 nF/km nom.  
69 %

## Typical values

Frequency (MHz)	10	16	62,5	100	155
Attenuation (dB/100m)	5,9	7,6	15,7	20,3	22,0
Next (db)	59,0	53,0	44,0	40,0	40,0
ACR (db)	53,1	45,4	28,3	19,7	18,0

## Technical data

Weight: app. 40 kg/km  
bending radius, repeated: 48 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,40 MJ/m  
Copper weight: 18,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e

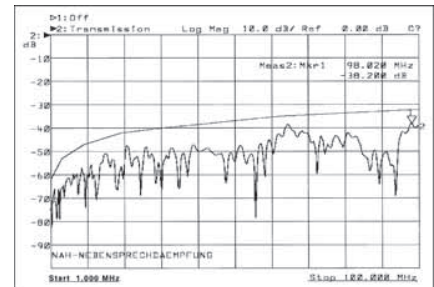
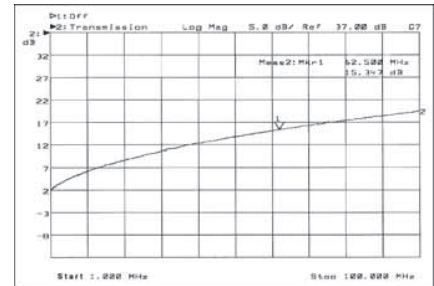
## Application

HELUKAT® 155 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**80043**, F/UTP 4x2xAWG24/1 PVC (FTP)

Dimensions and specifications may be changed without prior notice.



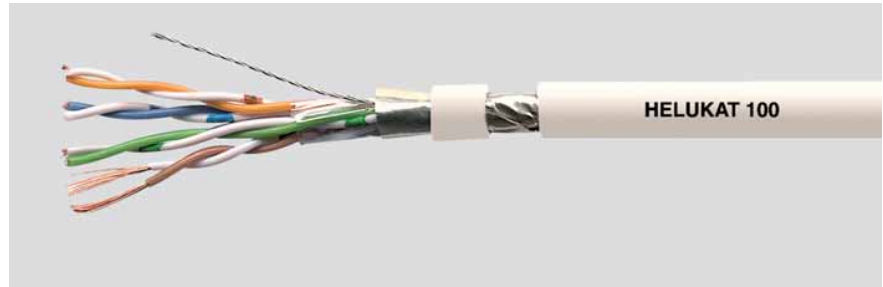
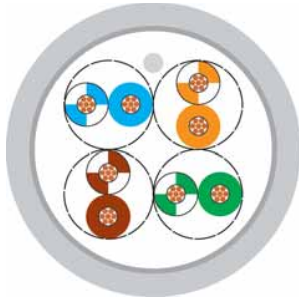


# LAN Cable

Category 5

**HELUKAT® 100**

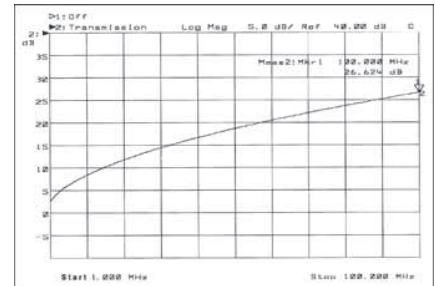
F/UTP flex



## Cable structure

Inner conductor Ø: 0,48 mm  
 Conductor material: Copper, bare  
 Core insulation: Foam-skin-PE  
 Core colours: whbu/bu, whog/og, whgn/gn, whbn/bn  
 Separator: -  
 Screen over stranding element: -  
 Screen 1 over stranding: Al-Foil  
 Screen 2 over stranding: -  
 Drain wire: yes  
 Outer sheath material: FRNC  
 Outer diameter: app. 5,3 mm  
 Outer sheath colour: Grey similar to RAL 7035

## F/UTP 4x2xAWG 26/7 FRNC



## Electrical data

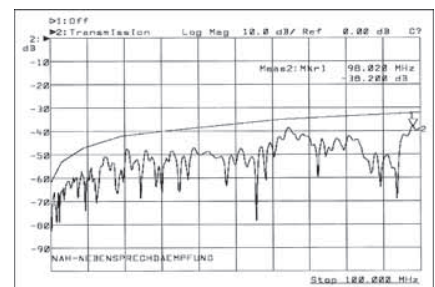
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 Loop resistance: 290 Ohm/km max.  
 Mutual capacitance: 50 nF/km nom.  
 Rel. propagation velocity: 74 %

## Typical values

Frequency (MHz)	10	16	62,5	100
Attenuation (dB/10m)	0,9	1,2	2,4	2,9
Next (db)	58,0	56,0	45,0	43,0
ACR (db)	57,1	54,8	42,6	40,1

## Technical data

Weight: app. 31 kg/km  
 bending radius, repeated: 40 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 0,45 MJ/m  
 Copper weight: 14,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-1, Corrosiveness acc. to EN50267-2-3

## Application

HELUKAT® 100 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT® 100 series can be manufactured quickly and easily with all common RJ45 plugs.

## Part no.

**81278**, F/UTP 4x2xAWG 26/7 FRNC (FTP)

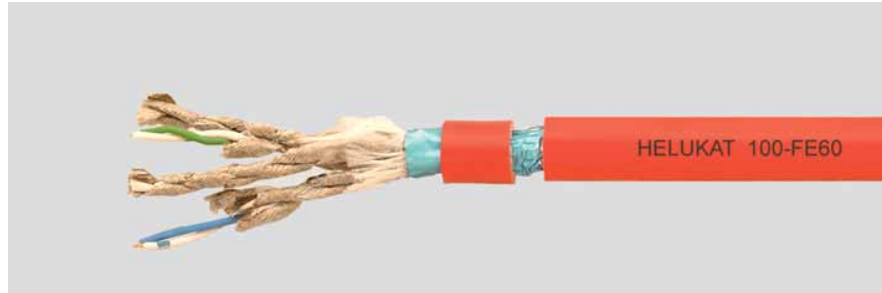
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 5

**HELUKAT® 100**

F/UTP PH120

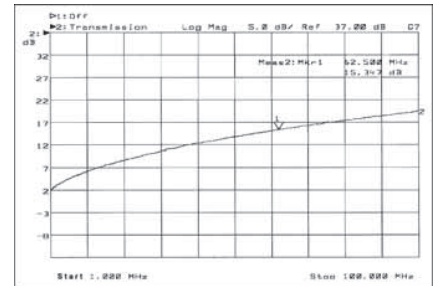


## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Drain wire:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## F/UTP 4x2xAWG 23/1 FR-0H

0,57 mm  
Copper, bare  
PO + flame resistant tape  
whbu/bu, whog/og, whgn/gn, whbn/bn  
-  
PO tape  
Helical glasfibre tape  
Al-Foil  
yes  
LSZH  
app. 8,6 mm  
Red



## Electrical data

Characteristic impedance:  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
188 Ohm/km max.  
65 nF/km nom.  
67 %

## Typical values

Frequency (MHz)	10	16	62,5	100
Attenuation (dB/100m)	5,9	7,9	16,3	21,1
Next (db)	58,0	51,0	41,0	38,0
ACR (db)	52,1	43,1	24,7	16,9

## Technical data

Weight: app. 75 kg/km  
bending radius, repeated: 130 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 0,72 MJ/m  
Copper weight: 24,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

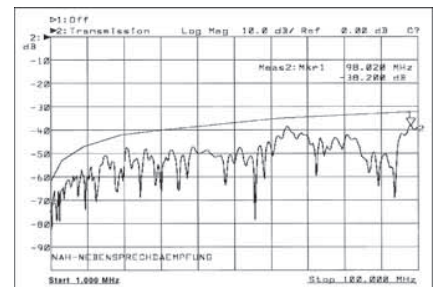
## Application

HELUKAT® 100-PH120 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the thermal characteristics are perfectly suited to realize an isolation integrity according EN50289-14-16 due to their optimized construction.

## Part no.

**804045**, F/UTP 4x2xAWG23/1 FRNC

Dimensions and specifications may be changed without prior notice.

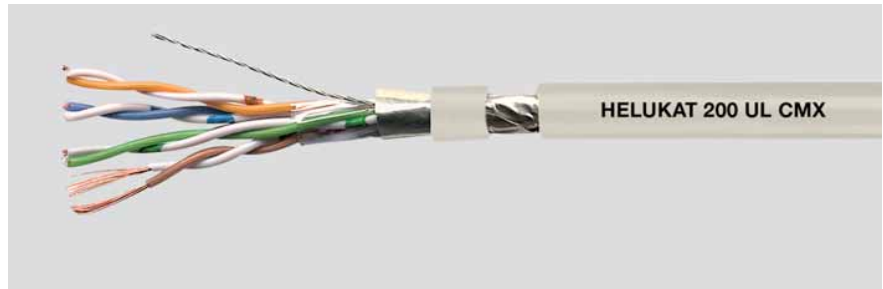


# LAN Cable

Category 5e

**HELUKAT® 200**

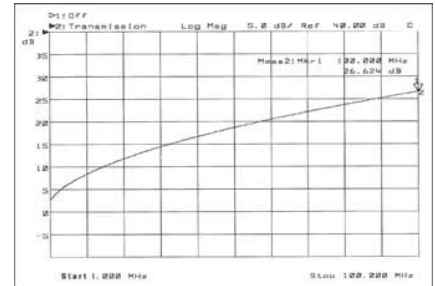
F/UTP Flex, UL



## Cable structure

Inner conductor Ø: 0,48 mm  
 Conductor material: Copper, bare  
 Core insulation: PE  
 Core colours: whbu/bu, whog/og, whgn/gn, whbn/bn  
 Separator: -  
 Screen over stranding element: -  
 Screen 1 over stranding: Al-Foil  
 Screen 2 over stranding: -  
 Drain wire: yes  
 Outer sheath material: PVC  
 Outer diameter: app. 5,4 mm  
 Outer sheath colour: Grey similar to RAL 7035

## F/UTP 4x2xAWG 26/7 PVC, UL



## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 200 MHz  
 Loop resistance: 290 Ohm/km max.  
 Mutual capacitance: 50 nF/km nom.  
 Rel. propagation velocity: 67 %

## Typical values

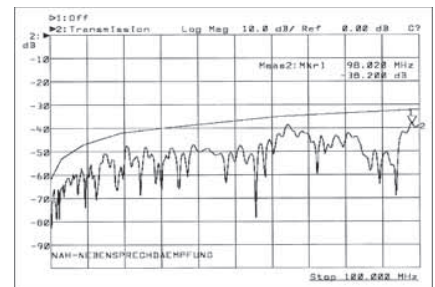
Frequency (MHz)	10	16	62,5	100	200
Attenuation (db/10m)	0,9	1,2	2,4	3,1	3,9
Next (db)	62,0	60,0	50,0	48,0	45,0
ACR (db)	61,1	58,8	47,6	44,9	41,1

## Technical data

Weight: app. 30 kg/km  
 bending radius, repeated: 44 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 0,40 MJ/m  
 Copper weight: 15,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1-2, CMX 444



## Application

HELUKAT®200 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®200 series can be manufactured quickly and easily with all common RJ45 plugs. This type is certified according UL because of the special PVC jacket.

## Part no.

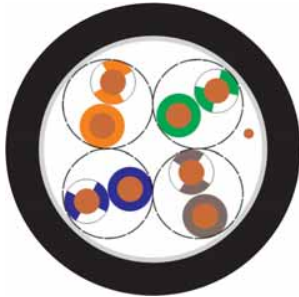
**802173**, F/UTP 4x2xAWG26/7 PVC UL (FTP)

Dimensions and specifications may be changed without prior notice.

# LAN-Cable, Outdoor

Category 5e

**HELUKAT® 200A**  
F/UTP



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Drain wire:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

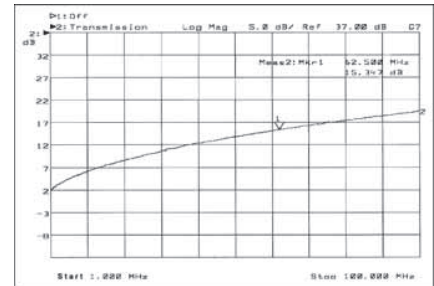
## F/UTP 4x2xAWG 24/1 PE

0,55 mm  
Copper, bare  
PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
-  
Al-Foil  
-  
yes  
PE  
app. 8,0 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 200 MHz  
190 Ohm/km max.  
45 nF/km nom.  
67 %



## Typical values

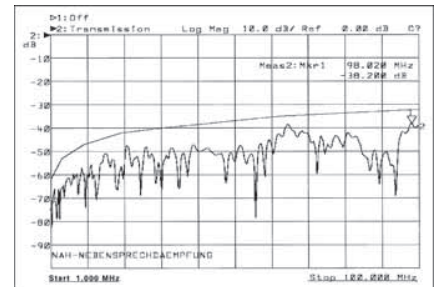
Frequency (MHz)	10	16	62,5	100	155	200
Attenuation (db/100m)	5,6	7,2	14,4	18,2	22,9	24,2
Next (db)	70,0	68,0	56,0	50,0	45,0	42,0
ACR (db)	64,4	60,8	41,6	31,8	22,1	17,8

## Technical data

Weight: app. 100 kg/km  
bending radius, repeated: 65 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +70°C  
Copper weight: 18,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Halogen-free acc. to 60754-2



## Application

HELUKAT® 200A outdoor data cables are used in the tertiary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in ducts or along buildings due to their optimized construction.

## Part no.

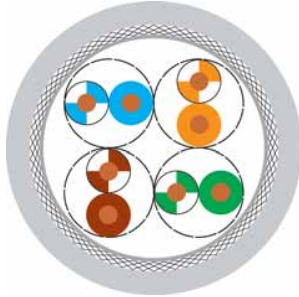
**805572**, F/UTP 4x2xAWG 24/1 PE (FTP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 5e

**HELUKAT® 200**   
CC-Link IE **E**Field SF/UTP



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

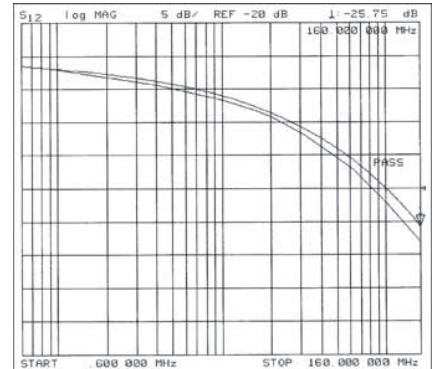
## SF/UTP 4x2xAWG 24/1 PVC/ FRNC

0,51 mm  
Copper, bare  
Foam-skin-PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
-  
Al-Foil  
Cu braid  
PVC / FRNC  
app. 6,0 mm / app. 6,0 mm  
Grey similar to RAL 7035

## Electrical data

Characteristic impedance:  
  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 200 MHz  
185 Ohm/km max.  
48 nF/km nom.  
74 %



## Typical values

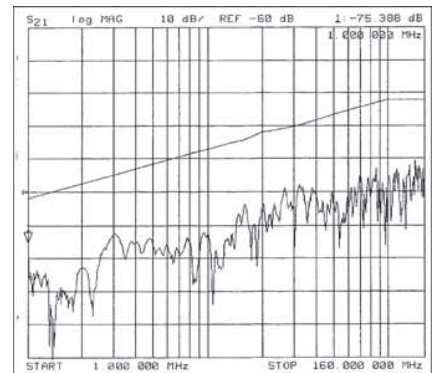
Frequency (MHz)	10	16	62,5	100	200
Attenuation (dB/100m)	5,6	7,2	14,4	18,2	25,9
Next (db)	62,0	59,0	50,0	46,0	40,0
ACR (db)	56,4	51,8	35,6	27,8	14,6

## Technical data

Weight: app. 50 kg/km  
bending radius, repeated: 52 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,60 MJ/m / 0,48 MJ/m  
Copper weight: 28,00 kg/km

## Norms

81610:  
Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e  
81609:  
Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant:  
acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness  
acc. to EN50267-2-3



## Application

HELUKAT® 200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**81610**, SF/UTP 4x2xAWG 24/1 PVC (S-FTP) **81609**, SF/UTP 4x2xAWG 24/1 FRNC (S-FTP)

Dimensions and specifications may be changed without prior notice.

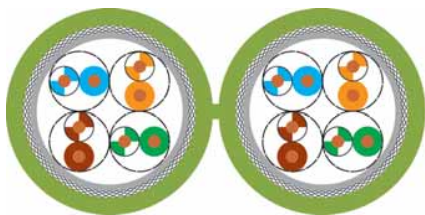


# LAN Cable

Category 5e

**HELUKAT**® 200 

SF/UTP duplex



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Cable dimensions:  
Outer sheath colour:

## SF/UTP 2x(4x2xAWG 24/ 1) FRNC

0,51 mm  
Copper, bare  
Foam-skin-PE  
whbu/bu, whog/og, whgn/gn, whbn/bn  
-  
Al-Foil  
Cu braid  
FRNC  
app. 6,0 mm x 12,5 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 200 MHz

Loop resistance:

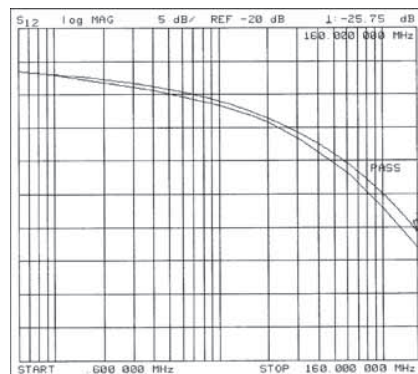
185 Ohm/km max.

Mutual capacitance:

48 nF/km nom.

Rel. propagation velocity:

74 %



## Typical values

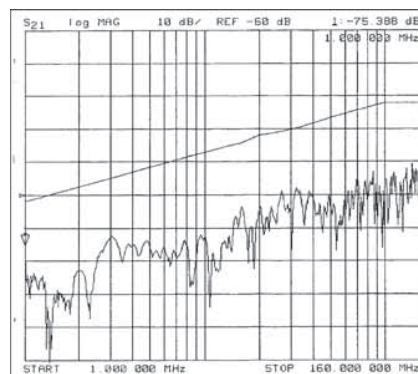
Frequency (MHz)	10	16	62,5	100	200
Attenuation (dB/100m)	5,6	7,2	14,4	18,2	25,9
Next (db)	62,0	59,0	50,0	46,0	40,0
ACR (db)	56,4	51,8	35,6	27,8	14,6

## Technical data

Weight: app. 100 kg/km  
bending radius, repeated: 52 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,96 MJ/m  
Copper weight: 56,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT®200 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**81123**, SF/UTP 2x(4x2xAWG 24/1) FRNC (S-FTP)

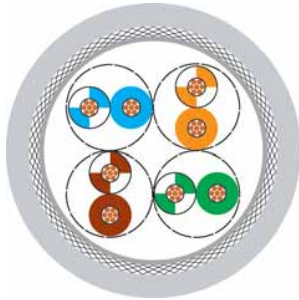
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 5e

**HELUKAT® 200**

SF/UTP flex



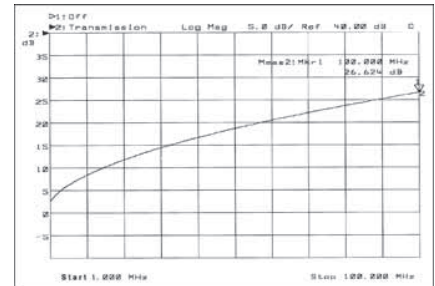
## Cable structure

- Inner conductor Ø: 0,48 mm
- Conductor material: Copper, bare
- Core insulation: Foam-skin-PE
- Core colours: whbu/bu, whog/og, whgn/gn, whbn/bn
- Separator: -
- Screen over stranding element: Al-Foil
- Screen 1 over stranding: Cu braid
- Screen 2 over stranding: FRNC
- Outer sheath material: app. 5,4 mm
- Outer diameter: Grey similar to RAL 7035
- Outer sheath colour: -

## SF/UTP 4x2xAWG 26/7 FRNC

## Electrical data

- Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 200 MHz
- Loop resistance: 300 Ohm/km max.
- Mutual capacitance: 47 nF/km nom.
- Rel. propagation velocity: 69 %



## Typical values

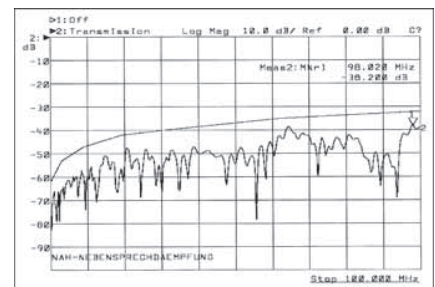
Frequency (MHz)	10	16	62,5	100	200
Attenuation (dB/10m)	0,8	1,1	2,4	2,9	4,3
Next (db)	58,0	56,0	45,0	43,0	37,0
ACR (db)	57,2	54,9	42,6	40,1	32,7

## Technical data

- Weight: app. 40 kg/km
- bending radius, repeated: 46 mm
- Operating temperature range min.: -20°C
- Operating temperature range max.: +60°C
- Caloric load, approx. value: 0,543 MJ/m
- Copper weight: 24,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 5e, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-1, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT®200 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®200 series can be manufactured quickly and easily with all common RJ45 plugs.

## Part no.

**81254**, SF/UTP 4x2xAWG 26/7 FRNC (S-FTP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6

**HELUKAT® 300**

U/FTP, UL



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Drain wire:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

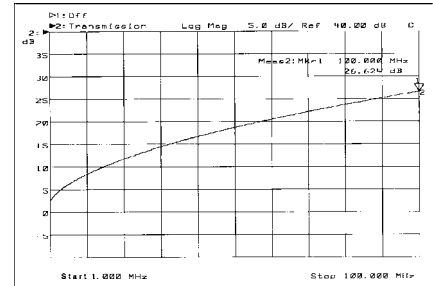
## U/FTP 4x2xAWG 26/7 PVC, UL

0,48 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
Polyester foil over stranded bundle  
Al-Foil  
-  
-  
yes  
PVC  
app. 5,9 mm  
Grey similar to RAL 7035

## Electrical data

Characteristic impedance:  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 300 MHz  
290 Ohm/km max.  
45 nF/km nom.  
77 %



## Typical values

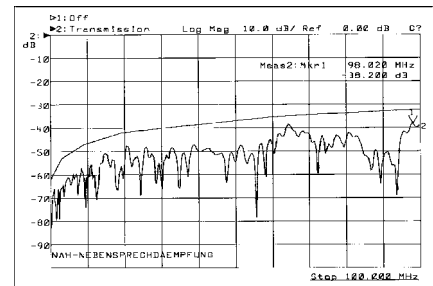
Frequency (MHz)	10	16	62,5	100	200	300
Attenuation (db/10m)	0,9	1,1	2,2	2,7	3,9	4,7
Next (db)	90,0	88,0	83,0	80,0	76,0	73,0
ACR (db)	89,1	86,9	80,8	77,3	72,1	68,3

## Technical data

Weight: app. 37 kg/km  
bending radius, repeated: 48 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,41 MJ/m  
Copper weight: 20,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-1-2, CMX 444



## Application

HELUKAT®300 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s, or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®300 series can be manufactured quickly and easily with all common RJ45 plugs. This type is certified according UL because of the special PVC jacket.

## Part no.

**802174**, U/FTP 4x2xAWG 26/7 PVC

Dimensions and specifications may be changed without prior notice.



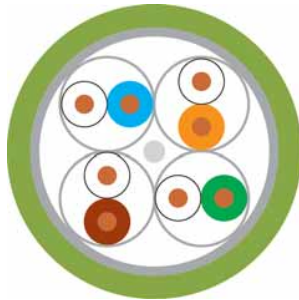
# LAN Cable

Category 6

**HELUKAT**® 450



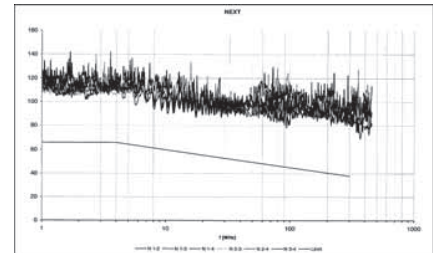
F/FTP



## Cable structure

Inner conductor Ø: 0,52 mm  
 Conductor material: Copper, bare  
 Core insulation: Foam-skin-PE  
 Core colours: wh/bu, wh/og, wh/gn, wh/bn  
 Separator: -  
 Screen over stranding element: Al-Foil  
 Screen 1 over stranding: Al-Foil  
 Screen 2 over stranding: -  
 Drain wire: yes  
 Outer sheath material: FRNC  
 Outer diameter: app. 7,4 mm  
 Outer sheath colour: Green similar to RAL 6018

## F/FTP 4x2xAWG 24/1 FRNC



## Electrical data

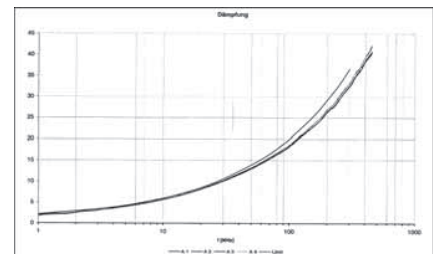
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 450 MHz  
 Loop resistance: 165 Ohm/km max.  
 Mutual capacitance: 43 nF/km nom.  
 Rel. propagation velocity: 79 %

## Typical values

Frequency (MHz)	10	16	62,5	100	200	300	450
Attenuation (dB/100m)	5,4	7,0	13,8	17,6	26,0	34,0	38,5
Next (db)	100,0	100,0	95,8	94,5	91,0	87,0	84,3
ACR (db)	94,6	93,0	82,0	76,9	65,0	53,0	45,8

## Technical data

Weight: app. 50 kg/km  
 bending radius, repeated: 59 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 0,57 MJ/m  
 Copper weight: 24,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

## Application

HELUKAT®450 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**82501**, F/FTP 4x2xAWG 24/1 FRNC (S-STP)

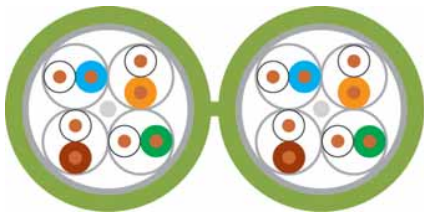
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6

**HELUKAT® 450**

F/FTP duplex

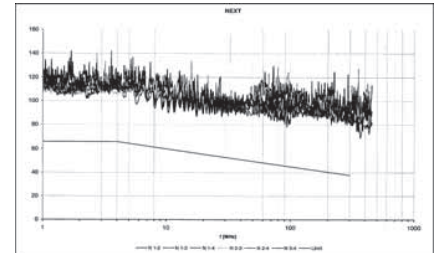


## Cable structure

Inner conductor Ø: 0,52 mm  
 Conductor material: Copper, bare  
 Core insulation: Foam-skin-PE  
 Core colours: wh/bu, wh/og, wh/gn, wh/bn  
 Separator: -  
 Screen over stranding element: Al-Foil  
 Screen 1 over stranding: Al-Foil  
 Screen 2 over stranding: -  
 Drain wire: yes  
 Outer sheath material: FRNC  
 Cable dimensions: app. 7,4 mm x 15,0 mm  
 Outer sheath colour: Green similar to RAL 6018

## F/FTP 2x(4x2xAWG 24/1) FRNC

0,52 mm  
 Copper, bare  
 Foam-skin-PE  
 wh/bu, wh/og, wh/gn, wh/bn  
 -  
 Al-Foil  
 Al-Foil  
 -  
 yes  
 FRNC  
 app. 7,4 mm x 15,0 mm  
 Green similar to RAL 6018



## Electrical data

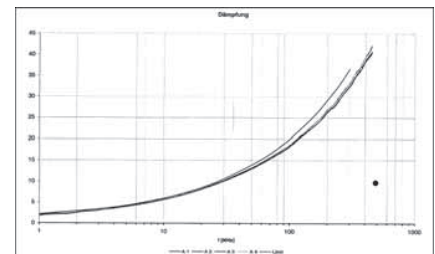
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 450 MHz  
 Loop resistance: 165 Ohm/km max.  
 Mutual capacitance: 43 nF/km nom.  
 Rel. propagation velocity: 79 %

## Typical values

Frequency (MHz)	10	16	62,5	100	200	300	450
Attenuation (dB/100m)	5,4	7,0	13,8	17,6	26,0	34,0	38,5
Next (db)	100,0	100,0	95,8	94,5	91,0	87,0	84,3
ACR (db)	94,6	93,0	82,0	76,9	65,0	53,0	45,8

## Technical data

Weight: app. 100 kg/km  
 bending radius, repeated: 59 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 1,14 MJ/m  
 Copper weight: 48,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

## Application

HELUKAT®450 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**82502**, F/FTP 2x4x2xAWG 24/1 FRNC (S-STP)

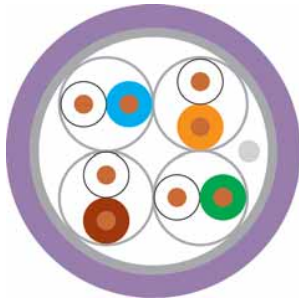
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6A

**HELUKAT® 500** 

F/FTP

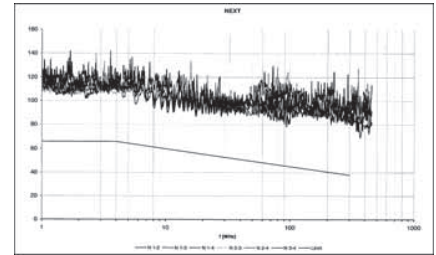


## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Drain wire:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## F/FTP 4x2xAWG 23/1 FRNC

0,57 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
Al-Foil  
Al-Foil  
-  
yes  
FRNC  
app. 7,5 mm  
Blue Lilac similar to RAL 4005



## Electrical data

Characteristic impedance:  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 500 MHz  
160 Ohm/km max.  
45 nF/km nom.  
80 %

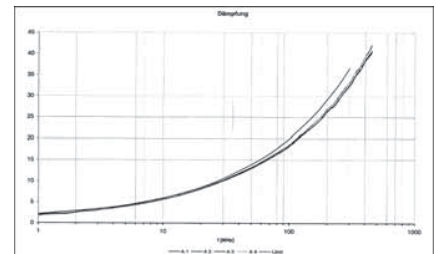
## Typical values

Frequency (MHz)	10	16	62,5	100	200	250	300	500
Attenuation (db/100m)	5,7	7,2	14,2	18,1	25,8	29,0	31,9	41,8
Next (db)	100,0	100,0	100,0	97,4	92,9	91,4	90,2	86,9
ACR (db)	94,3	92,8	85,8	79,3	67,1	62,4	58,3	45,1

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 50 kg/km  
100 mm  
-20°C  
+60°C  
0,55 MJ/m  
26,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

## Application

HELUKAT® 500 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

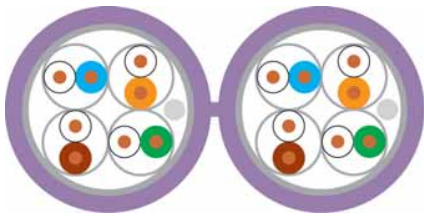
**803378**, F/FTP 4x2xAWG 23/1 LSZH (S-STP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6A

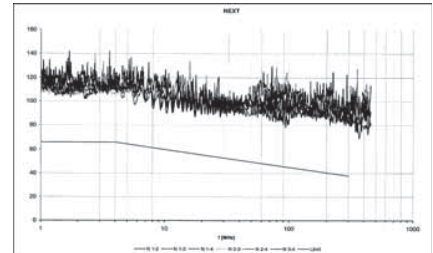
**HELUKAT®** 500   
F/FTP duplex



## Cable structure

Inner conductor Ø: 0,57 mm  
 Conductor material: Copper, bare  
 Core insulation: Foam-skin-PE  
 Core colours: wh/bu, wh/og, wh/gn, wh/bn  
 Separator: -  
 Screen over stranding element: Al-Foil  
 Screen 1 over stranding: Al-Foil  
 Screen 2 over stranding: -  
 Drain wire: yes  
 Outer sheath material: FRNC  
 Cable dimensions: app. 7,8 mm x 15,9 mm  
 Outer sheath colour: Blue Lilac similar to RAL 4005

## F/FTP 2x(4x2xAWG 23/1) FRNC (S-STP)



## Electrical data

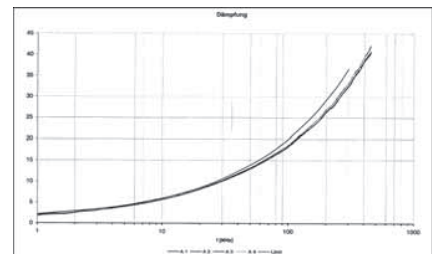
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 500 MHz  
 Loop resistance: 160 Ohm/km max.  
 Mutual capacitance: 45 nF/km nom.  
 Rel. propagation velocity: 80 %

## Typical values

Frequency (MHz)	10	16	62,5	100	200	250	300	500
Attenuation (db/100m)	5,7	7,2	14,2	18,1	25,8	29,0	31,9	41,8
Next (db)	100,0	100,0	100,0	97,4	92,9	91,4	90,2	86,9
ACR (db)	94,3	92,8	85,8	79,3	67,1	62,4	58,3	45,1

## Technical data

Weight: app. 100 kg/km  
 bending radius, repeated: 100 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 1,13 MJ/m  
 Copper weight: 52,00 kg/km



## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3

## Application

HELUKAT® 500 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**803379**, F/FTP 2x4x2xAWG 23/1 LSZH (S-STP)

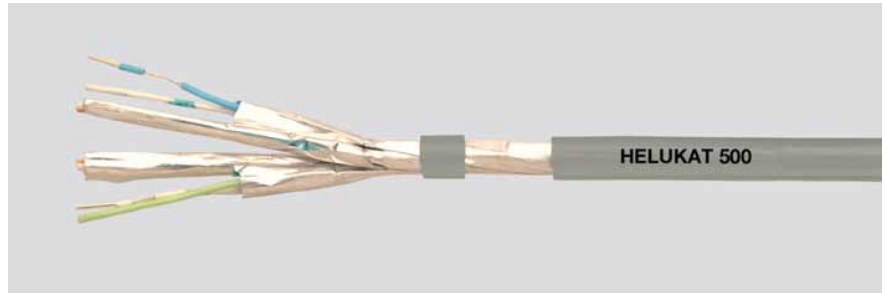
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 6A

**HELUKAT® 500**

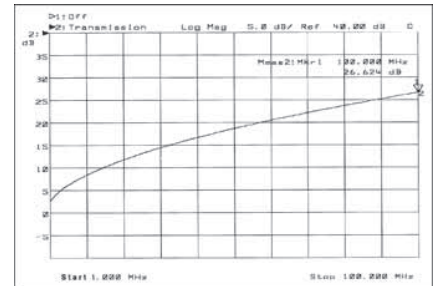
U/FTP, flex



## Cable structure

Inner conductor Ø: 0,48 mm  
 Conductor material: Copper, bare  
 Core insulation: Foam-skin-PE  
 Core colours: wh/bu, wh/og, wh/gn, wh/bn  
 Separator: -  
 Screen over stranding element: Al-Foil  
 Screen 1 over stranding: -  
 Screen 2 over stranding: -  
 Drain wire: yes  
 Outer sheath material: LSZH  
 Outer diameter: app. 5,8 mm  
 Outer sheath colour: Grey similar to RAL 7035

## U/FTP 4x2xAWG 26/7 (stranded) LSZH



## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 500 MHz  
 Loop resistance: 330 Ohm/km max.  
 Mutual capacitance: 54 nF/km nom.  
 Rel. propagation velocity: 78 %

## Typical values

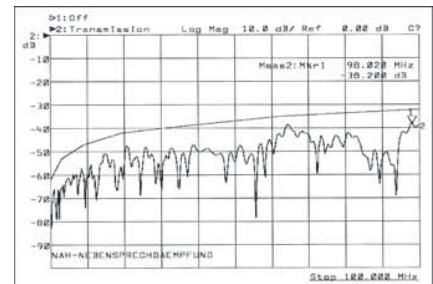
Frequency (MHz)	10	16	62,5	100	200	250	500
Attenuation (dB/10m)	0,8	1,1	2,1	2,7	3,9	4,4	6,3
Next (db)	100,0	100,0	100,0	97,0	92,0	91,0	86,0
ACR (db)	99,2	98,9	97,9	94,3	88,1	86,6	79,7

## Technical data

Weight: app. 35 kg/km  
 bending radius, repeated: 49 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 0,39 MJ/m  
 Copper weight: 15,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 6A, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-1, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT® 500 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®500 series can be manufactured quickly and easily with many common RJ45 plugs.

## Part no.

**804043**, U/FTP 4x2xAWG 26/7 LSZH

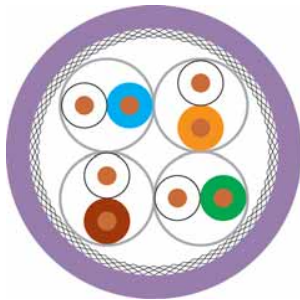
Dimensions and specifications may be changed without prior notice.



# LAN Cable

Category 7e

**HELUKAT® 600**   
CC-Link IE **F**ield S/FTP



## Cable structure

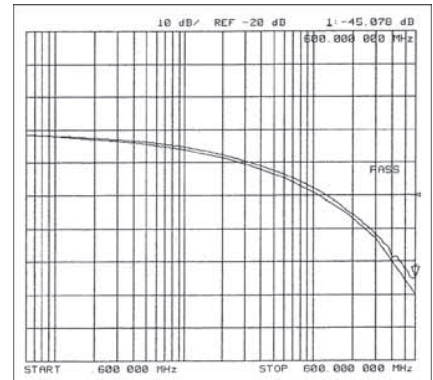
Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## S/FTP 4x2xAWG 23/1 FRNC

0,57 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
Al-Foil  
Cu braid  
-  
FRNC  
app. 7,5 mm  
Blue Lilac similar to RAL 4005

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 1000 MHz  
Loop resistance: 169 Ohm/km max.  
Mutual capacitance: 43 nF/km nom.  
Rel. propagation velocity: 79 %



## Typical values

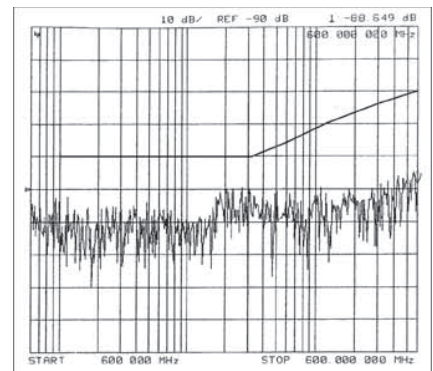
Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation (dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next (db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR (db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

## Technical data

Weight: app. 60 kg/km  
bending radius, repeated: 60 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,60 MJ/m  
Copper weight: 28,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT®600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

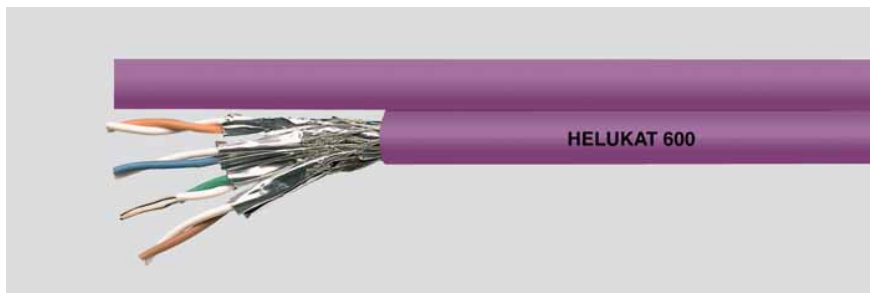
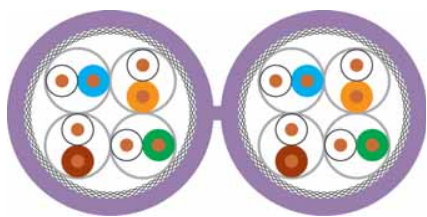
**80810**, S/FTP 4x2xAWG 23/1 FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 7e

**HELUKAT**® 600   
CC-Link IE **Field** S/FTP duplex



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Cable dimensions:  
Outer sheath colour:

## S/FTP 2x(4x2xAWG 23/1) FRNC

0,57 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
Al-Foil  
Cu braid  
-  
FRNC  
app. 7,5 mm x 16,0 mm  
Blue Lilac similar to RAL 4005

## Electrical data

Characteristic impedance:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 1000 MHz  
169 Ohm/km max.

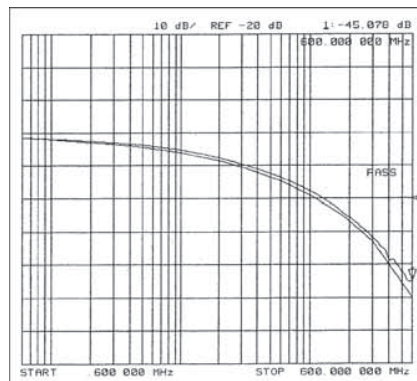
Loop resistance:

43 nF/km nom.

Mutual capacitance:

Rel. propagation velocity:

79 %



## Typical values

Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation (dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next (db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR (db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

## Technical data

Weight:

app. 120 kg/km

bending radius, repeated:

60 mm

Operating temperature range min.:

-20°C

Operating temperature range max.:

+60°C

Caloric load, approx. value:

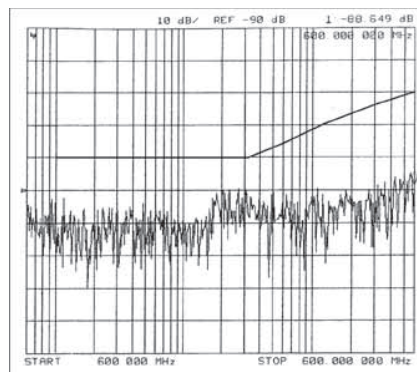
1,20 MJ/m

Copper weight:

56,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT®600 data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**81446**, S/FTP 2x(4x2xAWG 23/1) FRNC (S-STP)

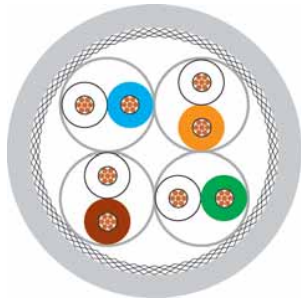
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 7

**HELUKAT® 600**

S/FTP flex



## Cable structure

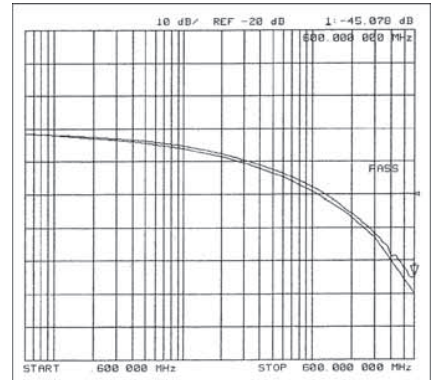
Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## S/FTP 4x2xAWG 26/7 FRNC

0,48 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
Al-Foil  
Cu braid  
-  
FRNC  
app. 5,9 mm  
Grey similar to RAL 7035

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 600 MHz  
Loop resistance: 290 Ohm/km max.  
Mutual capacitance: 45 nF/km nom.  
Rel. propagation velocity: 77 %



## Typical values

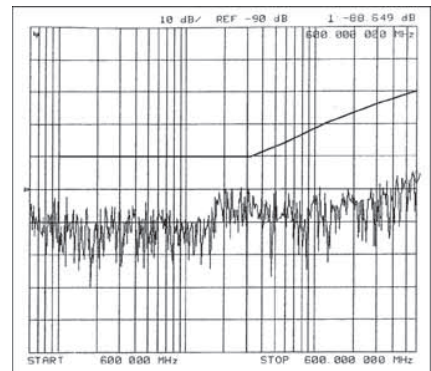
Frequency (MHz)	10	16	62,5	100	200	300	600
Attenuation (dB/10m)	0,8	1,0	2,0	2,6	4,0	4,9	6,3
Next (db)	96,0	96,0	95,0	94,0	88,0	86,0	80,0
ACR (db)	95,2	95,0	93,0	91,4	84,0	81,1	73,7

## Technical data

Weight: app. 42 kg/km  
bending radius, repeated: 55 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,47 MJ/m  
Copper weight: 22,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-1, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT®600 data cables are used in the tertiary level of a network as patch cables and connection cables. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. With its optimized construction, the HELUKAT®600 series can be manufactured quickly and easily with all common RJ45 plugs.

## Part no.

**80294**, S/FTP 4x2xAWG 26/7 FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.

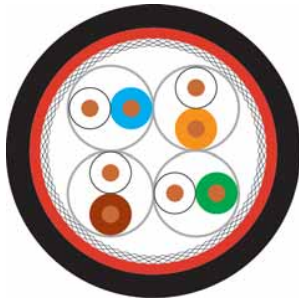


# LAN Cable Outdoor

Category 7e

**HELUKAT® 600A**

S/FTP PVC/PVC



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Inner sheath material:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

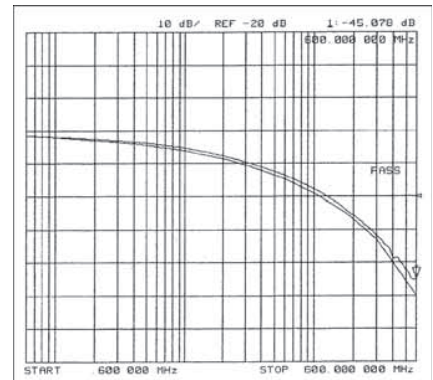
## S/FTP 4x2xAWG 23/1 PVC/PVC

0,58 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
PVC  
Al-Foil  
Cu braid  
-  
PVC  
app. 11,6 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
  
Loop resistance:  
Mutual capacitance:  
Rel. propagation velocity:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 1000 MHz  
160 Ohm/km max.  
43 nF/km nom.  
79 %



## Typical values

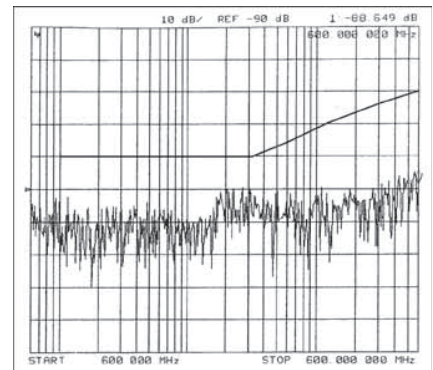
Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation (dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next (db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR (db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

## Technical data

Weight: app. 153 kg/km  
bending radius, repeated: 95 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 2,62 MJ/m  
Copper weight: 32,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-1-2



## Application

HELUKAT® 600A data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. The series of HELUKAT® 600A with a double PVC jacket is constructed especially for outdoor applications like laying at house walls or in cable lines.

## Part no.

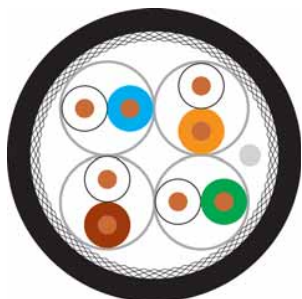
**801147**, S/FTP 4x2xAWG 23/1 PVC/PVC (S-STP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable direct Burial

Category 7e

**HELUKAT® 600E**  
S/FTP PVC



## Cable structure

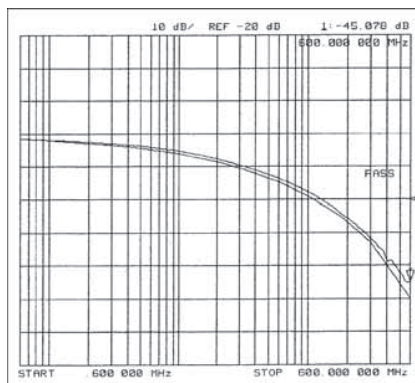
Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## S/FTP 4x2xAWG 23/1 direct burial

0,58 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
Al-Foil  
Cu braid  
-  
PVC  
app. 9,8 mm  
Black

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 1000 MHz  
Loop resistance: 150 Ohm/km max.  
Mutual capacitance: 42 nF/km nom.  
Rel. propagation velocity: 79 %



## Typical values

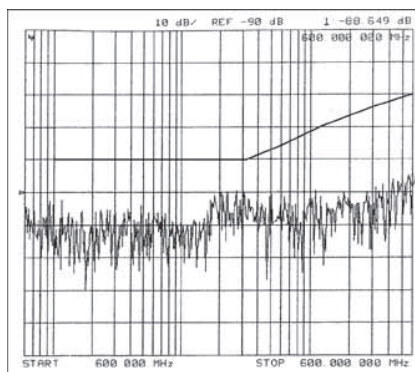
Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation (dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next (db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR (db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

## Technical data

Weight: app. 102 kg/km  
bending radius, repeated: 100 mm  
Operating temperature range min.: -45°C  
Operating temperature range max.: +65°C  
Caloric load, approx. value: 1,40 MJ/m  
Copper weight: 32,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e, Flame-retardant acc. to IEC 60332-1-2, Smoke density acc. to IEC 61034



## Application

HELUKAT® 600E data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. The series of HELUKAT® 600E with a cold resistant PVC jacket is constructed especially for outdoor applications like laying at house walls or direct burial.

## Part no.

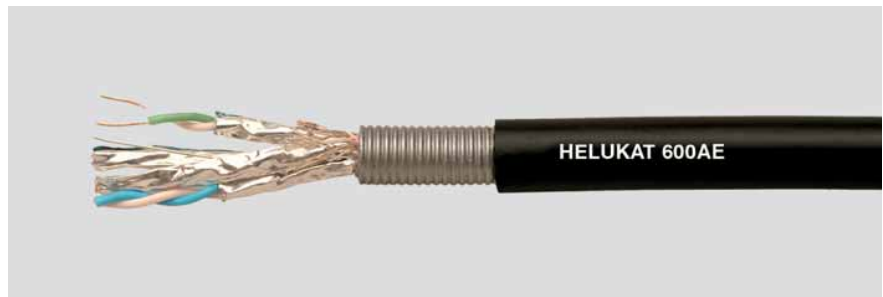
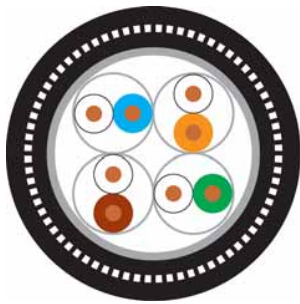
**802167**, S/FTP 4x2xAWG23/1 PVC (S-STP)

Dimensions and specifications may be changed without prior notice.

# LAN Cable direct Burial / armoured

Category 7e

**HELUKAT® 600AE**  
S/FTP FRNC/PE



## Cable structure

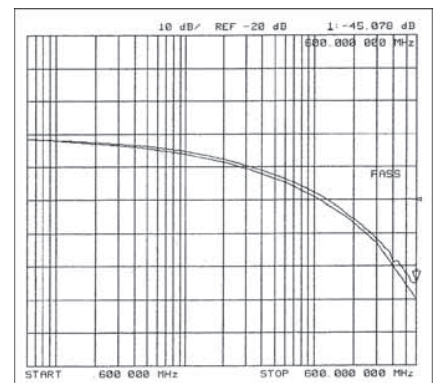
Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Inner sheath material:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## S/FTP 4x2xAWG 23/1 FRNC/PE

0,58 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
FRNC  
Al-Foil  
Cu braid  
-  
Steel shaft  
PE  
app. 12,2 mm  
Black

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 1000 MHz  
Loop resistance: 150 Ohm/km max.  
Mutual capacitance: 43 nF/km nom.  
Rel. propagation velocity: 79 %



## Typical values

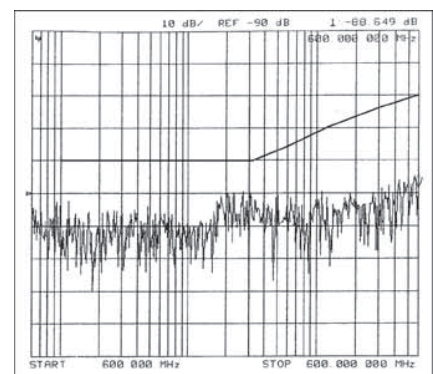
Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000
Attenuation (dB/100m)	5,6	7,1	13,9	17,5	25,2	32,1	44,9	55,0	58,0
Next (db)	100,0	100,0	96,0	94,0	88,0	84,0	73,0	71,0	69,0
ACR (db)	94,4	92,9	82,1	76,5	62,8	51,9	28,1	16,0	9,0

## Technical data

Weight: app. 155 kg/km  
bending radius, repeated: 330 mm  
Operating temperature range min.: -45°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 2,30 MJ/m  
Copper weight: 32,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7e



## Application

HELUKAT® 600AE data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. The series of HELUKAT® 600AE with a FRNC/PE double jacket and the rodent protection is constructed especially for outdoor and direct burial applications.

## Part no.

**802168**, S/FTP 4x2xAWG 23/1 FRNC/PE (S-STP)

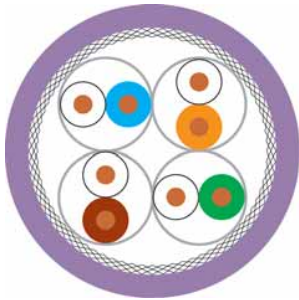
Dimensions and specifications may be changed without prior notice.

# LAN Cable

Category 7A

**HELUKAT**® 1200 

S/FTP



## Cable structure

Inner conductor Ø:  
Conductor material:  
Core insulation:  
Core colours:  
Separator:  
Screen over stranding element:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Outer diameter:  
Outer sheath colour:

## S/FTP 4x2xAWG 23/1 LSZH

0,57 mm  
Copper, bare  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
-  
Al-Foil  
Cu braid  
-  
LSZH  
app. 7,5 mm  
Blue Lilac similar to RAL 4005

## Electrical data

Characteristic impedance:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 1200 MHz  
160 Ohm/km max.

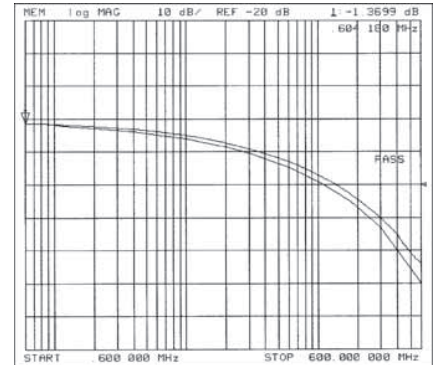
Loop resistance:

43 nF/km nom.

Mutual capacitance:

Rel. propagation velocity:

77 %



## Typical values

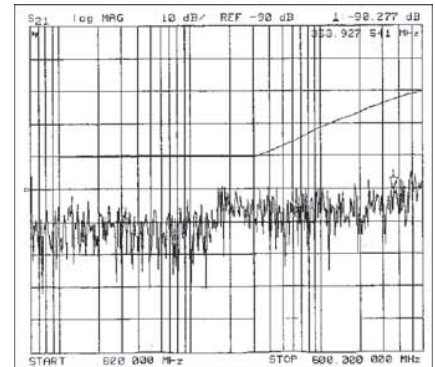
Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000	1200
Attenuation (db/100m)	5,2	6,8	13,3	17,3	24,2	30,2	43,5	54,3	56,9	62,9
Next (db)	105,0	105,0	105,0	100,0	95,0	93,0	88,0	85,0	84,0	82,0
ACR (db)	99,8	98,2	91,7	82,7	70,8	62,8	44,5	30,7	27,1	19,1

## Technical data

Weight: app. 60 kg/km  
bending radius, repeated: 65 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,57 MJ/m  
Copper weight: 30,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3



## Application

HELUKAT® 1200-7A data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**803380**, S/FTP 4x2xAWG 23/1 FRNC (S-STP)

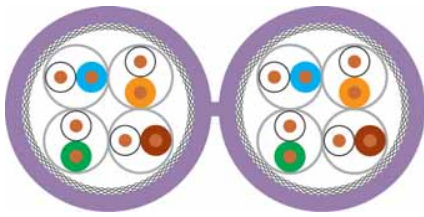
Dimensions and specifications may be changed without prior notice.



# LAN Cable

Category 7A

**HELUKAT**® 1200   
S/FTP duplex



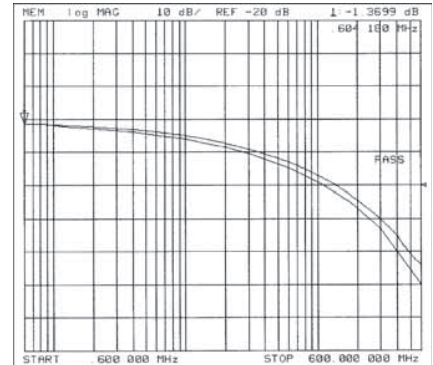
## Cable structure

Inner conductor Ø: 0,57 mm  
 Conductor material: Copper, bare  
 Core insulation: Foam-skin-PE  
 Core colours: wh/bu, wh/og, wh/gn, wh/bn  
 Separator: -  
 Screen over stranding element: Al-Foil  
 Screen 1 over stranding: Cu braid  
 Screen 2 over stranding: -  
 Outer sheath material: LSZH  
 Cable dimensions: app. 16,0 mm x 7,5 mm  
 Outer sheath colour: Blue Lilac similar to RAL 4005

## S/FTP 2x(4x2xAWG 23/1) LSZH

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
 100 Ohm ± 20 Ohm at 101 to 1200 MHz  
 Loop resistance: 160 Ohm/km max.  
 Mutual capacitance: 43 nF/km nom.  
 Rel. propagation velocity: 77 %



## Typical values

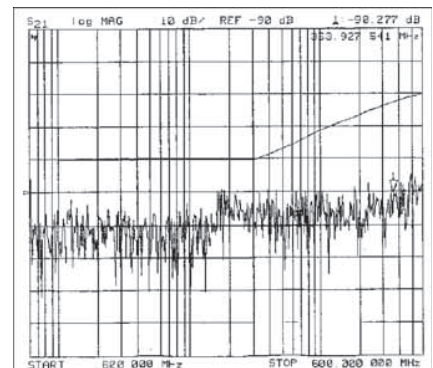
Frequency (MHz)	10	16	62,5	100	200	300	600	900	1000	1200
Attenuation (db/100m)	5,2	6,8	13,3	17,3	24,2	30,2	43,5	54,3	56,9	62,9
Next (db)	105,0	105,0	105,0	100,0	95,0	93,0	88,0	85,0	84,0	82,0
ACR (db)	99,8	98,2	91,7	82,7	70,8	62,8	44,5	30,7	27,1	19,1

## Technical data

Weight: app. 120 kg/km  
 bending radius, repeated: 65 mm  
 Operating temperature range min.: -20°C  
 Operating temperature range max.: +60°C  
 Caloric load, approx. value: 1,16 MJ/m  
 Copper weight: 60,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7A, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3



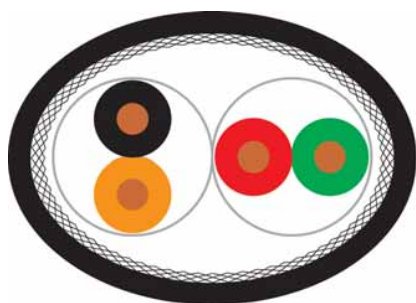
## Application

HELUKAT® 1200-7A data cables are used in the tertiary, but also in the secondary level of a network. They are characterized by large performance reserves and outstanding performance. They can be used to implement services such as 10Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, token ring 4/16 Mbit/s or ISDN absolutely trouble-free. Likewise, the mechanical characteristics are perfectly suited for the application in tight cable channels and platforms due to their optimized construction.

## Part no.

**803381**, S/FTP 2x(4x2xAWG 23/1) FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.



## Cable structure

Inner conductor Ø:  
 Conductor material:  
 Core insulation:  
 Number of cores:  
 Core colours:  
 Screen over stranding element:  
 Screen over stranding 1:  
 Screen over stranding 2:  
 Outer sheath material:  
 Cable dimensions:  
 Outer sheath colour:

## IBM P/N 33G2772 type 1A

0,64 mm  
 Copper, bare  
 Foam-skin-PE  
 4  
 bk/og, rd/gn  
 Al-Foil  
 Cu braid, tinned  
 -  
 PVC  
 app. 7,6 mm x 11,9 mm  
 Black

## Electrical data

Characteristic impedance:  
 Direct current resistance:  
 Rel. propagation velocity:

150 Ohm  
 $\pm 15$  Ohm at 3 to 20 MHz  
 185 Ohm  
 $\pm 18.5$  Ohm at 38.4 kHz  
 270 Ohm  
 $\pm 27$  Ohm at 9.6 kHz  
 57,1 Ohm/km  
 78 %

## Typical values

Frequency	(MHz)	20	100	20	100	20	100
Attenuation	(dB/100m)	7,4	18,7	4,9	12,3	7,4	18,7
Next	(db)	80,0	60,0	50,0	39,0	60,0	49,0

## Technical data

Weight:  
 bending radius, repeated:  
 Operating temperature range min.:  
 Operating temperature range max.:  
 Caloric load, approx. value:  
 Copper weight:

app. 85 kg/km  
 110 mm  
 -10°C  
 +70°C  
 1,70 MJ/m  
 38,00 kg/km

## Application

HELUKABEL® IVS types are used in the area of the IVS system, developed by IBM. They correspond to the wiring guidelines set by IBM.

## Part no.

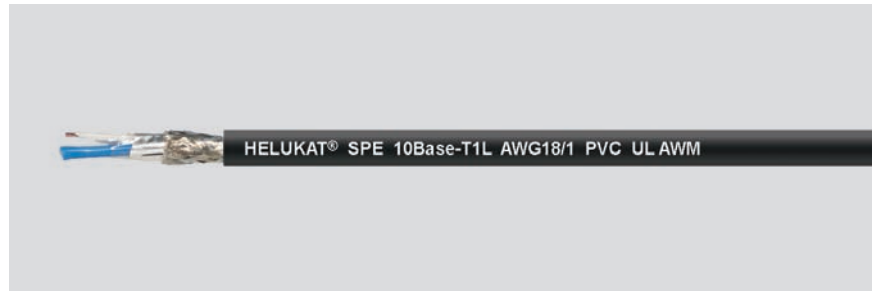
**80068**, IBM P/N 33G2772 type 1A

Dimensions and specifications may be changed without prior notice.

# Industrial Ethernet

HELUKAT® SPE Type A 10 BASE T1L 1x2xAWG18/1 PVC

**HELUKAT**®



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2xAWG18/1

Copper, bare (AWG 18/1)  
Foam-skin-PE  
wh, bu  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Cu braid, tinned  
PVC  
app. 7,0 mm ± 0,2 mm  
Black

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 20 MHz  
Conductor resistance, max.: 22 Ohm/km  
Insulation resistance, min.: 1 GOhm x km  
Loop resistance: 44 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Test voltage: 3 kV

## Typical values

Frequency (MHz)	1	4	10	16	20
Attenuation (db/100m)	1.19	2.32	3.41	4.21	4.67
Next (db)					

## Technical data

Weight: app. 76 kg/km  
bending radius, repeated: 140 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 0,34 MJ/m  
Copper weight: 35,00 kg/km

## Norms

Flame-retardant acc. to IEC 60332-1-2, UL AWM Style 21179 80°C 600V  
Oil resistant acc. to DIN EN 60811-404

## Application

Single Pair Ethernet covers the requirements of diverse industries, at the same time it can also supply devices with voltage via data cores with up to 50 Watt through PoDL (Power over Data Line). According to application area it is possible for the Customer to use the 1-pair cable for permanent installation, flexible use or for high dynamic application as a drag chain or at the robot. Different sheathing materials are used to meet the respective customer requirements.

The applications could be diverse and provide relief in mechanical and plant engineering or process technology. For example, camera broadcasts, the insert in Cobots (collaborative robots that work together with humans) or the MessSensoric. SPE is the solution for miniaturization and holds out the prospect of small, space- and weight-saving wiring in the future. The Type HELUKAT® SPE 1x2xAWG18/1 Typ A 10BASE-T1L is suitable for fixed installation up to 1000m transmission distance and forms in the process industry the switching option from Profibus PA / Foundation Fieldbus with 31,25 kBit to a data rate 10 Mbit with SPE 10BASE-T1L. This opens up completely new areas of application in the future.

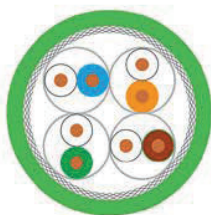
## Part no.

**11017748**, SPE Type A 10BASE-T1L

Dimensions and specifications may be changed without prior notice.

# HELUKAT® 600IND CAT.7e S/FTP PUR STATIC

CC-Link IE Field certified, extended performance up to 1200 MHz



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 7e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-4-1, UL-Std. 758 (AWM) Style 21238

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 74.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 149.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 43 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.74 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 8x Outer-Ø

- Sheath colour: see table
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals:  
EAC  
CC-Link IE

## APPLICATION

HELUKAT® 600IND CAT.7e S/FTP PUR STATIC is used for harsh industrial environments. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance. Electrically, this cable is characterized by high reserve capacity and outstanding performance. This allows you to create services such as 10 Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, Token Ring 4/16 Mbit/s or ISDN without difficulty. These cables considerably exceed the requirement for compliance with Class B interference emission to EN55022, as well as interference immunity to EN55024. This gives the series outstanding EMC characteristics.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	350	600	900	1000	1200
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0	45.2	57.1	60.8	66.0
NEXT (dB)	95.0	95.0	89.0	87.0	82.0	79.0	74.0	70.0	66.0	63.0
ACR (dB/100m)	89.4	88.0	75.2	69.4	53.7	43.0	27.8	13.9	5.2	-3.0



# HELUKAT® 600IND CAT.7e S/FTP PUR STATIC



CC-Link IE Field certified, extended performance up to 1200 MHz

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Sheath colour	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
801197	4 x 2 x AWG 23 /1	0.26	green	1.42	7.7	34.0	64.0
11022997	4 x 2 x AWG 23 /1	0.26	grey	1.42	7.7	34.0	64.0
11022998	4 x 2 x AWG 23 /1	0.26	blue	1.42	7.7	34.0	64.0
803815	4 x 2 x AWG 23 /1	0.26	red	1.42	7.7	34.0	64.0

# HELUKAT® 600IND CAT.7e S/FTP FRNC STATIC



extended performance up to 1200 MHz, flame-retardant, low smoke



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 7e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-4-1, UL-Std. 758 (AWM) Style 21143

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1500 V
<b>Conductor resistance at 20°C</b>	max. 74.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 149.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 43 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.74 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 7x Outer-Ø

- Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation
- halogen-free
- flame-retardant, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 600IND CAT.7e S/FTP FRNC STATIC is used for industrial environments with halogen free and low smoke characteristics. Electrically, this cable is characterized by high reserve capacity and outstanding performance. This allows you to create services such as 10 Gigabit Ethernet, Gigabit Ethernet, Fast Ethernet, Ethernet, ATM155, FDDI, Token Ring 4/16 Mbit/s or ISDN without difficulty. These cables considerably exceed the requirement for compliance with Class B interference emission to EN55022, as well as interference immunity to EN55024. This gives the series outstanding EMC characteristics.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	350	600	900	1000	1200
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0	45.2	57.1	60.8	66.0
NEXT (dB)	95.0	95.0	89.0	87.0	82.0	79.0	74.0	70.0	66.0	63.0
ACR (dB/100m)	89.4	88.0	75.2	69.4	53.7	43.0	27.8	13.9	5.2	-3.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007775	4 x 2 x AWG 23 /1	0.26	1.45	7.8	34.0	68.0

# HELUKAT 1200IND CAT.7A S/FTP PUR STATIC

extended performance up to 1200 MHz



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 7A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-9-1, UL-Std. 758 (AWM) Style 20549

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1500 V
<b>Conductor resistance at 20°C</b>	max. 74.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 149.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 43 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 25 Ohm
<b>Caloric load</b>	approx. 0.76 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 7x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.57 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 1200IND CAT.7A S/FTP PUR STATIC is used for harsh industrial environments. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance. Electrically, this cable is characterized by high reserve capacity and outstanding performance.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 300 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	350	600	900	1200
Attenuation (dB/100m)	5.6	7.0	13.8	17.6	28.3	34.0	45.2	57.1	66.0
NEXT (dB)	95.0	95.0	89.0	87.0	82.0	89.0	74.0	70.0	63.0
ACR (dB/100m)	89.4	86.0	73.2	67.4	51.7	43.0	27.8	13.9	1.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805680	4 x 2 x AWG 23 /1	0.26	1.43	7.8	37.0	68.0

# HELUKAT 1000IND CAT.7<sub>A</sub> S/FTP PUR ROBUSTFLEX

performance up to 1000 MHz



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 7<sub>A</sub> acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 758 (AWM) Style 21238

<b>Temperature range</b>	flexible -25°C to +60°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 145.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 290.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 44 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1000 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.45 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 6x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

HELUKAT® 1000IND CAT.7<sub>A</sub> S/FTP PUR ROBUSTFLEX is an Ethernet cable that, thanks to use of a halogen-free PU outer sheath, is ideal for harsh industrial surroundings. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with some Sub-D and M12 plugs.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## ■ TYPICAL VALUES

Frequency (MHz)	10	100	250	600	800	1000
Attenuation (dB/100m)	7.7	27.0	42.0	71.0	83.0	93.0
NEXT (dB)	100.0	99.0	95.0	94.0	85.0	77.0
ACR (dB/100m)	92.3	72.0	53.0	23.0	2.0	-16.0

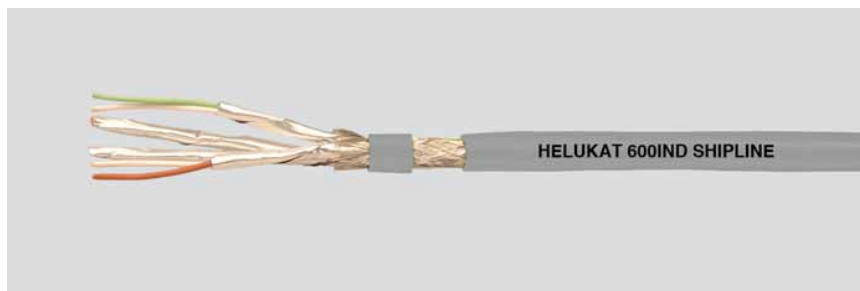
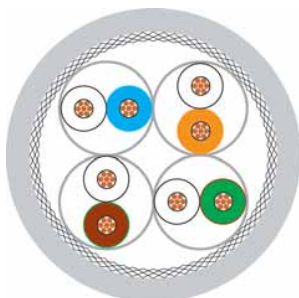
Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805684	4 x 2 x AWG 26 /7	0.14	0.48	1.05	6.2	23.0	40.0

# Industrial Ethernet

SHIPLINE

**HELUKAT®** 600IND

S/FTP, Category 7



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Screen 1 over stranding:  
Screen 2 over stranding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Marine and Offshore

### S/FTP 4x2xAWG 24/7 (stranded) FRNC

Copper, bare (AWG 24/7)  
Foam-skin-PE  
wh/bu, wh/og, wh/gn, wh/bn  
Double core  
-  
Al-Foil  
Cu braid  
-  
FRNC  
app. 9,1 mm ± 0,3 mm  
Grey similar to RAL 7035

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm ± 20 Ohm at 101 to 600 MHz  
Loop resistance: 168 Ohm/km max.  
Mutual capacitance: 43 nF/km nom.  
Relative propagation velocity: 72 %

## Typical values

Frequency (MHz)	10	16	62,5	100	200	600
Attenuation (dB/10m)	0,7	0,8	1,6	2,1	3,1	5,2
Next (db)	90,0	90,0	85,0	81,0	76,0	68,0
ACR (db)	89,3	89,2	83,4	78,9	72,9	62,8

## Technical data

Weight: app. 85 kg/km  
bending radius, repeated: 85 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +75°C  
Caloric load, approx. value: 0,80 MJ/m  
Copper weight: 36,00 kg/km

## Norms

Acc. to ISO/IEC 11801, Acc. to EN 50173, Acc. to EIA/TIA 568-A, Category 7, Flame-retardant acc. to IEC 60332-3, Smoke density acc. to IEC 61034, Halogen-free acc. to 60754-2, Corrosiveness acc. to EN50267-2-3, Oil-resistant

## Application

HELUKAT® 600IND Category 7 Shipline is designed specially for use in shipbuilding and exceptionally well-suited for Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here is certified by **German Lloyd**; this means it is designed for flexible marine and offshore applications.

## Part no.

**803382**, S/FTP 4x2xAWG 24/7 stranded FRNC (S-STP)

Dimensions and specifications may be changed without prior notice.

# HELUKAT® 600IND CAT.7 S/FTP PUR ROBUSTFLEX



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 7 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 758 (AWM) Style 20963

<b>Temperature range</b>	flexible -20°C to +60°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 75%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.45 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths
- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths

- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

HELUKAT® 600IND CAT.7 S/FTP PUR ROBUSTFLEX is an Ethernet cable that is ideal for harsh industrial surroundings thanks to use of a halogen-free PU outer sheath. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with some Sub-D and M12 plugs.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 30 V

## ■ TYPICAL VALUES

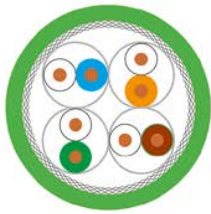
Frequency (MHz)	10	16	62.5	100	200	600
Attenuation (dB/100m)	8.4	10.4	20.5	26.2	38.0	67.8
PS-NEXT (dB)	95.0	95.0	90.0	90.0	85.0	73.0
PS-ACR (dB/100m)	86.6	84.6	69.5	63.8	47.0	5.2

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802184	4 x 2 x AWG 26 / 7	0.14	0.48	1.0	6.4	28.0	48.0

# HELUKAT 500IND CAT.6A S/FTP FRNC STATIC



flame-retardant, low smoke



## TECHNICAL DATA

**Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM**

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation 0°C to +70°C UL (CM) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes) 2000 V
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 59.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 118.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.95 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimal lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- halogen-free
- flame-retardant, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24
- UL Vertical-Tray Flame Exposure acc. to UL Std. 1685 Sec. 4-11

## APPLICATION

HELUKAT® 500IND CAT.6A S/FTP FRNC STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## CABLE STRUCTURE

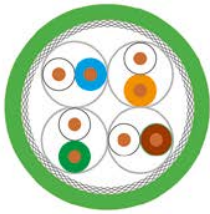
- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:  
No. 1: white-blue / blue  
No. 2: white-orange / orange  
No. 3: white-green / green  
No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.9	7.5	15.0	19.1	31.1	45.3
NEXT (dB)	60.3	57.2	48.4	45.3	39.3	34.8
ACR (dB/100m)	54.4	49.7	43.4	26.2	8.2	-10.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
1100777	4 x 2 x AWG 22 / 1	0.32	1.55	8.7	53.0	103.0

# HELUKAT 500IND CAT.6A S/FTP PUR STATIC



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21238

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation 0°C to +50°C UL (CMX) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 59.1 Ohm/km
<b>Loop resistance at 20°C</b>	max. 118.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 45 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 78%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.63 MJ/m
<b>Minimum bending radius</b>	during installation 8x Outer-Ø fixed installation 5x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 500IND CAT.6A S/FTP PUR STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.9	7.5	15.0	19.1	31.1	45.3
NEXT (dB)	60.3	57.2	48.4	45.3	39.3	34.8
ACR (dB/100m)	54.4	49.7	33.4	26.2	8.2	10.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007778	4 x 2 x AWG 22 / 1	0.32	1.55	8.7	53.0	103.0



# HELUKAT 500IND CAT.6A S/FTP PVC STATIC



highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (CL2), UL-Std. 758 (AWM) Style 21694

<b>Temperature range</b>	fixed installation -30°C to +80°C during installation 0°C to +50°C UL (CMG) to +75°C UL (AWM) to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 59.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 118.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 45 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 78%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.63 MJ/m
<b>Minimum bending radius</b>	during installation 8x Outer-Ø fixed installation 5x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths
- Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24

## APPLICATION

HELUKAT® 500IND CAT.6A S/FTP PVC STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

## TYPICAL VALUES

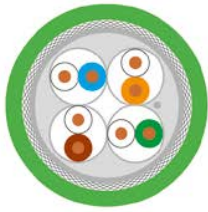
Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	5.9	7.5	15.0	19.1	31.1	45.3
NEXT (dB)	60.3	57.2	48.4	45.3	39.3	34.8
ACR (dB/100m)	54.4	49.7	33.4	26.2	8.2	10.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
1100776	4 x 2 x AWG 22 / 1	0.32	1.55	8.7	53.0	103.0

# HELUKAT 500IND CAT.6A SK S/FTP PVC STATIC



CC-Link IE Field certified, FastConnect (SK) capable, highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-10-1, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +70°C UL (CMG) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 56.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 112.9 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 76%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.63 MJ/m
<b>Minimum bending radius</b>	during installation 8x Outer-Ø fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs stranded in layers with optimally matched lay lengths
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- drain wire
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation (SUN RES)
- flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)
- certifications and approvals:
  - EAC
  - CC-Link IE

## APPLICATION

HELUKAT® 500IND CAT.6A SK S/FTP PVC STATIC was designed specially for extreme industrial applications for fixed installation. The copper data cable is especially well-suited for Category 6A 10 Giga-bit/500MHz (IEC 61156-5) Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500
Attenuation (dB/100m)	4.8	6.2	12.7	16.2	25.9	37.0
NEXT (dB)	108.3	107.1	100.2	99.5	90.2	80.0
PS-NEXT (dB)	57.3	54.2	45.4	42.3	36.3	31.8
ACR (dB/100m)	103.5	100.9	87.5	83.3	64.3	43.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
803693	4 x 2 x AWG 22 / 1	0.32	1.55	9.6	44.0	115.0

# HELUKAT® 250IND CAT.6 CMG SF/UTP PVC STATIC

with FRNC inner sheath, highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-5-1, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +70°C UL (CMG) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1500 V
<b>Conductor resistance at 20°C</b>	max. 95.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 190.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 72 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 62%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.69 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Foil wrapping
- Screening element: pairs
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation
- flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24

## APPLICATION

HELUKAT® 250IND CAT.6 CMG SF/UTP PVC STATIC was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Ethernet applications Category 6. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.51 mm, AWG sizes
- Core insulation: PE
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250
Attenuation (dB/100m)	5.6	7.1	14.5	18.4	30.3
NEXT (dB)	77.0	75.9	66.4	64.7	57.2
ACR (dB/100m)	71.4	68.8	51.9	46.3	26.9

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805655	4 x 2 x AWG 24 / 1	0.20	1.03	8.0	37.0	76.0

# HELUKAT® 250IND CAT.6 AWM SF/UTP PVC STATIC



with FRNC inner sheath, flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, DIN EN 50288-5-1, UL-Std. 758 (AWM) Style 2571

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +70°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1500 V
<b>Conductor resistance at 20°C</b>	max. 95.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 190.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 72 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 62%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.69 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- Screening element: pairs
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation
- flame-retardant

## TESTS

- flame-retardant acc. to CSA FT1
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)

## APPLICATION

HELUKAT® 250IND CAT.6 AWM SF/UTP PVC STATIC was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Category 6 Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. This version with PVC jacket is designed specifically for fixed installation under difficult industrial conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.51 mm, AWG sizes
- Core insulation: PE
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250
Attenuation (dB/100m)	5.6	7.1	14.5	18.4	30.3
NEXT (dB)	77.0	75.9	66.4	64.7	57.2
ACR (dB/100m)	71.4	68.8	51.9	46.3	26.9

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805681	4 x 2 x AWG 24 / 1	0.20	1.03	8.0	40.0	78.0

# HELUKAT® 100IND CAT.5 SF/UTP FRNC STATIC



flame-retardant, low smoke



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-2, DIN EN 50288-2-1

<b>Temperature range</b>	fixed installation -25°C to +80°C during installation -5°C to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1000 V
<b>Conductor resistance at 20°C</b>	max. 96.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 192.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 48 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 70%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.43 MJ/m
<b>Minimum bending radius</b>	during installation 15x Outer-Ø fixed installation 8x Outer-Ø

- Foil wrapping
- Pairs stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: blue
- Length marking: in metres

## PROPERTIES

- halogen-free
- flame-retardant, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 100IND CAT.5 SF/UTP FRNC STATIC for fixed installation indoor in halogen free and flame retardant edition.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.51 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:  
No. 1: white-orange / orange  
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.7	7.1	14.2	18.3
NEXT (dB)	57.0	54.0	45.0	42.0
ACR (dB/100m)	51.3	46.9	30.8	23.7

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805699	2 x 2 x AWG 24 /1	0.20	1.03	5.6	22.0	45.0

# HELUKAT® 100IND CAT.5 SF/UTP PUR STATIC



flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-2, DIN EN 50288-2-1

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -5°C to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1000 V
<b>Conductor resistance at 20°C</b>	max. 96.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 192.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 48 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 75%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.63 MJ/m
<b>Minimum bending radius</b>	during installation 15x Outer-Ø fixed installation 8x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.51 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:  
No. 1: white-orange / orange  
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping
- Pairs stranded with optimal lay lengths

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: blue
- Length marking: in metres

## PROPERTIES

- resistant to: oil
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 100IND CAT.5 SF/UTP PUR STATIC for fix installation in halogen free and flame retardent edition. Thanks to the PUR jacket excellent oil resistance for harsh environmental applications.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.7	7.1	14.2	18.3
NEXT (dB)	57.0	54.0	45.0	42.0
ACR (dB/100m)	51.3	46.9	30.8	23.7

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805700	2 x 2 x AWG 24 / 1	0.20	1.04	5.6	22.0	53.0

# HELUKAT® 200IND CAT.5e SF/UTP PUR ROBUSTFLEX

flame-retardant



## TECHNICAL DATA

**Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21576**

<b>Temperature range</b>	flexible -20°C to +50°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1000 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 47 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 200 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.64 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

- Pairs stranded in layers with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: grey
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## APPLICATION

HELUKAT® 200IND CAT.5e SF/UTP PUR ROBUSTFLEX is used in harsh industrial surroundings and characterized by high reserve capacity and outstanding performance. Mechanically, the halogen-free PU outer sheath makes it ideal for harsh industrial surroundings. This cable is configurable with common RJ45 plugs (industrial and office version), as well as with various Sub-D and M12 plugs.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200
Attenuation (dB/100m)	8.0	11.0	24.0	29.0	43.0
NEXT (dB)	58.0	56.0	45.0	43.0	37.0
ACR (dB/100m)	50.0	45.0	21.0	14.0	-6.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800068	4 x 2 x AWG 26 /7	0.14	0.48	0.95	5.8	24.0	44.0



# HELUKAT® 100IND CAT.5 WK SF/UTP X-FRNC FLEX

null, null, flame-retardant, low smoke



HELUKABEL® WK-Industrial Ethernet 105°C

## TECHNICAL DATA

Industrial Ethernet / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21281

<b>Temperature range</b>	flexible -20°C to +60°C fixed installation -40°C to +105°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 60.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 120.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 57 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 69%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.89 MJ/m
<b>Minimum bending radius</b>	fixed 8x Outer-Ø fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: XLPE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: cross-linkable, halogen-free, flame retardant compound (X-FRNC)
- Sheath colour: black

- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, microbes, coolants, acids, alkalis
- abrasion-resistant, notch-resistant, low adhesion
- for outdoor use
- halogen-free
- flame-retardant, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- certifications and approvals: EAC

## APPLICATION

HELUKAT® 100IND CAT.5 WK SF/UTP X-FRNC FLEX is designed specially for demanding temperature requirements such as those encountered in wind turbines. Radiation cross-linking provides improved thermal stability as well as good oil resistance.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- Temperature range up to +105°C, for an operating period of max. 5000h
- UL Voltage Rating: 300 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.3	8.0	16.5	21.3
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	63.7	57.0	38.5	28.7

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802293	2 x 2 x AWG 22 /7	0.35	0.75	1.55	6.5	34.0	64.0



# HELUKAT® PROFINet A CAT.5e SF/UTP PVC STATIC

PROFINet Type A, FastConnect (SK) capable, highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFINet Guidline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -20°C to +60°C UL (CMG) to +75°C UL (AWM) to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 57.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 115.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 48 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 62%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.91 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, weathering effects, microbes
- highly flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- CPR-class: Eca
- certifications and approvals: EAC

## APPLICATION

HELUKAT® PROFINet A CAT.5e SF/UTP PVC STATIC for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFINet Type A and is designed for normal fixed installation in industrial environments.

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800653	2 x 2 x AWG 22 / 1	0.32	1.5	6.5	32.0	67.0

# HELUKAT® PROFINet A CAT.5e SF/UTP PUR STATIC



PROFINet Type A, FastConnect (SK) capable, flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFINet Guideline

<b>Temperature range</b>	fixed installation -40°C to +80°C during installation -20°C to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 62.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 115.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 62%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.91 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- flame-retardant

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

HELUKAT PROFINet A CAT.5e SF/UTP PVC STATIC for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFINet Type A and is designed for difficult fixed installation in harsh industrial environments and offers excellent oil resistance due to the PUR jacket.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
801194	2 x 2 x AWG 22 /1	0.32	1.5	6.5	32.0	64.0

# HELUKAT® PROFInet A CAT.5e SF/UTP FRNC STATIC

PROFInet Type A, FastConnect (SK) capable, flame-retardant, low smoke



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFInet Guideline, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21279

<b>Temperature range</b>	fixed installation -25°C to +75°C during installation -25°C to +75°C UL (CM) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 57.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 115.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 48 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 62%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.34 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation
- halogen-free
- flame-retardant, low smoke development

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2

## APPLICATION

HELUKAT® PROFInet A CAT.5e SF/UTP FRNC STATIC for fixed installation in industrial networks, rugged. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cable listed here corresponds to PROFInet Type A in halogen free and flame retardant design.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805653	2 x 2 x AWG 22/1	0.32	1.5	6.5	32.0	65.0

# HELUKAT® PROFinet A CAT.5e SF/UTP PE STATIC ARMoured

PROFinet Type A, armoured, for outdoor use



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-5, PROFinet Guideline

<b>Temperature range</b>	fixed installation -40°C to +70°C during installation -20°C to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 57.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 115.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 62%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 2.14 MJ/m
<b>Minimum bending radius</b>	during installation 10x Outer-Ø fixed installation 5x Outer-Ø

## CABLE STRUCTURE

- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Inner sheath: PVC
- Steel tape, galvanised
- Outer sheath: PE
- Sheath colour: black
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation, weathering effects, microbes, coolants, acids, alkalis
- for outdoor use

## TESTS

- certifications and approvals: EAC

## APPLICATION

HELUKAT® PROFinet A CAT.5e SF/UTP PE STATIC ARMoured for fixed installation in industrial networks. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The cables listed here correspond to PROFinet Type A and thanks to their special construction with PVC inner sheath/PE outer sheath ideal for areas with rodent problems.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	5.2	6.9	15.0	19.5
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.8	58.1	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
801650	2 x 2 x AWG 22 / 1	0.32	1.5	9.3	31.0	124.0

# HELUKAT® PROFINet B CAT.5e SF/UTP PVC FLEX



PROFINet Type B, FastConnect (SK) capable, highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guidline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

<b>Temperature range</b>	flexible -20°C to +60°C fixed installation -40°C to +80°C UL (CMG) to +75°C UL (AWM) to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 57.5 Ohm/km
<b>Loop resistance at 20°C</b>	max. 115.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 48 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 65%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.96 MJ/m
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed installation 5x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, weathering effects, microbes
- highly flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- CPR-class: Eca
- certifications and approvals: EAC

## APPLICATION

HELUKAT® PROFINet B CAT.5e SF/UTP PVC FLEX for use on moving parts. The cables listed here correspond to the PROFINet classifications Type B for moving cables and are designed to withstand mechanical loads.

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800654	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	32.0	67.0

# HELUKAT® PROFINet B CAT.5e SF/UTP FRNC FLEX



PROFINet Type B, FastConnect (SK) capable, flame-retardant, low smoke



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21279

<b>Temperature range</b>	flexible -25°C to +75°C fixed installation -40°C to +75°C UL (CM) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 60.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 120.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 52 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 65%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.32 MJ/m
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed installation 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation, microbes
- halogen-free
- flame-retardant, low smoke development

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- CPR-class: Dca

## ■ APPLICATION

HELUKAT® PROFINet B CAT.5e SF/UTP FRNC FLEX for flexible use. The cable listed here correspond to the PROFINet classification Type B and can be used in areas with requirement of halogen-free.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

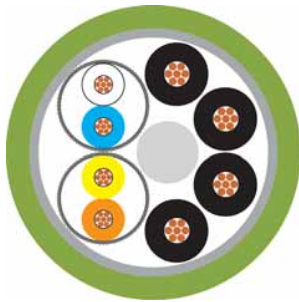
Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805654	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	32.0	65.0

# Industrial Ethernet

PROFINet Type B flexible hybrid

**HELUKAT**<sup>®</sup>

FRNC



## Type

### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Mobile use

### 2x2x0,75 mm (stranded)+ 4x1,5qmm

Copper, bare (AWG 22/7)  
Copper, bare (AWG 16/84)  
Foam-skin-PE  
PO  
wh, ye, bu, og  
Black  
Double core  
Polyester foil over stranded bundle  
AL-Foil + braid  
Polyester foil  
FRNC  
app. 10,3 mm ± 0,3 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
Conductor resistance, max.: 60 Ohm/km  
Insulation resistance, min.: 0,5 GOhm x km  
Loop resistance: 120 Ohm/km max.  
Mutual capacitance: 52 nF/km nom.  
Test voltage: 2 kV

## Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(dB/100m)	6,3	8,0	16,5	21,3
Next	(db)	50,3	47,2	38,4	35,3
ACR	(db)	43,7	39,0	21,5	13,7

## Technical data

Weight: app. 153 kg/km  
bending radius, repeated: 103 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 1,50 MJ/m  
Copper weight: 94,00 kg/km

## Norms

Applicable standards: PROFINet Guideline + IEC 61158-2  
Acc. to ISO/IEC 11801  
Acc. to EN 50173  
Category 5e  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
Corrosiveness acc. to EN50267-2-3  
Low-smoke acc. to EN50268-2  
UL Style: UL Style 21282

## Application

HELUKAT<sup>®</sup> PROFINet Type B Category 5e hybrid for flexible applications. The cable listed here corresponds to PROFINet Type B with integrated power supply in a cable with halogen-free and flame-retardant construction.

## Part no.

**801651**, PROFINet type B (SK)

Dimensions and specifications may be changed without prior notice.



# HELUKAT® PROFInet B CAT.5e SF/UTP FRNC SHIPLINE



PROFInet Type B, FastConnect (SK) capable, Marine and Offshore



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFInet Guidline, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM, UL-Std. 13 (PLTC)

<b>Temperature range</b>	flexible 0°C to +50°C fixed installation -25°C to +75°C UL (CM) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1500 V
<b>Conductor resistance at 20°C</b>	max. 60.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 120.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 52 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 66%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.45 MJ/m
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed installation 3x Outer-Ø

- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation
- halogen-free
- flame-retardant, low smoke development
- Suitable for naval and offshore applications

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- corrosiveness of combustion gases acc. to DIN VDE 0482-754-2 / DIN EN 60754-2 / IEC 60754-2
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- smoke density acc. to DIN VDE 0482-1034-1+2 / DIN EN 61034-1+2 / IEC 61034-1+2
- certifications and approvals:  
EAC  
DNV

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

## APPLICATION

HELUKAT® PROFInet B CAT.5e SF/UTP FRNC SHIPFLEX designed specially for marine/offshore applications.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802185	2 x 2 x AWG 22 /7	0.35	0.75	1.5	6.5	32.0	64.0

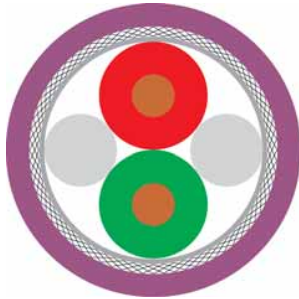


# BUS Cables

Profibus L2 indoor

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,8 mm ± 0,2 mm  
Grey similar to RAL 7001

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,8 mm ± 0,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
5 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
5 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 69 kg/km  
120 mm  
-40°C  
+70°C  
0,99 MJ/m  
24,00 kg/km

app. 69 kg/km  
120 mm  
-40°C  
+70°C  
0,99 MJ/m  
24,00 kg/km

## Norms

Applicable standards:  
  
UL Style:  
CSA standard:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
CSA FT1

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
CSA FT1

## Application

HELUKABEL® Profibus L2 Indoor is designed for fixed indoor installation in Profibus industrial networks. Depending on the application, the colour grey (special colour) or violet (standard colour) is available. Otherwise, the technical characteristics of the two products are identical.

## Part no.

**80384**, Profibus L2

**81448**, Profibus L2

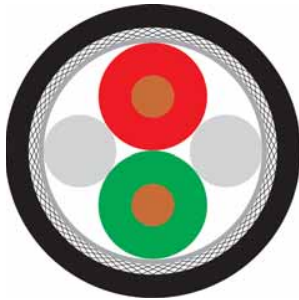
Dimensions and specifications may be changed without prior notice.

# BUS Cables

PROFIBUS L2 Outdoor + Industry

 **HELUKABEL®**

PE + PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, outdoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PE  
app. 8,0 mm ± 0,4 mm  
Black similar to RAL 9005

## Industrial Area 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Petrol similar to RAL 5018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 64 kg/km  
120 mm  
-40°C  
+70°C  
2,26 MJ/m  
24,00 kg/km

app. 67 kg/km  
120 mm  
-40°C  
+70°C  
1,52 MJ/m  
24,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® Profibus L2 Outdoor + Industry are special cables for use in Profibus industrial networks. The Outdoor version is designed for use in open-air environments, i.e. can withstand wind, weather and sun (not for burial directly in the ground). The Industry version is used in fixed installation applications in harsh industrial environment. Mechanically, this product exhibits excellent resistance to mineral oils, greases and cooling lubricants and has good microbe and hydrolysis resistance.

## Part no.

**80792**, Profibus L2

**81186**, Profibus L2

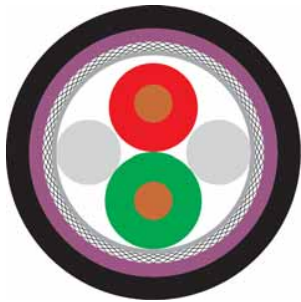
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus L2 direct Burial without + with Armouring



PE



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Direct burial 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
-  
PE  
app. 10,0 mm ± 0,2 mm  
Black similar to RAL 9005

## Direct burial 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Cell PE  
rd, gn  
2 cores + 2 fillers stranded together  
-  
PVC  
Al-Foil  
Cu braid, tinned  
Steel band  
PE  
app. 10,6 mm ± 0,5 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
-  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
3 MHz < 22,0 dB/km  
20 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
5 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
250 V  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 92 kg/km  
150 mm  
-40°C  
+80°C  
2,657 MJ/m  
24,00 kg/km

app. 132 kg/km  
165 mm  
-40°C  
+80°C  
2,40 MJ/m  
24,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170

Profibus acc. to DIN 19245 T3 and EN50170

## Application

HELUKABEL® Profibus L2 Direct Burial cables without + with armouring are special cables in the Profibus industrial networks. The version without armouring is for normal and direct cable burial in the ground. The version with steel tape armouring offers additional protection against rodents and is the right choice for regions with such animals.

## Part no.

**82824**, Profibus ERD

**802177**, Profibus L2

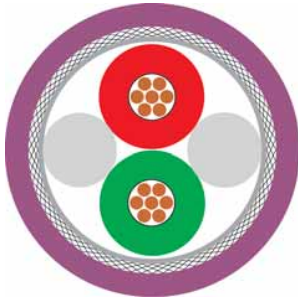
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus L2 7-wire

 **HELUKABEL®**

PVC



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Mobile use

### 1x2x0.64 mm (stranded)

Copper, bare (AWG 24/7)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,8 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 150 Ohm ± 10 %  
Conductor resistance, max.: 80 Ohm/km  
Insulation resistance, min.: 2 GOhm x km  
Loop resistance: 160 Ohm/km max.  
Mutual capacitance: 30 nF/km nom.  
Test voltage: 1,5 kV  
Attenuation: 9,6 kHz < 2,9 dB/km  
38,4 kHz < 4,6 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

## Technical data

Weight: app. 70 kg/km  
bending radius, repeated: 94 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 1,20 MJ/m  
Copper weight: 24,00 kg/km

## Norms

Applicable standards: Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. IEC 60332-2-1  
UL Style: UL Style 2571

## Application

HELUKABEL® Profibus L2 7-wire for mobile applications in Profibus industrial networks. With its core design and the special PVC sheath, the type described here is suitable for normal mobile applications.

## Part no.

**800648**, Profibus L2

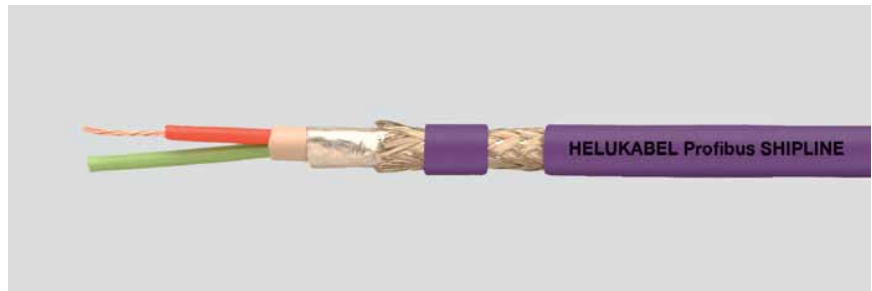
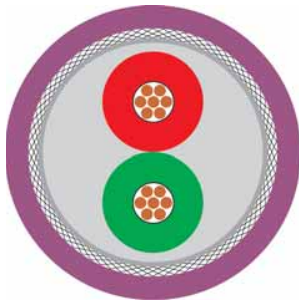
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus fixed installed SHIPLINE + High Temperature 180°C



X-FRNC + FEP



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Marine and Offshore 1x2x0.75 mm (stranded)

Copper, bare (AWG 22/7)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Al-Foil  
Cu braid, tinned  
X-FRNC  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## High temperature areas 1x2x0.64 mm

Copper, bare (AWG 22/1)  
FEP  
rd, gn  
2 cores + 2 fillers stranded together  
-  
Al-Foil  
Cu braid, tinned  
FEP  
app. 7,2 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1,6 GOhm x km  
110 Ohm/km max.  
29 nF/km nom.  
60 V  
1 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1,6 GOhm x km  
110 Ohm/km max.  
28 nF/km nom.  
250 V  
3,6 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 84 kg/km  
80 mm  
-25°C  
+80°C  
1,26 MJ/m  
35,00 kg/km

app. 64 kg/km  
52 mm  
-50°C  
+180°C  
0,30 MJ/m  
24,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-3

## Application

HELUKABEL® Profibus Shipline is designed for marine/offshore applications and **certified by German Lloyd**. Thanks to use of stranded conductors, this cable can be moved occasionally. The High-Temperature version is used in fixed installations with demanding temperature requirements, e.g. in the vicinity of a hot furnace or near welding activities.

## Part no.

**802178**, Profibus SHIPLINE

**802179**, Profibus high temperature

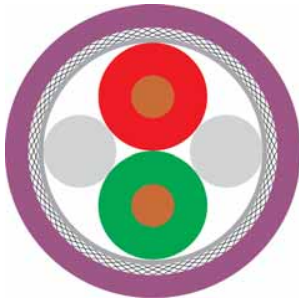
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus fixed installed High Temperature +105°C or +200°C



PVC + FRNC PH120



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,8 mm ± 0,2 mm  
Violet similar to RAL 4001

## High temperature areas 1x2xAWG23/1

Copper, bare (AWG 23/1)  
Rubber compound  
rd, gn  
2 cores + 2 fillers stranded together  
-  
AL-Foil + braid  
FRNC  
app. 8,3 mm ± 0,3 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
5 GOhm x km  
110 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
Frequency at +20°C  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
74,5 Ohm/km  
2 GOhm x km  
149 Ohm/km max.  
36 nF/km nom.  
1,5 kV  
Frequency at +20°C at +200°C  
9,6 kHz < 3,0 dB/km < 8,0 dB/km  
38,4 kHz < 5,0 dB/km < 12,0 dB/km  
4 MHz < 22,0 dB/km < 41,0 dB/km  
16 MHz < 42,0 dB/km < 90,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 69 kg/km  
120 mm  
-40°C  
+105°C  
0,99 MJ/m  
24,00 kg/km

app. 88 kg/km  
130 mm  
-50°C  
+200°C  
1,46 MJ/m  
28,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® Profibus L2 105°C is for fixed installation indoor and enhanced temperature resistance.

The version Profibus L2 SR 200°C Fire Resistant has additional circuit integrity for 120 minutes (EN50200 PH120) and the temperature range up to +200°C for fix indoor installation.

## Part no.

**805705**, Profibus high temperature

**805706**, Profibus high temperature with circuit integrity

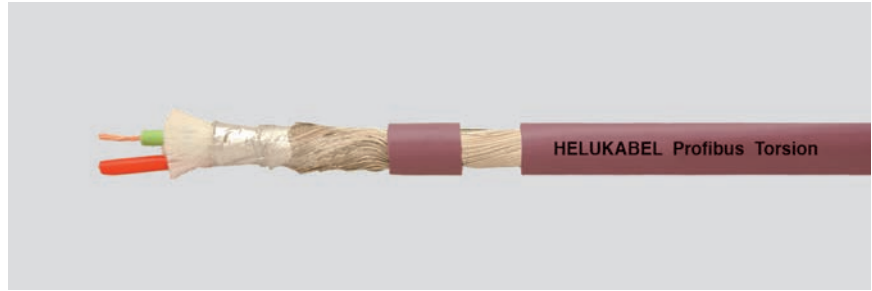
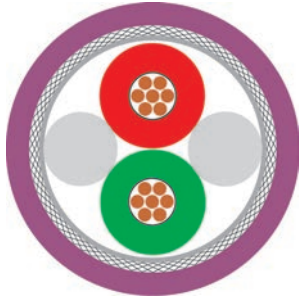
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus L2 high flexible TORSION + FESTOON

**HELUKABEL®**

PUR + PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsional applications 1x2x0.80 mm (stranded)

Copper, bare (AWG 22/19)  
Foam-skin-PE  
rd, gn  
2 cores + filler  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## FESTOON 1x2x0.65 mm (stranded)

Copper, bare (AWG 23/19)  
Cell PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,3 mm  
Petrol similar to RAL 5018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Relative propagation velocity:  
Attenuation:

150 Ohm ± 10 %  
57,6 Ohm/km  
5 GOhm x km  
115,2 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
-  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 3,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

150 Ohm ± 10 %  
66,5 Ohm/km  
1,6 GOhm x km  
133 Ohm/km max.  
28 nF/km nom.  
2 kV  
81 %  
9,6 kHz ≤ 3,0 dB/km  
38,4 kHz ≤ 4,0 dB/km  
4 MHz ≤ 25,0 dB/km  
16 MHz ≤ 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 66 kg/km  
120 mm  
-30°C  
+70°C  
0,89 MJ/m  
32,00 kg/km

app. 64 kg/km  
70 mm  
-40°C  
+60°C  
1,09 MJ/m  
23,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

UL Style:

CMG 75°C FT4 or CL2 or AWM 21694 600V  
SUN RES  
CSA FT 4

CSA standard:

-

## Application

HELUKABEL® Profibus Torsion is used in mobile applications in robots. The special torsion construction allows this cable to be twisted (torsioned) and is halogen-free thanks to use PU sheath. The Festoon version is used for hanging/moving loads in garland applications.

## Part no.

**800109**, Profibus L2

**800649**, Profibus L2

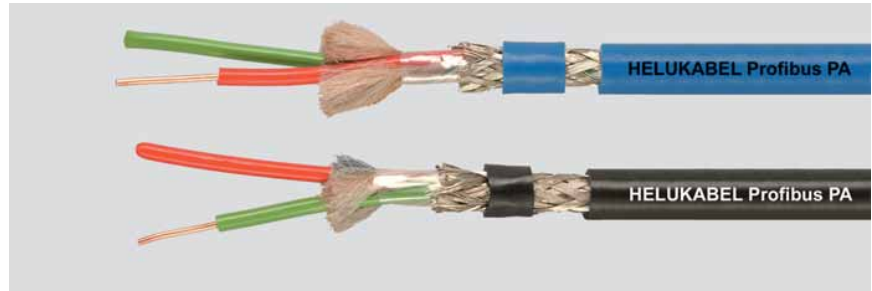
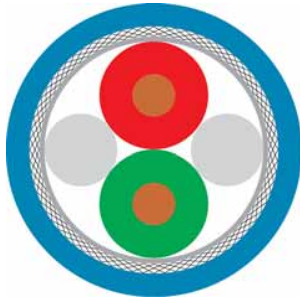
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus PA fixed installed

**HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Hazardous areas 1x2x1.0/2.55 mm

Copper, bare (AWG 18/1)  
PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,6 mm ± 0,2 mm  
Blue similar to RAL 5015

## Non-hazardous areas 1x2x1.0/2.55 mm

Copper, bare (AWG 18/1)  
PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 7,6 mm ± 0,2 mm  
Black

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

100 Ohm ± 20 %  
22 Ohm/km  
1 GOhm x km  
44 Ohm/km max.  
60 nF/km nom.  
300 V  
2,5 kV  
39 kHz ≤ 3,0 dB/km

100 Ohm ± 20 %  
22 Ohm/km  
1 GOhm x km  
44 Ohm/km max.  
60 nF/km nom.  
300 V  
2,5 kV  
39 kHz ≤ 3,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 76 kg/km  
140 mm  
-30°C  
+80°C  
0,95 MJ/m  
44,00 kg/km

app. 76 kg/km  
140 mm  
-30°C  
+80°C  
0,95 MJ/m  
44,00 kg/km

## Norms

Applicable standards:  
UL Style:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

## Application

HELUKABEL® Profibus PA is used for normal requirements in the process automation field (chemical industry). The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/ Class II, EX-i/ EN 60079-14). For other applications, the colour black is usually selected.

## Part no.

**82835**, Profibus PA

**82836**, Profibus PA

Dimensions and specifications may be changed without prior notice.

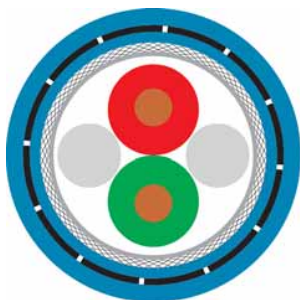


# BUS Cables

Profibus PA fixed installed armoured



PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Hazardous areas 1x2x1.0/2.55 mm

Copper, bare (AWG 18/1)  
PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
Steel band  
PVC  
app. 10,2 mm ± 0,2 mm  
Blue similar to RAL 5015

## Non-hazardous areas 1x2x1.0/2.55 mm

Copper, bare (AWG 18/1)  
PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
Steel band  
PVC  
app. 10,2 mm ± 0,2 mm  
Black

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

100 Ohm ± 15 %  
22 Ohm/km  
1 GOhm x km  
44 Ohm/km max.  
55 nF/km nom.  
300 V  
2,5 kV  
39 kHz ≤ 3,0 dB/km

100 Ohm ± 15 %  
22 Ohm/km  
1 GOhm x km  
44 Ohm/km max.  
55 nF/km nom.  
300 V  
2,5 kV  
39 kHz ≤ 3,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 170 kg/km  
140 mm  
-20°C  
+70°C  
1,95 MJ/m  
45,00 kg/km

app. 170 kg/km  
200 mm  
-20°C  
+70°C  
1,95 MJ/m  
45,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. IEC 60332-2-1

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. IEC 60332-2-1

## Application

HELUKABEL® Profibus PA Armoured is used in areas with rodent such as rats, nutria etc. but also offers additional protection against all other outside mechanical influences thanks to its steel tape armouring. The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/ Class II, EX-i/EN 60079-14). For other applications, the colour black is usually used.

## Part no.

**802180**, Profibus PA

**802181**, Profibus PA

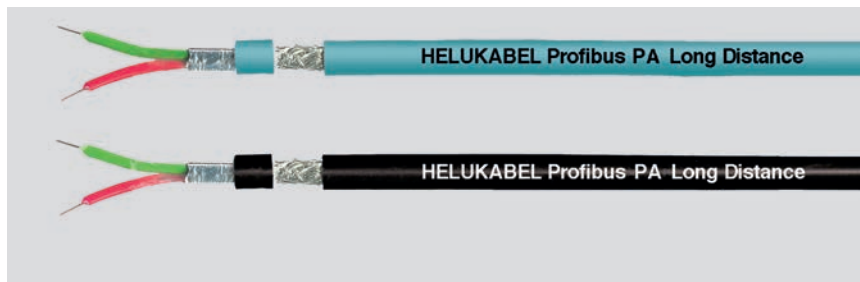
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus PA LD fixed installed



PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Hazardous areas 1x2x1.6/3.2 mm

Copper, bare (AWG 16/7)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 9,5 mm ± 0,3 mm  
Blue similar to RAL 5015

## Non-hazardous areas 1x2x1.6/3.2 mm

Copper, bare (AWG 16/7)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 9,5 mm ± 0,3 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

100 Ohm ± 20 %  
14,6 Ohm/km  
1 GOhm x km  
29,2 Ohm/km max.  
60 nF/km nom.  
300 V  
2,5 kV  
39 kHz ≤ 2,7 dB/km

100 Ohm ± 20 %  
14,6 Ohm/km  
1 GOhm x km  
29,2 Ohm/km max.  
60 nF/km nom.  
300 V  
2,5 kV  
39 kHz ≤ 2,7 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 131 kg/km  
100 mm  
-40°C  
+70°C  
1,57 MJ/m  
62,00 kg/km

app. 131 kg/km  
100 mm  
-40°C  
+70°C  
1,57 MJ/m  
62,00 kg/km

## Norms

Applicable standards:  
UL Style:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2  
UL Style 2571

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2  
UL Style 2571

## Application

HELUKABEL® Profibus PA Long Distance is used for especially long transmission distances in process networks. It uses a larger conductor cross-section to satisfy the attenuation requirements. The colour blue identifies it as suitable for use in potentially explosive areas (and ATEX/Class II, EX-i/EN 60079-14). For other applications, the colour black is usually selected.

## Part no.

**800650**, Profibus PA

**800715**, Profibus PA

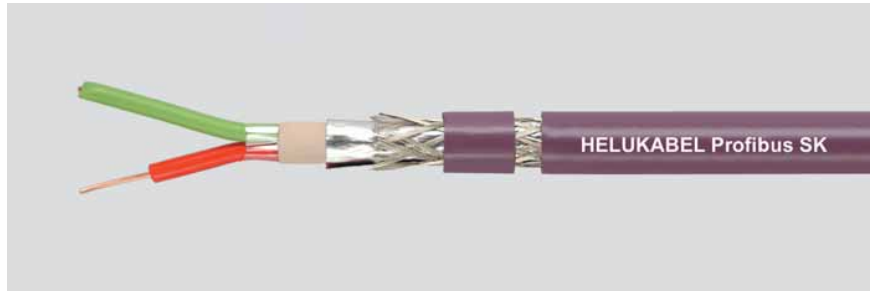
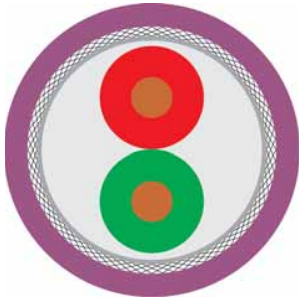
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus SK fixed installed Indoor + Outdoor



PVC + PE



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Fixed installation, outdoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
PE  
app. 8,0 mm ± 0,4 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4,0 MHz < 22,0 dB/km  
16,0 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 79 kg/km  
120 mm  
-40°C  
+80°C  
1,068 MJ/m  
24,00 kg/km

app. 65 kg/km  
120 mm  
-20°C  
+70°C  
1,451 MJ/m  
24,00 kg/km

## Norms

Applicable standards:  
  
UL Style:  
CSA standard:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-3  
CMG 75°C or CL3 or AWM 21694 600V  
CSA FT 4

Profibus acc. to DIN 19245 T3 and EN50170  
-  
-

## Application

HELUKABEL® Profibus SK Indoor + Outdoor have a special structure for processing with the Fast Connect Stripping Tool from Siemens. The indoor version is used for normal requirements in fixed installation applications in equipment; the Outdoor version is used in open-air applications, i.e. can withstand wind, weather and sun (not for burial directly in the ground).

## Part no.

**81903**, Profibus SK

**81904**, Profibus SK

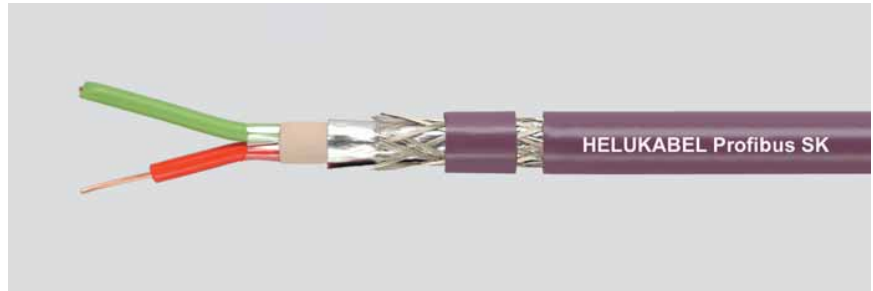
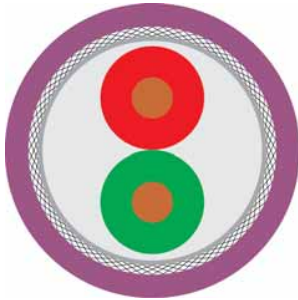
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus SK fixed installed FRNC + Robust



FRNC + PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Al-Foil  
Cu braid, tinned  
FRNC  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Industrial Area 1x2x0.64 mm

Copper, bare (AWG 22/1)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

150 Ohm ± 10 %  
55 Ohm/km  
1 GOhm x km  
110 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 4,0 dB/km  
4 MHz < 22,0 dB/km  
16 MHz < 42,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 73 kg/km  
160 mm  
-25°C  
+70°C  
1,203 MJ/m  
24,00 kg/km

app. 71 kg/km  
120 mm  
-40°C  
+70°C  
1,574 MJ/m  
24,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1  
CM 750C (shielded)

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
AWM Style 20236 AWM I/II A/B 80°C 30V  
FT1  
CSA FT1

UL Style:

CSA standard:

## Application

HELUKABEL® Profibus SK FRNC + Robust has a special structure for processing with the Fast Connect Stripping Tool from Siemens. The FRNC version is used to satisfy halogen-free and flame-retardant requirements in buildings. The Robust version is used in harsh industrial environments and offers excellent resistance to mineral oils, greases and cooling lubricants.

## Part no.

**81501**, Profibus SK

**81905**, Profibus SK

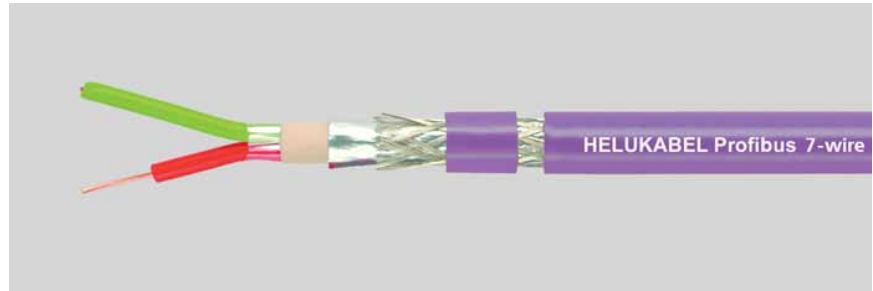
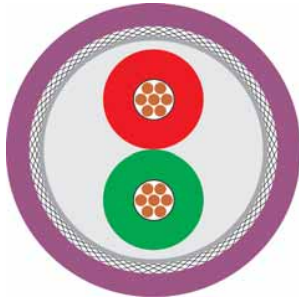
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus SK 7-wire

**HELUKABEL®**

PVC + FRNC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Mobile use 1x2x0.64 mm (stranded)

Copper, bare (AWG 24/7)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,5 mm  
Violet similar to RAL 4001

## Mobile use 1x2x0.64 mm (stranded)

Copper, bare (AWG 24/7)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
FRNC  
Al-Foil  
Cu braid, tinned  
FRNC  
app. 8,0 mm ± 0,5 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
93 Ohm/km  
5 GOhm x km  
186 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 2,9 dB/km  
38,4 kHz < 4,6 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

150 Ohm ± 10 %  
93 Ohm/km  
5 GOhm x km  
186 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 2,9 dB/km  
38,4 kHz < 4,6 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 70 kg/km  
64 mm  
-40°C  
+80°C  
1,20 MJ/m  
26,00 kg/km

app. 70 kg/km  
64 mm  
-5°C  
+50°C  
1,47 MJ/m  
26,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant CSA FT4  
CMG FT4

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

UL Style:

## Application

HELUKABEL® Profibus SK 7-wire for mobile applications in Profibus industrial networks. With its core design and the special PVC sheath, the type described here is suitable for normal mobile applications. The cable is optimized for use of the fast contact stripping tool. The FRNC edition fulfill the parameter halogen free.

## Part no.

**805656**, Profibus SK 7-wire PVC

**805657**, Profibus SK 7-wire FRNC

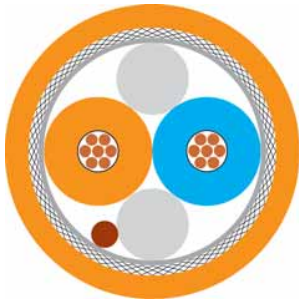
Dimensions and specifications may be changed without prior notice.

# BUS Cables

FOUNDATION™ Fieldbus flexible Basic

 **HELUKABEL®**

PVC



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## process automation

### 1x2x1.2/2,55-100 LI

Copper, bare (AWG 18/7)  
PO  
or, bl  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
yes  
PVC  
app. 8,0 mm ± 0,3 mm  
Orange similar to RAL 2003

## Electrical data

Characteristic impedance: 100 Ohm ± 20 Ohm  
Conductor resistance, max.: 22 Ohm/km  
Insulation resistance, min.: 5 GOhm x km  
Loop resistance: 44 Ohm/km max.  
Mutual capacitance: 60 nF/km nom.  
Nominal voltage: 300 V  
Test voltage: 1,5 kV  
Attenuation: 39 kHz ≤ 3,4 dB/km

## Technical data

Weight: app. 85 kg/km  
bending radius, repeated: 80 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 1,22 MJ/m  
Copper weight: 45,00 kg/km

## Norms

Applicable standards: Foundation Fieldbus Spec. FF-816-1.4  
Flame-retardant acc. to IEC 60332-3  
UL Style: CMG 75°C PLTC FT4  
CSA standard: CSA FT 4

## Application

HELUKABEL® FOUNDATION™ Fieldbus Basic for normal requirements in this industrial networks. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

## Part no.

**803354**, Foundation™ Fieldbus Basic

Dimensions and specifications may be changed without prior notice.

# BUS Cables

FOUNDATION™ Fieldbus flexible Type A + gnye

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## process automation 1x2x1.1/2,85-100 LI + 1x0,8 gnye

Copper, bare (AWG 18/41)  
Copper, bare (AWG 18/41)  
XLPE ray cross-linking  
PVC  
bu, bn  
gn/ye  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
PVC  
app. 7,9 mm ± 0,3 mm  
Yellow

## Electrical data

Characteristic impedance: 100 Ohm ± 20 Ohm  
Conductor resistance, max.: 24 Ohm/km  
Insulation resistance, min.: 2 GOhm x km  
Loop resistance: 48 Ohm/km max.  
Mutual capacitance: 65 nF/km nom.  
Nominal voltage: 300 V  
Test voltage: 1,5 kV  
Attenuation: 39 kHz ≤ 3,4 dB/km

## Technical data

Weight: app. 84 kg/km  
bending radius, repeated: 80 mm  
Operating temperature range min.: -25°C  
Operating temperature range max.: +105°C  
Caloric load, approx. value: 1,00 MJ/m  
Copper weight: 49,00 kg/km

## Norms

Applicable standards: Foundation Fieldbus Spec. FF-816-1.4  
Flame-retardant acc. to IEC 60332-3  
UL Style: CMG 105° or CL3 FT4  
CSA standard: CSA FT 4

## Application

HELUKABEL® FOUNDATION™ Fieldbus Type A + gnye offers an additional conductor in the structure in compliance with the FF specification. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

## Part no.

**801191**, Foundation Fieldbus FF A

Dimensions and specifications may be changed without prior notice.

# BUS Cables

FOUNDATION™ Fieldbus flexible Type A armoured

 **HELUKABEL®**

PVC



## Type

### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## process automation

### 1x2x1.1/2,85-100 LI + 1x0,8 gnye, armoured

Copper, bare (AWG 18/41)  
Copper, bare (AWG 18/37)  
XLPE ray cross-linking  
PVC  
bu, bn  
gn/ye  
Double core  
-  
Al-Foil  
Al-Foil  
yes  
Corrugated copper tube  
PVC  
app. 12,3 mm ± 0,3 mm  
Yellow

## Electrical data

Characteristic impedance: 100 Ohm ± 20 Ohm  
Conductor resistance, max.: 24 Ohm/km  
Insulation resistance, min.: 2 GOhm x km  
Loop resistance: 48 Ohm/km max.  
Mutual capacitance: 65 nF/km nom.  
Nominal voltage: 300 V  
Test voltage: 1,5 kV  
Attenuation: 39 kHz ≤ 3,4 dB/km

## Technical data

Weight: app. 187 kg/km  
bending radius, repeated: 130 mm  
Operating temperature range min.: -25°C  
Operating temperature range max.: +105°C  
Caloric load, approx. value: 1,65 MJ/m  
Copper weight: 125,00 kg/km

## Norms

Applicable standards: Foundation Fieldbus Spec. FF-816-1.4  
Flame-retardant acc. to IEC 60332-3  
UL Style: CMG 105°C or PLTC FT4 Sun Res  
CSA standard: CSA FT 4

## Application

HELUKABEL® FOUNDATION™ Type A Armoured finds use in areas with rodents such as rats, nutria etc. but also offers additional protection against all other outside mechanical influences thanks to its corrugated tape armouring. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

## Part no.

**801192**, Foundation Fieldbus FF A

Dimensions and specifications may be changed without prior notice.



# BUS Cables

FOUNDATION™ Fieldbus flexible Type A

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## process automation 1x2x1.1/2,85-100 LI

Copper, bare (AWG 18/37)  
XLPE ray cross-linking  
bu, bn  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
PVC  
app. 7,9 mm ± 0,3 mm  
Yellow

## Electrical data

Characteristic impedance: 100 Ohm ± 20 Ohm  
Conductor resistance, max.: 24 Ohm/km  
Insulation resistance, min.: 2 GOhm x km  
Loop resistance: 48 Ohm/km max.  
Mutual capacitance: 65 nF/km nom.  
Nominal voltage: 300 V  
Test voltage: 1,5 kV  
Attenuation: 39 kHz ≤ 3,4 dB/km

## Technical data

Weight: app. 89 kg/km  
bending radius, repeated: 80 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +105°C  
Caloric load, approx. value: 1,05 MJ/m  
Copper weight: 42,00 kg/km

## Norms

Applicable standards: Foundation Fieldbus Spec. FF-816-1.4  
Flame-retardant acc. to IEC 60332-3  
UL Style: CMG 105° or CL3 FT4  
CSA standard: CSA FT 4

## Application

HELUKABEL® FOUNDATION™ Fieldbus Type A for normal requirements in this industrial network. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

## Part no.

**801193**, Foundation Fieldbus FF A

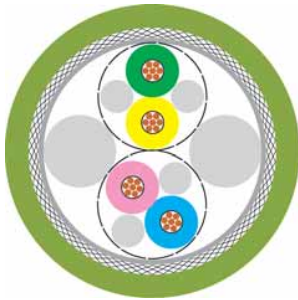
Dimensions and specifications may be changed without prior notice.

# BUS Cables

HMCB200 fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 2x2x0,22qmm

Copper, bare (AWG 24/7)  
Foam-skin-PE  
gn, ye, pk, bu  
Double core  
Polyester foil over stranded bundle  
Al-Foil  
AL-Foil + braid  
PVC  
app. 6,85 mm ± 0,15 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz  
Conductor resistance, max.: 94,2 Ohm/km  
Insulation resistance, min.: 1 GOhm x km  
Loop resistance: 188,4 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Test voltage: 0,5 kV

## Typical values

Frequency (MHz)	10	16	62,5	100
Attenuation (db/100m)	8,0	10,0	20,0	27,0
Next (db)	56,0	53,0	43,0	40,0
ACR (db)	48,0	43,0	23,0	13,0

## Technical data

Weight: app. 63 kg/km  
bending radius, repeated: 70 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +80°C  
Caloric load, approx. value: 0,92 MJ/m  
Copper weight: 35,00 kg/km

## Norms

Applicable standards: Flame-retardant acc. to IEC 60332-1-2  
UL Style: AWM Style 2502 AWM I/II A/B 80°C 30V FT1

## Application

HELUKABEL® HMCB200 for fixed installation and slight occasional movement, range up to 100m. This cable is used in Siemens Systems. Typical plugs are RJ45 Industrial IP20 Siemens or Y-Con RJ45 Yamaichi or round M-Connectors from Molex.

## Part no.

**802471**, HMCB200

Dimensions and specifications may be changed without prior notice.

\* Drive Cliq is registered trademark from Siemens AG.

# BUS-Cables

Multibus I, high flexible



## Type

### Cable structure

Profibus:	1 x 2 x AWG 22 mm <sup>2</sup> (Foam-Skin PO/rd/gn)
DeviceNet™:	2 x 2 x AWG 22 mm <sup>2</sup> (Foam-Skin PO/wh/bn, ye/gn)
Interbus:	2 x 2 x 0,25 (Foam-Skin PO/ gn/pk, ye/gn)
Power cores:	4 x 1 x 1,0 mm <sup>2</sup> (PO/rd, bl, bu, bn)
Protective earth core:	1,0 mm <sup>2</sup> (PO/gnye)
Stranding:	Single cores totally stranded together and filled with plastic elements
Total shielding:	PP vlies
Outer sheath material:	PUR, halogenfree
Cable external diameter:	app. 14,7 mm
Outer sheath colour:	violet similar to RAL 4001

### Electrical data

Characteristic impedance:	150 + - 15 Ohm (Profibus) 120 + - 12 Ohm (DeviceNet™) 100 + - 15 Ohm (Interbus)
Conductor resistance:	<= 20 Ohm/km (power cores + protection core) <= 70 Ohm/km (Profibus) <= 70 Ohm/km (DeviceNet™) <= 80 Ohm/km (Interbus)
Insulation resistance:	>= 500 Mohm x km (at 20° C)
Mutual capacitance:	30 pF/m nominal (Profibus) 40 pF/m nominal (DeviceNet™) 50 pF/m nominal (Interbus)
Testvoltage:	2500 V (core/ core) 1500 V (core/ screen)

### Mechanical data

Bending radius single:	<= 70 mm
Bending radius repeated:	<= 110 mm
Tensile strength static:	300 N
Tensile strength dynamic:	140 N
Oil resistance:	Diesel, IRM 902, Biohydran TM68, Ecocut HFN 10LE
Flame resistance:	IEC 60332-1, VW1/ FT1 acc. C-UL
FCKW free:	yes
Self extinguishable:	yes
Other attributes:	PVC free, free of lacquer wetting disturbing substances, siliconfree, resistant against PVC flexibiliser and cable fat RB1

### Thermal attributes

Operating temperature range:	- 40° C to + 80° C
Laying temperature range:	- 30° C to + 80° C

### Norms

Profibus standard, DeviceNet™ standard, Interbus standard

### UL-Style

VW1/ FT1 acc. C-UL, AWM style 20236

### Application

HELUKABEL® Multibus I is highly flexible with a special structure for use in cable carrier applications and robotics (use in acc. with HELU specification) in a PVC-free design. The Multibus I combines the Profibus / DeviceNet™ / Interbus bus systems as well as the power supply in a single hybrid cable.

### Part no.

**801652**, Multibus I, 15 cores

# BUS-Cables

Multibus II, high flexible

 **HELUKABEL®**

PUR



## Type Cable structure

Profibus:	1 x 2 x 0,34 mm <sup>2</sup> (Foam-Skin PO/rd/gn)
DeviceNet™:	4 x 2 x 0,34 mm <sup>2</sup> (Foam-Skin PE/ye, or, wh, bu-ye, or, wh, bu)
Power cores 1:	2 x 1,0 mm <sup>2</sup> (PO/rd, bl)
Power cores 2:	2 x 1,5 mm <sup>2</sup> (PO/bu, bn)
Protective earth core:	1,5 mm <sup>2</sup> (PO/gnye)
Stranding:	Single cores totally stranded together and filled with plastic elements
Total shielding:	PP vlies
Outer sheath material:	PUR, halogenfree
Cable external diameter:	app. 15,0 mm
Outer sheath colour:	violet similar to RAL 4001

## Electrical data

Characteristic impedance:	150 + -15 Ohm (Profibus) 100 + -15 Ohm (PROFINet)
Conductor resistance:	<= 20 Ohm/km (power cores + protection core) <= 70 Ohm/km (Profibus) <= 62 Ohm/km (PROFINet)
Insulation resistance:	>= 500 Mohm x km (at 20° C)
Mutual capacitance:	30 pF/m nominal (Profibus) 40 pF/m nominal (PROFINet)
Testvoltage:	2500 V (core/ core) 1500 V (core/ screen)

## Mechanical data

Bending radius single:	<= 70 mm
Bending radius repeated:	<= 110 mm
Tensile strength static:	300 N
Tensile strength dynamic:	140 N
Oil resistance:	Diesel, IRM 902, Biohydran TM68, Ecocut HFN 10LE
Flame resistance:	IEC 60332-1, VW1/ FT1 acc. C-UL
FCKW free:	yes
Self extinguishable:	yes
Other attributes:	PVC free, free of lacquer wetting disturbing substances, siliconfree, resistant against PVC flexibiliser and cable fat RB1

## Thermal attributes

Operating temperature range:	- 40° C to + 80° C
Laying temperature range:	- 20° C to + 80° C

## Norms

### UL-Style

### Application

Profibus standard, PROFINet standard

VW1/ FT1 acc. C-UL, AWM style 20236

HELUKABEL® Multibus II is highly flexible with a special structure for use in cable carrier applications and robotics (use in acc. with HELU specification) in a PVC-free design. The Multibus II (further development of Multibus I) combines the Profibus /Profinet bus systems as well as the power supply in a single hybrid cable.

## Part no.

**804115**, Multibus II, 15 cores

# BUS Cables

KH-BUS fixed installed



PVC + FRNC



## Type Cable structure

Inner conductor, power core:  
Inner conductor, data core:  
Core insulation, power core:  
Core insulation, data core:  
Core colours, power core:  
Core colours, data core:  
Stranding element, data core:  
Shielding, data pair:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Electrical data

Insulation resistance, min.:  
Mutual capacitance:  
Test voltage:

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

## Application

HELUKABEL® KH-BUS PVC + FRNC for fixed installation of patient calling systems. Simple and fast installation is an important factor there. For this reason, a 6-conductor hybrid cable is used to connect the individual components of the calling system. This cable is used for the power supply, speech and data transmission. The FRNC version is the right choice when a halogen-free installation is required.

## Part no.

Dimensions and specifications may be changed without prior notice.

## Hospital-Bus 2x1.5mm<sup>2</sup> (stranded) + 2x2x0.60 mm (solid)

Copper, bare  
Copper, tinned  
PVC  
PE  
rd, bu  
gn/ye, gy/pk  
Double core  
PP foil + aluminium-lined foil + PP foil  
yes  
PVC  
app. 8,0 mm ± 0,3 mm  
Green similar to RAL 6001

0,02 GOhm x km  
70 nF/km nom.  
2 kV

app. 90 kg/km  
120 mm  
-40°C  
+80°C  
1,01 MJ/m  
53,00 kg/km

## Hospital-Bus 2x1.5mm<sup>2</sup> (stranded) + 2x2x0.60 mm (solid)

Copper, bare  
Copper, tinned  
PE  
PE  
rd, bu  
gn/ye, gy/pk  
Double core  
PP foil + aluminium-lined foil + PP foil  
yes  
FRNC  
app. 8,0 mm ± 0,3 mm  
Green similar to RAL 6001

0,02 GOhm x km  
70 nF/km nom.  
2 kV

app. 93 kg/km  
120 mm  
-25°C  
+80°C  
0,86 MJ/m  
53,00 kg/km

**81085**, KH-BUS

**81447**, KH-BUS

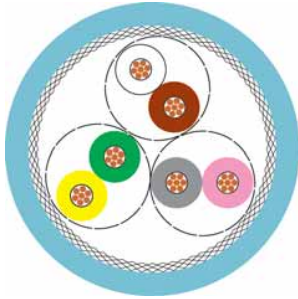
# BUS Cables

I-BUS fixed installed



**HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Inner conductor diameter 2:  
Core insulation:  
Core insulation 2:  
Core colours:  
Core colours 2:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 3x2x0.22 mm<sup>2</sup>

Copper, bare (AWG 24/7)  
-  
PE  
-  
wh/bn, gn/rd, ye/gn  
-  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, bare  
PVC  
app. 7,0 mm ± 0,3 mm  
Pastel turquoise similar to RAL 6034

## Fixed installation, indoor 3x2x0.22 mm<sup>2</sup> + 3x1.0 mm<sup>2</sup>

Copper, bare (AWG 24/7)  
Copper, bare (AWG 17/56)  
PE  
PE  
wh/bn, gn/rd, ye/gn  
bu, rd, gnye  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, bare  
PVC  
app. 8,0 mm ± 0,3 mm  
Pastel turquoise similar to RAL 6034

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

100 Ohm ± 15 Ohm  
96 Ohm/km  
1 GOhm x km  
192 Ohm/km max.  
60 nF/km nom.  
1 kV  
256 kHz < 15,0 dB/km  
772 kHz < 24,0 dB/km  
1 MHz < 27,0 dB/km  
4 MHz < 52,0 dB/km  
10 MHz < 84,0 dB/km  
16 MHz < 112,0 dB/km  
20 MHz < 119,0 dB/km

100 Ohm ± 15 Ohm  
96 Ohm/km  
1 GOhm x km  
192 Ohm/km max.  
60 nF/km nom.  
1 kV  
256 kHz < 15,0 dB/km  
772 kHz < 24,0 dB/km  
1 MHz < 27,0 dB/km  
4 MHz < 52,0 dB/km  
10 MHz < 84,0 dB/km  
16 MHz < 112,0 dB/km  
20 MHz < 119,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 70 kg/km  
110 mm  
-40°C  
+70°C  
1,20 MJ/m  
35,00 kg/km

app. 96 kg/km  
120 mm  
-40°C  
+70°C  
1,31 MJ/m  
68,00 kg/km

## Norms

Applicable standards:  
UL Style:

interbus specification 2.0, IEC61158  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

interbus specification 2.0, IEC61158  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

## Application

HELUKABEL® I-Bus is designed for fixed installation and occasional motion, for normal Interbus installation and as a hybrid cable with integrated power supply.

## Part no.

**80778**, I-BUS

**81202**, I-BUS

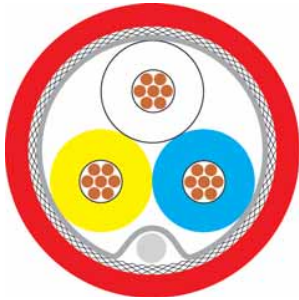
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CC-Link BUS fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 3x0.5 mm<sup>2</sup>

Copper, bare (AWG 20/7)  
Foam-skin-PE  
wh, bu, ye  
Triple core  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
yes  
PVC  
app. 7,7 mm ± 0,3 mm  
Red

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

110 Ohm ± 15 Ohm  
37,8 Ohm/km  
10 GOhm x km  
75,6 Ohm/km max.  
60 nF/km nom.  
2 kV  
1 MHz < 16,0 dB/100m  
5 MHz < 35,0 dB/100m

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 77 kg/km  
120 mm  
-40°C  
+75°C  
1,10 MJ/m  
40,00 kg/km

## Norms

Applicable standards:

UL Style:  
CSA standard:

CC-Link Specification 1.10  
Flame-retardant acc. IEC 60332-2-1  
CM 75°C or PLTC  
CSA FT 4

## Application

HELUKABEL® CC-Link Bus PVC for fixed installation. The primary market is Asia, but the USA and the United Kingdom are using CC-Link increasingly. The cable has the appropriate approvals for these markets. A version with power supply conductors is optionally available. It is used particularly in channels.

## Part no.

**800497**, CC-Link communications cable

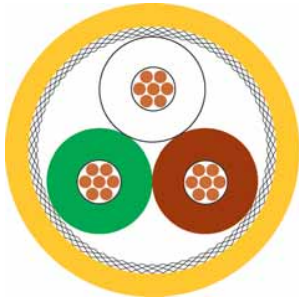
Dimensions and specifications may be changed without prior notice.

# BUS Cables

SafetyBUS fixed installed + high flexible



FRNC + PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 3x0,75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 18/24)  
Foam-skin-PE  
wh, bn, gn  
Triple core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
FRNC  
app. 7,5 mm ± 0,3 mm  
Yellow similar to RAL 1003

## Drag chain applications 3x0,75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 18)  
Foam-skin-PE  
wh, bn, gn  
Triple core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 7,8 mm ± 0,2 mm  
Yellow similar to RAL 1003

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

110 Ohm ± 10 Ohm  
27,7 Ohm/km  
5 GOhm x km  
52 Ohm/km max.  
45 nF/km nom.  
250 V  
3 kV  
1 MHz < 1,6 dB/km  
5 MHz < 3,4 dB/km  
10 MHz < 5,6 dB/km  
16 MHz < 7,5 dB/km

110 Ohm ± 10 Ohm  
26 Ohm/km  
5 GOhm x km  
52 Ohm/km max.  
45 nF/km nom.  
250 V  
3 kV  
1 MHz < 1,6 dB/km  
5 MHz < 3,4 dB/km  
10 MHz < 5,6 dB/km  
16 MHz < 7,5 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 68 kg/km  
75 mm  
-25°C  
+80°C  
0,72 MJ/m  
50,00 kg/km

app. 65 kg/km  
80 mm  
-30°C  
+80°C  
0,76 MJ/m  
50,00 kg/km

## Norms

Applicable standards:

abuttet at SafetyBUS p technical guidelines  
copper wires 1.0  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-3  
-

abuttet at SafetyBUS p technical guidelines  
copper wires 1.0  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)

UL Style:

## Application

HELUKABEL® SafetyBUS FRNC for fixed installation; the PUR version is intended for use in cable carriers. Both versions are halogen-free.

## Part no.

**800651**, SafetyBus p

**800652**, SafetyBus p

Dimensions and specifications may be changed without prior notice.

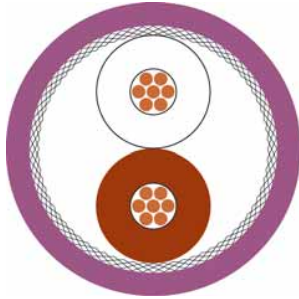


# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.22 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/7)  
Cell PE  
wh/bn  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 5,4 mm ± 0,2 mm  
Violet similar to RAL 4001

## Fixed installation, indoor 4x1x0.22 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/7)  
Cell PE  
wh, bn, gn, ye  
Star quad  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 6,9 mm ± 0,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:

120 Ohm ± 10 %  
88 Ohm/km  
1 GOhm x km  
175,2 Ohm/km max.  
58 nF/km nom.  
30 V  
1,5 kV

120 Ohm ± 10 %  
88 Ohm/km  
1 GOhm x km  
175,2 Ohm/km max.  
58 nF/km nom.  
30 V  
1,5 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 41 kg/km  
81 mm  
-40°C  
+70°C  
0,574 MJ/m  
17,00 kg/km

app. 60 kg/km  
107 mm  
-40°C  
+70°C  
1,234 MJ/m  
21,00 kg/km

## Norms

Applicable standards:

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

## Application

HELUKABEL® CAN Bus for fixed installation and occasional motion, for normal requirements. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and meets the requirements of the CAN Standard. For cable lengths up to max. 40m (observe CAN specifications).

## Part no.

**81286**, CAN BUS

**81287**, CAN BUS

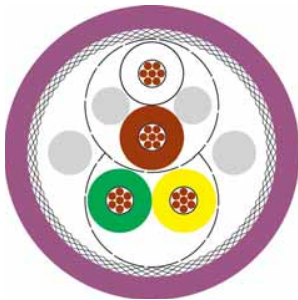
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 2x2x0.22 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/7)  
Cell PE  
wh/bn, gn/ye  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 7,5 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 87,6 Ohm/km  
Insulation resistance, min.: 5 GOhm x km  
Loop resistance: 175,2 Ohm/km max.  
Mutual capacitance: 40 nF/km nom.  
Nominal voltage: 30 V  
Test voltage: 1,5 kV

## Technical data

Weight: app. 60 kg/km  
bending radius, repeated: 113 mm  
Operating temperature range min.: -25°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 1,13 MJ/m  
Copper weight: 32,00 kg/km

## Norms

Applicable standards: CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: UL Style 2571  
CSA standard: CSA FT1

## Application

HELUKABEL® CAN BUS for fixed installation and occasion motion, for normal requirements. The two signal pairs are provided in the form twisted pairs. As a result, the diameter is somewhat larger than that of 81287. In the event of diameter problems, please have a look at this type. For cable lengths up to max. 40m ( observe CAN specifications).

## Part no.

**82509**, CAN BUS

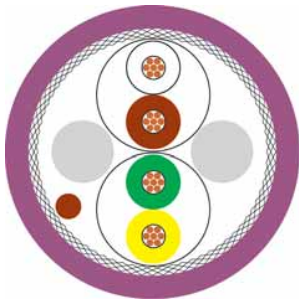
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed 105°C

 **HELUKABEL®**

PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Industrial Area 2x2x0,25 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/19)  
XLPE ray cross-linking  
wh/bn, gn/ye  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 8,4 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 87,2 Ohm/km  
Insulation resistance, min.: 1 GOhm x km  
Loop resistance: 174,4 Ohm/km max.  
Mutual capacitance: 42 nF/km nom.  
Nominal voltage: 600 V  
Test voltage: 2,5 kV

## Technical data

Weight: app. 80 kg/km  
bending radius, repeated: 126 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +105°C \*  
Caloric load, approx. value: 1,31 MJ/m  
Copper weight: 40,00 kg/km

## Norms

Applicable standards: CAN Bus acc. to ISO 11898-2  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
UL/CSA 21223 80°C, 600V

UL Style:

## Application

HELUKABEL® CAN Bus for fixed installation up to 105°C in difficult industrial environments with demanding temperature requirements thanks to cross-linking of the conductor insulation. Thanks to use a PUR sheath, this version is also halogen-free. For cable lengths up to max. 40m (observe CAN specifications).

## Part no.

**801982**, CAN BUS

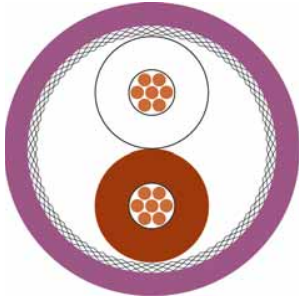
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.34 mm<sup>2</sup> (stranded)

Copper, bare (AWG 22/7)  
Cell PE  
wh/bn  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 6,5 mm ± 0,2 mm  
Violet similar to RAL 4001

## Fixed installation, indoor 4x1x0.34 mm<sup>2</sup> (stranded)

Copper, bare (AWG 22/7)  
Cell PE  
wh/bn, gn/ye  
Star quad  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:

120 Ohm ± 10 %  
57 Ohm/km  
5 GOhm x km  
114 Ohm/km max.  
58 nF/km nom.  
30 V  
2 kV

120 Ohm ± 10 %  
57 Ohm/km  
5 GOhm x km  
114 Ohm/km max.  
40 nF/km nom.  
30 V  
2 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 65 kg/km  
98 mm  
-30°C  
+70°C  
1,109 MJ/m  
23,00 kg/km

app. 77 kg/km  
120 mm  
-30°C  
+70°C  
1,179 MJ/m  
30,00 kg/km

## Norms

Applicable standards:

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

## Application

HELUKABEL® CAN Bus for fixed installation and occasional motion, for normal requirements. The 2-pair version is designed with a star-quad twisting, i.e. diagonal conductors form an electrical pair and meets the requirements of the CAN standard. For cable lengths up to max. 40m (observe CAN specifications).

## Part no.

**801572**, CAN BUS

**801573**, CAN BUS

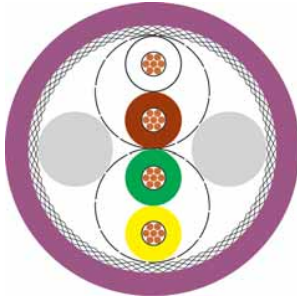
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor Ø:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 2x2x0.34 mm<sup>2</sup> (stranded)

Copper, bare (AWG 22/7)  
Foam-skin-PE  
wh/bn, gn/ye  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 8,5 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 55,4 Ohm/km  
Insulation resistance, min.: 5 GOhm x km  
Loop resistance: 110,8 Ohm/km max.  
Mutual capacitance: 40 nF/km nom.  
Nominal voltage: 250 V  
Test voltage: 1,5 kV

## Technical data

Weight: app. 85 kg/km  
bending radius, repeated: 130 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 1,32 MJ/m  
Copper weight: 46,00 kg/km

## Norms

Applicable standards: CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: CMX 75°C (shielded)  
CSA standard: CSA FT1

## Application

HELUKABEL® CAN Bus fixed installations and occasionally motion, for normal requirements. The two signal pairs are provided in the form twisted pairs. As a result, the diameter is somewhat larger than that of 801573. In the event of diameter problems, please have a look at this type. For cable lengths up to max. 40m (observe CAN specifications).

## Part no.

**803344**, CAN BUS

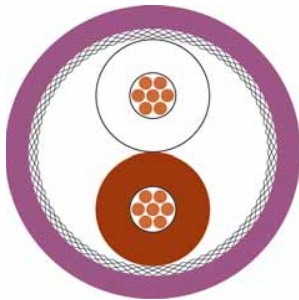
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.50 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/7)  
Foam-skin-PE  
wh/bn  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 7,0 mm ± 0,2 mm  
Violet similar to RAL 4001

## Fixed installation, indoor 4x1x0.50 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/7)  
Foam-skin-PE  
wh, bn, gn, ye  
Star quad  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 8,5 mm ± 0,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

120 Ohm ± 10 %  
36,4 Ohm/km  
1 GOhm x km  
72,8 Ohm/km max.  
40 nF/km nom.  
1,5 kV

120 Ohm ± 10 %  
37 Ohm/km  
1 GOhm x km  
74 Ohm/km max.  
44 nF/km nom.  
1,5 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 69 kg/km  
100 mm  
-40°C  
+70°C  
1,09 MJ/m  
30,00 kg/km

app. 100 kg/km  
130 mm  
-40°C  
+70°C  
1,64 MJ/m  
45,00 kg/km

## Norms

Applicable standards:  
UL Style:

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. IEC 60332-2-1  
UL Style 2571

## Application

HELUKABEL® CAN Bus for fixed installation and occasion motion, for normal requirements. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and meets the requirements of the CAN standard. For cable lengths up to 600m (observe CAN specifications).

## Part no.

**800571**, CAN BUS

**800685**, CAN BUS

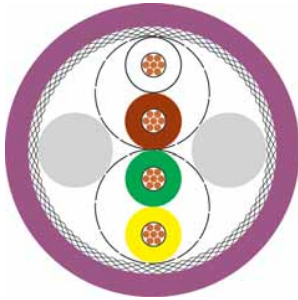
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 2x2x0.50 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/7)  
Foam-skin-PE  
wh/bn, gn/ye  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 9,6 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 120 Ohm ± 10 %  
Conductor resistance, max.: 34,4 Ohm/km  
Insulation resistance, min.: 5 GOhm x km  
Loop resistance: 68,8 Ohm/km max.  
Mutual capacitance: 40 nF/km nom.  
Nominal voltage: 250 V  
Test voltage: 1,5 kV

## Technical data

Weight: app. 116 kg/km  
bending radius, repeated: 150 mm  
Operating temperature range min.: -40°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 1,62 MJ/m  
Copper weight: 60,00 kg/km

## Norms

Applicable standards: CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: CMX 75°C (shielded)  
CSA standard: CSA FT1

## Application

HELUKABEL® CAN Bus for fixed installation and occasion motion, for normal requirements. The two signal pairs are provided in the form twisted pairs. As a result, the diameter is somewhat larger than that of 800685. In the event of diameter problems, please have a look at this type. For cable lengths up to 600m (observe CAN specifications).

## Part no.

**803722**, CAN BUS

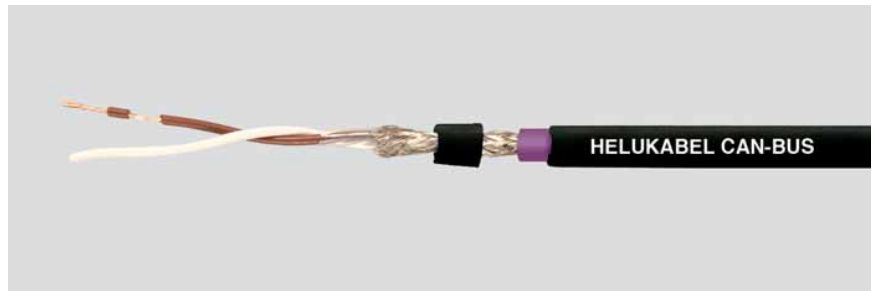
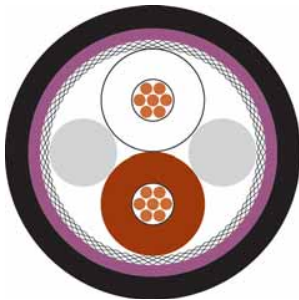
Dimensions and specifications may be changed without prior notice.

# BUS Cables

## CAN Bus direct Burial



PE



### Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Direct burial 1x2x0.50 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/7)  
Foam-skin-PE  
wh/bn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
PVC  
-  
Cu braid, tinned  
PET/PA tape  
PE  
app. 9,2 mm ± 0,4 mm  
Black similar to RAL 9005

### Direct burial 4x1x0.50 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/7)  
Foam-skin-PE  
wh, bn, gn, ye  
Star quad  
Polyester foil over stranded bundle  
PVC  
-  
Cu braid, tinned  
PET/PA tape  
PE  
app. 9,7 mm ± 0,4 mm  
Black similar to RAL 9005

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

120 Ohm ± 10 %  
37 Ohm/km  
1 GOhm x km  
74 Ohm/km max.  
40 nF/km nom.  
1,5 kV

120 Ohm ± 10 %  
36,4 Ohm/km  
1 GOhm x km  
72,8 Ohm/km max.  
44 nF/km nom.  
1,5 kV

### Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 105 kg/km  
150 mm  
-40°C  
+70°C  
2,05 MJ/m  
33,00 kg/km

app. 115 kg/km  
160 mm  
-40°C  
+70°C  
2,18 MJ/m  
45,00 kg/km

### Norms

Applicable standards:

CAN Bus acc. to ISO 11898-2

CAN Bus acc. to ISO 11898-2

### Application

HELUKABEL® CAN Bus Direct Burial is suitable for fixed outdoor installation or direct burial applications. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and meets the requirements of the CAN standard. For cable lengths up to 600m (observe CAN specifications).

### Part no.

**804268**, CAN BUS

**804269**, CAN BUS

Dimensions and specifications may be changed without prior notice.

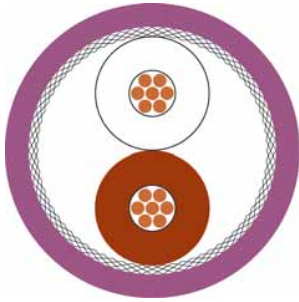


# BUS Cables

CAN Bus fixed installed

 **HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0.75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 18/24)  
Foam-skin-PE  
wh/bn  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 8,3 mm ± 0,3 mm  
Violet similar to RAL 4001

## Fixed installation, indoor 4x1x0.75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 18/24)  
Foam-skin-PE  
wh, bn, gn, ye  
Star quad  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PVC  
app. 8,8 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:

120 Ohm ± 15 %  
27,5 Ohm/km  
1 GOhm x km  
55 Ohm/km max.  
42 nF/km nom.  
300 V  
1,5 kV

120 Ohm ± 15 %  
27,5 Ohm/km  
1 GOhm x km  
55 Ohm/km max.  
42 nF/km nom.  
300 V  
1,5 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 101 kg/km  
110 mm  
-40°C  
+70°C  
1,67 MJ/m  
40,00 kg/km

app. 112 kg/km  
110 mm  
-40°C  
+70°C  
1,76 MJ/m  
58,00 kg/km

## Norms

Applicable standards:

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. to IEC 60332-1-2  
UL Style 2571  
CSA FT1

CAN Bus acc. to ISO 11898-2  
Flame-retardant acc. to IEC 60332-1-2  
UL Style 2571  
CSA FT1

## Application

HELUKABEL® CAN Bus for fixed installation and occasion motion, for normal requirements. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths over 600m (observe CAN specifications).

## Part no.

**803383**, CAN BUS

**803384**, CAN BUS

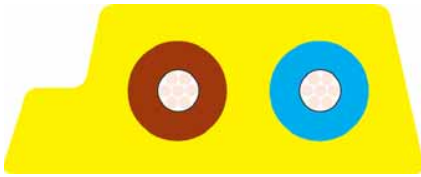
Dimensions and specifications may be changed without prior notice.

# BUS Cables

A-BUS EPDM

 **HELUKABEL®**

EPDM



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Outer sheath colour:

## Actuator Sensor Interface 2x1.5 mm<sup>2</sup>

Copper, tinned  
Rubber compound  
bu, bn  
-  
-  
EPDM  
Yellow similar to RAL 1023

## Actuator Sensor Interface 2x1.5 mm<sup>2</sup>

Copper, tinned  
Rubber compound  
bu, bn  
-  
-  
EPDM  
Black similar to RAL 9005

## Electrical data

Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Nominal voltage:  
Test voltage:

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
32 V  
1 kV at 15 min.

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
48 V  
1 kV at 15 min.

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 70 kg/km  
30 mm  
-40°C  
+85°C  
0,975 MJ/m  
31,00 kg/km

app. 70 kg/km  
30 mm  
-40°C  
+85°C  
0,975 MJ/m  
31,00 kg/km

## Norms

Applicable standards:

ASI standard  
Halogen-free acc. to 60754-1

ASI standard  
Halogen-free acc. to 60754-1

## Application

HELUKABEL® A-Bus EPDM Rubber for normal use in an AS-I system. Applications include wet/dry areas where the properties of a rubber jacket are desired. In addition, this material offers benefits such as low compression forces needed when contacting and the best sealing against the AS-I module.

## Part no.

**80824**, A-BUS EPDM

**80825**, A-BUS EPDM

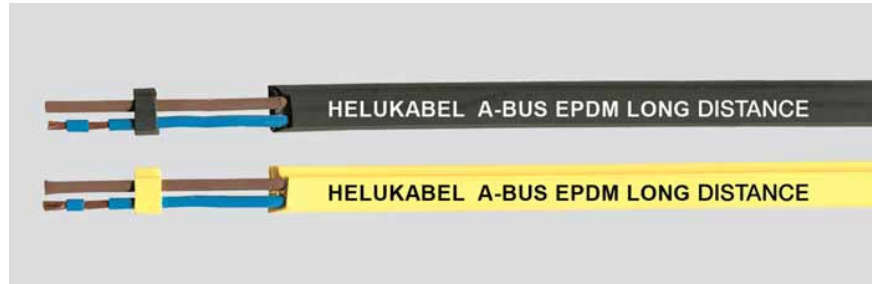
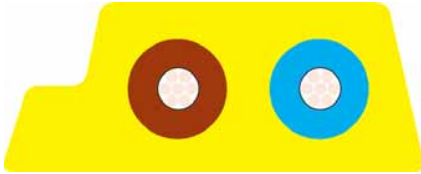
Dimensions and specifications may be changed without prior notice.

# BUS Cables

A-BUS EPDM, Long Distance



EPDM



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Outer sheath colour:

## Industrial Area 2x2.5 mm<sup>2</sup>

Copper, tinned  
Rubber compound  
bu, bn  
-  
-  
-  
EPDM  
Yellow similar to RAL 1023

## Industrial Area 2x2.5 mm<sup>2</sup>

Copper, tinned  
Rubber compound  
bu, bn  
-  
-  
-  
EPDM  
Black similar to RAL 9005

## Electrical data

### Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 130 kg/km  
35 mm  
-40°C  
+85°C  
0,70 MJ/m  
49,00 kg/km

app. 130 kg/km  
30 mm  
-40°C  
+85°C  
0,70 MJ/m  
49,00 kg/km

## Norms

Applicable standards:

ASI standard  
Halogen-free acc. to 60754-1

ASI standard  
Halogen-free acc. to 60754-1

## Application

HELUKABEL® A-Bus Long Distance EPDM Rubber 2,5mm<sup>2</sup> for normal use in an AS-I system. The enlarged cross-section allows bigger transmission distances, higher ampacity and this results in savings of supplementary power packs. Applications include wet/dry areas where the properties of a rubber jacket are desired. In addition, this material offers benefits such as low compression forces needed when contacting and the best sealing against the AS-I module.

## Part no.

**804408**, A-BUS EPDM

**804409**, A-BUS EPDM

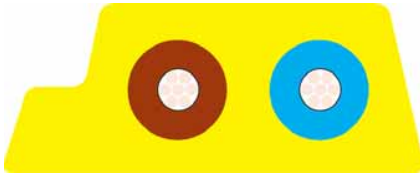
Dimensions and specifications may be changed without prior notice.

# BUS Cables

A-BUS PUR, UL/CSA

 **HELUKABEL®**

PUR



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Outer sheath colour:

## Actuator Sensor Interface 2x1.5 mm<sup>2</sup>

Copper, tinned  
PO  
bu, bn  
-  
-  
-  
PUR  
Yellow similar to RAL 1023

## Actuator Sensor Interface 2x1.5 mm<sup>2</sup>

Copper, tinned  
PO  
bu, bn  
-  
-  
-  
PUR  
Black similar to RAL 9005

## Electrical data

Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Nominal voltage:  
Test voltage:

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
32 V  
1 kV at 15 min.

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
48 V  
1 kV at 15 min.

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 64 kg/km  
30 mm  
-40°C  
+80°C  
0,965 MJ/m  
31,00 kg/km

app. 64 kg/km  
30 mm  
-40°C  
+80°C  
0,965 MJ/m  
31,00 kg/km

## Norms

Applicable standards:

ASI standard  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
AWM Style 20549  
CSA FT2

ASI standard  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
AWM Style 20549  
CSA FT2

## Application

HELUKABEL® A-Bus PUR is ideal for use in wet/dry areas thanks to its outstanding characteristics when exposed to common coolants/lubricants. This version can also be used in cable carriers (special installation conditions must be observed: place wide cable side on inside radius, use partitions and install flat/round cables separately). These types are approved for use in the American market (UL 1581, FT2) thanks to use of special materials.

## Part no.

**82434**, A-BUS PUR

**82822**, A-BUS PUR

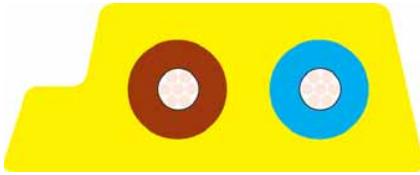
Dimensions and specifications may be changed without prior notice.

# BUS Cables

A-BUS TPE, UL CMG

 **HELUKABEL®**

TPE 105°



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Outer sheath colour:

## Mobile use 2x1.5 mm<sup>2</sup>

Copper, tinned  
TPE  
bu, bn  
-  
-  
-  
TPE  
Yellow

## Mobile use 2x1.5 mm<sup>2</sup>

Copper, tinned  
TPE  
bu, bn  
-  
-  
-  
TPE  
Black

## Electrical data

Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Nominal voltage:  
Test voltage:

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
32 V  
1,5 kV at 15 min.

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
48 V  
1,5 kV at 15 min.

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 71 kg/km  
24 mm  
-40°C  
+105°C  
1,10 MJ/m  
31,00 kg/km

app. 70 kg/km  
24 mm  
-40°C  
+105°C  
1,10 MJ/m  
31,00 kg/km

## Norms

Applicable standards:  
  
UL Style:  
CSA standard:

ASI standard  
Flame-retardant acc. to IEC 60332-1-2  
CL2 CMG  
CSA FT 4

ASI standard  
Flame-retardant acc. to IEC 60332-1-2  
CL2 CMG  
CSA FT 4

## Application

HELUKABEL® A-Bus TPE UL/CSA for demanding temperature requirements up to 105 °C and with improved flame retardance specifically for the American market. The special outer sheath makes the cable resistant to many oils, greases and cooling lubricants and thus suitable for applications in wet surroundings, in machinery and plant construction as well as in the machine tool and automotive industries.

## Part no.

**805693**, A-BUS UL

**805694**, A-BUS UL

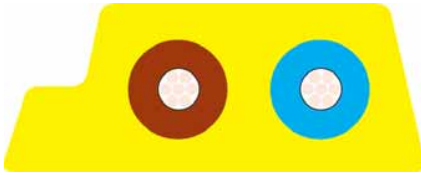
Dimensions and specifications may be changed without prior notice.

# BUS Cables

A-BUS TPE

 **HELUKABEL®**

TPE



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Outer sheath colour:

## Actuator Sensor Interface 2x1.5 mm<sup>2</sup>

Copper, tinned  
TPE  
bu, bn  
-  
-  
-  
TPE  
Yellow

## Actuator Sensor Interface 2x1.5 mm<sup>2</sup>

Copper, tinned  
TPE  
bu, bn  
-  
-  
-  
TPE  
Black

## Electrical data

Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Nominal voltage:  
Test voltage:

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
32 V  
1,5 kV at 15 min.

13,7 Ohm/km  
1 GOhm x km  
27,4 Ohm/km max.  
48 V  
1,5 kV at 15 min.

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 70 kg/km  
24 mm  
-40°C  
+105°C  
1,10 MJ/m  
31,00 kg/km

app. 70 kg/km  
24 mm  
-40°C  
+105°C  
1,10 MJ/m  
31,00 kg/km

## Norms

Applicable standards:

ASI standard  
Flame-retardant acc. to IEC 60332-1-2

ASI standard  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® A-Bus TPE for demanding temperature requirements up to 105 °C and flame retardance. The special outer sheath makes the cable resistant to many oils, greases and cooling lubricants and thus suitable for applications in wet surroundings, in machinery and plant construction as well as in the machine tool and automotive industries.

## Part no.

**801846**, A-BUS TPE

**801847**, A-BUS TPE

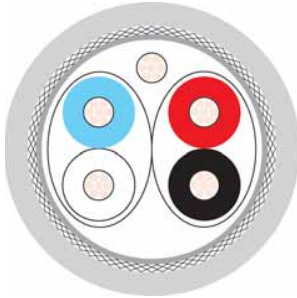
Dimensions and specifications may be changed without prior notice.

# BUS Cables

DeviceNet™ fixed installed thick + thin

**HELUKABEL®**

PVC



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2xAWG18 + 1x2xAWG15

Copper, tinned (AWG 18/19)  
Copper, tinned (AWG 15/19)  
Foam-skin-PE  
PVC  
light bu, wh  
rd, bk  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
PVC  
app. 12,2 mm ± 0,3 mm  
Grey similar to RAL 7001

## Fixed installation, indoor 1x2xAWG24 + 1x2xAWG22

Copper, tinned (AWG 24/19)  
Copper, tinned (AWG 22/19)  
Foam-skin-PE  
PVC  
light bu, wh  
rd, bk  
Double core  
-  
Al-Foil  
Copper shifting, tinned  
yes  
PVC  
app. 6,9 mm ± 0,3 mm  
Grey similar to RAL 7001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

120 Ohm ± 10 %  
22,6 Ohm/km  
0,2 GOhm x km  
45,2 Ohm/km max.  
39,8 nF/km nom.  
2 kV  
125 kHz < 4,2 dB/km  
500 kHz < 8,1 dB/km

120 Ohm ± 10 %  
90 Ohm/km  
0,2 GOhm x km  
180 Ohm/km max.  
39,8 nF/km nom.  
2 kV  
125 kHz < 9.5 dB/km  
500 kHz < 16.4 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 192 kg/km  
190 mm  
-20°C  
+80°C  
2,92 MJ/m  
88,00 kg/km

app. 67 kg/km  
110 mm  
-20°C  
+80°C  
0,91 MJ/m  
35,00 kg/km

## Norms

Applicable standards:

ODVA DeviceNet  
Flame-retardant acc. to IEC 60332-3  
CMG 75°C PLTC FT4  
CEC: CMG FT4

ODVA DeviceNet  
Flame-retardant acc. to IEC 60332-3  
CMG 75°C PLTC FT4  
CSA FT 4

## Application

HELUKABEL® DeviceNet™ PVC for fixed installation. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

## Part no.

**800683**, DeviceNet PVC

**800684**, DeviceNet PVC

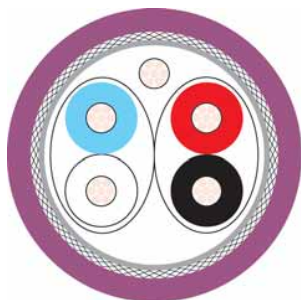
Dimensions and specifications may be changed without prior notice.

# BUS Cables

DeviceNet™ fixed installed thick + thin



FRNC



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2xAWG18 + 1x2xAWG15

Copper, tinned (AWG 18/19)  
Copper, tinned (AWG 15/19)  
Cell PE  
PE  
light bu, wh  
rd, bk  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
FRNC  
app. 12,2 mm ± 0,3 mm  
Violet similar to RAL 4001

## Fixed installation, indoor 1x2xAWG24 + 1x2xAWG22

Copper, tinned (AWG 24/19)  
Copper, tinned (AWG 22/19)  
Cell PE  
PE  
light bu, wh  
rd, bk  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
FRNC  
app. 6,9 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

120 Ohm ± 10 %  
22,6 Ohm/km  
0,2 GOhm x km  
45,2 Ohm/km max.  
39 nF/km nom.  
2 kV  
125 kHz < 4.2 dB/km  
500 kHz < 8.1 dB/km

120 Ohm ± 10 %  
90 Ohm/km  
0,2 GOhm x km  
180 Ohm/km max.  
39,8 nF/km nom.  
2 kV  
125 kHz < 9.5 dB/km  
500 kHz < 16.4 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 195 kg/km  
190 mm  
-25°C  
+80°C  
2,73 MJ/m  
88,00 kg/km

app. 70 kg/km  
110 mm  
-25°C  
+80°C  
0,82 MJ/m  
34,00 kg/km

## Norms

Applicable standards:

ODVA DeviceNet  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1  
CL2 CMG  
CEC: CMG FT4

ODVA DeviceNet  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1  
CL2 CMG  
CEC: CMG FT4

## Application

HELUKABEL® DeviceNet™ FRNC for fixed installation in areas where high flame retardance and a halogen-free design are needed. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

## Part no.

**800681**, DeviceNet FRNC

**800682**, DeviceNet FRNC

Dimensions and specifications may be changed without prior notice.

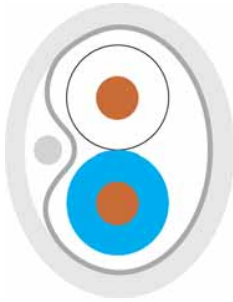


# BUS Cables

LON BUS H122 + Y116

 **HELUKABEL®**

FRNC + PVC



## Type

### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Fixed installation, indoor

#### 1x2xAWG 22/1

Copper, bare (AWG 22/1)  
Foam-skin-PE  
wh, bu  
Double core  
Polyester foil over stranded bundle  
-  
Al-Foil  
yes  
FRNC  
app. 4,4 mm ± 0,3 mm  
White

### Mobile use

#### 1x2xAWG 16/19

Copper, tinned (AWG 16/19)  
PVC  
wh, bk  
Double core  
Polyester foil over stranded bundle  
-  
-  
-  
PVC  
app. 7,0 mm ± 0,4 mm  
Grey similar to RAL 7001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:

100 Ohm ± 10 %  
57 Ohm/km  
5 GOhm x km  
114 Ohm/km max.  
45 nF/km nom.  
125 V  
0,7 kV

85 Ohm ± 15 %  
14 Ohm/km  
0,02 GOhm x km  
28 Ohm/km max.  
100 nF/km nom.  
300 V  
2 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:  
Applicable standards:

app. 25 kg/km  
70 mm  
-20°C  
+75°C  
0,337 MJ/m  
11,00 kg/km  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

app. 65 kg/km  
85 mm  
-20°C  
+80°C  
1,25 MJ/m  
30,00 kg/km  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® LON BUS H122 FRNC for fixed installation; version Y116 for mobile applications. For both versions: Use indoors is in fixed installations (H122) and as a patch cable (Y116) and must comply with DIN EN 50090-2-2 (VDE 0892 Part 2-2:1997-06).

## Part no.

**802187**, LON H122

**802188**, LON Y116

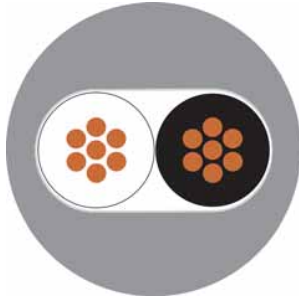
Dimensions and specifications may be changed without prior notice.

# BUS Cables

LON BUS H116

 **HELUKABEL®**

FRNC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2xAWG 16/19

Copper, tinned (AWG 16/19)  
PE  
wh, bk  
Double core  
Polyester foil over stranded bundle  
-  
-  
FRNC  
app. 7,0 mm ± 0,4 mm  
Grey similar to RAL 7001

## Electrical data

Characteristic impedance: 85 Ohm ± 15 %  
Conductor resistance, max.: 15,8 Ohm/km  
Insulation resistance, min.: 0,02 GOhm x km  
Loop resistance: 31,6 Ohm/km max.  
Mutual capacitance: 82 nF/km nom.  
Nominal voltage: 300 V  
Test voltage: 2 kV

## Technical data

Weight: app. 65 kg/km  
bending radius, repeated: 85 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 1,25 MJ/m  
Copper weight: 30,00 kg/km  
Applicable standards: Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® LON BUS H116 FRNC fixed installation indoor acc. DIN EN 50090-2-2 (VDE 0892 Teil 2-2:1997-06).

## Part no.

**805661**, LON H116

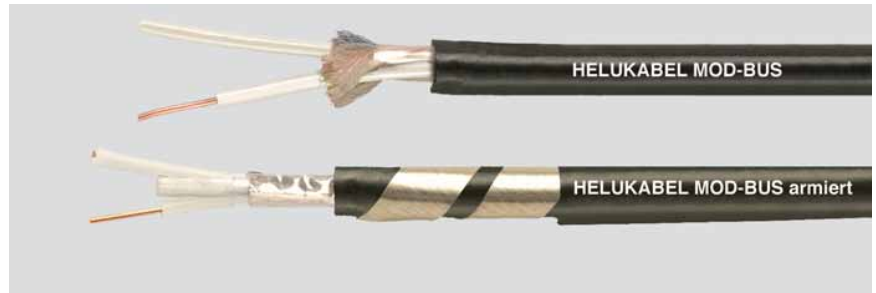
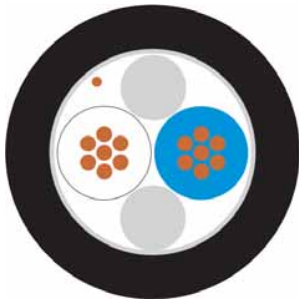
Dimensions and specifications may be changed without prior notice.

# BUS Cables

MOD-BUS fixed installed

 **HELUKABEL®**

PVC + armoured



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Drain wire:  
Armouring:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 1x2x0,75-105 LI

Copper, bare (AWG 19)  
PE  
wh, bu  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
-  
Al-Foil  
-  
yes  
-  
PVC  
app. 7,5 mm ± 0,3 mm  
Black similar to RAL 9005

## Fixed installation, indoor 1x2x0,75-105 LI armoured

Copper, bare (AWG 19)  
PE  
wh, bu  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
-  
yes  
Steel band  
PVC  
app. 10,0 mm ± 0,5 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Nominal voltage:

105 Ohm ± 20 Ohm  
25 Ohm/km  
1 GOhm x km  
50 Ohm/km max.  
300 V

105 Ohm ± 20 Ohm  
25 Ohm/km  
1 GOhm x km  
50 Ohm/km max.  
300 V

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Copper weight:  
Applicable standards:

app. 70 kg/km  
80 mm  
-30°C  
+70°C  
28,00 kg/km  
Flame-retardant acc. to IEC 60332-3

app. 130 kg/km  
200 mm  
-30°C  
+70°C  
28,00 kg/km  
Flame-retardant acc. to IEC 60332-3

## Application

HELUKABEL® MOD-Bus PVC for standard application in this industry network.

## Part no.

**805698**, MOD-Bus Single Pair

**805697**, MOD-Bus Single Pair armoured

Dimensions and specifications may be changed without prior notice.

# BUS Cables

E-BUS / KNX fixed installed

**HELUKABEL®**

PVC + FRNC



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## 2-pairs J-Y(St)Yh 2x2x0.8 mm

Copper, bare  
PVC  
wh, ye, rd, bk  
Star quad  
Polyester foil over stranded bundle  
-  
Al-Foil  
yes  
PVC  
app. 6,2 mm ± 0,3 mm  
Blue Lilac similar to RAL 4005

## 2-pairs J-H(St)Hh 2x2x0.8mm

Copper, bare  
PE  
wh, ye, rd, bk  
Star quad  
Polyester foil over stranded bundle  
-  
Al-Foil  
yes  
FRNC  
app. 6,2 mm ± 0,3 mm  
Blue Lilac similar to RAL 4005

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

100 Ohm  
36,6 Ohm/km  
0,1 GOhm x km  
73,2 Ohm/km max.  
120 nF/km nom.  
4 kV

100 Ohm  
36,6 Ohm/km  
0,1 GOhm x km  
73,2 Ohm/km max.  
120 nF/km nom.  
4 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 64 kg/km  
95 mm  
-30°C  
+70°C  
0,90 MJ/m  
25,00 kg/km

app. 54 kg/km  
95 mm  
-30°C  
+70°C  
0,58 MJ/m  
25,00 kg/km

## Norms

Applicable standards:

EIB/KNX standard  
Flame-retardant acc. to IEC 60332-1-2

EIB/KNX standard  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2

## Application

HELUKABEL® E-BUS EIB/KNX PVC for fixed installation. The E-Bus cable is intended for transmission of bus signals in intelligent building systems. The cables ensure perfect communication in compliance with EIB regulations. They can be installed over, in and under plaster, in conduits and cable channels, in dry, damp and wet rooms as well as outdoors - if protected from direct sunlight. Wiring together with high-power cables is possible without limitation. The EIB/KNX bus can be used to control lighting, blinds, heating, ventilation, indicator boards etc.

## Part no.

**81081**, E-BUS / KNX

**80826**, E-BUS / KNX

Dimensions and specifications may be changed without prior notice.

# BUS Cables

E-BUS / KNX fixed installed



PVC + FRNC



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

## Norms

Applicable standards:

## Application

### Part no.

Dimensions and specifications may be changed without prior notice.

## 2-pairs 2x2x0.8 mm

Copper, bare  
PVC  
wh, ye, rd, bk  
Star quad  
Polyester foil over stranded bundle  
-  
Al-Foil  
yes  
PVC  
app. 6,2 mm ± 0,3 mm  
Green similar to RAL 6010

100 Ohm  
36,6 Ohm/km  
0,1 GOhm x km  
73,2 Ohm/km max.  
120 nF/km nom.  
4 kV

app. 64 kg/km  
95 mm  
-30°C  
+70°C  
0,90 MJ/m  
25,00 kg/km

EIB/KNX standard  
Flame-retardant acc. IEC 60332-2-1

**81663**, E-BUS / KNX

## 2-pairs 2x2x0.8 mm

Copper, bare  
PE  
wh, ye, rd, bk  
Star quad  
Polyester foil over stranded bundle  
-  
Al-Foil  
yes  
FRNC  
app. 6,6 mm ± 0,3 mm  
Green

100 Ohm  
73,2 Ohm/km  
0,1 GOhm x km  
146,4 Ohm/km max.  
100 nF/km nom.  
4 kV

app. 54 kg/km  
95 mm  
-30°C  
+70°C  
0,58 MJ/m  
25,00 kg/km

EIB/KNX standard  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1

**804042**, E-BUS / KNX

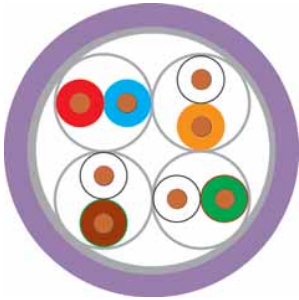
# BUS Cables

E-BUS / KNX fixed installed

 **HELUKABEL®**



PVC



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## 4-pairs 4x2x0.8 mm

Copper, bare  
PVC  
wh, ye, rd, gn, bu, bn, wh, wh  
Double core  
Polyester foil over stranded bundle  
-  
Al-Foil  
yes  
PVC  
app. 8,6 mm ± 0,3 mm  
Blue Lilac similar to RAL 4005

## Electrical data

Characteristic impedance: 100 Ohm  
Conductor resistance, max.: 36,6 Ohm/km  
Insulation resistance, min.: 0,1 GOhm x km  
Loop resistance: 73,2 Ohm/km max.  
Mutual capacitance: 120 nF/km nom.  
Test voltage: 4 kV

## Technical data

Weight: app. 92 kg/km  
bending radius, repeated: 120 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 1,37 MJ/m  
Copper weight: 41,00 kg/km

## Norms

Applicable standards: EIB/KNX standard  
Flame-retardant acc. IEC 60332-2-1

## Application

### Part no.

**81077**, E-BUS / KNX

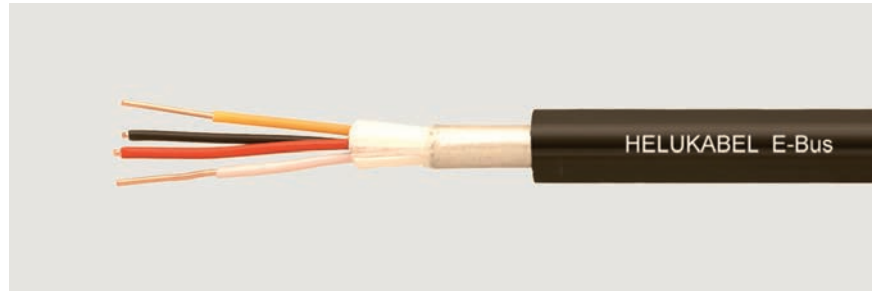
Dimensions and specifications may be changed without prior notice.

# BUS Cables

E-BUS / KNX BURIAL fixed installed

 **HELUKABEL**<sup>®</sup>

PE, BURIAL



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Direct burial 2x2x0.8 mm

Copper, bare  
PE  
wh, ye, rd, bk  
Star quad  
Polyester foil over stranded bundle  
-  
Al-Foil  
PE  
app. 8,8 mm ± 0,3 mm  
Black similar to RAL 9005

## Electrical data

Characteristic impedance: 100 Ohm  
Conductor resistance, max.: 36,6 Ohm/km  
Insulation resistance, min.: 5 GOhm x km  
Loop resistance: 73,2 Ohm/km max.  
Mutual capacitance: 55 nF/km nom.  
Test voltage: 0,8 kV

## Technical data

Weight: app. 75 kg/km  
bending radius, repeated: 130 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 2,00 MJ/m  
Copper weight: 25,00 kg/km

## Norms

Applicable standards: EIB/KNX standard  
Halogen-free acc. to 60754-1

## Application

HELUKABEL<sup>®</sup> E-BUS / KNX ERD with PE jacket for fixed installation in the ground or outdoors and as a connection between buildings or to EIB/KNX components on the building. They can be installed over, in and under plaster, in conduits and cable channels, in dry, damp and wet rooms as well as outdoors. Wiring together with high-power cables is possible without limitation. The EIB/KNX bus can be used to control lighting, blinds, heating, ventilation, indicator boards etc.

## Part no.

**802800**, E-BUS / KNX BURIAL

Dimensions and specifications may be changed without prior notice.





5678  
1  
109

2.1

500.07

PLA

PLA



# Multipolari movimentazione

PVC	650
PUR	672
TPE	698
DIN 47100	705
BUS   USB   Safety	718
Profinet	722
Profibus	725
I-bus	728
Industrial ethernet	729
Devicenet	742
Asi-bus	743
Bus	745
Can bus	748
Encoder   Resolver   Servomotori	751
Tamburo avvolgicavo	762
Spiralati	769
Torsionali   Robotica	778
Piatti   Festoni	811

# JZ-HF / OZ-HF

oil resistant



HELUKABEL® JZ-HF 25G0,75 QMM / 15030 300/500 V CE

## TECHNICAL DATA

PVC drag chain cable, in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil
- suitable for use in drag chains

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15001	2 x 0.5	20	5.0	9.6	38.0
15002	3 G 0.5	20	5.3	14.0	44.0
15003	4 G 0.5	20	5.7	19.0	52.0
15004	5 G 0.5	20	6.3	24.0	67.0
15005	7 G 0.5	20	7.6	34.0	91.0
15090	7 x 0.5	20	7.6	34.0	91.0
15006	10 G 0.5	20	9.3	48.0	128.0
15007	12 G 0.5	20	9.3	58.0	137.0
15008	14 G 0.5	20	9.8	67.0	158.0
15009	16 G 0.5	20	10.3	77.0	182.0
15010	18 G 0.5	20	11.2	86.0	207.0
15011	20 G 0.5	20	11.6	96.0	226.0
15012	25 G 0.5	20	13.8	120.0	292.0
15013	30 G 0.5	20	13.7	144.0	330.0
15014	34 G 0.5	20	15.0	163.0	387.0
15015	36 G 0.5	20	15.0	173.0	399.0
15016	42 G 0.5	20	16.3	202.0	449.0
15017	50 G 0.5	20	17.9	240.0	573.0
15018	61 G 0.5	20	19.7	290.0	682.0
15019	2 x 0.75	19	5.5	14.0	44.0

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals: EAC

## APPLICATION

A highly flexible PVC drag chain cable used for installation in dry and damp rooms, but not outdoors. Used for frequent lifting and bending stress in machine and tool construction, in robotics and on permanently moving machine parts. With free movement, without tensile stress and without forced motion control capabilities, these cables have proven their reliable performance in drag chain applications.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- cleanroom qualification tested on analog types; please note "cleanroom qualification" in your order
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15020	3 G 0.75	19	5.7	22.0	53.0
15021	4 G 0.75	19	6.5	29.0	67.0
15022	5 G 0.75	19	7.0	36.0	81.0
15023	7 G 0.75	19	8.4	50.0	111.0
15024	10 G 0.75	19	10.3	72.0	159.0
15025	12 G 0.75	19	10.3	86.0	174.0
14070	12 x 0.75	19	10.3	86.0	174.0
15026	14 G 0.75	19	11.1	101.0	201.0
13944	14 x 0.75	19	11.1	101.0	201.0
15027	16 G 0.75	19	11.6	115.0	225.0
15028	18 G 0.75	19	12.4	130.0	249.0
15029	20 G 0.75	19	13.0	144.0	282.0
15030	25 G 0.75	19	15.3	180.0	375.0
15031	30 G 0.75	19	15.5	216.0	411.0
15032	34 G 0.75	19	16.8	245.0	473.0
15033	36 G 0.75	19	16.8	259.0	509.0
15034	42 G 0.75	19	18.5	302.0	602.0
15035	50 G 0.75	19	20.3	360.0	706.0
15036	61 G 0.75	19	22.2	432.0	886.0
15091	65 G 0.75	19	23.1	439.0	899.0

# JZ-HF / OZ-HF



oil resistant

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15037	2 x 1	18	5.7	19.0	62.0
15038	3 G 1	18	6.1	29.0	64.0
15039	4 G 1	18	6.8	38.0	80.0
15040	5 G 1	18	7.5	48.0	97.0
15041	7 G 1	18	9.0	67.0	132.0
15042	10 G 1	18	11.2	96.0	187.0
15043	12 G 1	18	11.2	115.0	206.0
15044	14 G 1	18	11.7	134.0	239.0
15045	16 G 1	18	12.5	154.0	274.0
15046	18 G 1	18	13.2	173.0	307.0
15047	20 G 1	18	13.9	192.0	336.0
15048	25 G 1	18	16.5	240.0	443.0
15049	30 G 1	18	16.6	288.0	558.0
15050	34 G 1	18	18.1	326.0	601.0
15051	36 G 1	18	18.1	346.0	623.0
15052	41 G 1	18	19.6	403.0	710.0
15214	42 G 1	18	19.6	403.0	730.0
15053	50 G 1	18	21.7	480.0	868.0
15092	61 G 1	18	23.9	586.0	1044.0
15054	65 G 1	18	24.7	624.0	1195.0
15055	2 x 1.5	16	6.5	29.0	69.0
15056	3 G 1.5	16	6.9	43.0	84.0
15057	4 G 1.5	16	7.5	58.0	103.0
15058	5 G 1.5	16	8.5	72.0	129.0
15059	7 G 1.5	16	10.2	101.0	177.0
11017475	8 G 1.5	16	11.1	115.0	206.0
15060	10 G 1.5	16	12.4	144.0	248.0
15061	12 G 1.5	16	12.6	173.0	283.0
15062	14 G 1.5	16	13.2	202.0	327.0
15063	16 G 1.5	16	14.2	230.0	372.0
15064	18 G 1.5	16	14.9	259.0	418.0
15065	20 G 1.5	16	15.9	288.0	469.0
15066	25 G 1.5	16	18.6	360.0	631.0
15067	30 G 1.5	16	18.9	432.0	701.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15068	34 G 1.5	16	20.6	490.0	800.0
15069	36 G 1.5	16	20.6	518.0	831.0
15070	42 G 1.5	16	22.3	605.0	987.0
15071	50 G 1.5	16	24.6	720.0	1241.0
15072	60 G 1.5	16	26.3	864.0	1431.0
15215	61 G 1.5	16	27.1	878.0	1495.0
15216	65 G 1.5	16	28.0	936.0	1566.0
15073	2 x 2.5	14	8.1	48.0	102.2
15074	3 G 2.5	14	8.6	72.0	129.0
15075	4 G 2.5	14	9.6	96.0	160.0
15076	5 G 2.5	14	10.5	120.0	201.0
15077	7 G 2.5	14	12.9	168.0	278.0
15078	10 G 2.5	14	15.5	240.0	398.0
15079	12 G 2.5	14	15.5	288.0	444.0
15080	14 G 2.5	14	16.8	336.0	512.0
15081	16 G 2.5	14	17.7	384.0	615.0
15082	18 G 2.5	14	18.8	432.0	678.0
15083	20 G 2.5	14	20.0	480.0	752.0
15084	25 G 2.5	14	23.7	600.0	1060.0
15085	30 G 2.5	14	24.0	720.0	1197.0
15086	34 G 2.5	14	26.0	816.0	1337.0
15087	36 G 2.5	14	26.0	864.0	1384.0
15088	42 G 2.5	14	28.5	1008.0	1599.0
15089	50 G 2.5	14	30.6	1200.0	1854.0
15142	3 G 4	12	10.5	115.0	213.0
15143	4 G 4	12	11.6	154.0	265.0
15144	5 G 4	12	12.9	192.0	328.0
15145	4 G 6	10	13.4	230.0	382.0
15146	5 G 6	10	14.7	288.0	461.0
15147	4 G 10	8	17.8	384.0	652.0
15148	5 G 10	8	19.7	480.0	790.0
15149	4 G 16	6	20.8	614.0	1007.0
15150	5 G 16	6	23.3	768.0	1304.0

# JZ-HF-CY / OZ-HF-CY



oil resistant, with inner sheath, EMC-preferred type



HELUKABEL® JZ-HF-CY 7G0,75 QMM / 15949 300/500 V CE

## TECHNICAL DATA

PVC drag chain cable, in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -10°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PVC, compound type Z 7225
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer
- Inner sheath: PVC
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil
- suitable for use in drag chains

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15930	2 x 0.5	20	7.1	30.0	90.0
15931	3 G 0.5	20	7.4	38.0	115.0
15932	4 G 0.5	20	8.1	48.0	140.0
15933	5 G 0.5	20	8.6	64.0	168.0
15934	7 G 0.5	20	10.0	70.0	217.0
15935	12 G 0.5	20	11.5	100.0	274.0
15876	14 G 0.5	20	12.2	135.0	332.0
15877	16 G 0.5	20	12.9	145.0	388.0
15936	18 G 0.5	20	13.8	154.0	445.0
15937	20 G 0.5	20	14.3	160.0	497.0
15878	21 G 0.5	20	14.9	175.0	500.0
15938	25 G 0.5	20	16.5	240.0	505.0
15879	30 G 0.5	20	16.8	280.0	515.0
15880	34 G 0.5	20	17.9	290.0	530.0
15881	36 G 0.5	20	17.9	300.0	572.0

- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals: EAC

## ■ APPLICATION

Used for installation in dry and damp rooms, but not outdoors. With free movement, without tensile stress and without forced motion control capabilities, these cables have proven their reliable performance in standard drag chain applications, automatic handling machines, robots and permanently moving machine parts. These screened cables have been developed for interference-free data signal transmission for all areas in electronics, measurement and control technology. Also available in paired version. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- cleanroom qualification tested on analog types; please note "cleanroom qualification" in your order
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15882	42 G 0.5	20	19.4	330.0	605.0
15883	50 G 0.5	20	21.1	393.0	742.0
15945	2 x 0.75	19	7.8	39.0	105.0
15946	3 G 0.75	19	8.1	49.0	128.0
15947	4 G 0.75	19	8.7	60.0	184.0
15948	5 G 0.75	19	9.4	70.0	200.0
15949	7 G 0.75	19	10.9	95.0	269.0
15885	10 G 0.75	19	12.7	110.0	327.0
15950	12 G 0.75	19	12.7	140.0	366.0
15886	14 G 0.75	19	13.7	163.0	426.0
15887	16 G 0.75	19	14.4	187.0	487.0
15951	18 G 0.75	19	15.0	211.0	547.0
15888	20 G 0.75	19	15.9	216.0	551.0
15889	21 G 0.75	19	16.5	272.0	590.0
15952	25 G 0.75	19	18.1	322.0	600.0

# JZ-HF-CY / OZ-HF-CY



oil resistant, with inner sheath, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15890	30 G 0.75	19	18.5	414.0	650.0	15980	7 G 1.5	16	12.8	148.0	403.0
15891	34 G 0.75	19	20.0	473.0	685.0	15981	12 G 1.5	16	15.4	274.0	592.0
15892	36 G 0.75	19	20.0	500.0	720.0	15982	18 G 1.5	16	17.7	386.0	844.0
15893	42 G 0.75	19	21.6	583.0	800.0	15983	25 G 1.5	16	21.8	584.0	1155.0
15894	50 G 0.75	19	23.3	695.0	954.0	15152	41 G 1.5	16	25.9	867.0	1227.0
15961	2 x 1	18	8.1	50.0	115.0	15153	50 G 1.5	16	28.0	970.0	1445.0
15962	3 G 1	18	8.5	60.0	142.0	15154	61 G 1.5	16	30.9	1028.0	1724.0
15963	4 G 1	18	9.2	73.0	196.0	15925	3 G 2.5	14	11.1	140.0	215.0
15964	5 G 1	18	9.9	81.0	271.0	15926	4 G 2.5	14	11.8	159.0	264.0
15965	7 G 1	18	11.4	114.0	307.0	15927	5 G 2.5	14	13.3	194.0	344.0
15966	12 G 1	18	13.8	186.0	474.0	15928	7 G 2.5	14	15.6	234.0	410.0
15967	18 G 1	18	16.0	254.0	622.0	15929	12 G 2.5	14	18.6	390.0	721.0
15968	25 G 1	18	19.5	365.0	828.0	15155	3 G 4	12	13.0	178.0	292.0
15969	34 G 1	18	21.3	500.0	1049.0	15156	4 G 4	12	14.4	222.0	372.0
15970	41 G 1	18	22.8	576.0	1257.0	15157	5 G 4	12	15.7	328.0	448.0
15971	50 G 1	18	25.0	681.0	1437.0	15158	4 G 6	10	16.0	305.0	526.0
15972	65 G 1	18	28.1	932.0	1823.0	15159	5 G 6	10	17.5	441.0	632.0
15976	2 x 1.5	16	8.7	64.0	170.0	15160	4 G 10	8	21.1	485.0	838.0
15977	3 G 1.5	16	9.1	84.0	203.0	15161	5 G 10	8	23.0	610.0	998.0
15978	4 G 1.5	16	10.0	99.0	243.0	15162	4 G 16	6	24.1	840.0	1225.0
15979	5 G 1.5	16	10.7	120.0	288.0	15163	5 G 16	6	27.0	1050.0	1560.0

# JZ-HF-FCY / OZ-HF-FCY

oil resistant, EMC-preferred type



HELUKABEL® JZ-HF-FCY 7G2,5 QMM (14 AWG)7C E 170315 CSA AWM Style 2570 CE

## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 2570, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: Special-PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12), UL-Std. 1581
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimally matched lay lengths
- Foil wrapping over each stranding layer
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special-PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5), UL-Std. 1581
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil
- low adhesion
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
EAC

## ■ APPLICATION

UL/CSA approved, highly flexible PVC drag chain cable for installation in dry, damp and wet rooms with free movement, without tensile stress and without forced motion control. Suitable for frequent lifting and bending stress in machine and tool construction. Due to the high screening density, interference-free transmission of signals or pulses is ensured. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12908	2 x 0.5	20	6.0	35.0	46.0
12909	3 G 0.5	20	6.3	42.0	56.0
12910	4 G 0.5	20	6.8	47.0	64.0
12911	5 G 0.5	20	7.4	56.0	77.0
12912	7 G 0.5	20	8.5	69.0	104.0
12913	12 G 0.5	20	10.1	108.0	158.0
12914	18 G 0.5	20	11.7	145.0	229.0
12915	25 G 0.5	20	14.0	240.0	320.0
12916	2 x 0.75	19	6.4	40.0	59.0
12917	3 G 0.75	19	6.8	52.0	68.0
12918	4 G 0.75	19	7.3	60.0	82.0
12919	5 G 0.75	19	7.9	71.0	101.0
12920	7 G 0.75	19	9.2	91.0	150.0
12921	12 G 0.75	19	11.0	142.0	212.0
12922	18 G 0.75	19	13.0	212.0	305.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12923	25 G 0.75	19	15.8	281.0	430.0
12924	2 x 1	18	6.8	50.0	71.0
12925	3 G 1	18	7.2	60.0	90.0
12926	4 G 1	18	7.8	71.0	114.0
12927	5 G 1	18	8.4	88.0	136.0
12928	7 G 1	18	9.8	111.0	169.0
12929	12 G 1	18	12.0	184.0	270.0
12930	18 G 1	18	14.2	260.0	385.0
12931	25 G 1	18	16.8	349.0	530.0
12932	2 x 1.5	16	7.3	63.0	88.0
12933	3 G 1.5	16	7.7	80.0	104.0
12934	4 G 1.5	16	8.4	97.0	136.0
12935	5 G 1.5	16	9.1	119.0	170.0
12936	7 G 1.5	16	10.7	147.0	221.0
12937	12 G 1.5	16	13.0	267.0	348.0

# JZ-HF-FCY / OZ-HF-FCY

oil resistant, EMC-preferred type

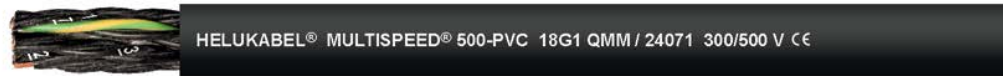


Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12938	18 G 1.5	16	15.5	374.0	489.0
12939	25 G 1.5	16	18.7	526.0	710.0
12940	3 G 2.5	14	9.1	144.0	177.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12941	4 G 2.5	14	9.9	148.0	204.0
12942	7 G 2.5	14	13.0	255.0	340.0
12943	4 G 4	12	11.2	230.0	310.0

# MULTISPEED® 500-PVC

oil-resistant, for extreme mechanical stress



## TECHNICAL DATA

PVC drag chain cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -30°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 42 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Outer sheath: Special-PVC, extruded filler
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone
- largely resistant to: chemicals

- low adhesion
- for outdoor use
- highly resistant to alternate bending strength
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

HELUKABEL® MULTISPEED® 500-PVC is used when extreme demands are imposed on the cable. Integrated materials and stranding techniques permit continuous use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry and damp rooms, as well as outdoors with free movement, without tensile stress and without forced motion control capabilities. Suitable for frequent lifting and bending stress in machine and tool construction.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24050	2 x 0.5	20	4.3	9.6	40.0
24051	3 G 0.5	20	4.6	14.4	45.0
24052	4 G 0.5	20	5.0	19.0	57.0
24053	5 G 0.5	20	5.4	24.0	66.0
24054	7 G 0.5	20	8.9	33.6	81.0
24055	12 G 0.5	20	9.7	58.0	133.0
24056	18 G 0.5	20	11.8	86.0	194.0
24057	25 G 0.5	20	13.9	120.0	274.0
25076	2 x 0.75	19	4.8	14.4	35.1
25077	3 x 0.75	19	5.2	21.6	42.9
24058	4 G 0.75	19	5.6	29.0	63.0
24059	5 G 0.75	19	6.3	36.0	79.0
24060	7 G 0.75	19	10.3	50.0	107.0
24061	12 G 0.75	19	11.0	86.0	169.0
24062	18 G 0.75	19	13.9	130.0	247.0
24063	25 G 0.75	19	15.9	180.0	366.0
24064	36 G 0.75	19	19.6	259.0	540.0
24065	42 G 0.75	19	21.5	302.0	630.0
25078	2 x 1	18	5.1	19.2	38.1
24066	3 G 1	18	5.4	29.0	69.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24067	4 G 1	18	5.9	38.4	86.0
24068	5 G 1	18	6.7	48.0	101.0
24069	7 G 1	18	11.1	67.0	140.0
24070	12 G 1	18	12.0	115.0	227.0
24071	18 G 1	18	14.8	173.0	351.0
24072	25 G 1	18	17.2	240.0	489.0
25079	2 x 1.5	16	6.0	28.8	55.2
24073	3 G 1.5	16	6.4	43.0	88.0
24074	4 G 1.5	16	7.0	58.0	110.0
24075	5 G 1.5	16	7.8	72.0	130.0
24076	7 G 1.5	16	13.0	101.0	182.0
24077	12 G 1.5	16	14.2	173.0	319.0
24078	18 G 1.5	16	17.5	259.0	420.0
24079	25 G 1.5	16	20.1	360.0	604.0
25102	2 x 2.5	14	7.4	48.0	89.9
25103	3 G 2.5	14	8.1	72.0	113.0
24080	4 G 2.5	14	8.8	96.0	172.0
24081	5 G 2.5	14	9.8	120.0	219.0
24082	7 G 2.5	14	16.1	168.0	303.0
24083	12 G 2.5	14	17.8	288.0	504.0



# MULTISPEED® 500-PVC

oil-resistant, for extreme mechanical stress



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24084	18 G 2.5	14	21.8	432.0	754.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24085	25 G 2.5	14	24.4	600.0	940.0

# MULTISPEED® 500-C-PVC

oil-resistant, for extreme mechanical stress, EMC-preferred type



## TECHNICAL DATA

PVC drag chain cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -15°C to +80°C fixed -30°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 25 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Inner sheath: PVC, compound type YM2, extruded filler, black
- Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone
- largely resistant to: chemicals

- low adhesion
- for outdoor use
- highly resistant to alternate bending strength
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## APPLICATION

HELUKABEL® MULTISPEED® 500-C-PVC is used when extreme demands are imposed on the cable. Integrated materials and stranding techniques permit continuous use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry and damp rooms, as well as outdoors with free movement, without tensile stress and without forced motion control capabilities. Suitable for frequent lifting and bending stress in machine and tool construction. These copper screened cables are ideally suited for interference-free data and signal transmission for measurement and control technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24086	2 x 0.5	20	6.2	30.0	88.0
24087	3 G 0.5	20	6.7	36.0	101.0
24088	4 G 0.5	20	7.2	42.0	116.0
24089	5 G 0.5	20	7.6	48.0	146.0
24090	7 G 0.5	20	11.4	64.0	181.0
24091	9 G 0.5	20	11.4	80.0	219.0
24092	12 G 0.5	20	12.4	105.0	271.0
24093	18 G 0.5	20	14.7	137.0	374.0
24094	25 G 0.5	20	17.1	210.0	542.0
24095	2 x 0.75	19	6.8	40.0	96.0
24096	3 G 0.75	19	7.3	48.0	111.0
24097	4 G 0.75	19	7.8	55.0	140.0
24098	5 G 0.75	19	8.3	66.0	161.0
24099	7 G 0.75	19	12.7	85.0	227.0
24100	12 G 0.75	19	13.7	135.0	317.0
24101	18 G 0.75	19	17.1	190.0	486.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24102	25 G 0.75	19	19.5	275.0	651.0
25104	2 x 1	18	7.3	47.0	93.0
24103	3 G 1	18	7.6	59.0	131.0
24104	4 G 1	18	8.1	70.0	164.0
24105	5 G 1	18	8.9	84.0	198.0
24106	7 G 1	18	13.6	106.0	252.0
24107	12 G 1	18	14.6	174.0	410.0
24108	18 G 1	18	18.4	240.0	550.0
24109	25 G 1	18	21.0	332.0	756.0
25105	2 x 1.5	16	8.0	63.5	120.0
24110	3 G 1.5	16	8.4	75.0	166.0
24111	4 G 1.5	16	9.1	90.0	199.0
24112	5 G 1.5	16	10.2	108.0	229.0
24113	7 G 1.5	16	15.7	157.0	304.0
24114	12 G 1.5	16	17.4	240.0	502.0
24115	18 G 1.5	16	21.3	355.0	709.0

# MULTISPEED® 500-C-PVC

oil-resistant, for extreme mechanical stress, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24116	25 G 1.5	16	24.3	448.0	939.0
25106	2 x 2.5	14	9.2	90.8	163.0
25107	3 G 2.5	14	10.1	114.8	189.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24117	4 G 2.5	14	11.2	134.0	270.0
24118	5 G 2.5	14	12.2	175.0	335.0

# MULTISPEED® 500-PVC UL/CSA

for extreme mechanical stress, oil resistant



## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 21179, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -5°C to +80°C fixed -30°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 42 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Outer sheath: Special-PVC, extruded filler
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone
- largely resistant to: chemicals
- low adhesion
- for outdoor use

- suitable for use in drag chains
- highly resistant to alternate bending strength
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
EAC

## APPLICATION

This UL/CSA approved cable is used when extreme demands are placed on the cable. Designed for export-oriented mechanical engineers, specifically in the USA and Canada. Gearing toward the needs of the industry, materials and stranding techniques permit uninterrupted use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry and damp rooms, as well as outdoors. With free movement, without tensile stress and without forced motion control capabilities, these cables are suitable for frequent lifting and bending stress in machine and tool construction.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24295	2 x 0.5	20	4.8	9.6	40.0
24296	3 G 0.5	20	5.1	14.4	45.0
24297	4 G 0.5	20	5.5	19.0	57.0
24298	5 G 0.5	20	6.0	24.0	66.0
24299	7 G 0.5	20	9.1	33.6	81.0
24300	12 G 0.5	20	10.0	58.0	133.0
24301	18 G 0.5	20	12.2	86.0	194.0
24302	25 G 0.5	20	14.3	120.0	274.0
25229	2 x 0.75	19	5.3	14.4	40.0
25239	3 G 0.75	19	5.7	21.6	48.0
24303	4 G 0.75	19	6.1	29.0	63.0
24304	5 G 0.75	19	6.6	36.0	79.0
24305	7 G 0.75	19	10.5	50.0	107.0
24306	12 G 0.75	19	11.4	86.0	169.0
24307	18 G 0.75	19	14.2	130.0	247.0
24308	25 G 0.75	19	16.3	180.0	366.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24309	36 G 0.75	19	20.1	259.0	540.0
24310	42 G 0.75	19	22.2	302.0	630.0
25249	2 x 1	18	5.6	19.2	46.0
24311	3 G 1	18	5.9	29.0	69.0
24312	4 G 1	18	6.4	38.4	86.0
24313	5 G 1	18	7.0	48.0	101.0
24314	7 G 1	18	11.2	67.0	140.0
24315	12 G 1	18	12.3	115.0	227.0
24316	18 G 1	18	15.1	173.0	351.0
24317	25 G 1	18	17.6	240.0	489.0
25295	2 x 1.5	16	6.3	28.8	56.0
24318	3 G 1.5	16	6.7	43.0	88.0
24319	4 G 1.5	16	7.3	58.0	110.0
24320	5 G 1.5	16	8.0	72.0	130.0
24321	7 G 1.5	16	13.2	101.0	182.0
24322	12 G 1.5	16	14.4	173.0	319.0

# MULTISPEED® 500-PVC UL/CSA

for extreme mechanical stress, oil resistant



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24323	18 G 1.5	16	17.7	259.0	420.0
24324	25 G 1.5	16	20.5	360.0	604.0
25296	2 x 2.5	14	7.4	48.0	93.0
25297	3 G 2.5	14	8.1	72.0	117.0
24325	4 G 2.5	14	8.9	96.0	172.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24326	5 G 2.5	14	9.9	120.0	219.0
24327	7 G 2.5	14	16.1	168.0	303.0
24328	12 G 2.5	14	17.8	288.0	504.0
24329	18 G 2.5	14	21.8	432.0	754.0
24330	25 G 2.5	14	24.4	600.0	940.0

# MULTISPEED® 500-C-PVC UL/CSA

for extreme mechanical stress, EMC-preferred type, oil resistant



## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 21179, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -5°C to +80°C fixed -30°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 25 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Inner sheath: PVC, extruded filler, black
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special-PVC
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone

- largely resistant to: chemicals
- low adhesion
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals: EAC

## APPLICATION

For continuous operation with long travelling distances at high or low speeds. For installation in dry and damp rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Used as a highly flexible PVC drag chain cable suitable for frequent lifting and bending stress in machine and tool construction. These copper screened cables are ideally suited for interference-free data signal transmission in measurement and control technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:  
1) the assembly instructions must be observed  
2) for further application parameters, please refer to the selection tables  
3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24335	2 x 0.5	20	6.6	30.0	70.0
24336	3 G 0.5	20	6.9	36.0	101.0
24337	4 G 0.5	20	7.3	42.0	116.0
24338	5 G 0.5	20	7.8	48.0	146.0
24339	7 G 0.5	20	11.3	64.0	181.0
24340	9 G 0.5	20	11.4	80.0	219.0
24341	12 G 0.5	20	12.6	105.0	271.0
24342	18 G 0.5	20	15.0	137.0	374.0
24343	25 G 0.5	20	17.1	210.0	542.0
24344	2 x 0.75	19	6.9	37.5	78.0
24345	3 G 0.75	19	7.4	48.0	111.0
24346	4 G 0.75	19	8.0	55.0	140.0
24347	5 G 0.75	19	8.5	66.0	161.0
24348	7 G 0.75	19	12.9	85.0	227.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24349	12 G 0.75	19	14.4	135.0	317.0
24350	18 G 0.75	19	17.5	190.0	486.0
24351	25 G 0.75	19	19.9	275.0	651.0
25298	2 x 1	18	7.4	47.0	91.0
24352	3 G 1	18	7.7	59.0	131.0
24353	4 G 1	18	8.3	70.0	164.0
24354	5 G 1	18	9.1	84.0	198.0
24355	7 G 1	18	14.0	106.0	252.0
24356	12 G 1	18	15.0	174.0	410.0
24357	18 G 1	18	18.7	240.0	550.0
24358	25 G 1	18	21.2	332.0	756.0
25299	2 x 1.5	16	8.1	63.5	110.0
24359	3 G 1.5	16	8.6	75.0	166.0
24360	4 G 1.5	16	9.4	90.0	199.0

# MULTISPEED® 500-C-PVC UL/CSA



for extreme mechanical stress, EMC-preferred type, oil resistant

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24361	5 G 1.5	16	10.4	108.0	229.0
24362	7 G 1.5	16	16.0	157.0	304.0
24363	12 G 1.5	16	17.6	240.0	502.0
24364	18 G 1.5	16	21.3	355.0	709.0
24365	25 G 1.5	16	24.8	448.0	939.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
25300	2 x 2.5	14	9.4	90.8	170.0
25301	3 G 2.5	14	10.3	114.8	194.0
24366	4 G 2.5	14	11.3	134.0	270.0
24367	5 G 2.5	14	12.3	175.0	335.0



HELUKABEL® JZ-602 RC AWM STYLE 21179 20 AWG / 0.5 QMM 5 C  
E170315 80°C 1000 V VW-1 AWM I/II A/B 80°C 1000 V FT 1 CE

## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 21179, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer
- Outer sheath: Special-PVC acc. to UL-Std. 758 (AWM) Style 21179, CSA-Std. C22.2 No. 210
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: UV radiation
- largely resistant to: acids, alkalis, at room temperature

- low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- certifications and approvals: EAC

## APPLICATION

For installation in dry, damp and wet rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Suitable for frequent lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. RC = Robotics Cable

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89900	3 G 0.5	20	5.8	14.0	45.0
89901	4 G 0.5	20	6.2	19.0	54.0
89902	5 G 0.5	20	6.7	24.0	63.0
89903	7 G 0.5	20	7.8	34.0	83.0
89904	9 G 0.5	20	8.9	43.2	96.0
89905	12 G 0.5	20	9.3	58.2	119.0
89906	18 G 0.5	20	11.0	86.0	172.0
89907	25 G 0.5	20	13.6	120.0	249.0
89908	34 G 0.5	20	15.0	163.0	276.0
11020415	2 x 0.75	19	6.0	14.4	45.0
11020416	5 G 0.75	19	7.4	36.0	81.0
11020417	7 G 0.75	19	8.6	50.4	107.0
11020418	12 G 0.75	19	10.5	86.4	162.0
11020419	18 G 0.75	19	12.4	129.6	234.0
11020420	25 G 0.75	19	15.3	180.0	337.0
89909	3 G 1	18	6.7	28.8	72.0
89910	4 G 1	18	7.2	38.4	95.0
89911	5 G 1	18	7.8	48.0	104.0
89912	7 G 1	18	9.2	67.2	153.0
89913	9 G 1	18	10.7	86.4	194.0
89914	12 G 1	18	11.2	115.2	252.0
89915	15 G 1	18	12.5	144.0	294.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89916	18 G 1	18	13.4	172.8	393.0
47000	21 G 1	18	14.9	201.6	450.0
89917	25 G 1	18	16.5	240.0	550.0
89918	34 G 1	18	18.3	326.4	730.0
89919	3 G 1.5	16	7.3	44.0	91.0
89920	4 G 1.5	16	7.9	58.0	111.0
89921	5 G 1.5	16	8.7	72.0	136.0
89922	7 G 1.5	16	10.4	101.0	202.0
89923	9 G 1.5	16	12.1	129.7	244.0
89924	12 G 1.5	16	12.6	173.0	312.0
89925	18 G 1.5	16	15.1	260.0	524.0
89926	25 G 1.5	16	18.6	360.0	694.0
89927	34 G 1.5	16	20.8	490.0	879.0
89932	3 G 2.5	14	8.6	72.0	140.0
89928	4 G 2.5	14	9.4	96.0	176.0
89933	5 G 2.5	14	10.5	120.0	228.0
89929	7 G 2.5	14	12.6	168.0	309.0
89934	12 G 2.5	14	15.5	288.0	558.0
89935	3 G 4	12	9.9	115.0	227.0
89930	4 G 4	12	11.1	154.0	317.0
89936	5 G 4	12	12.3	192.0	329.0
89931	7 G 4	12	15.0	269.0	507.0



# JZ-602-RC



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89937	4 G 6	10	12.7	231.0	425.0
89938	4 G 10	8	16.5	384.0	655.0
89939	4 G 16	6	19.3	615.0	1149.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89940	4 G 25	4	24.1	960.0	1530.0
89941	4 G 35	2	30.2	1344.0	2154.0

# JZ-602-RC-CY

EMC-preferred type



HELUKABEL® JZ-602 RC-CY AWM STYLE 21179 18 AWG / 1 QMM 7 C  
E170315 80°C 1000 V VW-1 AWM I/II A/B 80°C 1000 V FT 1 CE

## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 21179, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping between stranded layers, foil wrapping over the outer layer
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special-PVC acc. to UL-Std. 758 (AWM) Style 21179, CSA-Std. C22.2 No. 210
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation
- largely resistant to: acids, alkalis, at room temperature

- low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- certifications and approvals: EAC

## ■ APPLICATION

For installation in dry, damp and wet rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Suitable for frequent lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. Due to the high screening density, interference-free transmission of signals or pulses is ensured. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding. RC = Robotics Cable

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89950	3 G 0.5	20	6.5	42.0	62.0
89951	4 G 0.5	20	7.0	47.0	73.0
89952	5 G 0.5	20	7.5	56.0	85.0
89953	7 G 0.5	20	8.5	69.0	111.0
89954	9 G 0.5	20	9.6	88.0	125.0
89955	12 G 0.5	20	10.0	108.0	157.0
89956	15 G 0.5	20	11.2	122.0	205.0
89957	18 G 0.5	20	11.9	145.0	227.0
89958	25 G 0.5	20	14.4	220.0	307.0
89959	3 G 1	18	7.4	60.0	84.0
89960	4 G 1	18	7.9	71.0	95.0
89961	5 G 1	18	8.6	88.0	113.0
89962	7 G 1	18	9.9	111.0	157.0
89963	9 G 1	18	11.4	138.0	219.0
89964	12 G 1	18	12.1	184.0	242.0
89965	15 G 1	18	13.7	202.0	337.0
89966	18 G 1	18	14.3	260.0	380.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89967	25 G 1	18	17.4	349.0	475.0
89968	34 G 1	18	19.6	434.0	648.0
89969	3 G 1.5	16	8.0	80.0	106.0
89970	4 G 1.5	16	8.7	97.0	129.0
89971	5 G 1.5	16	9.4	119.0	159.0
89972	7 G 1.5	16	11.1	147.0	213.0
89973	9 G 1.5	16	12.8	189.0	254.0
89974	12 G 1.5	16	13.7	267.0	330.0
89975	18 G 1.5	16	16.2	374.0	504.0
89976	25 G 1.5	16	19.9	526.0	679.0
89977	34 G 1.5	16	22.1	638.0	870.0
89984	3 G 2.5	14	9.3	129.0	167.0
89978	4 G 2.5	14	10.3	148.0	186.0
89985	5 G 2.5	14	11.2	181.0	233.0
89979	7 G 2.5	14	13.7	255.0	344.0
89986	12 G 2.5	14	16.6	368.0	545.0
89980	18 G 2.5	14	19.8	570.0	681.0

# JZ-602-RC-CY



EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89987	3 G 4	12	10.8	174.0	218.0
89981	4 G 4	12	12.0	230.0	275.0
89988	5 G 4	12	13.2	273.0	368.0
89982	7 G 4	12	15.9	316.0	477.0
89983	4 G 6	10	13.8	305.0	417.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
89989	4 G 10	8	17.6	490.0	703.0
89990	4 G 16	6	20.6	740.0	1052.0
89991	4 G 25	4	25.6	1140.0	1487.0
89992	4 G 35	2	31.7	1576.0	2177.0

# MULTIFLEX 600

highly flexible, oil resistant, open installation TC-ER, PLTC-ER, NFPA 79



## Technical data

- Highly flexible PVC control cable acc. to UL Std.1277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
flexing 7,5x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire stranded, with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFPA 79, WTTC 1000 V, DP-1, OIL RES I&II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, simple installation

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Grey or TPE outer sheath

## Application

HELUKABEL® MULTIFLEX 600 is a highly flexible, oil resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life; for industrial applications in dry, damp and wet environments. Recommended applications: production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry. Please observe applicable installation regulations for use in energy supply chains.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62502	2 x 0,5	20	6,9	10,0	53,0
62503	3 G 0,5	20	7,3	14,0	61,0
62504	4 G 0,5	20	8,0	19,0	72,0
62505	5 G 0,5	20	8,6	24,0	85,0
62506	7 G 0,5	20	9,9	34,0	110,0
62507	12 G 0,5	20	11,4	58,0	158,0
62508	18 G 0,5	20	14,2	86,0	241,0
62509	25 G 0,5	20	17,0	120,0	316,0
62510	34 G 0,5	20	18,9	163,0	439,0
62511	3 G 0,75	18	7,8	22,0	75,0
62512	4 G 0,75	18	8,6	29,0	91,0
62513	5 G 0,75	18	9,3	36,0	103,0
62514	7 G 0,75	18	10,8	50,0	136,0
62515	12 G 0,75	18	12,4	86,0	228,0
62516	15 G 0,75	18	13,8	108,0	273,0
62517	18 G 0,75	18	15,4	130,0	311,0
62518	25 G 0,75	18	18,5	180,0	498,0
62519	34 G 0,75	18	20,5	245,0	550,0
62520	36 G 0,75	18	20,6	259,0	570,0
62521	42 G 0,75	18	22,3	302,0	600,0
62522	3 G 1,5	16	8,6	43,0	100,0
62523	4 G 1,5	16	9,5	58,0	122,0
62524	5 G 1,5	16	10,3	72,0	148,0
62525	7 G 1,5	16	12,0	101,0	197,0
62526	9 G 1,5	16	14,2	130,0	244,0
62527	12 G 1,5	16	14,7	173,0	328,0
62528	18 G 1,5	16	17,2	259,0	459,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62529	25 G 1,5	16	20,8	360,0	665,0
62530	34 G 1,5	16	23,0	490,0	1084,0
62531	41 G 1,5	16	25,1	590,0	1260,0
62532	50 G 1,5	16	27,7	720,0	1521,0
62533	60 G 1,5	16	29,5	864,0	1885,0
62534	3 G 2,5	14	9,8	72,0	160,0
63136	4 G 2,5	14	10,6	96,0	173,0
62535	5 G 2,5	14	11,9	120,0	268,0
62536	7 G 2,5	14	13,6	168,0	307,0
62537	9 G 2,5	14	16,1	216,0	437,0
62538	12 G 2,5	14	16,9	288,0	572,0
62539	18 G 2,5	14	20,1	432,0	800,0
62540	25 G 2,5	14	25,1	600,0	1100,0
62541	3 G 4	12	11,3	115,0	221,0
62542	4 G 4	12	12,4	154,0	247,0
62543	5 G 4	12	13,8	192,0	318,0
62544	7 G 4	12	16,9	269,0	438,0
62545	4 G 6	10	15,3	230,0	383,0
62546	5 G 6	10	16,6	288,0	481,0
62547	7 G 6	10	18,2	403,0	800,0
62548	4 G 10	8	19,7	384,0	671,0
62549	5 G 10	8	22,0	480,0	990,0
62550	4 G 16	6	23,7	614,0	951,0
62551	5 G 16	6	26,1	768,0	1500,0
62552	4 G 25	4	34,0	960,0	1700,0
62554	4 G 35	2	37,0	1344,0	2300,0

Dimensions and specifications may be changed without prior notice. (RN01)

# MULTIFLEX 600-C

highly flexible, oil resistant, screened, EMC-preferred type, open installation TC-ER, PLTC-ER, NFFPA 79



## Technical data

- Highly flexible PVC control cable acc. to UL Std. 1277
- **Temperature range**  
flexing -5°C to +90°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTC 1000 V
- **Test voltage**  
3000 V
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 10x cable Ø
- **Insulation resistance**  
min. 20 MOhm x km
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper conductor, extra fine wire stranded, with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification to DIN VDE 0293 black cores with continuous white numbering
- GN-YE conductor, 3 cores and above in the outer layer
- Cores stranded in layers with optimal lay length
- Separating foil
- Braided screening of tinned copper wires, coverage approx. 85%
- Separator
- Outer sheath of special PVC
- Sheath colour: black (RAL 9005)
- With length marking in feet

## Properties

- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- UV resistant

## Tests

- Self-extinguishing and flame retardant acc. to CSA FT4
- **UL:**  
TC-ER, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), MTW, NFFPA 79, WTTC 1000 V, DP-1, OIL RES I&II, 90°C dry / 75°C wet, Class 1 Div. 2 per NEC Art 336, 392, 501, crush impact test acc. to UL 1277
- **CSA:**  
c(UL) CIC-TC FT4, CSA AWM I/II A/B FT4

## Note

### Advantages

- Highly flexible, simple installation

### Available on request

- With blue cores (DC)
- With red cores (AC)
- Grey or TPE outer sheath

## Application

HELUKABEL® MULTIFLEX 600-C is a highly flexible, oil resistant control cable. The special combination of TC-ER, PLTC-ER and ITC-ER allows this cable to be used as a connecting cable for industrial plant and machinery in accordance with NFFPA 79. Approved for open, unprotected installation in cable trays to the machine. Its outstanding oil resistance (OIL RES I & II) guarantees a long service life; for industrial applications in dry, damp and wet environments. Recommended applications: Production lines, bottling plants, machine construction, switch cabinets, conveyor systems, packaging machines, automotive industry. For the use in energy drag chains please note the installation guidelines.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62556	2 x 0,5	20	7,7	30,0	80,0
62557	3 G 0,5	20	8,0	37,0	85,0
62558	4 G 0,5	20	8,7	46,0	100,0
62559	5 G 0,5	20	9,3	54,0	113,0
62560	7 G 0,5	20	10,7	70,0	152,0
62561	12 G 0,5	20	12,3	112,0	210,0
62562	18 G 0,5	20	15,1	153,0	304,0
62563	25 G 0,5	20	18,1	225,0	408,0
62564	34 G 0,5	20	19,8	267,0	530,0
62565	3 G 0,75	18	8,5	55,0	101,0
62566	4 G 0,75	18	9,3	69,0	127,0
62567	5 G 0,75	18	10,0	82,0	148,0
62568	7 G 0,75	18	11,6	119,0	186,0
62569	12 G 0,75	18	14,1	178,0	286,0
62570	15 G 0,75	18	15,2	175,0	455,0
62571	18 G 0,75	18	16,3	252,0	383,0
62572	25 G 0,75	18	19,6	362,0	514,0
62573	34 G 0,75	18	21,9	473,0	685,0
62574	3 G 1,5	16	9,3	75,0	131,0
62575	4 G 1,5	16	10,2	93,0	165,0
62576	5 G 1,5	16	11,0	113,0	195,0
62577	7 G 1,5	16	12,9	162,0	250,0
62578	9 G 1,5	16	15,2	193,0	340,0
62579	12 G 1,5	16	15,6	249,0	393,0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62580	18 G 1,5	16	18,4	376,0	559,0
62581	25 G 1,5	16	23,1	510,0	788,0
62582	34 G 1,5	16	25,8	674,0	1203,0
62583	3 G 2,5	14	10,3	141,0	218,0
62584	4 G 2,5	14	11,5	149,0	222,0
62585	5 G 2,5	14	12,4	195,0	350,0
62586	7 G 2,5	14	15,4	243,0	373,0
62587	9 G 2,5	14	16,8	312,0	479,0
62588	12 G 2,5	14	18,5	368,0	730,0
62589	18 G 2,5	14	22,4	639,0	1140,0
62590	25 G 2,5	14	25,5	796,0	1530,0
62591	3 G 4	12	11,7	180,0	296,0
62592	4 G 4	12	13,3	221,0	305,0
62593	5 G 4	12	14,7	330,0	450,0
62594	7 G 4	12	17,8	363,0	536,0
62595	4 G 6	10	16,1	314,0	469,0
62596	5 G 6	10	17,5	441,0	772,0
62597	7 G 6	10	20,6	505,0	1028,0
62598	4 G 10	8	21,9	526,0	790,0
62599	5 G 10	8	24,1	610,0	1096,0
62600	4 G 16	6	24,8	730,0	1621,0
62602	5 G 16	6	27,2	1050,0	1759,0
62603	4 G 25	4	33,1	1450,0	2100,0
62605	4 G 35	2	37,8	1840,0	2550,0

Dimensions and specifications may be changed without prior notice. (RN01)

# MULTIFLEX 1000-PVC UL/CSA Style 2570

Cavo idoneo alla posa in catene portacavo



HELUKABEL® MULTIFLEX 1000-PVC UL/CSA Style 2570 CE

HELUKABEL® MULTIFLEX 1000-PVC UL/CSA Style 2570 CE

## Dati tecnici

- **Tensione Nominale:**  
1.000 V
- **Range Temperatura:**  
Posa flessibile 0°C / +80°C  
Posa fissa -40°C / +80°C
- **Raggio di curvatura:**  
7,5 volte il diametro esterno  
in applicazione mobile  
5 volte il diametro esterno  
in applicazione statica
- **Velocità massima:**  
Fino a 180 m/min.
- **Massima accelerazione:**  
Fino 20 m./sec<sup>2</sup>
- **Numero di cicli:**  
Fino a 3.000.000
- **Lunghezza della catena:**  
10 m. in tratto orizzontale

## Struttura

- **Conduttori:**  
Rame rosso extraflessibile classe 6  
VDE 0295 e IEC 60228 cl.6
- **Isolamento dei conduttori:**  
Mescola polipropilene in accordo  
a UL 80°C 1.000 V
- **Identificazione Conduttori:**  
Neri numerizzati con Giallo/Verde
- **Cordatura Cavo:**  
A corona con inserti laterali,  
su inserto centrale
- **Nastratura:**  
Nastro Tessuto Non Tessuto sovrapposto
- **Guaina Esterna:**  
Mescola PVC,  
in accordo a UL 80°C - 1.000 V  
Style 2570
- **Colore Guaina:** GRIGIO RAL 7001  
(su richiesta NERO RAL 9005)

## Caratteristiche

### Test

- **Comportamento alla Fiamma:**  
IEC 60332-1-2 / UL 1581 VW-1 / CSA FT1
- **Resistenza olii:**  
UL 1581 / VDE 0473-811-404 /  
IEC 60811-404
- **Riferimenti normativi:**  
UL 1581 / UL 758 / CSA 22.2
- **Marcatura:**  
Marcatura metrica HELUKABEL formazione  
codice articolo - E170315 cURus AWM  
STYLE 2570 80°C 1000 V VW-1 AWM  
I/II A/B 80°C 1000 V FT1 lotto di  
produzione CE - RAL 7001 -

## Impiego

CE = il prodotto è conforme alla Direttiva Bassa Tensione 2014/35/UE.

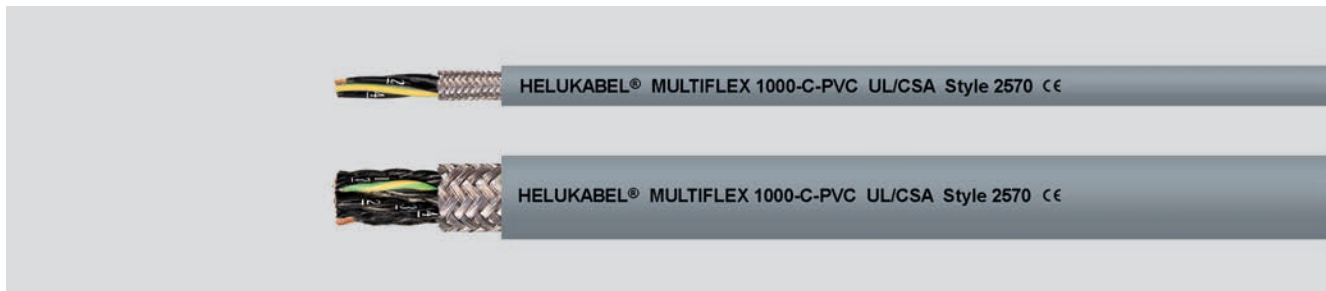
Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000616	2 x 0,5	21	4,9	10,0	40,0
18000617	3 G 0,5	21	5,1	14,0	46,0
18000618	4 G 0,5	21	5,6	19,0	56,0
18000619	5 G 0,5	21	6,0	24,0	65,0
18000620	7 G 0,5	21	6,4	34,0	80,0
18000621	12 G 0,5	21	8,7	58,0	135,0
18000622	18 G 0,5	21	10,5	86,0	196,0
18000623	25 G 0,5	21	12,8	120,0	270,0
18000624	2 x 0,75	19	5,6	14,0	46,0
18000625	3 G 0,75	19	5,9	22,0	54,0
18000626	4 G 0,75	19	6,4	29,0	66,0
18000627	5 G 0,75	19	7,1	36,0	80,0
18000628	6 G 0,75	19	8,1	50,0	110,0
18000629	12 G 0,75	19	10,0	86,0	179,0
18000630	18 G 0,75	19	12,2	130,0	257,0
18000631	25 G 0,75	19	14,5	180,0	365,0
18000632	2 x 1	18	5,9	19,0	60,0
18000633	3 G 1	18	6,2	29,0	72,0
18000634	4 G 1	18	7,0	38,0	86,0
18000635	5 G 1	18	7,5	48,0	104,0

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000636	7 G 1	18	9,5	67,0	141,0
18000637	12 G 1	18	11,2	115,0	230,0
18000638	18 G 1	18	13,3	173,0	343,0
18000639	25 G 1	18	16,4	240,0	485,0
18000640	2 x 1,5	16	6,5	29,0	70,0
18000641	3 G 1,5	16	7,1	43,0	90,0
18000642	4 G 1,5	16	7,8	58,0	109,0
18000643	5 G 1,5	16	8,3	72,0	131,0
18000644	7 G 1,5	16	9,8	101,0	184,0
18000645	12 G 1,5	16	12,7	173,0	309,0
18000646	18 G 1,5	16	14,5	259,0	440,0
18000647	25 G 1,5	16	18,6	360,0	620,0
18000648	2 x 2,5	14	8,2	48,0	112,0
18000649	3 G 2,5	14	8,8	72,0	148,0
18000650	4 G 2,5	14	10,3	96,0	178,0
18000651	5 G 2,5	14	11,1	120,0	221,0
18000652	7 G 2,5	14	12,5	168,0	306,0
18000653	12 G 2,5	14	16,2	288,0	498,0
18000654	18 G 2,5	14	19,5	432,0	764,0
18000655	25 G 2,5	14	24,1	600,0	1044,0

Con riserva di modifiche tecniche.

# MULTIFLEX 1000-C-PVC UL/CSA Style 2570

Cavo idoneo alla posa in catene portacavo



## Dati tecnici

- **Tensione Nominale:**  
1.000 V
- **Range Temperatura:**  
Posa flessibile 0°C / +80°C  
Posa fissa -40°C / +80°C
- **Raggio di curvatura:**  
7,5 volte il diametro esterno  
in applicazione mobile  
5 volte il diametro esterno  
in applicazione statica
- **Velocità massima:**  
Fino a 180 m/min.
- **Massima accelerazione:**  
Fino 20 m./sec<sup>2</sup>
- **Numero di cicli:**  
Fino a 3.000.000
- **Lunghezza della catena:**  
10 m. in tratto orizzontale

## Struttura

- **Conduttori:**  
Rame rosso extraflessibile classe 6  
VDE 0295 e IEC 60228 cl.6
- **Isolamento dei conduttori:**  
Mescola polipropilene in accordo  
a UL 80°C 1.000 V
- **Identificazione Conduttori:**  
Neri numerizzati con Giallo/Verde
- **Cordatura Cavo:**  
A corona con inserti laterali,  
su inserto centrale
- **Nastratura:**  
Nastro Tessuto Non Tessuto sovrapposto
- **Schermatura:**  
Treccia di rame stagnato densità ottica 85%
- **Guaina Esterna:**  
Mescola PVC,  
in accordo a UL 80° C – 1.000 V  
Style 2570
- **Colore Guaina:** GRIGIO RAL 7001  
(su richiesta NERO RAL 9005)

## Caratteristiche

### Test

- **Comportamento alla Fiamma:**  
IEC 60332-1-2 / UL 1581 VW-1 / CSA FT1
- **Resistenza olii:**  
UL 1581 / VDE 0473-811-404 /  
IEC 60811-404
- **Riferimenti normativi:**  
UL 1581 / UL 758 / CSA 22.2
- **Marcatura:**  
Marcatura metrica HELUKABEL formazione  
codice articolo - E170315 cURus AWM  
STYLE 2570 80°C 1000 V VW-1 AWM  
I/II A/B 80°C 1000 V FT1 lotto di  
produzione CE – RAL 7001 -

## Impiego

CE= il prodotto è conforme alla Direttiva Bassa Tensione 2014/35/UE.

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000656	2 x 0,5	21	5,6	23,0	45,0
18000657	3 G 0,5	21	5,9	30,0	55,0
18000658	4 G 0,5	21	6,3	37,0	61,0
18000659	5 G 0,5	21	6,4	42,0	74,0
18000660	7 G 0,5	21	7,0	56,0	98,0
18000661	12 G 0,5	21	9,7	90,0	157,0
18000662	18 G 0,5	21	11,1	123,0	217,0
18000663	25 G 0,5	21	13,4	161,0	314,0
18000664	2 x 0,75	19	6,0	27,0	59,0
18000665	3 G 0,75	19	6,3	39,0	66,0
18000666	4 G 0,75	19	6,8	47,0	77,0
18000667	5 G 0,75	19	7,4	59,0	93,0
18000668	6 G 0,75	19	8,0	73,0	130,0
18000669	12 G 0,75	19	10,3	118,0	202,0
18000670	18 G 0,75	19	12,2	171,0	292,0
18000671	25 G 0,75	19	14,3	244,0	415,0
18000672	2 x 1	18	6,4	37,0	65,0
18000673	3 G 1	18	6,7	47,0	80,0
18000674	4 G 1	18	7,5	61,0	98,0
18000675	5 G 1	18	8,4	71,0	127,0

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000676	7 G 1	18	9,5	94,0	158,0
18000677	12 G 1	18	11,6	152,0	260,0
18000678	18 G 1	18	13,5	214,0	380,0
18000679	25 G 1	18	16,5	304,0	534,0
18000680	2 x 1,5	16	7,2	47,0	88,0
18000681	3 G 1,5	16	7,6	66,0	100,0
18000682	4 G 1,5	16	8,2	80,0	126,0
18000683	5 G 1,5	16	8,8	99,0	160,0
18000684	7 G 1,5	16	10,4	132,0	208,0
18000685	12 G 1,5	16	13,3	213,0	338,0
18000686	18 G 1,5	16	15,6	323,0	479,0
18000687	25 G 1,5	16	19,2	432,0	705,0
18000688	2 x 2,5	14	8,7	71,0	130,0
18000689	3 G 2,5	14	9,3	99,0	167,0
18000690	4 G 2,5	14	10,9	128,0	195,0
18000691	5 G 2,5	14	11,7	151,0	223,0
18000692	7 G 2,5	14	13,1	204,0	344,0
18000693	12 G 2,5	14	16,8	352,0	570,0
18000694	18 G 2,5	14	20,1	512,0	681,0
18000695	25 G 2,5	14	24,7	696,0	946,0

Con riserva di modifiche tecniche.

# PURö-JZ-HF / PURö-J-HF / PURö-OZ-HF

oil-resistant PVC core insulation



HELUKABEL® PURö-JZ-HF 5G1,5 QMM / 15578 300/500 V C€



HELUKABEL® PURö-J-HF 1G6 QMM / 15653 300/500 V C€

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -20°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: oil-resistant PVC in alignment with DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer, x = without protective conductor (OZ)
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type T MPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Extremely robust drag chain cable, which is distinguished by its high abrasion resistance and notch-tensile strength properties. Due to its resistance to mineral oils, notably against coolant emulsions, it is suited for use in particularly critical locations in machine, tool and plant construction, rolling mills and steelworks. Due to its high abrasion resistance and small bending radius, it is ideally suited for use in drag chain systems.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15520	2 x 0.5	20	4.9	9.6	45.0
15521	3 G 0.5	20	5.2	14.0	56.0
15522	4 G 0.5	20	5.6	19.0	69.0
15523	5 G 0.5	20	6.3	24.0	92.0
15524	7 G 0.5	20	7.6	34.0	126.0
16161	7 x 0.5	20	7.6	34.0	126.0
15525	8 G 0.5	20	8.2	38.0	136.0
15526	10 G 0.5	20	9.3	48.0	158.0
15527	12 G 0.5	20	9.3	58.0	176.0
15528	14 G 0.5	20	9.7	67.0	212.0
15529	18 G 0.5	20	11.0	86.0	283.0
15530	21 G 0.5	20	12.3	96.0	310.0
15531	25 G 0.5	20	13.6	120.0	330.0
15532	30 G 0.5	20	13.8	144.0	390.0
15533	34 G 0.5	20	15.1	163.0	420.0
15534	42 G 0.5	20	16.4	202.0	500.0
15535	50 G 0.5	20	17.9	240.0	580.0
15538	2 x 0.75	19	5.4	14.0	57.0
15539	3 G 0.75	19	5.7	22.0	72.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15540	4 G 0.75	19	6.5	29.0	97.0
15541	5 G 0.75	19	7.0	36.0	119.0
15542	7 G 0.75	19	8.4	50.0	165.0
15543	8 G 0.75	19	9.3	58.0	189.0
15544	10 G 0.75	19	10.5	72.0	214.0
15545	12 G 0.75	19	10.5	86.0	247.0
15546	14 G 0.75	19	11.1	101.0	283.0
15547	18 G 0.75	19	12.4	130.0	356.0
15548	21 G 0.75	19	13.9	151.0	502.0
15549	25 G 0.75	19	15.3	180.0	698.0
15550	30 G 0.75	19	15.7	216.0	720.0
15551	34 G 0.75	19	17.0	245.0	770.0
15552	42 G 0.75	19	18.5	302.0	840.0
15553	50 G 0.75	19	20.3	360.0	990.0
15556	2 x 1	18	5.7	19.0	64.0
15557	3 G 1	18	6.3	29.0	83.0
15558	4 G 1	18	6.8	38.0	113.0
15559	5 G 1	18	7.6	48.0	137.0
15560	7 G 1	18	9.2	67.0	191.0



# PURÖ-JZ-HF / PURÖ-J-HF / PURÖ-OZ-HF

oil-resistant PVC core insulation



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15561	8 G 1	18	9.8	77.0	218.0
15562	10 G 1	18	11.2	96.0	251.0
15563	12 G 1	18	11.2	115.0	294.0
15564	14 G 1	18	11.9	134.0	337.0
15565	18 G 1	18	13.4	173.0	420.0
15566	21 G 1	18	14.9	196.0	504.0
15567	25 G 1	18	16.5	240.0	600.0
15568	32 G 1	18	17.6	308.0	732.0
15569	34 G 1	18	18.3	326.0	776.0
15570	41 G 1	18	19.8	394.0	925.0
15571	42 G 1	18	19.8	403.0	949.0
15572	50 G 1	18	21.7	480.0	1092.0
15573	65 G 1	18	24.9	624.0	1400.0
15575	2 x 1.5	16	6.5	29.0	90.0
15576	3 G 1.5	16	6.9	43.0	117.0
15577	4 G 1.5	16	7.7	58.0	147.0
15578	5 G 1.5	16	8.5	72.0	181.0
15579	7 G 1.5	16	10.4	101.0	274.0
15580	8 G 1.5	16	11.1	115.0	313.0
15581	10 G 1.5	16	12.6	144.0	344.0
15582	12 G 1.5	16	12.6	173.0	391.0
15583	14 G 1.5	16	13.4	202.0	457.0
15584	18 G 1.5	16	15.1	259.0	589.0
15585	21 G 1.5	16	16.8	302.0	680.0
15586	25 G 1.5	16	18.6	360.0	801.0
15587	30 G 1.5	16	19.1	410.0	938.0
15588	34 G 1.5	16	20.8	490.0	1048.0
15589	42 G 1.5	16	22.5	605.0	1290.0
15590	50 G 1.5	16	24.8	720.0	1520.0
15591	61 G 1.5	16	27.3	889.0	1850.0
15592	65 G 1.5	16	28.2	940.0	1970.0
15620	2 x 2.5	14	7.9	48.0	128.0
15621	3 G 2.5	14	8.4	72.0	160.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
15622	4 G 2.5	14	9.4	96.0	200.0
15623	5 G 2.5	14	10.5	120.0	268.0
15624	7 G 2.5	14	12.6	168.0	357.0
15625	12 G 2.5	14	15.5	288.0	571.0
15626	14 G 2.5	14	16.5	336.0	612.0
15627	18 G 2.5	14	18.5	432.0	800.0
15628	25 G 2.5	14	23.0	600.0	1100.0
15630	2 x 4	12	9.3	77.0	190.0
15631	3 G 4	12	9.9	115.0	250.0
15632	4 G 4	12	11.1	154.0	320.0
15633	5 G 4	12	12.3	192.0	400.0
15634	7 G 4	12	15.0	269.0	550.0
15653	1 G 6	10	6.0	58.0	81.0
15636	3 G 6	10	12.0	173.0	350.0
15637	4 G 6	10	13.4	230.0	500.0
15638	5 G 6	10	14.9	288.0	580.0
15639	7 G 6	10	18.1	403.0	800.0
15654	1 G 10	8	7.5	96.0	152.0
15641	3 G 10	8	15.3	288.0	660.0
15642	4 G 10	8	17.0	384.0	750.0
15643	5 G 10	8	19.1	480.0	990.0
15644	7 G 10	8	23.0	672.0	1300.0
15655	1 G 16	6	8.5	154.0	215.0
15645	4 G 16	6	19.8	614.0	1200.0
15646	5 G 16	6	22.2	768.0	1500.0
15647	7 G 16	6	27.0	1075.0	1900.0
15656	1 G 25	4	10.4	240.0	320.0
15648	4 G 25	4	24.1	960.0	1700.0
15649	4 G 35	2	30.2	1344.0	2300.0
15650	4 G 50	1	34.2	1920.0	2500.0
15651	4 G 70	2/0	38.5	2688.0	4600.0
15652	4 G 95	3/0	44.9	3648.0	6400.0

# PURÖ-JZ-HF-YCP / PURÖ-OZ-HF-YCP

oil-resistant PVC core insulation, with inner sheath, EMC-preferred

type



HELUKABEL® PURÖ-JZ-HF-YCP 7G1,5 QMM / 22456 300/500 V CE

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -20°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: oil-resistant PVC in alignment with DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE, in the outer layer,  
x = without protective conductor (OZ)
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Inner sheath: PVC
- Screen: braided screen of tinned copper, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Extremely robust drag chain cable, which is distinguished by its high abrasion resistance and notch-tensile strength properties. Due to its resistance to mineral oils, notably against coolant emulsions, it is suited for use in particularly critical locations in machine, tool and plant construction, rolling mills and steelworks. Due to its high abrasion resistance and small bending radius, it is ideally suited for use in drag chain systems. These screened cables are ideally suited for interference-free data signal transmission in measurement and control technology. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22400	2 x 0.5	20	6.9	30.0	90.0
22401	3 G 0.5	20	7.2	38.0	104.0
22402	4 G 0.5	20	7.8	48.0	123.0
22403	5 G 0.5	20	8.3	65.0	131.0
22404	7 G 0.5	20	9.6	70.0	172.0
22405	8 G 0.5	20	10.5	81.0	195.0
22406	10 G 0.5	20	11.5	94.0	230.0
22407	12 G 0.5	20	11.5	110.0	250.0
22408	14 G 0.5	20	12.1	135.0	280.0
22409	18 G 0.5	20	13.6	157.0	321.0
22410	21 G 0.5	20	15.0	175.0	380.0
22411	25 G 0.5	20	16.3	240.0	445.0
22412	30 G 0.5	20	16.6	275.0	509.0
22413	34 G 0.5	20	18.1	305.0	560.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22414	42 G 0.5	20	19.5	330.0	780.0
22415	50 G 0.5	20	21.3	393.0	960.0
22416	61 G 0.5	20	23.5	541.0	1050.0
22417	2 x 0.75	19	7.6	39.0	106.0
22418	3 G 0.75	19	7.9	49.0	120.0
22419	4 G 0.75	19	8.5	60.0	150.0
22420	5 G 0.75	19	9.2	70.0	158.0
22421	7 G 0.75	19	10.8	95.0	205.0
22422	8 G 0.75	19	11.5	104.0	272.0
22423	10 G 0.75	19	12.7	110.0	290.0
22424	12 G 0.75	19	12.7	141.0	304.0
22425	14 G 0.75	19	13.9	163.0	380.0
22426	18 G 0.75	19	15.2	211.0	418.0
22427	21 G 0.75	19	16.7	274.0	485.0

# PURÖ-JZ-HF-YCP / PURÖ-OZ-HF-YCP

oil-resistant PVC core insulation, with inner sheath, EMC-preferred



type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22428	25 G 0.75	19	18.3	322.0	578.0	22462	21 G 1.5	16	20.2	461.0	780.0
22429	30 G 0.75	19	18.7	414.0	630.0	22463	25 G 1.5	16	22.1	533.0	927.0
22430	34 G 0.75	19	20.6	473.0	720.0	22464	30 G 1.5	16	22.5	608.0	1030.0
22431	42 G 0.75	19	22.1	583.0	780.0	22465	34 G 1.5	16	24.4	702.0	1180.0
22432	50 G 0.75	19	24.1	626.0	954.0	22466	42 G 1.5	16	26.5	867.0	1458.0
22433	61 G 0.75	19	26.4	763.0	1085.0	22467	50 G 1.5	16	28.8	1033.0	1857.0
22434	2 x 1	18	7.9	50.0	116.0	22468	61 G 1.5	16	31.6	1233.0	2250.0
22435	3 G 1	18	8.3	60.0	135.0	22469	65 G 1.5	16	32.6	1315.0	2401.0
22436	4 G 1	18	9.0	73.0	178.0	22470	2 x 2.5	14	9.9	96.0	185.0
22437	5 G 1	18	9.6	81.0	188.0	22471	3 G 2.5	14	10.8	150.0	278.0
22438	7 G 1	18	11.3	114.0	235.0	22472	4 G 2.5	14	11.8	159.0	370.0
22439	8 G 1	18	12.2	130.0	270.0	22473	5 G 2.5	14	12.7	195.0	412.0
22440	10 G 1	18	14.0	178.0	340.0	22474	7 G 2.5	14	15.3	240.0	470.0
22441	12 G 1	18	14.0	186.0	358.0	22475	12 G 2.5	14	18.5	390.0	738.0
22442	14 G 1	18	14.7	231.0	415.0	22476	14 G 2.5	14	19.7	480.0	870.0
22443	18 G 1	18	16.2	254.0	500.0	22477	18 G 2.5	14	22.1	620.0	1100.0
22444	21 G 1	18	17.9	328.0	525.0	22478	25 G 2.5	14	27.1	821.0	1512.0
22445	25 G 1	18	19.6	378.0	678.0	22479	2 x 4	12	11.5	135.0	235.0
22446	32 G 1	18	21.0	450.0	777.0	22480	3 G 4	12	12.3	178.0	350.0
22447	34 G 1	18	21.7	478.0	825.0	22481	4 G 4	12	13.9	222.0	460.0
22448	41 G 1	18	23.6	576.0	980.0	22482	5 G 4	12	15.1	328.0	550.0
22449	42 G 1	18	23.6	590.0	998.0	22483	7 G 4	12	18.0	360.0	700.0
22450	50 G 1	18	25.7	702.0	1160.0	22484	3 G 6	10	15.2	250.0	525.0
22451	65 G 1	18	28.9	913.0	1670.0	22485	4 G 6	10	16.6	305.0	700.0
22452	2 x 1.5	16	8.5	64.0	141.0	22486	5 G 6	10	18.3	441.0	800.0
22453	3 G 1.5	16	9.1	84.0	164.0	22487	7 G 6	10	22.2	505.0	1100.0
22454	4 G 1.5	16	9.7	99.0	220.0	22488	3 G 10	8	18.7	370.0	855.0
22455	5 G 1.5	16	10.9	120.0	233.0	22489	4 G 10	8	21.0	485.0	1140.0
22456	7 G 1.5	16	12.5	148.0	323.0	22490	5 G 10	8	22.8	610.0	1310.0
22457	8 G 1.5	16	13.9	191.0	369.0	22491	7 G 10	8	28.4	820.0	1630.0
22458	10 G 1.5	16	15.4	240.0	461.0	22492	4 G 16	6	24.0	840.0	1391.0
22459	12 G 1.5	16	15.4	274.0	481.0	22493	5 G 16	6	26.6	1050.0	1810.0
22460	14 G 1.5	16	16.2	340.0	561.0	22494	7 G 16	6	32.3	1510.0	2166.0
22461	18 G 1.5	16	18.1	395.0	672.0						

# MULTISPEED® 500-PUR

for extreme mechanical stress



## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 42 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU), extruded filler
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Suitable for continuous operation with long travelling distance capabilities at high or low speeds in dry, damp and wet rooms, as well as outdoors. For applications where the highest demands are placed on flexibility and abrasion resistance, e.g. in energy supply chains, industrial robots, production lines, automation systems and on permanently moving machine parts for uninterrupted operation.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24119	2 x 0.5	20	4.3	9.6	41.0
24120	3 G 0.5	20	4.6	14.4	48.0
24121	4 G 0.5	20	5.0	19.0	62.0
24122	5 G 0.5	20	5.4	24.0	70.0
24123	7 G 0.5	20	8.9	33.6	88.0
24124	12 G 0.5	20	9.7	58.0	131.0
24125	18 G 0.5	20	11.8	86.0	204.0
24126	25 G 0.5	20	13.9	120.0	266.0
25108	2 x 0.75	19	4.8	14.4	31.0
24127	3 G 0.75	19	5.2	21.6	51.0
24128	4 G 0.75	19	5.6	29.0	68.0
24129	5 G 0.75	19	6.3	36.0	73.0
24130	7 G 0.75	19	10.3	50.0	92.0
24131	12 G 0.75	19	11.0	86.0	170.0
24132	18 G 0.75	19	13.9	130.0	257.0
24133	25 G 0.75	19	15.9	180.0	280.0
24134	36 G 0.75	19	19.6	260.0	411.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24135	42 G 0.75	19	21.5	302.0	608.0
25109	2 x 1	18	5.1	19.2	38.0
24136	3 G 1	18	5.4	29.0	59.0
24137	4 G 1	18	5.9	38.0	71.0
24138	5 G 1	18	6.7	48.0	84.0
24139	7 G 1	18	11.1	67.0	111.0
24140	12 G 1	18	12.0	115.0	200.0
24141	18 G 1	18	14.8	173.0	286.0
24142	25 G 1	18	17.2	240.0	370.0
25119	2 x 1.5	16	6.0	28.8	53.0
24143	3 G 1.5	16	6.4	43.0	81.0
24144	4 G 1.5	16	7.0	58.0	102.0
24145	5 G 1.5	16	7.8	72.0	121.0
24146	7 G 1.5	16	13.0	101.0	164.0
24147	12 G 1.5	16	14.2	173.0	293.0
24148	18 G 1.5	16	17.5	259.0	450.0
24149	25 G 1.5	16	20.1	360.0	631.0

# MULTISPEED® 500-PUR

for extreme mechanical stress



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
25129	2 x 2.5	14	7.4	48.0	87.0
25139	3 G 2.5	14	8.1	72.0	110.0
24150	4 G 2.5	14	8.8	96.0	173.0
24151	5 G 2.5	14	9.8	120.0	220.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24152	7 G 2.5	14	16.1	168.0	290.0
24153	12 G 2.5	14	17.8	288.0	504.0
24154	18 G 2.5	14	21.8	432.0	719.0
24155	25 G 2.5	14	24.4	600.0	940.0

# MULTISPEED® 500-C-PUR

for extreme mechanical stress, EMC-preferred type



## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51, DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 25 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Inner sheath: TPE, extruded filler, black
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24156	2 x 0.5	20	6.4	30.0	90.0
24157	3 G 0.5	20	6.7	36.0	104.0
24158	4 G 0.5	20	7.2	42.0	118.0
24159	5 G 0.5	20	7.6	48.0	148.0
24160	7 G 0.5	20	11.4	64.0	184.0
24161	9 G 0.5	20	11.4	80.0	219.0
24162	12 G 0.5	20	12.4	105.0	276.0
24163	18 G 0.5	20	14.7	137.0	378.0
24164	25 G 0.5	20	17.1	210.0	547.0
24165	2 x 0.75	19	6.8	40.0	100.0
24166	3 G 0.75	19	7.3	48.0	117.0
24167	4 G 0.75	19	7.8	55.0	143.0
24168	5 G 0.75	19	8.3	66.0	167.0

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Suitable for continuous operation with long travelling distance capabilities at high or low speeds in dry, damp and wet rooms, as well as outdoors. This robust cable is used wherever the highest demands are placed on flexibility, abrasion resistance, ozone and chemical resistance. These copper screened cables are ideally suited for interference-free data and signal transmission for measurement and control technology. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24169	7 G 0.75	19	12.7	85.0	229.0
24170	12 G 0.75	19	13.7	135.0	319.0
24171	18 G 0.75	19	17.1	190.0	492.0
24172	25 G 0.75	19	19.5	275.0	659.0
24173	2 x 1	18	7.1	50.0	120.0
24174	3 G 1	18	7.6	59.0	140.0
24175	4 G 1	18	8.1	70.0	167.0
24176	5 G 1	18	8.9	84.0	201.0
24177	7 G 1	18	13.6	106.0	256.0
24178	12 G 1	18	14.6	174.0	417.0
24179	18 G 1	18	18.4	240.0	557.0
24180	25 G 1	18	21.0	332.0	766.0
25149	2 x 1.5	16	8.0	63.5	100.0

# MULTISPEED® 500-C-PUR

for extreme mechanical stress, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24181	3 G 1.5	16	8.4	75.0	170.0
24182	4 G 1.5	16	9.1	90.0	204.0
24183	5 G 1.5	16	10.2	108.0	236.0
24184	7 G 1.5	16	15.7	157.0	309.0
24185	12 G 1.5	16	17.4	240.0	509.0
24186	18 G 1.5	16	21.3	355.0	718.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24187	25 G 1.5	16	24.3	448.0	944.0
25159	2 x 2.5	14	9.2	90.8	165.0
25169	3 G 2.5	14	10.1	114.8	191.0
24188	4 G 2.5	14	11.2	134.0	280.0
24189	5 G 2.5	14	12.2	175.0	346.0
24190	7 G 2.5	14	19.7	229.0	410.0

# MULTISPEED® 500-PUR UL/CSA

for extreme mechanical stress



## TECHNICAL DATA

PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 20939, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 42 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type Tmpu), extruded filler
- Sheath colour: black (RAL 9004)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- largely resistant to: chemicals

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

This UL/CSA approved cable is used when extreme demands are placed on the cable. Gearing toward the needs of the industry, materials and stranding techniques permit uninterrupted use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry, damp and wet rooms, as well as outdoors. For applications with the highest demands on flexibility, abrasion resistance and robustness, e.g. in cable carrier systems on industrial robots, production lines, automation systems and other permanently moving machine parts in continuous and multi-shift operation.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24370	2 x 0.5	20	4.8	9.6	41.0
24371	3 G 0.5	20	5.1	14.4	48.0
24372	4 G 0.5	20	5.5	19.0	62.0
24373	5 G 0.5	20	6.0	24.0	70.0
24374	7 G 0.5	20	9.1	33.6	88.0
24375	12 G 0.5	20	10.0	58.0	131.0
24376	18 G 0.5	20	12.2	86.0	204.0
24377	25 G 0.5	20	14.3	120.0	266.0
25302	2 x 0.75	19	5.3	14.4	31.0
24378	3 G 0.75	19	5.7	21.6	51.0
24379	4 G 0.75	19	6.1	29.0	68.0
24380	5 G 0.75	19	6.6	36.0	73.0
24381	7 G 0.75	19	10.5	50.0	92.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24382	12 G 0.75	19	11.4	86.0	170.0
24383	18 G 0.75	19	14.2	130.0	257.0
24384	25 G 0.75	19	16.3	180.0	280.0
24385	36 G 0.75	19	20.1	260.0	411.0
24386	42 G 0.75	19	22.2	302.0	608.0
25303	2 x 1	18	5.8	19.2	38.0
24387	3 G 1	18	5.9	29.0	59.0
24388	4 G 1	18	6.4	38.0	71.0
24389	5 G 1	18	7.0	48.0	84.0
24390	7 G 1	18	11.2	67.0	111.0
24391	12 G 1	18	12.3	115.0	200.0
24392	18 G 1	18	15.1	173.0	286.0
24393	25 G 1	18	17.6	240.0	370.0



# MULTISPEED® 500-PUR UL/CSA

for extreme mechanical stress



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24331	36 G 1	18	21.6	346.0	485.0
11007258	41 G 1	18	22.8	394.0	692.0
25304	2 x 1.5	16	6.4	28.8	53.0
24394	3 G 1.5	16	6.7	43.0	81.0
24395	4 G 1.5	16	7.3	58.0	102.0
24396	5 G 1.5	16	8.0	72.0	121.0
24397	7 G 1.5	16	13.2	101.0	164.0
24398	12 G 1.5	16	15.0	173.0	293.0
24399	18 G 1.5	16	17.7	259.0	450.0
24400	25 G 1.5	16	20.5	360.0	631.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24332	36 G 1.5	16	25.6	518.0	779.0
25305	2 x 2.5	14	7.8	48.0	87.0
25306	3 G 2.5	14	8.2	72.0	110.0
24401	4 G 2.5	14	8.9	96.0	173.0
24402	5 G 2.5	14	9.8	120.0	220.0
24403	7 G 2.5	14	16.1	168.0	290.0
24404	12 G 2.5	14	17.8	288.0	504.0
24405	18 G 2.5	14	21.8	432.0	719.0
24406	25 G 2.5	14	24.4	600.0	940.0

# MULTISPEED® 500-C-PUR UL/CSA



for extreme mechanical stress, EMC-preferred type



## TECHNICAL DATA

PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 20939, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 36 core(s): cores stranded into bundles with optimally matched, short lay lengths; bundles stranded together around a tensile core
- Inner sheath: TPE, extruded filler, black
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9004)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- largely resistant to: chemicals
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use

- suitable for use in drag chains
- highly resistant to alternate bending strength
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals:  
EAC

## APPLICATION

This UL/CSA approved cable is used when extreme demands are placed on the cable. Designed for export-oriented mechanical engineers, specifically in the USA and Canada. Gearing toward the needs of the industry, materials and stranding techniques permit uninterrupted use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry, damp and wet rooms, as well as outdoors. This special, robust and abrasion-resistant drag chain cable is used where highest demands on flexibility and load capacity are made, e.g. in cable carrier systems, industrial robots, production lines, automation systems and on permanently moving machine parts for continuous use in multi-shift operation. These copper screened cables are ideally suited for interference-free data signal transmission in measurement and control technology. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24410	2 x 0.5	20	6.6	30.0	90.0
24411	3 G 0.5	20	6.9	36.0	104.0
24412	4 G 0.5	20	7.3	42.0	118.0
24413	5 G 0.5	20	7.8	48.0	148.0
24414	7 G 0.5	20	11.3	64.0	184.0
24415	9 G 0.5	20	11.4	80.0	219.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24416	12 G 0.5	20	12.6	105.0	276.0
24417	18 G 0.5	20	15.0	137.0	378.0
24418	25 G 0.5	20	17.5	210.0	547.0
24419	2 x 0.75	19	6.8	40.0	100.0
24420	3 G 0.75	19	7.4	48.0	117.0
24421	4 G 0.75	19	8.0	55.0	143.0

# MULTISPEED® 500-C-PUR UL/CSA



for extreme mechanical stress, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
24422	5 G 0.75	19	8.5	66.0	167.0
24423	7 G 0.75	19	12.9	85.0	229.0
24424	12 G 0.75	19	14.4	135.0	319.0
24425	18 G 0.75	19	17.5	190.0	492.0
24426	25 G 0.75	19	19.9	275.0	659.0
24427	2 x 1	18	7.1	50.0	120.0
24428	3 G 1	18	7.7	59.0	140.0
24429	4 G 1	18	8.3	70.0	167.0
24430	5 G 1	18	9.1	84.0	201.0
24431	7 G 1	18	14.0	106.0	256.0
24432	12 G 1	18	15.0	174.0	417.0
24433	18 G 1	18	18.7	240.0	557.0
24434	25 G 1	18	21.4	332.0	766.0
24333	36 G 1	18	26.1	436.0	840.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
25307	2 x 1.5	16	7.0	63.5	99.0
24435	3 G 1.5	16	8.6	75.0	170.0
24436	4 G 1.5	16	9.4	90.0	204.0
24437	5 G 1.5	16	10.4	108.0	236.0
24438	7 G 1.5	16	16.0	157.0	309.0
24439	12 G 1.5	16	17.6	240.0	509.0
24440	18 G 1.5	16	21.3	355.0	718.0
24441	25 G 1.5	16	24.8	448.0	944.0
24334	36 G 1.5	16	30.3	592.0	1070.0
25308	2 x 2.5	14	8.5	90.8	238.0
25309	3 G 2.5	14	8.7	114.8	261.0
24442	4 G 2.5	14	11.3	134.0	280.0
24443	5 G 2.5	14	12.3	175.0	346.0
24444	7 G 2.5	14	19.9	229.0	410.0



HELUKABEL® JZ-602 RC-PUR 18 AWG 0,75 QMM 5C E170315 CSA AWM I/II A/B 80°C 600V FT1 CE

## TECHNICAL DATA

**PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 20939, CSA-Std. C22.2 No. 210 - AWM I/II A/B**

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12), UL-Std. 1581
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals: EAC

## ■ APPLICATION

For installation in dry, damp and wet rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Used as a highly flexible PUR drag chain cable well suited for frequent lifting and bending stress in machine and tool construction, in robotics and on permanently moving machine parts. RC= Robotics Cable

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12630	3 G 0.5	20	6.0	14.0	58.0
12631	4 G 0.5	20	6.5	19.0	69.0
12632	5 G 0.5	20	7.1	24.0	84.0
12633	7 G 0.5	20	8.2	34.0	123.0
12634	9 G 0.5	20	10.0	43.2	177.0
12635	12 G 0.5	20	10.5	58.2	192.0
12636	18 G 0.5	20	12.5	86.0	256.0
12637	25 G 0.5	20	15.2	120.0	358.0
12638	34 G 0.5	20	17.1	163.0	487.0
12639	3 G 0.75	18	6.6	23.8	88.0
12640	4 G 0.75	18	7.1	31.7	101.0
12641	5 G 0.75	18	7.8	39.6	126.0
12642	7 G 0.75	18	9.2	55.4	145.0
12643	9 G 0.75	18	11.0	86.4	168.0
12644	12 G 0.75	18	11.5	95.0	260.0
12645	15 G 0.75	18	13.2	119.0	300.0
12646	18 G 0.75	18	14.0	142.4	360.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12647	25 G 0.75	18	17.2	197.8	640.0
12648	34 G 0.75	18	19.1	269.0	730.0
12649	3 G 1.5	16	7.4	44.0	94.0
12650	4 G 1.5	16	8.0	58.0	117.0
12651	5 G 1.5	16	8.8	72.0	140.0
12652	7 G 1.5	16	10.8	101.0	186.0
12653	9 G 1.5	16	12.8	129.7	244.0
12654	12 G 1.5	16	13.5	173.0	319.0
12655	18 G 1.5	16	16.0	260.0	451.0
12656	25 G 1.5	16	19.8	360.0	625.0
12657	34 G 1.5	16	22.4	490.0	840.0
12658	3 G 2.5	14	8.9	72.0	150.0
12659	4 G 2.5	14	10.1	96.0	185.0
12660	5 G 2.5	14	11.3	120.0	242.0
12661	7 G 2.5	14	13.6	168.0	293.0
12662	12 G 2.5	14	16.8	288.0	498.0
12663	3 G 4	12	10.9	115.0	231.0

# JZ-602-RC-PUR



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12664	4 G 4	12	12.4	154.0	298.0
12665	5 G 4	12	13.8	192.0	370.0
12666	7 G 4	12	16.6	269.0	460.0
12667	4 G 6	10	14.6	231.0	430.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12668	4 G 10	8	18.2	384.0	720.0
12669	4 G 16	6	22.6	615.0	1060.0
12670	4 G 25	4	26.5	960.0	1590.0
12671	4 G 35	2	30.8	1344.0	2105.0

# JZ-602-RC-C-PUR

EMC-preferred type



HELUKABEL® JZ-602 RC-C-PUR 9A AWM STYLE 20939 18 AWG/0,75  
QMM 5C E170315 80°C 600V VW-1 AWM I/II A/B 80°C 600V FT1 C€

## TECHNICAL DATA

PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 20939, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 600 V
<b>Test voltage core/core</b>	4000 V
<b>Breakdown voltage</b>	8000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12), UL-Std. 1581
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer
- Inner sheath: PVC
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals: EAC

## APPLICATION

For installation in dry, damp and wet rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Suitable for frequent lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. Due to the high screening density, interference-free transmission of signals or pulses is ensured. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding. RC= Robotics Cable

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12680	3 G 0.5	20	8.5	45.0	124.0
12681	4 G 0.5	20	9.0	52.0	135.0
12682	5 G 0.5	20	9.7	68.0	153.0
12683	7 G 0.5	20	11.0	93.0	191.0
12684	9 G 0.5	20	12.4	134.0	243.0
12685	12 G 0.5	20	13.5	163.0	322.0
12686	15 G 0.5	20	14.8	174.0	350.0
12687	18 G 0.5	20	16.0	191.0	374.0
12688	25 G 0.5	20	19.0	223.0	436.0
12689	3 G 0.75	18	8.9	56.0	130.0
12690	4 G 0.75	18	9.7	81.0	155.0
12691	5 G 0.75	18	10.4	90.0	181.0
12692	7 G 0.75	18	12.0	106.0	208.0
12693	9 G 0.75	18	14.1	161.0	321.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12694	12 G 0.75	18	15.2	175.0	341.0
12695	15 G 0.75	18	16.7	204.0	396.0
12696	18 G 0.75	18	17.6	241.0	473.0
12697	25 G 0.75	18	20.7	342.0	650.0
12698	34 G 0.75	18	24.3	434.0	781.0
12699	3 G 1.5	16	10.2	89.0	165.0
12700	4 G 1.5	16	11.0	97.0	192.0
12701	5 G 1.5	16	11.8	111.0	224.0
12702	7 G 1.5	16	14.0	147.0	274.0
12703	9 G 1.5	16	16.4	193.0	340.0
12704	12 G 1.5	16	17.1	256.0	461.0
12705	18 G 1.5	16	20.2	360.0	674.0
12706	25 G 1.5	16	25.2	544.0	950.0
12707	34 G 1.5	16	28.1	674.0	1203.0

# JZ-602-RC-C-PUR



EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12708	3 G 2.5	14	11.8	141.0	220.0
12709	4 G 2.5	14	13.2	170.0	270.0
12710	5 G 2.5	14	14.2	195.0	350.0
12711	7 G 2.5	14	17.4	251.0	428.0
12712	12 G 2.5	14	21.0	368.0	730.0
12713	18 G 2.5	14	25.4	639.0	1140.0
12714	3 G 4	12	14.0	180.0	296.0
12715	4 G 4	12	15.9	232.0	456.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
12716	5 G 4	12	17.7	330.0	450.0
12717	7 G 4	12	20.9	395.0	737.0
12718	4 G 6	10	18.3	316.0	572.0
12719	4 G 10	8	23.2	490.0	1012.0
12720	4 G 16	6	27.6	850.0	1400.0
12721	4 G 25	4	33.1	1450.0	2100.0
12722	4 G 35	2	37.8	1890.0	2550.0

# MULTIFLEX 512®-PUR

for high mechanical stress



HELUKABEL® MULTIFLEX 512®-PUR 12G1,5 QMM / 22539 300/500 V CE

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- fleece wrapping over each stranding layer, from 4 mm<sup>2</sup> without fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- Alternate bending test: tested on approx. 10 million cycles

## APPLICATION

These special drag chain applications are used for permanently flexible applications in machine and tool construction, in robotics and on permanently moving machine parts for continuous use in multi-shift operations. With free movement, without tensile stress and without forced motion control capabilities, these cables have proven their reliable performance in drag chain applications. This highly flexible cable with gliding PP core insulation and cut-resistant low adhesive PUR outer sheath, guarantees an optimum service life and very high economic efficiency.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- cleanroom qualification tested on analog types; please note "cleanroom qualification" in your order
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22501	2 x 0.5	20	5.5	9.6	38.0
22502	3 G 0.5	20	5.8	14.4	46.0
22503	4 G 0.5	20	6.5	19.0	59.0
22504	5 G 0.5	20	7.0	24.0	68.0
22505	7 G 0.5	20	8.3	33.6	88.0
22506	12 G 0.5	20	9.9	58.0	131.0
22507	18 G 0.5	20	11.6	86.0	197.0
22508	20 G 0.5	20	12.2	96.0	260.0
22509	25 G 0.5	20	14.0	120.0	282.0
22510	30 G 0.5	20	14.5	144.0	315.0
22511	36 G 0.5	20	15.5	172.0	374.0
22512	2 x 0.75	19	6.5	14.4	47.0
22513	3 G 0.75	19	6.9	21.6	58.0
22514	4 G 0.75	19	7.4	29.0	69.0
22515	5 G 0.75	19	8.3	36.0	85.0
22516	7 G 0.75	19	9.6	50.0	118.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22517	12 G 0.75	19	11.8	86.0	183.0
22518	18 G 0.75	19	13.8	130.0	270.0
22519	20 G 0.75	19	14.5	144.0	290.0
22520	25 G 0.75	19	16.8	180.0	374.0
22521	30 G 0.75	19	17.2	216.0	420.0
22522	36 G 0.75	19	18.7	259.0	498.0
22523	2 x 1	18	6.9	19.2	55.0
22524	3 G 1	18	7.5	29.0	70.0
22525	4 G 1	18	8.1	38.0	86.0
22526	5 G 1	18	8.8	48.0	102.0
22527	7 G 1	18	10.5	67.0	143.0
22528	12 G 1	18	12.8	115.0	225.0
22529	18 G 1	18	15.0	173.0	334.0
22530	20 G 1	18	16.0	192.0	370.0
22531	25 G 1	18	18.5	240.0	460.0
22532	30 G 1	18	18.7	288.0	530.0



# MULTIFLEX 512®-PUR

for high mechanical stress



Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22533	36 G 1	18	20.3	346.0	625.0
22878	41 G 1	18	22.4	410.0	779.0
22879	50 G 1	18	24.2	498.0	953.0
22880	65 G 1	18	27.5	650.0	1205.0
22534	2 x 1.5	16	7.7	29.0	70.0
22535	3 G 1.5	16	8.2	43.0	90.0
22536	4 G 1.5	16	8.9	58.0	106.0
22537	5 G 1.5	16	9.8	72.0	145.0
22538	7 G 1.5	16	11.7	101.0	205.0
22539	12 G 1.5	16	14.1	173.0	320.0
22540	18 G 1.5	16	16.8	259.0	465.0
22541	20 G 1.5	16	17.8	288.0	510.0
22542	25 G 1.5	16	20.6	360.0	650.0
22543	30 G 1.5	16	20.9	432.0	750.0
22544	36 G 1.5	16	22.9	518.0	880.0
22881	42 G 1.5	16	24.8	628.0	1209.0
22882	50 G 1.5	16	27.0	749.0	1449.0
22883	61 G 1.5	16	29.8	912.0	1712.0
22545	2 x 2.5	14	9.1	48.0	115.0
22546	3 G 2.5	14	9.7	72.0	162.0

Part no.	No. cores x cross-sec. mm²	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22547	4 G 2.5	14	10.5	96.0	196.0
22548	5 G 2.5	14	11.7	120.0	230.0
22549	7 G 2.5	14	13.9	168.0	312.0
22550	12 G 2.5	14	17.0	288.0	532.0
22551	18 G 2.5	14	20.2	432.0	762.0
22552	20 G 2.5	14	21.4	480.0	858.0
22553	25 G 2.5	14	25.0	600.0	998.0
22554	4 G 4	12	13.3	154.0	283.0
22555	5 G 4	12	14.7	192.0	349.0
22556	7 G 4	12	17.8	269.0	498.0
22557	4 G 6	10	14.9	230.0	432.0
22558	5 G 6	10	16.6	288.0	529.0
22559	7 G 6	10	20.1	403.0	782.0
22560	4 G 10	8	18.8	384.0	685.0
22561	5 G 10	8	21.0	480.0	817.0
22562	7 G 10	8	25.4	672.0	1023.0
22563	4 G 16	6	21.9	614.0	1042.0
22564	5 G 16	6	24.5	768.0	1292.0
22565	7 G 16	6	29.7	1075.0	1709.0

# MULTIFLEX 512®-C-PUR

for high mechanical stress, EMC-preferred type



HELUKABEL® MULTIFLEX 512®-C-PUR 12G1 QMM / 22598 300/500 V CE

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-2-21 / DIN EN 50525-2-21

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 300/500 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer, from 4 mm<sup>2</sup> without fleece wrapping
- Inner sheath: TPE
- Fleece wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- Alternate bending test: tested on approx. 10 million cycles
- certifications and approvals: EAC

## APPLICATION

These specially screened drag chain cables offer application possibilities in areas where external high-frequency influences disturb pulse transmissions. They are used for permanently flexible applications in machine and tool construction, in robotics and on permanently moving machine parts for continuous use in multi-shift operations. With free movement, without tensile stress and without forced motion control capabilities, these cables have proven their reliable performance in drag chain applications. This highly flexible cable with gliding PP core insulation and cut-resistant low adhesive PUR outer sheath, guarantees an optimum service life and very high economic efficiency. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- please note "cleanroom qualification" in your order
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22571	2 x 0.5	20	8.3	30.0	90.0
22572	3 G 0.5	20	8.6	38.0	105.0
22573	4 G 0.5	20	9.1	50.0	124.0
22574	5 G 0.5	20	9.8	65.0	132.0
22575	7 G 0.5	20	11.3	70.0	175.0
22576	12 G 0.5	20	12.9	100.0	250.0
22577	18 G 0.5	20	14.8	157.0	325.0
22578	20 G 0.5	20	15.6	167.0	350.0
22579	25 G 0.5	20	17.6	240.0	450.0
22580	30 G 0.5	20	18.3	273.0	510.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22581	36 G 0.5	20	19.5	306.0	580.0
22582	2 x 0.75	19	9.1	39.0	110.0
22583	3 G 0.75	19	9.7	49.0	120.0
22584	4 G 0.75	19	10.2	60.0	148.0
22585	5 G 0.75	19	11.1	70.0	160.0
22586	7 G 0.75	19	12.6	95.0	205.0
22587	12 G 0.75	19	15.0	140.0	308.0
22588	18 G 0.75	19	17.4	220.0	420.0
22589	20 G 0.75	19	18.1	249.0	450.0
22590	25 G 0.75	19	20.8	313.0	579.0

# MULTIFLEX 512®-C-PUR

for high mechanical stress, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22591	30 G 0.75	19	21.0	470.0	630.0
22592	36 G 0.75	19	22.7	500.0	745.0
22593	2 x 1	18	9.9	50.0	120.0
22594	3 G 1	18	10.3	60.0	135.0
22595	4 G 1	18	11.1	73.0	173.0
22596	5 G 1	18	11.8	84.0	187.0
22597	7 G 1	18	13.7	114.0	240.0
22598	12 G 1	18	16.2	186.0	360.0
22599	18 G 1	18	18.8	254.0	498.0
22600	20 G 1	18	19.8	322.0	568.0
22601	25 G 1	18	22.5	377.0	670.0
22602	30 G 1	18	22.9	429.0	774.0
22603	36 G 1	18	24.7	516.0	895.0
22884	41 G 1	18	26.6	610.0	1032.0
22885	50 G 1	18	28.8	690.0	1160.0
22886	65 G 1	18	32.5	852.0	1660.0
22604	2 x 1.5	16	10.3	64.0	145.0
22605	3 G 1.5	16	11.2	84.0	168.0
22606	4 G 1.5	16	11.9	99.0	217.0
22607	5 G 1.5	16	12.8	129.0	235.0
22608	7 G 1.5	16	14.9	148.0	325.0
22609	12 G 1.5	16	17.9	279.0	481.0
22610	18 G 1.5	16	20.6	393.0	675.0
22611	25 G 1.5	16	24.8	584.0	927.0
22612	30 G 1.5	16	25.3	607.0	1025.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22613	36 G 1.5	16	27.3	702.0	1210.0
22887	42 G 1.5	16	29.4	829.0	1441.0
22888	50 G 1.5	16	32.0	1025.0	1709.0
22889	61 G 1.5	16	35.0	1190.0	2025.0
22614	2 x 2.5	14	11.9	104.0	198.0
22615	3 G 2.5	14	12.7	140.0	284.0
22616	4 G 2.5	14	13.5	164.0	378.0
22617	5 G 2.5	14	14.7	190.0	423.0
22618	7 G 2.5	14	17.7	236.0	486.0
22619	12 G 2.5	14	21.2	390.0	756.0
22620	18 G 2.5	14	24.6	607.0	1127.0
22621	20 G 2.5	14	26.0	661.0	1210.0
22622	25 G 2.5	14	29.8	796.0	1530.0
22623	4 G 4	12	16.7	222.0	448.0
22624	5 G 4	12	18.5	328.0	533.0
22625	7 G 4	12	21.8	360.0	678.0
22626	4 G 6	10	18.7	305.0	636.0
22627	5 G 6	10	20.4	441.0	772.0
22628	7 G 6	10	24.3	505.0	1028.0
22629	4 G 10	8	23.0	485.0	1052.0
22630	5 G 10	8	25.2	610.0	1096.0
22631	7 G 10	8	30.2	820.0	1530.0
22632	4 G 16	6	26.5	840.0	1386.0
22633	5 G 16	6	29.1	1050.0	1759.0
22634	7 G 16	6	34.9	1510.0	2087.0

# MULTIFLEX 512®-PUR UL/CSA

for extreme mechanical stress



HELUKABEL® MULTIFLEX 512®-PUR UL/CSA 12G1,5 QMM 1000 V E170315 CE

## TECHNICAL DATA

PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range flexible -30°C to +90°C  
fixed -40°C to +90°C

Permissible operating temperature of the conductor +90°C

Nominal voltage UL (AWM) AC 1000 V

Test voltage core/core 3000 V

Minimum bending radius flexible 5x Outer-Ø  
fixed 3x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer, from 4 mm<sup>2</sup> without fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU), UL-Std. 758 (AWM) Style 21209
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater, drilling fluids, drilling mud
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains

- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- drilling mud resistant acc. to NEK TS 606
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- Alternate bending test: tested on approx. 10 million cycles
- Certifications: DNV GL

## APPLICATION

Industrial application: UL/CSA approved drag chain cable for use in machine and tool manufacturing, in robotics and in other constantly moving machine parts; for permanently flexible applications moving freely without tensile stress and without movement control in dry, damp and wet rooms as well as outdoors. A slippery PP core insulation, cut-resistance and a low-adhesion PUR outer sheath guarantee an optimum durability and excellent cost-efficiency.

Oil and gas sector: for use as control and instrumentation cables on drilling platforms and ships, in land drilling as well as in chemical and petrochemical plants; resistant to drilling mud according to NEK TS 606 and thus ideal for high-performance applications such as pumping stations, compressors, generators and emergency power supply systems.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21559	2 x 0.5	20	5.9	10.8	38.0
21560	3 G 0.5	20	6.2	16.1	46.0
21561	4 G 0.5	20	6.7	21.5	59.0
21562	5 G 0.5	20	7.2	27.0	68.0
21563	7 G 0.5	20	8.3	37.6	88.0
21564	12 G 0.5	20	9.7	64.5	131.0
21565	18 G 0.5	20	11.2	97.0	197.0
21566	20 G 0.5	20	11.8	107.5	260.0
21567	25 G 0.5	20	13.6	134.5	282.0
21568	30 G 0.5	20	13.9	161.3	315.0
21569	36 G 0.5	20	15.1	193.5	374.0
21570	2 x 0.75	19	6.6	14.4	47.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21571	3 G 0.75	19	7.0	21.6	58.0
21572	4 G 0.75	19	7.5	29.0	69.0
21573	5 G 0.75	19	8.1	36.0	85.0
21574	7 G 0.75	19	9.4	50.0	118.0
21575	12 G 0.75	19	11.2	86.0	183.0
21576	18 G 0.75	19	13.0	130.0	270.0
21577	20 G 0.75	19	13.8	144.0	290.0
21523	21 G 0.75	19	14.7	151.0	302.0
21578	25 G 0.75	19	16.3	180.0	374.0
21579	30 G 0.75	19	16.5	216.0	420.0
21580	36 G 0.75	19	18.0	259.0	498.0
21581	2 x 1	18	6.9	19.2	55.0

# MULTIFLEX 512®-PUR UL/CSA

for extreme mechanical stress



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21582	3 G 1	18	7.3	29.0	70.0
21583	4 G 1	18	7.9	38.0	86.0
21584	5 G 1	18	8.5	48.0	102.0
21585	7 G 1	18	10.0	67.0	143.0
21586	12 G 1	18	11.8	115.0	225.0
21587	18 G 1	18	13.9	173.0	334.0
21588	20 G 1	18	14.9	192.0	370.0
21589	25 G 1	18	17.2	240.0	460.0
21590	30 G 1	18	17.7	288.0	530.0
21591	36 G 1	18	19.2	346.0	625.0
21592	41 G 1	18	20.9	410.0	779.0
21593	50 G 1	18	22.8	498.0	953.0
21594	65 G 1	18	26.0	650.0	1205.0
21595	2 x 1.5	16	7.7	29.0	70.0
21596	3 G 1.5	16	8.2	43.0	90.0
21597	4 G 1.5	16	8.9	58.0	106.0
21598	5 G 1.5	16	9.6	72.0	145.0
21599	7 G 1.5	16	11.3	101.0	205.0
21600	12 G 1.5	16	13.7	173.0	320.0
21601	18 G 1.5	16	16.4	259.0	465.0
21602	20 G 1.5	16	17.2	288.0	510.0
21603	25 G 1.5	16	20.2	360.0	650.0
21604	30 G 1.5	16	20.7	432.0	750.0
21605	36 G 1.5	16	22.5	518.0	880.0
21606	42 G 1.5	16	24.4	628.0	1209.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21607	50 G 1.5	16	26.8	749.0	1449.0
21608	61 G 1.5	16	29.6	912.0	1712.0
21609	2 x 2.5	14	8.5	48.0	115.0
21610	3 G 2.5	14	9.0	72.0	162.0
21611	4 G 2.5	14	9.8	96.0	196.0
21612	5 G 2.5	14	10.7	120.0	230.0
21613	7 G 2.5	14	12.7	168.0	312.0
21614	12 G 2.5	14	15.5	288.0	532.0
21615	18 G 2.5	14	18.6	432.0	762.0
21616	20 G 2.5	14	19.8	480.0	858.0
21617	25 G 2.5	14	23.1	600.0	998.0
21618	4 G 4	12	11.2	154.0	283.0
21619	5 G 4	12	12.3	192.0	349.0
21620	7 G 4	12	15.0	269.0	498.0
11017371	3 G 6	10	11.6	173.0	350.0
21621	4 G 6	10	12.7	230.0	432.0
21622	5 G 6	10	14.1	288.0	529.0
21623	7 G 6	10	17.2	403.0	782.0
21624	4 G 10	8	16.7	384.0	685.0
21625	5 G 10	8	18.6	480.0	817.0
21626	7 G 10	8	22.8	672.0	1023.0
11017372	3 G 16	6	17.6	461.0	792.0
21627	4 G 16	6	19.6	614.0	1042.0
21628	5 G 16	6	21.9	768.0	1292.0
21629	7 G 16	6	26.8	1075.0	1709.0

# MULTIFLEX 512®-C-PUR UL/CSA



EMC-preferred type, for extreme mechanical stress



HELUKABEL® MULTIFLEX 512®-C-PUR UL/CSA 12G1 QMM 1000 V E170315 CE

## TECHNICAL DATA

PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -30°C to +90°C fixed -40°C to +90°C
<b>Permissible operating temperature of the conductor</b>	+90°C
<b>Nominal voltage</b>	UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: Special-PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores, G = with protective conductor GN-YE, in the outer layer, x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer, from 4 mm<sup>2</sup> without fleece wrapping
- Inner sheath: TPE
- Fleece wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU), UL-Std. 758 (AWM) Style 21209
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater, drilling fluids, drilling mud
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- drilling mud resistant acc. to NEK TS 606
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- Alternate bending test: tested on approx. 10 million cycles
- Certifications: DNV GL

## ■ APPLICATION

Industrial application: UL/CSA approved drag chain cable for use in machine and tool manufacturing, in robotics and in other constantly moving machine parts; for permanently flexible applications moving freely without tensile stress and without movement control in dry, damp and wet rooms as well as outdoors. A slippery PP core insulation, cut-resistance and a low-adhesion PUR outer sheath guarantee an optimum durability and excellent cost-efficiency. Oil and gas sector: for use as control and instrumentation cables on drilling platforms and ships, in land drilling as well as in chemical and petrochemical plants; resistant to drilling mud according to NEK TS 606 and thus ideal for high-performance applications such as pumping stations, compressors, generators and emergency power supply systems. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21630	2 x 0.5	20	7.8	30.0	90.0
21631	3 G 0.5	20	8.1	38.0	105.0
21632	4 G 0.5	20	8.6	50.0	124.0
21633	5 G 0.5	20	9.1	65.0	132.0
21634	7 G 0.5	20	10.2	70.0	175.0
21635	12 G 0.5	20	11.8	100.0	250.0
21636	18 G 0.5	20	13.9	157.0	325.0
21637	20 G 0.5	20	14.7	167.0	350.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21638	25 G 0.5	20	16.6	240.0	450.0
21639	30 G 0.5	20	17.0	273.0	510.0
21640	36 G 0.5	20	18.2	306.0	580.0
21641	2 x 0.75	19	8.5	39.0	110.0
21642	3 G 0.75	19	8.9	49.0	120.0
21643	4 G 0.75	19	9.4	60.0	148.0
21644	5 G 0.75	19	10.1	70.0	160.0
21645	7 G 0.75	19	11.6	95.0	205.0

# MULTIFLEX 512®-C-PUR UL/CSA



EMC-preferred type, for extreme mechanical stress

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21646	12 G 0.75	19	13.9	140.0	308.0
21647	18 G 0.75	19	15.9	220.0	420.0
21648	20 G 0.75	19	16.8	249.0	450.0
21649	25 G 0.75	19	19.6	313.0	579.0
21650	30 G 0.75	19	19.8	470.0	630.0
21651	36 G 0.75	19	21.5	500.0	745.0
21652	2 x 1	18	8.8	50.0	120.0
21653	3 G 1	18	9.2	60.0	135.0
21654	4 G 1	18	9.8	73.0	173.0
21655	5 G 1	18	10.5	81.0	187.0
21656	7 G 1	18	12.1	114.0	240.0
21657	12 G 1	18	14.7	186.0	360.0
21658	18 G 1	18	17.1	254.0	498.0
21659	20 G 1	18	18.0	322.0	568.0
21660	25 G 1	18	20.9	377.0	670.0
21661	30 G 1	18	21.2	429.0	774.0
21662	36 G 1	18	22.8	516.0	895.0
21663	41 G 1	18	24.6	610.0	1032.0
21664	50 G 1	18	27.1	690.0	1160.0
21665	65 G 1	18	30.7	852.0	1660.0
21666	2 x 1.5	16	9.7	64.0	145.0
21667	3 G 1.5	16	10.1	84.0	168.0
21668	4 G 1.5	16	11.0	99.0	217.0
21669	5 G 1.5	16	11.8	129.0	235.0
21670	7 G 1.5	16	14.0	148.0	325.0
21671	12 G 1.5	16	16.6	279.0	481.0
21672	18 G 1.5	16	19.7	393.0	675.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
21673	25 G 1.5	16	24.1	584.0	927.0
21674	30 G 1.5	16	24.4	607.0	1025.0
21675	36 G 1.5	16	26.6	702.0	1210.0
21676	42 G 1.5	16	28.7	829.0	1441.0
21677	50 G 1.5	16	31.3	1025.0	1709.0
21678	61 G 1.5	16	34.3	1190.0	2025.0
21679	2 x 2.5	14	10.5	104.0	198.0
21680	3 G 2.5	14	11.1	140.0	284.0
21681	4 G 2.5	14	12.0	164.0	378.0
21682	5 G 2.5	14	12.9	190.0	423.0
21683	7 G 2.5	14	15.6	236.0	486.0
21684	12 G 2.5	14	18.6	390.0	756.0
21685	18 G 2.5	14	22.3	607.0	1127.0
21686	20 G 2.5	14	23.7	661.0	1210.0
21687	25 G 2.5	14	27.4	796.0	1530.0
21688	4 G 4	12	13.9	222.0	448.0
21689	5 G 4	12	15.2	328.0	533.0
21690	7 G 4	12	18.1	360.0	678.0
21691	4 G 6	10	15.6	305.0	636.0
21692	5 G 6	10	17.3	441.0	772.0
21693	7 G 6	10	20.9	505.0	1028.0
21694	4 G 10	8	20.0	485.0	1052.0
21695	5 G 10	8	22.3	610.0	1096.0
21696	7 G 10	8	27.1	820.0	1530.0
21697	4 G 16	6	23.1	840.0	1386.0
21698	5 G 16	6	25.9	1050.0	1759.0
21699	7 G 16	6	31.3	1510.0	2087.0

# MULTIFLEX 1000-PUR UL/CSA Style 20234

Cavo idoneo alla posa in catene portacavo, senza alogeni



HELUKABEL® MULTIFLEX 1000-PUR UL/CSA Style 20234 CE

HELUKABEL® MULTIFLEX 1000-PUR UL/CSA Style 20234 CE

## Dati tecnici

- **Tensione Nominale:**  
1.000 V
- **Range Temperatura:**  
Posa flessibile -30°C / +80°C  
Posa fissa -40°C / +80°C
- **Raggio di curvatura:**  
6,5 volte il diametro esterno  
in applicazione mobile  
4 volte il diametro esterno  
in applicazione statica
- **Velocità massima:**  
Fino a 300 m/min.
- **Massima accelerazione:**  
Fino 50 m./sec<sup>2</sup>
- **Numero di cicli:**  
Fino a 5.000.000
- **Lunghezza della catena:**  
15 m. in tratto orizzontale

## Struttura

- **Conduttori:**  
Rame rosso extraflessibile classe 6  
VDE 0295 e IEC 60228 cl.6
- **Isolamento dei conduttori:**  
Mescola polipropilene in accordo  
a UL 80°C 1.000 V
- **Identificazione Conduttori:**  
Neri numerizzati con Giallo/Verde
- **Cordatura Cavo:**  
A corona con inserti laterali,  
su inserto centrale
- **Nastratura:**  
Nastro Tessuto Non Tessuto sovrapposto
- **Guaina Esterna:**  
Mescola poliuretanic a base polietere,  
mattato, in accordo a UL 80°C – 1.000 V  
Style 20234
- **Colore Guaina:** GRIGIO RAL 7001  
(su richiesta NERO RAL 9005)

## Caratteristiche

### Test

- **Comportamento alla Fiamma:**  
IEC 60332-1-2 / UL 1581 VW-1 / CSA FT1
- **Emissione Alogeni:**  
IEC 60754-1
- **Resistenza olii:**  
UL 1581 / VDE 0473-811-404 /  
IEC 60811-404
- **Riferimenti normativi:**  
UL 1581 / UL 758 / CSA 22.2
- **Marcatura:**  
Marcatura metrica HELUKABEL formazione  
codice articolo - E170315 cURus AWM  
STYLE 20234 80°C 1000 V VW-1 AWM  
I/II A/B 80°C 1000 V FT1 lotto di  
produzione CE - RAL -

## Impiego

CE = il prodotto è conforme alla Direttiva Bassa Tensione 2014/35/UE.

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000696	2 x 0,5	21	5,9	10,0	40,0
18000697	3 G 0,5	21	6,2	14,0	47,0
18000698	4 G 0,5	21	6,6	19,0	57,0
18000699	5 G 0,5	21	7,1	24,0	65,0
18000700	7 G 0,5	21	8,2	34,0	94,0
18000701	12 G 0,5	21	9,8	58,0	150,0
18000702	18 G 0,5	21	11,5	86,0	208,0
18000703	25 G 0,5	21	13,5	120,0	276,0
18000704	2 x 0,75	19	6,3	14,0	52,0
18000705	3 G 0,75	19	6,6	22,0	62,0
18000706	4 G 0,75	19	7,0	29,0	80,0
18000707	5 G 0,75	19	8,0	36,0	94,0
18000708	6 G 0,75	19	9,3	50,0	160,0
18000709	12 G 0,75	19	10,8	86,0	191,0
18000710	18 G 0,75	19	12,8	130,0	267,0
18000711	25 G 0,75	19	14,5	180,0	376,0
18000712	2 x 1	18	6,7	19,0	59,0
18000713	3 G 1	18	7,0	29,0	70,0
18000714	4 G 1	18	7,5	38,0	87,0
18000715	5 G 1	18	8,0	48,0	100,0

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000716	7 G 1	18	9,5	67,0	182,0
18000717	12 G 1	18	11,4	115,0	230,0
18000718	18 G 1	18	13,2	173,0	325,0
18000719	25 G 1	18	16,0	240,0	476,0
18000720	2 x 1,5	16	7,1	29,0	92,0
18000721	3 G 1,5	16	7,6	43,0	108,0
18000722	4 G 1,5	16	8,2	58,0	144,0
18000723	5 G 1,5	16	9,0	72,0	168,0
18000724	7 G 1,5	16	10,7	101,0	230,0
18000725	12 G 1,5	16	12,5	173,0	306,0
18000726	18 G 1,5	16	14,7	259,0	464,0
18000727	25 G 1,5	16	18,0	360,0	641,0
18000728	2 x 2,5	14	8,7	48,0	120,0
18000729	3 G 2,5	14	9,2	72,0	148,0
18000730	4 G 2,5	14	9,6	96,0	184,0
18000731	5 G 2,5	14	10,8	120,0	224,0
18000732	7 G 2,5	14	12,5	168,0	301,0
18000733	12 G 2,5	14	15,5	288,0	489,0
18000734	18 G 2,5	14	17,5	432,0	734,0
18000735	25 G 2,5	14	22,0	600,0	1020,0

Con riserva di modifiche tecniche.



# MULTIFLEX 1000-C-PUR UL/CSA Style 20234

Cavo idoneo alla posa in catene portacavo, senza alogeni



HELUKABEL® MULTIFLEX 1000-C-PUR UL/CSA Style 20234 CE

HELUKABEL® MULTIFLEX 1000-C-PUR UL/CSA Style 20234 CE

## Dati tecnici

- **Tensione Nominale:**  
1.000 V
- **Range Temperatura:**  
Posa flessibile -30°C / +80°C  
Posa fissa -40°C / +80°C
- **Raggio di curvatura:**  
6,5 volte il diametro esterno  
in applicazione mobile  
4 volte il diametro esterno  
in applicazione statica
- **Velocità massima:**  
Fino a 300 m/min.
- **Massima accelerazione:**  
Fino 50 m./sec<sup>2</sup>
- **Numero di cicli:**  
Fino a 5.000.000
- **Lunghezza della catena:**  
15 m. in tratto orizzontale

## Struttura

- **Conduttori:**  
Rame rosso extraflessibile classe 6  
VDE 0295 e IEC 60228 cl.6
- **Isolamento dei conduttori:**  
Mescola polipropilene in accordo  
a UL 80°C 1.000 V
- **Identificazione Conduttori:**  
Neri numerizzati con Giallo/Verde
- **Cordatura Cavo:**  
A corona con inserti laterali,  
su inserto centrale
- **Nastratura:**  
Nastro Tessuto Non Tessuto sovrapposto
- **Schermatura:**  
Treccia di rame stagnato densità ottica 85%
- **Guaina Esterna:**  
Mescola poliuretana a base polietere,  
mattato, in accordo a UL 80°C – 1.000 V  
Style 20234
- **Colore Guaina:** GRIGIO RAL 7001  
(su richiesta NERO RAL 9005)

## Caratteristiche

### Test

- **Comportamento alla Fiamma:**  
IEC 60332-1-2 / UL 1581 VW-1 / CSA FT1
- **Emissione Alogeni:**  
IEC 60754-1
- **Resistenza olii:**  
UL 1581 / VDE 0473-811-404 /  
IEC 60811-404
- **Riferimenti normativi:**  
UL 1581 / UL 758 / CSA 22.2
- **Marcatura:**  
Marcatura metrica HELUKABEL formazione  
codice articolo - E170315 cURus AWM  
STYLE 20234 80°C 1000 V VW-1 AWM  
I/II A/B 80°C 1000 V FT1 lotto di  
produzione CE - RAL -

## Impiego

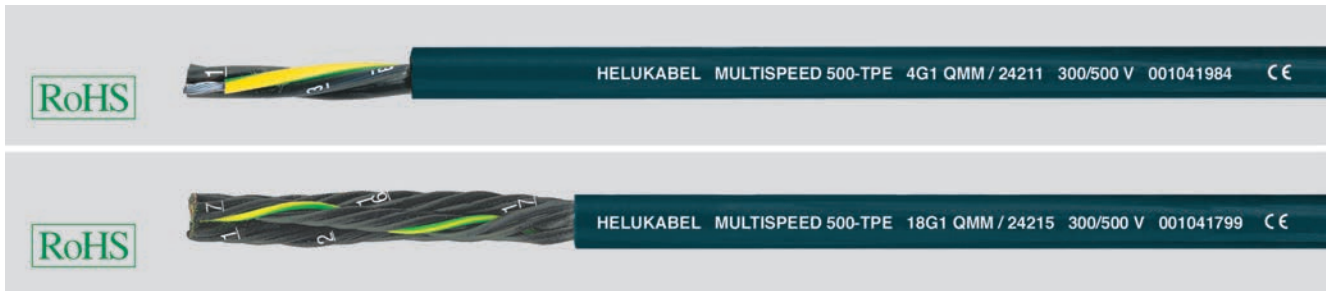
CE = il prodotto è conforme alla Direttiva Bassa Tensione 2014/35/UE.

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000736	2 x 0,5	21	6,3	33,0	46,0
18000737	3 G 0,5	21	6,6	39,0	56,0
18000738	4 G 0,5	21	7,0	46,0	62,0
18000739	5 G 0,5	21	7,8	54,0	75,0
18000740	7 G 0,5	21	9,0	70,0	98,0
18000741	12 G 0,5	21	10,8	100,0	158,0
18000742	18 G 0,5	21	12,3	153,0	216,0
18000743	25 G 0,5	21	14,3	202,0	315,0
18000744	2 x 0,75	19	7,0	41,0	60,0
18000745	3 G 0,75	19	7,3	48,0	68,0
18000746	4 G 0,75	19	7,8	59,0	78,0
18000747	5 G 0,75	19	8,4	69,0	95,0
18000748	6 G 0,75	19	9,7	90,0	138,0
18000749	12 G 0,75	19	11,6	129,0	207,0
18000750	18 G 0,75	19	13,5	205,0	293,0
18000751	25 G 0,75	19	15,5	271,0	413,0
18000752	2 x 1	18	7,2	46,0	65,0
18000753	3 G 1	18	7,5	57,0	76,0
18000754	4 G 1	18	8,0	70,0	89,0
18000755	5 G 1	18	8,8	81,0	108,0

Codice	Numero di fili x Sezione nominale mm <sup>2</sup>	N. AWG	Ø esterno ca. mm	Cu factor per km	Peso ca. kg / km
18000756	7 G 1	18	10,2	110,0	187,0
18000757	12 G 1	18	12,0	182,0	240,0
18000758	18 G 1	18	14,0	254,0	335,0
18000759	25 G 1	18	16,5	365,0	484,0
18000760	2 x 1,5	16	8,0	58,0	97,0
18000761	3 G 1,5	16	8,3	75,0	119,0
18000762	4 G 1,5	16	8,8	91,0	152,0
18000763	5 G 1,5	16	9,6	112,0	168,0
18000764	7 G 1,5	16	11,0	145,0	243,0
18000765	12 G 1,5	16	13,5	247,0	317,0
18000766	18 G 1,5	16	16,0	348,0	481,0
18000767	25 G 1,5	16	18,5	498,0	674,0
18000768	2 x 2,5	14	9,1	95,0	129,0
18000769	3 G 2,5	14	9,6	115,0	158,0
18000770	4 G 2,5	14	10,3	155,0	196,0
18000771	5 G 2,5	14	11,6	185,0	241,0
18000772	7 G 2,5	14	13,6	250,0	317,0
18000773	12 G 2,5	14	16,3	388,0	496,0
18000774	18 G 2,5	14	18,8	552,0	744,0
18000775	25 G 2,5	14	22,5	750,0	1033,0

Con riserva di modifiche tecniche.

# MULTISPEED® 500-TPE high flexible, safety against high bending in drag chain systems, low torsion, halogen-free, meter marking



## Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Insulation resistance**  
min. 100 MΩm x km
- **Minimum bending radius**  
flexing 5x cable Ø  
fixed installation 3x cable Ø
- **Radiation resistance**  
up to  $100 \times 10^{10}$  cJ/kg (up to 100 Mrad)

## Cable structure

- Tinned copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding:  
<7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction  
≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Outer sheath of special TPE-O extruded as filler with pressure
- Sheath colour ocean blue (RAL 5020)
- with meter marking
- **TPE:** The selected tinned copper wire conductor permits the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide

## Properties

- Microbe-resistance - TPE
- Halogen-free
- Low adhesion
- High property of alternating bending strength
- High resistant to mechanical strain
- Long life durability due to low friction-resistance
- High tensile strength, abrasion- and impact resistance at low temperature
- Use in multi-shift operations under extremely high continuous bending loads
- Abrasion resistance
- Tear resistance
- High stability
- Oil resistance
- Better chemical resistance
- UV and ozone resistance
- Higher economical solution
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- G = with green-yellow conductor  
x = without green-yellow conductor (OZ)
- Cleanroom qualification tested with analog type. Please note "cleanroom qualified" when ordering.
- screened analogue type:  
**MULTISPEED® 500-C-TPE**

## Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains, industry robotics, production lines, automatic control systems and permanent movable machinery parts for multi-shift operation. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm²	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm²	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
24191	2 x 0,5	4,7	9,6	42,0	20	24199	2 x 0,75	5,0	14,4	47,0	19
24192	3 G 0,5	5,0	14,4	49,0	20	24200	3 G 0,75	5,2	21,6	55,0	19
24193	4 G 0,5	5,4	19,0	63,0	20	24201	4 G 0,75	6,0	29,0	70,0	19
24194	5 G 0,5	5,8	24,0	70,0	20	24202	5 G 0,75	6,5	36,0	74,0	19
24195	7 G 0,5	8,9	33,6	90,0	20	24203	7 G 0,75	10,3	50,0	95,0	19
24196	12 G 0,5	9,7	58,0	134,0	20	24204	12 G 0,75	11,0	86,0	174,0	19
24197	18 G 0,5	11,8	86,0	209,0	20	24205	18 G 0,75	13,9	130,0	261,0	19
24198	25 G 0,5	13,9	120,0	270,0	20	24206	25 G 0,75	15,9	180,0	290,0	19
						24207	36 G 0,75	19,6	260,0	419,0	19
						24208	42 G 0,75	21,5	302,0	614,0	19

# MULTISPEED® 500-TPE high flexible, safety against high bending in drag chain systems, low torsion, halogen-free, meter marking

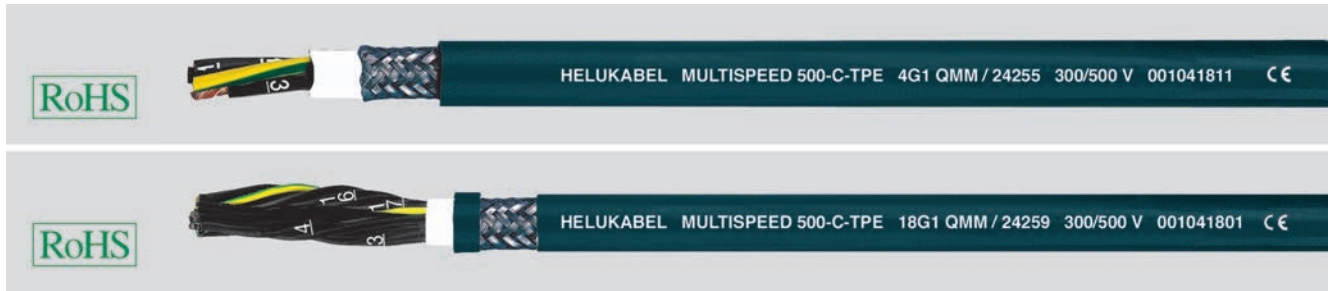


Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
24209	2 x 1	5,2	19,2	50,0	18
24210	3 G 1	5,8	29,0	60,0	18
24211	4 G 1	6,3	38,0	74,0	18
24212	5 G 1	6,9	48,0	86,0	18
24213	7 G 1	11,1	67,0	114,0	18
24214	12 G 1	12,0	115,0	210,0	18
24215	18 G 1	14,8	173,0	291,0	18
24216	25 G 1	17,2	240,0	380,0	18
24043	41 G 1	22,0	394,0	510,0	18
24217	3 G 1,5	6,6	43,0	84,0	16
24218	4 G 1,5	7,2	58,0	108,0	16
24219	5 G 1,5	7,8	72,0	126,0	16
24220	7 G 1,5	13,0	101,0	169,0	16
24221	12 G 1,5	14,2	173,0	299,0	16
24222	18 G 1,5	17,5	259,0	460,0	16
24223	25 G 1,5	20,1	360,0	640,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
24224	4 G 2,5	8,8	96,0	179,0	14
24225	5 G 2,5	9,8	120,0	230,0	14
24226	7 G 2,5	16,1	168,0	294,0	14
24227	12 G 2,5	17,8	288,0	510,0	14
24228	18 G 2,5	21,8	432,0	722,0	14
24229	25 G 2,5	24,4	600,0	950,0	14
24230	4 G 4	10,3	154,0	197,0	12
24231	4 G 6	11,9	231,0	320,0	10
24232	5 G 6	13,4	289,0	394,0	10
24233	4 G 10	14,7	387,0	520,0	8
24234	4 G 16	20,0	517,0	784,0	6
24235	4 G 35	24,9	1344,0	1711,0	2

Dimensions and specifications may be changed without prior notice. (RC02)

# MULTISPEED® 500-C-TPE safety against high bending in drag chain systems, low torsion, halogen-free, EMC-preferred type, meter marking



## Technical data

- Special drag chain cables for high mechanical stress adapted to DIN VDE 0285-525-2-51 / DIN EN 50525-2-51
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Insulation resistance**  
min. 100 MOhm x km
- **Minimum bending radius**  
flexing 5x cable Ø  
fixed installation 3x cable Ø
- **Coupling resistance**  
max. 250 Ohm x km
- **Radiation resistance**  
up to  $100 \times 10^6$  cJ/kg (up to 100 Mrad)

## Cable structure

- Tinned copper, fine wire conductors, Unilay with short pitch length
- Core insulation of special PP
- Core identification black cores with continuous white numbering
- GN-YE conductor, 3 cores and above
- Stranding:  
<7 cores: cores stranded in a layer with optimal lay-length around a filler as per construction  
≥7 cores: cores stranded with optimal lay-length to bunch-construction with low torsion strength, optimal selected short lay-length around a filler
- Inner sheath of special-TPE, extruded as filler with pressure, natural colour
- Screen of Cu braid tinned, coverage 85% max., with optimal pitch
- Fleece separator, ensure good dismantling ability
- Outer sheath of special-TPE-O extruded as filler with pressure
- Sheath colour ocean blue (RAL 5020)
- with meter marking
- **TPE:** The selected tinned copper wire conductor permits the installation in aggressive environments as well as hydrogen sulfide, ammonia and sulfur dioxide

## Properties

- Microbe-resistance - TPE
- High property of alternating bending strength
- Long life durability due to low friction-resistance
- High tensile strength, abrasion- and impact resistance at low temperature
- Low adhesion, oil resistance
- Tear resistance
- Better chemical resistance
- UV and ozone resistance
- Reduced Ø, results low weight of moving materials
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- G = with green-yellow conductor  
x = without green-yellow conductor (OZ)
- Please note the cleanroom qualification when ordering.  
For more information, see introduction
- unscreened analogue type:  
**MULTISPEED® 500-TPE**

## Application

For permanent application in drag chains for long distances, high and low speed of movements. These cables are installed in dry, moist and wet rooms and in open air with free movement without tensile stress or forced movements. These robust and abrasion resistant special control cables are installed there, where the problems appear for the application in permanent stresses e. g. in energy drag chains. These cables are installed everywhere, where high requirements for the flexibility, abrasion, oxygen and chemical resistance are necessary.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
24236	2 x 0,5	6,5	30,0	85,0	20	24255	4 G 1	8,1	70,0	160,0	18
24237	3 G 0,5	6,7	36,0	99,0	20	24256	5 G 1	8,9	84,0	195,0	18
24238	4 G 0,5	7,2	42,0	107,0	20	24257	7 G 1	13,6	106,0	247,0	18
24239	5 G 0,5	7,6	48,0	140,0	20	24258	12 G 1	14,8	174,0	411,0	18
24240	7 G 0,5	11,4	64,0	176,0	20	24259	18 G 1	18,4	240,0	547,0	18
24241	10 G 0,5	11,4	80,0	204,0	20	24260	25 G 1	21,0	332,0	754,0	18
24242	12 G 0,5	12,4	105,0	261,0	20	24261	3 G 1,5	8,4	75,0	160,0	16
24243	18 G 0,5	14,7	137,0	360,0	20	24262	4 G 1,5	9,2	90,0	194,0	16
24244	25 G 0,5	17,1	320,0	530,0	20	24263	5 G 1,5	10,2	108,0	220,0	16
24245	2 x 0,75	7,0	40,0	97,0	19	24264	7 G 1,5	15,7	157,0	294,0	16
24246	3 G 0,75	7,3	48,0	110,0	19	24265	12 G 1,5	17,4	240,0	490,0	16
24247	4 G 0,75	7,8	55,0	139,0	19	24266	18 G 1,5	21,3	355,0	704,0	16
24248	5 G 0,75	8,3	66,0	160,0	19	24267	25 G 1,5	24,3	448,0	930,0	16
24249	7 G 0,75	12,7	85,0	219,0	19	24268	4 G 2,5	11,2	134,0	260,0	14
24250	12 G 0,75	13,7	135,0	307,0	19	24269	5 G 2,5	12,2	175,0	330,0	14
24251	18 G 0,75	17,1	190,0	490,0	19	24270	7 G 2,5	19,5	229,0	406,0	14
24252	25 G 0,75	19,5	275,0	640,0	19	24271	12 G 2,5	21,7	390,0	990,0	14
24253	2 x 1	7,3	50,0	115,0	18	24272	4 G 4	13,6	194,0	355,0	12
24254	3 G 1	7,6	59,0	131,0	18						

Dimensions and specifications may be changed without prior notice. (RC02)

# HELUCHAIN® MULTISPEED® 522-TPE UL/CSA



for extreme mechanical stress, oil resistant



## TECHNICAL DATA

TPE drag chain cable acc. to UL-Std. 758 (AWM) Style 21387, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -40°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V 3000 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 42 core(s): cores stranded into bundles/pairs with optimally matched, short lay lengths; bundles/pairs stranded together around a tensile core
- Ripcord
- Outer sheath: TPE, extruded filler
- Sheath colour: black (RAL 9004)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone

- low adhesion
- longer service life due to low frictional resistance of the PP-insulated cores
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## ■ APPLICATION

This UL/CSA approved cable is used when extreme demands are placed on the cable. Designed for export-oriented mechanical engineers, specifically in the USA and Canada. Gearing to the needs of the industry, materials and stranding techniques permit continuous use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry and damp rooms, as well as outdoors. With free movement, without tensile stress and without forced motion control capabilities, these highly flexible TPE drag chain cables are suitable for frequent lifting and bending stress in machine and tool construction.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001824	2 x 0.5	21	5.5	9.6	37.0
11001825	3 G 0.5	21	5.7	14.4	42.0
11001826	4 G 0.5	21	6.1	19.2	49.0
11001827	5 G 0.5	21	6.6	24.0	59.0
11001828	7 G 0.5	21	8.8	33.6	91.0
11001829	12 G 0.5	21	10.2	57.6	133.0
11001830	16 G 0.5	21	11.3	76.8	167.0
11001831	18 G 0.5	21	12.1	86.4	184.0
11001832	20 G 0.5	21	12.4	96.0	199.0
11001833	25 G 0.5	21	13.6	120.0	244.0
11001834	36 G 0.5	21	16.9	172.8	355.0
11001835	42 G 0.5	21	18.6	201.6	419.0
11001836	2 x 0.75	19	5.9	14.4	45.0
11001837	3 G 0.75	19	6.2	21.6	53.0
11001838	4 G 0.75	19	6.6	28.8	62.0
11001839	5 G 0.75	19	7.2	36.0	75.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001840	7 G 0.75	19	9.6	50.4	119.0
11001841	12 G 0.75	19	11.1	86.4	172.0
11001842	16 G 0.75	19	12.4	115.2	216.0
11001843	18 G 0.75	19	13.3	129.6	240.0
11001844	20 G 0.75	19	13.7	144.0	269.0
11001845	25 G 0.75	19	15.1	180.0	325.0
11001846	36 G 0.75	19	19.2	259.2	484.0
11001847	42 G 0.75	19	20.8	302.4	564.0
11001848	2 x 1	18	6.3	19.2	53.0
11001849	3 G 1	18	6.6	28.8	63.0
11001850	4 G 1	18	7.1	38.4	77.0
11001851	5 G 1	18	7.7	48.0	92.0
11001852	7 G 1	18	10.4	67.2	143.0
11001853	12 G 1	18	12.2	115.2	211.0
11001854	16 G 1	18	13.6	153.6	276.0
11001855	18 G 1	18	14.8	172.8	311.0

# HELUCHAIN® MULTISPEED® 522-TPE UL/CSA



for extreme mechanical stress, oil resistant



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001856	20 G 1	18	15.2	192.0	339.0	11001877	12 G 2.5	14	16.7	288.0	442.0
11001857	25 G 1	18	17.0	240.0	419.0	11001878	16 G 2.5	14	18.9	384.0	584.0
11001858	36 G 1	18	21.4	345.6	625.0	11001879	18 G 2.5	14	20.6	432.0	655.0
11001859	42 G 1	18	23.5	403.2	742.0	11001880	20 G 2.5	14	21.2	480.0	726.0
11001860	2 x 1.5	16	6.9	28.8	67.0	11001881	25 G 2.5	14	23.8	600.0	901.0
11001861	3 G 1.5	16	7.3	43.2	82.0	11001882	3 G 4	12	9.7	115.2	174.0
11001862	4 G 1.5	16	7.9	57.6	101.0	11001883	4 G 4	12	10.6	153.6	219.0
11001863	5 G 1.5	16	8.6	72.0	122.0	11001884	5 G 4	12	11.6	192.0	266.0
11001864	7 G 1.5	16	11.7	100.8	191.0	11001885	3 G 6	10	11.0	172.8	240.0
11001865	12 G 1.5	16	13.7	172.8	291.0	11001886	4 G 6	10	12.1	230.4	306.0
11001866	16 G 1.5	16	15.6	230.4	386.0	11001887	5 G 6	10	13.3	288.0	375.0
11001867	18 G 1.5	16	17.0	259.2	422.0	11001888	4 G 10	8	16.7	384.0	538.0
11001868	20 G 1.5	16	17.6	288.0	472.0	11001889	5 G 10	8	18.6	480.0	666.0
11001869	25 G 1.5	16	19.7	360.0	589.0	11001890	4 G 16	6	19.8	614.4	811.0
11001870	36 G 1.5	16	24.7	518.4	878.0	11001891	5 G 16	6	22.1	768.0	1008.0
11001871	42 G 1.5	16	27.1	604.8	1025.0	11001892	4 G 25	4	25.1	960.0	1277.0
11001872	2 x 2.5	14	7.9	48.0	96.0	11001893	5 G 25	4	28.2	1200.0	1596.0
11001873	3 G 2.5	14	8.4	72.0	119.0	11001894	4 G 35	2	28.5	1344.0	1792.0
11001874	4 G 2.5	14	9.1	96.0	148.0	11001895	5 G 35	2	31.9	1680.0	2184.0
11001875	5 G 2.5	14	10.0	120.0	180.0	11001896	4 G 50	1	33.3	1920.0	2532.0
11001876	7 G 2.5	14	13.8	168.0	297.0	11001897	5 G 50	1	37.5	2400.0	3154.0

# HELUCHAIN® MULTISPEED® 522-C-TPE UL/CSA

for extreme mechanical stress, oil resistant, EMC-preferred type



## TECHNICAL DATA

TPE drag chain cable acc. to UL-Std. 758 (AWM) Style 21387, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-2-51 / DIN EN 50525-2-51

<b>Temperature range</b>	flexible -40°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	3000 V
<b>Test voltage core/screen</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- Protective conductor: starting with 3 cores,  
G = with protective conductor GN-YE,  
x = without protective conductor
- Stranding:  
2 - 5 core(s): cores stranded into one layer with an optimally matched short lay length  
7 - 42 core(s): cores stranded into bundles/pairs with optimally matched, short lay lengths; bundles/pairs stranded together around a tensile core
- Ripcord
- Inner sheath: TPE, extruded filler
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Outer sheath: TPE
- Sheath colour: black (RAL 9004)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone
- low adhesion
- longer service life due to low frictional resistance of the PP-insulated cores
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## ■ APPLICATION

This UL/CSA approved cable is used when extreme demands are placed on the cable. Designed for export-oriented mechanical engineers, specifically in the USA and Canada. Gearing to the needs of the industry, materials and stranding techniques permit continuous use as highly flexible drag chain cables with long travelling distance capabilities at high or low speeds. For installation in dry and damp rooms, as well as outdoors. With free movement, without tensile stress and without forced motion control capabilities, these highly flexible TPE drag chain cables are suitable for frequent lifting and bending stress in machine and tool construction. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001898	2 x 0.5	21	7.2	28.5	71.0
11001899	3 G 0.5	21	7.4	33.1	77.0
11001900	4 G 0.5	21	7.8	40.8	88.0
11001901	5 G 0.5	21	8.3	48.0	101.0
11001902	7 G 0.5	21	10.8	73.6	157.0
11001903	12 G 0.5	21	12.4	103.4	212.0
11001904	16 G 0.5	21	13.5	128.0	254.0
11001905	18 G 0.5	21	14.5	138.0	280.0
11001906	20 G 0.5	21	14.8	149.0	297.0
11001907	25 G 0.5	21	16.4	182.6	361.0
11001908	36 G 0.5	21	19.9	250.4	513.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001909	42 G 0.5	21	22.0	309.5	626.0
11001910	2 x 0.75	19	7.6	36.2	83.0
11001911	3 G 0.75	19	7.9	43.4	91.0
11001912	4 G 0.75	19	8.3	52.8	104.0
11001913	5 G 0.75	19	8.9	62.7	121.0
11001914	7 G 0.75	19	11.6	90.8	183.0
11001915	12 G 0.75	19	13.3	137.8	257.0
11001916	16 G 0.75	19	14.8	172.4	317.0
11001917	18 G 0.75	19	16.1	187.2	352.0
11001918	20 G 0.75	19	16.5	206.8	379.0
11001919	25 G 0.75	19	18.1	248.8	457.0

# HELUCHAIN® MULTISPEED® 522-C-TPE UL/CSA



for extreme mechanical stress, oil resistant, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001920	36 G 0.75	19	22.4	366.7	678.0
11001921	42 G 0.75	19	24.4	425.1	804.0
11001922	2 x 1	18	8.0	41.2	92.0
11001923	3 G 1	18	8.3	53.5	105.0
11001924	4 G 1	18	8.8	62.8	120.0
11001925	5 G 1	18	9.7	81.9	149.0
11001926	7 G 1	18	12.6	113.5	221.0
11001927	12 G 1	18	14.6	167.0	310.0
11001928	16 G 1	18	16.4	217.0	391.0
11001929	18 G 1	18	17.6	236.3	430.0
11001930	20 G 1	18	18.0	260.0	464.0
11001931	25 G 1	18	20.0	314.9	574.0
11001932	36 G 1	18	24.8	472.3	857.0
11001933	42 G 1	18	27.3	541.0	1017.0
11001934	2 x 1.5	16	8.6	53.4	110.0
11001935	3 G 1.5	16	9.0	68.1	127.0
11001936	4 G 1.5	16	9.9	92.0	161.0
11001937	5 G 1.5	16	10.6	111.5	187.0
11001938	7 G 1.5	16	13.9	152.9	277.0
11001939	12 G 1.5	16	16.5	235.6	407.0
11001940	16 G 1.5	16	18.6	299.7	518.0
11001941	18 G 1.5	16	20.0	337.0	577.0
11001942	20 G 1.5	16	20.4	366.7	623.0
11001943	25 G 1.5	16	23.1	483.1	809.0
11001944	36 G 1.5	16	28.5	656.9	1165.0
11001945	42 G 1.5	16	31.3	758.4	1359.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11001946	2 x 2.5	14	9.9	82.4	154.0
11001947	3 G 2.5	14	10.4	106.8	179.0
11001948	4 G 2.5	14	11.1	135.9	215.0
11001949	5 G 2.5	14	12.0	165.5	254.0
11001950	7 G 2.5	14	16.6	230.4	397.0
11001951	12 G 2.5	14	19.7	363.7	597.0
11001952	16 G 2.5	14	22.5	491.7	795.0
11001953	18 G 2.5	14	24.2	554.9	889.0
11001954	20 G 2.5	14	24.6	602.2	952.0
11001955	25 G 2.5	14	27.6	737.8	1177.0
11001956	3 G 4	12	11.7	155.8	242.0
11001957	4 G 4	12	12.8	199.6	301.0
11001958	5 G 4	12	13.8	243.9	356.0
11001959	3 G 6	10	13.2	224.0	326.0
11001960	4 G 6	10	14.5	282.0	404.0
11001961	5 G 6	10	16.1	345.6	485.0
11001962	4 G 10	8	19.7	453.9	689.0
11001963	5 G 10	8	22.0	587.9	864.0
11001964	4 G 16	6	23.2	721.9	1023.0
11001965	5 G 16	6	25.9	893.5	1261.0
11001966	4 G 25	4	29.1	1099.7	1576.0
11001967	5 G 25	4	32.4	1357.2	1936.0
11001968	4 G 35	2	32.7	1504.1	2115.0
11001969	5 G 35	2	36.5	1904.0	2634.0
11001970	4 G 50	1	38.1	2171.4	3095.0
11001971	5 G 50	1	42.5	2656.4	3692.0





HELUKABEL SUPERTRONIC-PVC 4x0,25 QMM / 49563 350 V 001041714

CE



## Technical data

- Special PVC cable for drag chains, adapted to DIN VDE 0285-525-1 / DIN EN 50525-1
- Very high flexible due to special construction
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +70°C
- **Nominal voltage** 350 V
- **Test voltage** 1500 V
- **Breakdown voltage** min. 3000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 5x cable Ø  
fixed installation 3x cable Ø
- **Radiation resistance**  
up to 80x10<sup>6</sup> cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper, extra fine wire conductors, to DIN VDE 0295 cl.6
- Core insulation of special PVC compound type TI2 to DIN VDE 0207-363-3 / DIN EN 50363-3
- Cores colour coded to DIN 47100, see Technical Informations
- Cores stranded in layers with optimal selected lay-length
- Core wrapping with textile tape
- Outer sheath of special PVC compound type TM2 to DIN VDE 0207-363-4-1/DIN EN 50363-4-1
- Colour grey (RAL 7001)
- with meter marking

## Properties

- Extensively oil resistant  
Chemical Resistance - see table Technical Informations
- Adhesion-low
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Tests

- PVC self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

The ideal cable for use in cable trays. This high flexible cable is ideal for all areas requiring a high and fast flexing cable including the machine industries, robotics and all areas of highly mobile machine parts. The long working life offers a secure performance as well as economy. For applications which go beyond standard solutions (for example for composting appliances or high shelf conveyors with extremely high processing speeds etc.) we recommend for our especially developed enquiry sheet for energy guiding systems. Before installation in cable trays please read the instructions. Further technical details see selection table for drag chain cables, see lead text.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
49550	2 x 0,14	3,5	2,8	23,0	26	49567	12 x 0,25	7,5	30,1	95,0	24
49551	3 x 0,14	3,7	4,1	25,0	26	49568	14 x 0,25	7,9	35,0	107,0	24
49552	4 x 0,14	3,9	5,6	30,0	26	49569	18 x 0,25	8,9	45,0	130,0	24
49553	5 x 0,14	4,2	7,0	35,0	26	49570	24 x 0,25	10,4	60,0	170,0	24
49554	7 x 0,14	4,8	9,8	49,0	26	49571	25 x 0,25	10,5	62,5	177,0	24
49555	10 x 0,14	6,2	14,0	64,0	26	49572	2 x 0,34	4,6	6,8	33,0	22
49556	12 x 0,14	6,3	16,8	71,0	26	49573	3 x 0,34	4,8	10,2	42,0	22
49557	14 x 0,14	6,6	19,6	77,0	26	49574	4 x 0,34	5,2	13,6	56,0	22
49558	18 x 0,14	7,2	25,2	90,0	26	49575	5 x 0,34	6,1	17,0	64,0	22
49559	24 x 0,14	8,5	33,6	119,0	26	49576	7 x 0,34	7,0	23,8	84,0	22
49560	25 x 0,14	8,6	35,0	124,0	26	49577	10 x 0,34	8,4	34,0	116,0	22
49561	2 x 0,25	4,2	5,0	28,0	24	49578	12 x 0,34	8,5	40,8	133,0	22
49562	3 x 0,25	4,4	7,5	33,0	24	49579	14 x 0,34	9,0	47,6	150,0	22
49563	4 x 0,25	4,7	10,0	39,0	24	49580	18 x 0,34	10,1	61,2	182,0	22
49564	5 x 0,25	5,6	12,5	50,0	24	49581	24 x 0,34	12,0	81,5	240,0	22
49565	7 x 0,25	6,1	17,5	63,0	24	49582	25 x 0,34	12,2	85,0	250,0	22
49566	10 x 0,25	7,2	25,0	83,0	24						

Dimensions and specifications may be changed without prior notice. (RC03)



HELUKABEL® SUPERTRONIC®-C-PVC 4x0,25 QMM / 49633 350 V C€

## TECHNICAL DATA

PVC drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U 350 V
<b>Test voltage core/core</b>	1500 V
<b>Breakdown voltage</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm
  - 0.25 mm<sup>2</sup>: approx. 32 x 0.10 mm
  - 0.34 mm<sup>2</sup>: approx. 42 x 0.10 mm
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special-PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM2)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- largely resistant to: oil, for details, see "Technical Information"
- low adhesion
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

These cables are ideal for the use in drag chain applications; for frequent lifting and bending stress in machine and tool construction, in robotics and on permanently moving machine parts. A long service life also guarantees reliable function and high efficiency. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49620	2 x 0.14	26	3.9	11.2	33.0
49621	3 x 0.14	26	4.3	14.1	36.0
49622	4 x 0.14	26	4.6	15.5	41.0
49623	5 x 0.14	26	4.9	18.3	46.0
49624	7 x 0.14	26	5.7	27.6	70.0
49625	10 x 0.14	26	6.6	39.3	88.0
49626	12 x 0.14	26	6.6	41.1	97.0
49627	14 x 0.14	26	7.1	45.3	105.0
49628	18 x 0.14	26	7.7	54.1	122.0
49629	24 x 0.14	26	8.9	66.3	156.0
49630	25 x 0.14	26	9.5	68.4	162.0
49631	2 x 0.25	24	4.6	14.9	39.0
49632	3 x 0.25	24	4.8	18.8	45.0
49633	4 x 0.25	24	5.2	21.3	52.0
49634	5 x 0.25	24	5.8	31.0	70.0
49635	7 x 0.25	24	6.6	39.6	88.0
49636	10 x 0.25	24	7.8	53.9	114.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49637	12 x 0.25	24	7.8	59.1	128.0
49638	14 x 0.25	24	8.4	64.2	140.0
49639	18 x 0.25	24	9.2	78.4	166.0
49640	24 x 0.25	24	10.8	89.9	210.0
49641	25 x 0.25	24	11.2	101.0	220.0
49642	2 x 0.34	22	5.0	16.1	46.0
49643	3 x 0.34	22	5.3	28.7	62.0
49644	4 x 0.34	22	5.9	35.7	80.0
49645	5 x 0.34	22	6.3	39.1	88.0
49646	7 x 0.34	22	7.5	52.7	116.0
49647	10 x 0.34	22	8.9	67.4	156.0
49648	12 x 0.34	22	8.9	76.4	167.0
49649	14 x 0.34	22	9.5	85.3	195.0
49650	18 x 0.34	22	10.4	99.7	225.0
49651	24 x 0.34	22	12.2	147.1	312.0
49652	25 x 0.34	22	12.7	155.0	325.0



HELUKABEL® SUPERTRONIC® 310-PVC 9A AWM STYLE 2464 24 AWG / 0,25 QMM 5C  
80°C 300V VW-1 LL113926 CSA AWM I/II A/B 80°C FT1 CE

## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 2464, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -5°C to +80°C fixed -40°C to +80°C
Nominal voltage	UL (AWM) AC 300 V
Test voltage core/core	1500 V
Breakdown voltage	3000 V
Minimum bending radius	flexible 5x Outer-Ø fixed 3x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PVC acc. to UL-Std. 1581 Tab. 50.183 (semirigid)
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5), UL-Std. 1581
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil
- low adhesion

- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals: EAC

## APPLICATION

Used as a highly flexible PVC drag chain cable suitable for frequent and fast lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. A long service life guarantees reliable function and high efficiency. Designed for the export-oriented machine construction industry, specifically for the USA and Canada.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49885	2 x 0.14	26	3.8	2.8	24.0
49886	3 x 0.14	26	4.0	4.1	26.0
49887	4 x 0.14	26	4.3	5.6	31.0
49888	5 x 0.14	26	4.6	7.0	36.0
49889	7 x 0.14	26	5.3	9.8	50.0
49890	10 x 0.14	26	6.2	14.0	65.0
49891	12 x 0.14	26	6.2	16.8	72.0
49892	14 x 0.14	26	6.5	19.6	78.0
49893	18 x 0.14	26	7.1	25.2	91.0
49894	24 x 0.14	26	8.1	33.6	120.0
49895	25 x 0.14	26	8.5	35.0	125.0
49896	2 x 0.25	24	4.1	5.0	29.0
49897	3 x 0.25	24	4.3	7.5	34.0
49898	4 x 0.25	24	4.6	10.0	40.0
49899	5 x 0.25	24	5.0	12.5	51.0
49900	7 x 0.25	24	5.8	17.5	65.0
49901	10 x 0.25	24	6.8	25.0	85.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49902	12 x 0.25	24	6.8	30.1	97.0
49903	14 x 0.25	24	7.1	35.0	109.0
49904	18 x 0.25	24	7.9	45.0	132.0
49905	24 x 0.25	24	9.3	60.0	171.0
49906	25 x 0.25	24	9.7	62.5	178.0
49907	2 x 0.34	22	4.3	6.8	34.0
49908	3 x 0.34	22	4.5	10.2	43.0
49909	4 x 0.34	22	4.9	13.6	58.0
49910	5 x 0.34	22	5.3	17.0	65.0
49911	7 x 0.34	22	6.1	23.8	85.0
49912	10 x 0.34	22	7.2	34.0	117.0
49913	12 x 0.34	22	7.2	40.8	134.0
49914	14 x 0.34	22	7.6	47.6	152.0
49915	18 x 0.34	22	8.4	61.2	184.0
49916	24 x 0.34	22	9.9	81.5	242.0
49917	25 x 0.34	22	10.3	85.0	252.0

# SUPERTRONIC® - 310-C-PVC

EMC-preferred type



HELUKABEL® SUPERTRONIC®-310-C-PVC AWM STYLE 2464 22 AWG / 0,34 QMM 5C  
80°C 300V VW-1 LL 113926 CSA AWM I/II A/B 80°C FT1 CE

## TECHNICAL DATA

PVC drag chain cable acc. to UL-Std. 758 (AWM) Style 2464, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -5°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 300 V
<b>Test voltage core/core</b>	1500 V
<b>Test voltage core/screen</b>	1000 V
<b>Breakdown voltage</b>	3000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/ km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, finely stranded, unilay with short lay lengths
- Core insulation: Special-PVC acc. to UL-Std. 1581 Tab. 50.183 (semirigid)
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping over each stranding layer
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: oil-resistant special PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM5), UL-Std. 1581
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49920	2 x 0.14	26	4.4	11.3	33.0
49921	3 x 0.14	26	4.6	14.2	36.0
49922	4 x 0.14	26	4.9	15.5	41.0
49923	5 x 0.14	26	5.2	18.4	46.0
49924	7 x 0.14	26	5.8	27.9	70.0
49925	10 x 0.14	26	6.8	39.1	88.0
49926	12 x 0.14	26	6.8	42.2	97.0
49927	14 x 0.14	26	7.1	45.4	105.0
49928	18 x 0.14	26	7.7	54.2	116.0
49929	24 x 0.14	26	8.7	66.5	150.0
49930	25 x 0.14	26	9.1	68.5	157.0
49931	2 x 0.25	24	4.7	14.8	39.0
49932	3 x 0.25	24	4.9	18.9	45.0
49933	4 x 0.25	24	5.2	21.4	52.0
49934	5 x 0.25	24	5.6	31.2	70.0
49935	7 x 0.25	24	6.3	39.8	80.0
49936	10 x 0.25	24	7.4	53.9	114.0

- resistant to: oil
- low adhesion
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## ■ APPLICATION

Used as a highly flexible PVC drag chain cable suitable for frequent and fast lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. A long service life guarantees reliable function and high efficiency. The copper screening effectively protects against internal and external interference. Designed for the export-oriented machine construction industry, specifically for the USA and Canada. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49937	12 x 0.25	24	7.4	59.2	123.0
49938	14 x 0.25	24	7.7	64.3	138.0
49939	18 x 0.25	24	8.5	78.6	165.0
49940	24 x 0.25	24	9.8	89.8	200.0
49941	25 x 0.25	24	10.2	101.2	204.0
49942	2 x 0.34	22	4.9	18.2	44.0
49943	3 x 0.34	22	5.1	28.8	60.0
49944	4 x 0.34	22	5.5	35.8	76.0
49945	5 x 0.34	22	5.9	39.2	80.0
49946	7 x 0.34	22	6.7	52.8	104.0
49947	10 x 0.34	22	7.8	67.5	150.0
49948	12 x 0.34	22	7.8	76.5	160.0
49949	14 x 0.34	22	8.2	85.9	180.0
49950	18 x 0.34	22	9.0	99.9	211.0
49951	24 x 0.34	22	10.4	147.0	290.0
49952	25 x 0.34	22	11.0	155.0	304.0



HELUKABEL® SUPERTRONIC®-PURÖ 5x0,25 QMM / 49597 350 V C €

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -5°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U 350 V
<b>Test voltage core/core</b>	1500 V
<b>Breakdown voltage</b>	3000 V
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm  
0.25 mm<sup>2</sup>: approx. 32 x 0.10 mm  
0.34 mm<sup>2</sup>: approx. 42 x 0.10 mm
- Core insulation: oil-resistant special PVC in alignment with DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type T12)
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Used for installation in dry, damp and wet rooms, as well as outdoors. With free movement, without tensile stress and without forced motion control capabilities, these cables have proven their reliable performance in drag chain applications, for frequent lifting and bending stress in machine and tool construction, in robotics and on permanently moving machine parts. A long service life and high economic efficiency are also guaranteed.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49583	2 x 0.14	26	3.5	2.8	22.0
49584	3 x 0.14	26	3.7	4.1	24.0
49585	4 x 0.14	26	4.0	5.6	29.0
49586	5 x 0.14	26	4.3	7.0	33.0
49587	7 x 0.14	26	5.2	9.8	47.0
49588	10 x 0.14	26	6.2	14.0	59.0
49589	12 x 0.14	26	6.4	16.8	67.0
49590	14 x 0.14	26	6.7	19.6	74.0
49591	18 x 0.14	26	7.3	25.2	86.0
49592	24 x 0.14	26	8.6	33.6	115.0
49593	25 x 0.14	26	9.0	35.0	120.0
49594	2 x 0.25	24	3.9	5.0	27.0
49595	3 x 0.25	24	4.1	7.5	33.0
49596	4 x 0.25	24	4.6	10.0	40.0
49597	5 x 0.25	24	5.0	12.5	48.0
49598	7 x 0.25	24	6.1	17.5	60.0
49599	10 x 0.25	24	7.0	25.0	79.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49600	12 x 0.25	24	7.2	30.1	91.0
49601	14 x 0.25	24	7.7	35.0	102.0
49602	18 x 0.25	24	8.5	45.0	125.0
49603	24 x 0.25	24	10.0	60.0	163.0
49604	25 x 0.25	24	10.7	62.5	170.0
49605	2 x 0.34	22	4.1	6.8	32.0
49606	3 x 0.34	22	4.3	10.2	40.0
49607	4 x 0.34	22	4.9	13.6	55.0
49608	5 x 0.34	22	5.3	17.0	60.0
49609	7 x 0.34	22	6.4	23.8	80.0
49610	10 x 0.34	22	7.6	34.0	112.0
49611	12 x 0.34	22	7.8	40.8	127.0
49612	14 x 0.34	22	8.4	47.6	142.0
49613	18 x 0.34	22	9.2	61.2	175.0
49614	24 x 0.34	22	10.8	81.5	229.0
49615	25 x 0.34	22	11.6	85.0	238.0



HELUKABEL® SUPERTRONIC®-C-PURö 4x0,25 QMM / 49666 500 V CE

## TECHNICAL DATA

PUR drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -30°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	0.14 mm <sup>2</sup> : AC U 350 V 0.25 - 0.34 mm <sup>2</sup> : AC U 500 V
<b>Test voltage core/core</b>	0.14 mm <sup>2</sup> : 800 V 0.25 - 0.34 mm <sup>2</sup> : 1200 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 80 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.10 mm
  - 0.25 mm<sup>2</sup>: approx. 32 x 0.10 mm
  - 0.34 mm<sup>2</sup>: approx. 42 x 0.10 mm
- Core insulation: PP
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49653	2 x 0.14	26	4.2	11.0	32.0
49654	3 x 0.14	26	4.4	14.0	35.0
49655	4 x 0.14	26	4.7	16.0	40.0
49656	5 x 0.14	26	5.2	18.0	45.0
49657	7 x 0.14	26	5.9	28.0	66.0
49658	10 x 0.14	26	6.9	39.0	86.0
49659	12 x 0.14	26	7.1	42.0	94.0
49660	14 x 0.14	26	7.4	45.0	102.0
49661	18 x 0.14	26	8.2	54.0	118.0
49662	24 x 0.14	26	9.5	66.0	149.0
49663	25 x 0.14	26	9.9	68.0	156.0
49664	2 x 0.25	24	4.6	14.9	38.0
49665	3 x 0.25	24	5.0	19.0	44.0
49666	4 x 0.25	24	5.3	21.3	51.0

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Used for installation in dry, damp and wet rooms, as well as outdoors. With free movement, without tensile stress and without forced motion control capabilities, these cables have proven their reliable performance in drag chain applications, for frequent lifting and bending stress in machine and tool construction, in robotics and on permanently moving machine parts. A long service life and high economic efficiency are also guaranteed. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49667	5 x 0.25	24	5.7	31.0	68.0
49668	7 x 0.25	24	6.8	40.0	82.0
49669	10 x 0.25	24	7.9	54.0	110.0
49670	12 x 0.25	24	8.1	59.0	124.0
49671	14 x 0.25	24	8.4	64.0	135.0
49672	18 x 0.25	24	9.4	78.0	160.0
49673	24 x 0.25	24	10.9	90.0	202.0
49674	25 x 0.25	24	11.4	101.0	211.0
49675	2 x 0.34	22	5.0	18.0	45.0
49676	3 x 0.34	22	5.2	29.0	60.0
49677	4 x 0.34	22	5.6	36.0	76.0
49678	5 x 0.34	22	6.2	39.0	82.0
49679	7 x 0.34	22	7.1	53.0	110.0
49680	10 x 0.34	22	8.3	67.0	148.0

# SUPERTRONIC®-C-PURÖ

colour code DIN 47100, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49681	12 x 0.34	22	8.5	76.0	166.0
49682	14 x 0.34	22	8.9	86.0	185.0
49683	18 x 0.34	22	9.9	100.0	216.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49684	24 x 0.34	22	11.5	147.0	300.0
49685	25 x 0.34	22	12.0	155.0	313.0



# SUPER-PAAR-TRONIC-C-PUR®

colour code DIN 47100, EMC-preferred type



HELUKABEL® SUPER-PAAR-TRONIC-C-PUR® 8x2x0,5 QMM / 19125 350 V C C

## TECHNICAL DATA

**PUR drag chain cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1**

<b>Temperature range</b>	flexible -30°C to +70°C fixed -40°C to +70°C
<b>Nominal voltage</b>	AC U 350 V
<b>Test voltage core/core</b>	1500 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 60 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 0.14 - 0.25 mm <sup>2</sup> : 7.5 x Outer-Ø 0.5 - 1 mm <sup>2</sup> : 10 x Outer-Ø fixed 0.14 - 0.25 mm <sup>2</sup> : 4 x Outer-Ø 0.5 - 1 mm <sup>2</sup> : 5 x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded, 0.5 - 1 mm<sup>2</sup>: acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm  
0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimally matched lay lengths, Pairs stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- highly resistant to alternate bending strength
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2
- certifications and approvals:  
EAC

## APPLICATION

Drag chain compatible cable with overall screen and stranded in pairs that offers operational possibilities where outer electrical influences at high frequency may cause interference of impulse transmission; suitable for permanent flexible operations in machinery, machine tools, robot technics, for movable automated machinery parts and multi-shift-operation as a transmission-cable. This highly flexible data cable with enhanced sliding capabilities by using PP-core insulation and an adhesion-low and cut-resistant PUR-outer sheath, guarantees optimum durability and is highly economic.  
EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19758	1 x 2 x 0.14	26	4.5	13.0	24.0
19759	2 x 2 x 0.14	26	5.9	19.2	42.0
19768	3 x 2 x 0.14	26	6.2	23.3	53.0
19769	4 x 2 x 0.14	26	6.7	27.0	60.0
19778	5 x 2 x 0.14	26	7.4	37.6	74.0
19779	6 x 2 x 0.14	26	8.0	49.2	90.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19788	8 x 2 x 0.14	26	9.4	54.6	108.0
19789	10 x 2 x 0.14	26	10.0	60.0	119.0
19101	1 x 2 x 0.25	24	4.9	14.0	28.0
19102	2 x 2 x 0.25	24	6.6	32.0	61.0
19103	3 x 2 x 0.25	24	6.9	38.4	73.0
19104	4 x 2 x 0.25	24	7.7	43.2	90.0



# SUPER-PAAR-TRONIC-C-PUR®

colour code DIN 47100, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19105	5 x 2 x 0.25	24	8.3	51.5	105.0
19106	6 x 2 x 0.25	24	9.2	71.8	133.0
19107	8 x 2 x 0.25	24	10.8	74.4	156.0
19108	10 x 2 x 0.25	24	11.5	90.0	188.0
19109	14 x 2 x 0.25	24	12.6	111.2	220.0
19119	1 x 2 x 0.5	20	5.7	22.0	47.0
19120	2 x 2 x 0.5	20	8.1	50.0	100.0
19121	3 x 2 x 0.5	20	8.6	71.8	131.0
19122	4 x 2 x 0.5	20	9.5	74.4	149.0
19123	5 x 2 x 0.5	20	10.5	84.5	169.0
19124	6 x 2 x 0.5	20	11.4	99.6	196.0
19125	8 x 2 x 0.5	20	13.8	144.3	285.0
19126	10 x 2 x 0.5	20	14.9	176.0	344.0
19127	14 x 2 x 0.5	20	16.3	215.4	401.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
19128	1 x 2 x 0.75	19	6.5	34.0	61.0
19129	2 x 2 x 0.75	19	9.0	60.0	113.0
19130	3 x 2 x 0.75	19	9.5	85.7	158.0
19131	4 x 2 x 0.75	19	10.5	93.6	173.0
19132	5 x 2 x 0.75	19	11.4	113.0	203.0
19133	6 x 2 x 0.75	19	12.6	130.4	231.0
19134	8 x 2 x 0.75	19	15.2	192.2	343.0
19135	10 x 2 x 0.75	19	16.4	258.0	467.0
19136	14 x 2 x 0.75	19	17.9	316.6	546.0
19137	1 x 2 x 1	18	6.9	42.0	71.0
19138	2 x 2 x 1	18	9.6	73.0	130.0
19139	3 x 2 x 1	18	10.4	93.6	170.0
19140	4 x 2 x 1	18	11.3	117.8	204.0
19141	5 x 2 x 1	18	12.5	139.0	238.0



**HELUKABEL® SUPERTRONIC® 330 PURö 4x0,34 QMM E 170315 AWM STYLE 20233**  
**22 AWG 4C VW-1 AWM I/II A/B 80°C 300V FT1/49788 CE**

## TECHNICAL DATA

**PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 20233, CSA-Std. C22.2 No. 210 - AWM I/II A/B**

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 300 V
<b>Test voltage core/core</b>	1500 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 60 pF/m
<b>Minimum bending radius</b>	flexible 5x Outer-Ø fixed 3x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm  
0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm  
0.34 mm<sup>2</sup>: approx. 42 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU), UL-Std. 1581
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

For installation in dry, damp and wet rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Suitable for frequent and fast lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. A long service life ensures reliable operation and high economic efficiency. It is also well-suited for use in the export-oriented mechanical engineering industry.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49764	2 x 0.14	26	3.9	2.8	22.0
49765	3 x 0.14	26	4.0	4.1	24.0
49766	4 x 0.14	26	4.3	5.6	29.0
49767	5 x 0.14	26	4.7	7.0	33.0
49768	7 x 0.14	26	5.3	9.8	47.0
49769	10 x 0.14	26	6.1	14.0	57.0
49770	12 x 0.14	26	6.2	16.8	63.0
49771	14 x 0.14	26	6.5	19.6	72.0
49772	18 x 0.14	26	7.2	25.2	80.0
49773	24 x 0.14	26	8.2	33.6	110.0
49774	25 x 0.14	26	8.6	35.0	115.0
49775	2 x 0.25	24	4.3	5.0	26.0
49776	3 x 0.25	24	4.5	7.5	30.0
49777	4 x 0.25	24	4.8	10.0	39.0
49778	5 x 0.25	24	5.2	12.5	44.0
49779	7 x 0.25	24	6.0	17.5	52.0
49780	10 x 0.25	24	6.9	25.0	70.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49781	12 x 0.25	24	7.1	30.1	84.0
49782	14 x 0.25	24	7.4	35.0	97.0
49783	18 x 0.25	24	8.2	45.0	114.0
49784	24 x 0.25	24	9.6	60.0	157.0
49785	25 x 0.25	24	10.1	62.5	160.0
49786	2 x 0.34	22	4.6	6.8	31.0
49787	3 x 0.34	22	4.8	10.2	38.0
49788	4 x 0.34	22	5.2	13.6	51.0
49789	5 x 0.34	22	5.6	17.0	54.0
49790	7 x 0.34	22	6.5	23.8	77.0
49791	10 x 0.34	22	7.5	34.0	104.0
49792	12 x 0.34	22	7.7	40.8	122.0
49793	14 x 0.34	22	8.1	47.6	140.0
49794	18 x 0.34	22	9.2	61.2	162.0
49795	24 x 0.34	22	10.7	81.5	204.0
49796	25 x 0.34	22	11.2	85.0	229.0

# SUPERTRONIC®-330-C-PURÖ

EMC-preferred type



HELUKABEL® SUPERTRONIC® 330-C-PURÖ 7x0,25 QMM E 170315 AWM STYLE 20233 24 AWG  
7 C VW-1 AWM I/II A/B 80°C 300V FT1/49812 CE

## TECHNICAL DATA

PUR drag chain cable acc. to UL-Std. 758 (AWM) Style 20233, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	UL (AWM) AC 300 V
<b>Test voltage core/core</b>	1500 V
<b>Test voltage core/screen</b>	1000 V
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 60 pF/m
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 7.5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm
  - 0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm
  - 0.34 mm<sup>2</sup>: approx. 42 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Screen: braided screen of tinned copper wires, approx. coverage 85%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU), UL-Std. 1581
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater

- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

For installation in dry, damp and wet rooms, as well as outdoors with free movement, without tensile stress and without forced motion control. Suitable for frequent and fast lifting and bending stress in machine and tool construction, robotics, and in permanently moving machine parts. A long service life guarantees reliable function and high efficiency. The high screening density ensures interference-free transmission of signals or pulses. EMC= Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49797	2 x 0.14	26	4.4	11.2	32.0
49798	3 x 0.14	26	4.5	14.1	35.0
49799	4 x 0.14	26	4.8	15.5	40.0
49800	5 x 0.14	26	5.0	18.3	45.0
49801	7 x 0.14	26	5.8	27.8	66.0
49802	10 x 0.14	26	6.7	39.3	86.0
49803	12 x 0.14	26	6.8	42.1	94.0
49804	14 x 0.14	26	7.1	45.3	102.0
49805	18 x 0.14	26	7.8	54.1	118.0
49806	24 x 0.14	26	8.8	66.3	149.0
49807	25 x 0.14	26	9.2	68.4	156.0
49808	2 x 0.25	24	4.8	14.9	38.0
49809	3 x 0.25	24	5.0	18.8	44.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49810	4 x 0.25	24	5.3	21.3	51.0
49811	5 x 0.25	24	5.7	31.0	68.0
49812	7 x 0.25	24	6.6	39.6	82.0
49813	10 x 0.25	24	7.5	53.9	110.0
49814	12 x 0.25	24	7.7	59.1	124.0
49815	14 x 0.25	24	8.0	64.2	135.0
49816	18 x 0.25	24	8.8	78.4	150.0
49817	24 x 0.25	24	10.2	89.9	194.0
49818	25 x 0.25	24	10.7	101.0	204.0
49819	2 x 0.34	22	5.1	18.1	45.0
49820	3 x 0.34	22	5.3	28.7	60.0
49821	4 x 0.34	22	5.7	35.7	76.0
49822	5 x 0.34	22	6.1	39.1	82.0

# SUPERTRONIC®-330-C-PURö

EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49823	7 x 0.34	22	7.1	52.7	110.0
49824	10 x 0.34	22	8.1	67.4	148.0
49825	12 x 0.34	22	8.3	76.4	166.0
49826	14 x 0.34	22	8.7	85.5	185.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
49827	18 x 0.34	22	9.8	99.7	216.0
49828	24 x 0.34	22	11.3	147.1	291.0
49829	25 x 0.34	22	11.8	155.0	305.0

# SUPER-PAAR-TRONIC 340-C-PUR

Cable for drag chains, halogen-free, meter marking, EMC-preferred type



## Technical data

- Special drag chain cable, stranded in pairs, to UL-Style 20233
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
300 V
- **Test voltage**  
core/core 1500 V  
core/screen 1000 V
- **Mutual capacitance** at 800 Hz  
core/core approx. 60 pF/m
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing  
0,14 - 0,25 mm<sup>2</sup>: 7,5x outer Ø  
0,34 - 1 mm<sup>2</sup>: 10x outer Ø  
fixed installation  
0,14 - 0,25 mm<sup>2</sup>: 4x outer Ø  
0,34 - 1 mm<sup>2</sup>: 5x outer Ø

## Cable structure

- Bare copper conductor, extra fine wire from 0,5 mm<sup>2</sup> acc. to DIN VDE 0295 cl.6 / IEC 60228 cl.6
- Conductor construction:  
0,14 mm<sup>2</sup> approx. 18x0,1 mm  
0,25 mm<sup>2</sup> approx. 32x0,1 mm  
0,34 mm<sup>2</sup> approx. 42x0,1 mm
- Core insulation of PP
- Core identification to DIN 47100
- Cores stranded in pairs, pairs stranded torsion-free in layers with optimal selected lay length
- Fleece wrapping
- Tinned copper braided screen, approx. coverage 85%
- Fleece wrapping
- Outer sheath of **full polyurethane** compound type TMPU acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 and acc. to UL Std.1581 tab.50.227
- Sheath colour: grey (RAL 7001)
- With meter marking

## Properties

- Resistant to weather, ozone, UV-radiation, solvents, acids, alkalis, hydraulic liquidity
- Halogen-free
- The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## Tests

- Flame retardant acc. to  
DIN VDE 0482-332-1-2 /  
DIN EN 60332-1-2 / IEC 60332-1-2 /  
UL VW-1 / CSA FT1
- Oil resistance acc. to  
DIN VDE 0473-811-404/DIN EN 60811-404

## Note

- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Advantages

- High tear, abrasion and impact resistance, even at low temperatures

## Application

Stranded in pairs, these fully-screened special drag chain cables can also be used where external, high-frequency interference influences pulse transfer. They are used for permanently flexible stresses in machine and tool building, in robot technology, on constantly moving machine components and for extended use in multi-shift operations. This two-approvals single-core cable is preferred for use in export-oriented mechanical engineering, in machine tools, production lines and systems engineering. Guaranteed extended use in multi-shift operations with extremely high bending stresses. For applications which go beyond standard solutions we recommend for our especially developed enquiry sheet for energy guiding systems. For use in cable drag chains please note installation instruction. Further technical details see selection table for drag chain cables, see chapter "Technical Information".

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No.pairs x no.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
49536	1 x 2 x 0,14	26	4,3	13,0	24,0
49537	2 x 2 x 0,14	26	5,5	19,2	41,0
49538	3 x 2 x 0,14	26	5,8	23,3	52,0
49539	4 x 2 x 0,14	26	6,2	27,0	59,0
49540	5 x 2 x 0,14	26	6,7	37,6	72,0
49541	6 x 2 x 0,14	26	7,2	49,2	89,0
49542	8 x 2 x 0,14	26	8,4	54,6	107,0
49543	10 x 2 x 0,14	26	9,1	60,0	116,0
49830	1 x 2 x 0,25	24	4,9	14,0	26,0
49831	2 x 2 x 0,25	24	6,6	32,0	61,0
49832	3 x 2 x 0,25	24	6,9	38,4	70,0
49833	4 x 2 x 0,25	24	7,5	43,2	82,0
49834	5 x 2 x 0,25	24	8,1	51,5	99,0
49835	6 x 2 x 0,25	24	8,8	71,8	126,0
49836	8 x 2 x 0,25	24	10,4	74,4	147,0
49837	10 x 2 x 0,25	24	11,3	90,0	179,0
49838	14 x 2 x 0,25	24	12,4	111,2	210,0
49839	1 x 2 x 0,34	22	5,1	20,0	35,0
49840	2 x 2 x 0,34	22	6,9	41,0	80,0
49841	3 x 2 x 0,34	22	7,3	52,2	100,0
49842	4 x 2 x 0,34	22	7,9	59,1	118,0
49843	5 x 2 x 0,34	22	8,6	67,0	134,0
49844	6 x 2 x 0,34	22	9,5	86,4	162,0
49845	8 x 2 x 0,34	22	11,2	107,5	214,0
49846	10 x 2 x 0,34	22	12,1	131,0	270,0

Part no.	No.pairs x no.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
49847	14 x 2 x 0,34	22	13,5	150,0	304,0
49848	1 x 2 x 0,5	20	5,7	22,5	47,0
49849	2 x 2 x 0,5	20	7,9	53,0	100,0
49850	3 x 2 x 0,5	20	8,4	72,8	131,0
49851	4 x 2 x 0,5	20	9,3	75,6	149,0
49852	5 x 2 x 0,5	20	10,1	85,7	169,0
49853	6 x 2 x 0,5	20	11,2	103,0	181,0
49854	8 x 2 x 0,5	20	13,6	148,4	274,0
49855	10 x 2 x 0,5	20	14,7	180,0	332,0
49856	14 x 2 x 0,5	20	16,3	218,3	390,0
49857	1 x 2 x 0,75	19	6,4	35,2	56,0
49858	2 x 2 x 0,75	19	9,1	61,4	102,0
49859	3 x 2 x 0,75	19	9,8	87,1	144,0
49860	4 x 2 x 0,75	19	10,9	95,2	160,0
49861	5 x 2 x 0,75	19	12,1	115,0	193,0
49862	6 x 2 x 0,75	19	13,5	137,1	216,0
49863	8 x 2 x 0,75	19	16,1	184,4	327,0
49864	10 x 2 x 0,75	19	17,4	259,8	451,0
49865	14 x 2 x 0,75	19	19,2	318,4	521,0
49866	1 x 2 x 1	18	6,9	42,0	64,0
49867	2 x 2 x 1	18	10,1	73,0	120,0
49868	3 x 2 x 1	18	10,9	93,6	160,0
49869	4 x 2 x 1	18	12,1	117,8	184,0
49870	5 x 2 x 1	18	13,6	139,0	217,0

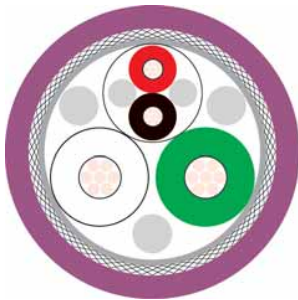
Dimensions and specifications may be changed without prior notice. (RN05)

# BUS Cables

## USB Bus S 2.0 drag chain



PUR



### Type

#### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Drag chain applications

#### 1x2xAWG28 + 1x2xAWG20

Copper, tinned (AWG 28/19)  
Copper, tinned (AWG 20/64)  
PP  
PP  
wh, gn  
rd, bk  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
-  
AL-Foil + braiding  
PUR  
app. 5,0 mm ± 0,2 mm  
Violet similar to RAL 4001

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

90 Ohm ± 15 %  
230 Ohm/km  
0,1 GOhm x km  
460 Ohm/km max.  
60 nF/km nom.  
0,5 kV

### Typical values

Frequency (MHz)	1	10	16	62,5	100	200	300	400
Attenuation (db/100m)	4,5	12,0	15,4	31,0	39,0	60,0	76,2	99,0

### Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 45 kg/km  
50 mm  
-30°C  
+70°C  
0,55 MJ/m  
30,00 kg/km

### Norms

Applicable standards:  
UL Style:  
CSA standard:

USB-Standard 2.0  
Halogen-free acc. to 60754-1  
Flame-retardant CSA FT1  
AWM 20963 (80°C/30V)  
CSA FT1

### Application

HELUKABEL® USB BUS S is designed for continuous moving in cable carriers and lengths up to max. 5m. Conventional USB cables fail within a short period of time, which is why HELUKABEL developed this special cable. Thanks to the PUR sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

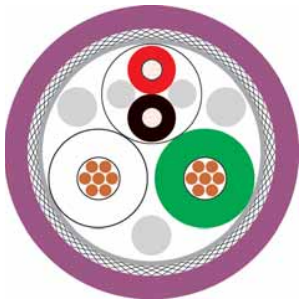
### Part no.

**802469**, USB S

Dimensions and specifications may be changed without prior notice.

# BUS Cables

## USB Bus L 2.0 drag chain



### Type

#### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Drag chain applications

#### 1x2xAWG24 + 1x2xAWG20

Copper, tinned (AWG 24/19)  
Copper, tinned (AWG 20/19)  
PO  
PVC  
wh, gn  
rd, bk  
Double core  
-  
-  
AL-Foil + braid  
yes  
PUR  
app. 6,3 mm ± 0,2 mm  
Violet similar to RAL 4001

### Electrical data

Characteristic impedance: 90 Ohm ± 15 %  
Conductor resistance, max.: 36 Ohm/km  
Insulation resistance, min.: 0,2 GOhm x km  
Loop resistance: 71,6 Ohm/km max.  
Mutual capacitance: 50 nF/km nom.  
Nominal voltage: 300 V  
Test voltage: 2 kV

### Typical values

Frequency (MHz)	1	24	48	96	200	400
Attenuation (db/100m)	2,6	14,0	21,0	30,0	45,0	69,0

### Technical data

Weight: app. 56 kg/km  
bending radius, repeated: 95 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 0,57 MJ/m  
Copper weight: 40,00 kg/km

### Norms

Applicable standards: USB-Standard 2.0  
Flame-retardant acc. IEC 60332-2  
UL Style: AWM 21198 (80°C/ 300V)

### Application

HELUKABEL® USB BUS L is designed for continuous motion in cable carriers and lengths up to max. 10m without a repeater. Conventional USB cables fail within a short period of time and need a repeater after a cable length of 5m, which is why HELUKABEL developed this special cable with a larger cross-section. Thanks to the PUR sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

### Part no.

**802470**, USB L

Dimensions and specifications may be changed without prior notice.

# BUS Cables

## USB Bus 3.0 drag chain



### Type

#### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Drag chain applications

#### 2x2xAWG28 + 2x(1x2xAWG28)

Copper, tinned (AWG 28/19)  
Copper, tinned (AWG 28/19)  
Foam-skin-PE  
PE  
bu/ye, or/vio  
rd/bk, gn/gnwh  
Double core  
Polyester foil over stranded bundle  
AL-Foil + braid  
Cu braid, tinned  
PUR  
app. 6,5 mm ± 0,3 mm  
Violet similar to RAL 4001

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Relative propagation velocity:

90 Ohm ± 20 %  
105 Ohm ± 15% at 1 MHz  
205 Ohm/km  
2 GOhm x km  
410 Ohm/km max.  
60 nF/km nom.  
0,7 kV  
75 %

### Typical values

Frequency (MHz)	1	625	1200
Attenuation UTP pair (dB/100m)	4,0	-	-
Attenuation S/FTP pair (dB/100m)	4,0	115,0	180,0

### Technical data

Weight: app. 62 kg/km  
bending radius, repeated: 55 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 0,69 MJ/m  
Copper weight: 42,00 kg/km

### Norms

Applicable standards: USB-Standard 3.0  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: AWM Style 20236 AWM I/II A/B 80°C 30V FT1  
CSA standard: CSA FT1

### Application

HELUKABEL® USB S 3.0, designed specifically for use in heavy-duty industries, are the ideal solution for highly-flexible applications such as drag chains and camera technology. They guarantee superior transmission properties. The transmission distance is connected with the transmission rate.

### Part no.

**805287**, USB S

Dimensions and specifications may be changed without prior notice.

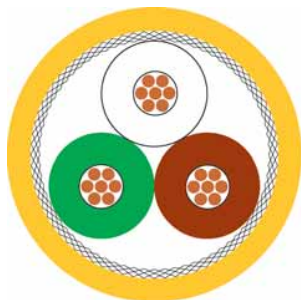


# BUS Cables

SafetyBUS fixed installed + high flexible



FRNC + PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Fixed installation, indoor 3x0,75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 18/24)  
Foam-skin-PE  
wh, bn, gn  
Triple core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
FRNC  
app. 7,5 mm ± 0,3 mm  
Yellow similar to RAL 1003

## Drag chain applications 3x0,75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 18)  
Foam-skin-PE  
wh, bn, gn  
Triple core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 7,8 mm ± 0,2 mm  
Yellow similar to RAL 1003

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:  
Attenuation:

110 Ohm ± 10 Ohm  
27,7 Ohm/km  
5 GOhm x km  
52 Ohm/km max.  
45 nF/km nom.  
250 V  
3 kV  
1 MHz < 1,6 dB/km  
5 MHz < 3,4 dB/km  
10 MHz < 5,6 dB/km  
16 MHz < 7,5 dB/km

110 Ohm ± 10 Ohm  
26 Ohm/km  
5 GOhm x km  
52 Ohm/km max.  
45 nF/km nom.  
250 V  
3 kV  
1 MHz < 1,6 dB/km  
5 MHz < 3,4 dB/km  
10 MHz < 5,6 dB/km  
16 MHz < 7,5 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 68 kg/km  
75 mm  
-25°C  
+80°C  
0,72 MJ/m  
50,00 kg/km

app. 65 kg/km  
80 mm  
-30°C  
+80°C  
0,76 MJ/m  
50,00 kg/km

## Norms

Applicable standards:

abutted at SafetyBUS p technical guidelines  
copper wires 1.0  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-3  
-

abutted at SafetyBUS p technical guidelines  
copper wires 1.0  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)

UL Style:

## Application

HELUKABEL® SafetyBUS FRNC for fixed installation; the PUR version is intended for use in cable carriers. Both versions are halogen-free.

## Part no.

**800651**, SafetyBus p

**800652**, SafetyBus p

Dimensions and specifications may be changed without prior notice.

# HELUKAT® PROFINet C CAT.5e SF/UTP PVC CHAIN



PROFINet Type C, FastConnect (SK) capable, highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

<b>Temperature range</b>	flexible -10°C to +70°C fixed installation -20°C to +70°C UL (CMG) to +75°C UL (AWM) to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 60.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 120.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 52 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 66%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.85 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 6x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, weathering effects, microbes
- abrasion-resistant, notch-resistant
- suitable for use in drag chains
- highly flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3

## APPLICATION

HELUKAT® PROFINet C CAT.5e SF/UTP PVC CHAIN for use on moving parts and in cable carriers. The cable listed here correspond to the PROFINet classifications Type C for moving cables and is designed to withstand mechanical loads. Thanks to the flame retardant jacket the PVC cable has UL CMG PLTC FT4 AWM 600V approval.

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802914	2 x 2 x AWG 22 / 7	0.35	0.75	1.55	6.5	32.0	68.0

# HELUKAT® PROFInet C CAT.5e SF/UTP PUR CHAIN



PROFInet Type C, FastConnect (SK) capable, flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFInet Guideline, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX

<b>Temperature range</b>	flexible -30°C to +75°C fixed installation -40°C to +80°C UL (CMX) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2500 V
<b>Conductor resistance at 20°C</b>	max. 58.6 Ohm/km
<b>Loop resistance at 20°C</b>	max. 117.1 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 66%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.85 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR

- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## APPLICATION

HELUKAT® PROFInet C CAT.5e SF/UTP PUR CHAIN for use on moving parts and in cable carriers. The cable listed here correspond to the PROFInet classifications Type C for moving cables and is designed to withstand mechanical loads. This PUR version has UL CMX listing and offers higher values in chain and chemical resistance.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.3	8.0	16.5	21.3
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800655	2 x 2 x AWG 22 / 7	0.35	0.75	1.5	6.5	32.0	61.0

# HELUCHAIN® PROFINET 24V POWER PVC / HELUCHAIN® PROFINET 24V POWER + FE PVC

flexible, colour coded, meter marking



HELUCHAIN PROFINET 24V POWER PVC 4x0,75 QMM / 11008504 300/500 V C€



HELUCHAIN PROFINET 24V POWER + FE PVC 5x0,75 QMM / 11008505 300/500 V C€

## Technical data

- **PROFINET-compliant\*, highly-flexible PVC drag chain cable**  
acc. to guideline for Profinet Draft 4.10 -  
Date: May 2018  
Order No.: 2.252  
and DIN EN 60445 (VDE 0197)
- **Temperature range**  
flexing 0°C to +90°C  
fixed installation -30°C to +90°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Minimum bending radius**  
flexing 12x conductor Ø  
fixed installation 4x conductor Ø

## Cable structure

- Bare copper conductor, finely stranded acc. to DIN VDE 0295 cl. 5 / IEC 60228 cl. 5
- Core insulation: PVC acc. to DIN VDE 0207-363-3 / DIN EN 50363-3 (compound type TI3)
- Core identification: brown (L1), blue (N1), black (L2), white (N2)  
5 cores: rose (FE)
- Nonwoven wrapping min. 25 % overlapping
- Outer sheath: PVC acc. to DIN VDE 0207-363-4-1 / DIN EN 50363-4-1 (compound type TM3)
- Sheath colour  
HELUCHAIN® PROFINET 24V POWER PVC (without functional earthing conductor) black (RAL 9005)  
HELUCHAIN® PROFINET 24V POWER + FE PVC (with functional earthing conductor) gray (RAL 7001)
- With meter marking

## Properties

- **Drag chain properties**  
max. travelling distance 10 m  
max. speed 3 m/s  
max. acceleration 3m/s<sup>2</sup>  
max. cycles 2M
- The materials used in production are free of silicone, cadmium, and paint-wetting impairment substances
- **Resistance**  
Extensively oil resistant

## Tests

- Flame retardant acc. to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1-2

## Note

\*Deviation from guideline for Profinet Draft 4.10 with pink functional earthing conductor (+FE) with 5-core construction acc. to DIN EN 60445 (VDE 0197)

## Application

PROFINET-compliant, highflex PVC drag chain cable for use in dry and wet environments, but not outdoors. For use in measurement, control and feedback control systems in the automotive industry, machine and machine tool construction and continuous moving machine parts with shift and bending stresses. For use in drag chains, please follow installation guidelines.

C€ = Product conforms with Low-Voltage Directive 2014/35/EU.

### HELUCHAIN® PROFINET 24V POWER PVC

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11008504	4 x 0,75	6,4	28,8	66,0	-
11008506	4 x 1,5	7,7	58,0	109,0	-
11008508	4 x 2,5	9,3	96,0	178,0	-

### HELUCHAIN® PROFINET 24V POWER + FE PVC

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
11008505	5 x 0,75	7,0	36,0	80,0	-
11008507	5 x 1,5	8,4	72,0	131,0	-
11008509	5 x 2,5	10,2	120,0	221,0	-

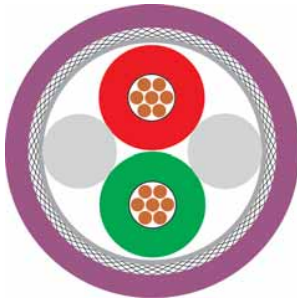
Dimensions and specifications may be changed without prior notice. (RA01)

# BUS Cables

## Profibus L2 drag Chain



PUR



### Type

#### Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

#### Drag chain applications 1x2x0.65 mm (stranded)

Copper, bare (AWG 24/19)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

#### Drag chain applications 1x2x0.65 mm (stranded)

Copper, bare (AWG 24/19)  
Foam-skin-PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Petrol similar to RAL 5018

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
80 Ohm/km  
5 GOhm x km  
160 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 52,0 dB/km

150 Ohm ± 10 %  
80 Ohm/km  
5 GOhm x km  
160 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 52,0 dB/km

### Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 70 kg/km  
80 mm  
-30°C  
+70°C  
1,24 MJ/m  
25,00 kg/km

app. 70 kg/km  
80 mm  
-30°C  
+70°C  
1,24 MJ/m  
25,00 kg/km

### Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1

### Application

HELUKABEL® Profibus L2 Trailing cable for permanent moving in drag chain. Two jacket colours available - petrol or violet. All other technical parameters are the same.

### Part no.

**80267**, Profibus L2

**81003**, Profibus L2

Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus drag chain ET200X + ECOFAST



PUR



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications 1x2x0.65 mm + 3x1x0.75 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/19)  
Copper, bare (AWG 18/42)  
Foam-skin-PE  
PE  
rd, gn  
bk, bu, gnye  
Double core  
Polyester foil over stranded bundle  
AL-Foil + braid  
Polyester foil  
PUR  
app. 9,7 mm ± 0,3 mm  
Petrol similar to RAL 5018

## Drag chain applications 1x2x0.65 mm + 4x1x1.5 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/19)  
Copper, bare (AWG 18/85)  
Foam-skin-PE  
PE  
rd, gn  
bk, bk, bk  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
AL-Foil + braid  
-  
PUR  
app. 11,5 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Relative propagation velocity:  
Attenuation:

150 Ohm ± 10 %  
73 Ohm/km  
5 GOhm x km  
145 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
-  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 52,0 dB/km

150 Ohm ± 15 %  
73 Ohm/km  
1 GOhm x km  
145 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
81 %  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 106 kg/km  
145 mm  
-15°C  
+60°C  
1,953 MJ/m  
46,00 kg/km

app. 160 kg/km  
173 mm  
-30°C  
+70°C  
2,835 MJ/m  
90,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
AWM 21814 80°C 30V I/II A/B FT2

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
UL Style 20233

## Application

HELUKABEL® Profibus ET200X + Ecofast Hybrid cables are designed for continuous motion in cable carriers. The hybrid construction integrates the power supply next to the Profibus in one cable. The type ET200X offers three 0,75mm<sup>2</sup> power conductors, while the type Ecofast 4 has 1,5mm<sup>2</sup> power conductors and greater current-carrying capacity.

## Part no.

**82913**, Profibus L2

**800044**, Profibus L2

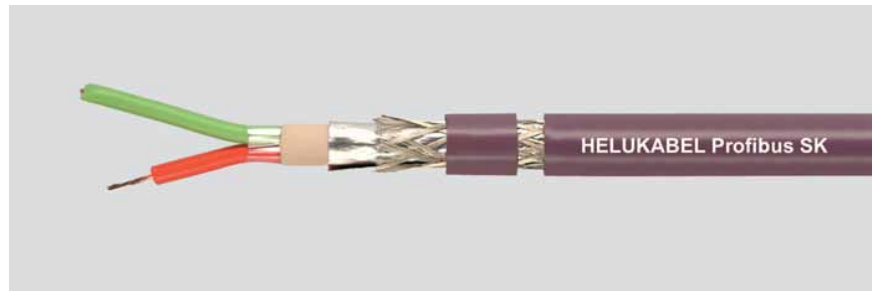
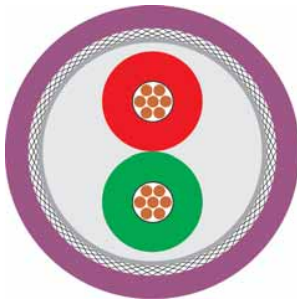
Dimensions and specifications may be changed without prior notice.

# BUS Cables

Profibus SK drag chain

 **HELUKABEL®**

PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Inner sheath material:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications 1x2x0.65 mm (stranded)

Copper, bare (AWG 24/19)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## Drag chain applications 1x2x0.65 mm (stranded)

Copper, bare (AWG 24/19)  
Foam-skin-PE  
rd, gn  
Double core  
Polyester foil over stranded bundle  
PVC  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Petrol similar to RAL 5018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

150 Ohm ± 10 %  
67 Ohm/km  
1 GOhm x km  
134 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

150 Ohm ± 10 %  
67 Ohm/km  
1 GOhm x km  
134 Ohm/km max.  
35 nF/km nom.  
1,5 kV  
9,6 kHz < 3,0 dB/km  
38,4 kHz < 5,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 70 kg/km  
100 mm  
-40°C  
+70°C  
1,53 MJ/m  
25,00 kg/km

app. 70 kg/km  
100 mm  
-40°C  
+70°C  
1,53 MJ/m  
25,00 kg/km

## Norms

Applicable standards:  
  
UL Style:  
CSA standard:

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
CSA FT1

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
CSA FT1

## Application

HELUKABEL® Profibus SK drag chain is designed for continuous motion in cable carriers and has a special structure for processing with the Fast Connect Stripping Tool from Siemens. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants. Depending on the application, the colour petrol or violet is available.

## Part no.

**801659**, Profibus SK

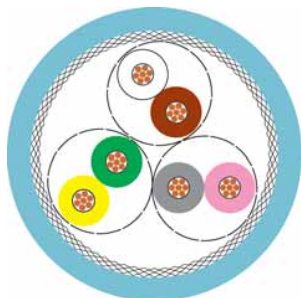
**81906**, Profibus SK

Dimensions and specifications may be changed without prior notice.



# BUS Cables

## I-BUS drag chain



### Type Cable structure

Inner conductor diameter:  
Inner conductor diameter 2:  
Core insulation:  
Core insulation 2:  
Core colours:  
Core colours 2:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Drag chain applications 3x2x0.25 mm<sup>2</sup>

Copper, bare (AWG 24/19)  
-  
PE  
-  
wh/bn, gn/rd, ye/gn  
-  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, bare  
PUR  
app. 7,6 mm ± 0,3 mm  
Pastel turquoise similar to RAL 6034

### Drag chain applications 3x2x0.25 mm<sup>2</sup> + 3x1.0 mm<sup>2</sup>

Copper, bare (AWG 24/19)  
Copper, bare (AWG 17/56)  
PE  
PE  
wh/bn, gn/rd, ye/gn  
bu, rd, gnye  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, bare  
PUR  
app. 8,6 mm ± 0,3 mm  
Violet similar to RAL 4001

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

100 Ohm ± 15 Ohm  
96 Ohm/km  
1 GOhm x km  
192 Ohm/km max.  
60 nF/km nom.  
1 kV  
256 kHz < 15,0 dB/km  
772 kHz < 24,0 dB/km  
1 MHz < 27,0 dB/km  
4 MHz < 52,0 dB/km  
10 MHz < 84,0 dB/km  
16 MHz < 112,0 dB/km  
20 MHz < 119,0 dB/km

100 Ohm ± 15 Ohm  
96 Ohm/km  
1 GOhm x km  
192 Ohm/km max.  
60 nF/km nom.  
1 kV  
256 kHz < 15,0 dB/km  
772 kHz < 24,0 dB/km  
1 MHz < 27,0 dB/km  
4 MHz < 52,0 dB/km  
10 MHz < 84,0 dB/km  
16 MHz < 112,0 dB/km  
20 MHz < 119,0 dB/km

### Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 63 kg/km  
120 mm  
-20°C  
+70°C  
0,937 MJ/m  
36,00 kg/km

app. 92 kg/km  
130 mm  
-20°C  
+70°C  
1,227 MJ/m  
70,00 kg/km

### Norms

Applicable standards:

interbus specification 2.0, IEC61158  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1

interbus specification 2.0, IEC61158  
Halogen-free acc. to 60754-1

### Application

HELUKABEL® I-Bus is designed for guided continuous motion in cable carriers and as strictly a bus cable or a hybrid version (with integrated power supply). Both versions feature a halogen-free PUR jacket.

### Part no.

**81203**, I-BUS

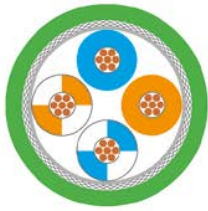
**82696**, I-BUS

Dimensions and specifications may be changed without prior notice.



# HELUKAT® 100S CAT.5e 30 V 4C SF/UTP PUR CHAIN

flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 20963

<b>Temperature range</b>	flexible -30°C to +60°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	500 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.37 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 7x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: blue, orange, white-blue, white-orange
- Cores twisted into a star quad with optimal lay lengths
- Fleece wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	155
Attenuation (dB/100m)	9.1	11.3	22.8	29.5	41.0
NEXT (dB)	67.5	69.0	56.1	55.7	30.0
ACR (dB/100m)	58.4	57.7	33.3	26.2	11.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82838	2 x 2 x AWG 26 / 19	0.15	0.5	1.0	4.8	17.0	30.0

- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

HELUKAT 100S CAT.5e 30 V 4C SF/UTP PUR CHAIN is designed in use in cable carriers and the recurring loads cause by moving machine components. Thanks to the PU sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 30 V

# HELUKAT® 100S CAT.5e 30 V 4P SF/UTP PUR CHAIN



flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 20963

<b>Temperature range</b>	flexible -30°C to +60°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	500 V
<b>Conductor resistance at 20°C</b>	max. 125.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 250.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.64 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 7x Outer-Ø

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths
- Fleece wrapping
- Pairs stranded in layers with optimal lay lengths

## APPLICATION

HELUKAT® 100S CAT.5e 30 V 4P SF/UTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. Thanks to the PUR sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 30 V

## TYPICAL VALUES

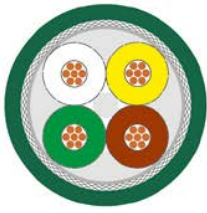
Frequency (MHz)	10	16	62.5	100	155
Attenuation (dB/100m)	9.1	11.3	22.8	29.5	41.0
NEXT (dB)	67.5	69.0	56.1	55.7	30.0
ACR (dB/100m)	58.4	57.7	33.3	26.2	11.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
82839	4 x 2 x AWG 26 / 19	0.15	0.5	1.0	6.6	31.0	56.0

# HELUKAT® 200S CAT.5 4C SF/UTP PUR CHAIN



flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2

<b>Temperature range</b>	flexible -20°C to +70°C fixed installation -35°C to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	700 V
<b>Conductor resistance at 20°C</b>	max. 84.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 168.0 Ohm/km
<b>Insulation resistance</b>	min. 2.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 51 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.94 MJ/m
<b>Minimum bending radius</b>	flexible 12x Outer-Ø fixed installation 6x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: white, yellow, brown, green
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green

- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

HELUKAT® 200S CAT.5 4C SF/UTP PUR CHAIN is designed for use in cable carriers and the extreme loads caused by moving machine components and provides excellent transmission characteristics under the most difficult and extreme conditions. Thanks to the clever structure, it is also suitable mechanically for use even in cable carriers with a high packing density.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	8.0	16.0	22.0
NEXT (dB)	59.0	55.0	43.0	38.0
ACR (dB/100m)	53.0	47.0	27.0	16.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800088	4 x 1 x AWG 24 /19	0.24	0.64	1.3	6.2	30.0	54.0

# HELUKAT® 200S CAT.5 4P SF/UTP PUR CHAIN



flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-3, DIN EN 50288-2-2

<b>Temperature range</b>	flexible -25°C to +70°C fixed installation -35°C to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	700 V
<b>Conductor resistance at 20°C</b>	max. 78.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 156.0 Ohm/km
<b>Insulation resistance</b>	min. 2.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 51 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 2.08 MJ/m
<b>Minimum bending radius</b>	flexible 12x Outer-Ø fixed installation 6x Outer-Ø

- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## APPLICATION

HELUKAT® 200S CAT.5 4P SF/UTP PUR CHAIN is designed for use in cable carriers and the extreme loads caused by moving machine components and provides excellent transmission characteristics under the most difficult and extreme conditions. Thanks to the clever structure, it is also suitable mechanically for use even in cable carriers with a high packing density.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	7.0	9.0	20.0	25.0
NEXT (dB)	57.0	54.0	45.0	43.0
ACR (dB/100m)	50.0	45.0	25.0	18.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
81155	4 x 2 x AWG 24 /19	0.24	0.64	1.25	9.5	54.3	110.0

# HELUKAT® 100S CAT.5e 1000 V SF/UTP PUR CHAIN

flame-retardant



## TECHNICAL DATA

**Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21576**

<b>Temperature range</b>	flexible -30°C to +60°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	500 V
<b>Conductor resistance at 20°C</b>	max. 125.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 250.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.64 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 7x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Polyolefin
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths
- Fleece wrapping
- Pairs stranded in layers with optimal lay lengths

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

HELUKAT® 100S CAT.5e 1000 V SF/UTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. Thanks to the PUR sheath, it also offers excellent resistance to common mineral oils, greases and cooling lubricants.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	155
Attenuation (dB/100m)	9.5	12.1	24.8	32.0	41.0
NEXT (dB)	50.3	47.2	38.4	35.3	30.0
ACR (dB/100m)	40.8	35.1	13.6	3.3	-11.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007779	2 x 2 x AWG 26 / 19	0.15	0.5	1.0	6.6	31.0	56.0

# HELUKAT® 100IND CAT.5e SF/UTP FRNC FLEX

flame-retardant, low smoke



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2

<b>Temperature range</b>	flexible -10°C to +70°C fixed installation -30°C to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1000 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 47 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 70%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.44 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:  
No. 1: white-orange / orange  
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths

- Foil wrapping
- Pairs stranded with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: halogen-free, flame retardant compound (FRNC)
- Sheath colour: blue
- Length marking: in metres

## ■ PROPERTIES

- halogen-free
- flame-retardant, low smoke development

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

HELUKAT® 100IND CAT.5e SF/UTP FRNC FLEX is designed for flexible use. Thanks to the FRNC sheath, it also offers halogen free and flame retardant parameters.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	8.3	10.6	21.7	27.9
NEXT (dB)	59.0	56.0	48.0	45.0
ACR (dB/100m)	50.7	45.4	26.3	17.1

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805701	2 x 2 x AWG 26 /7	0.14	0.5	0.95	5.6	19.0	44.0

# HELUKAT® 100IND CAT.5 SF/UTP PUR ROBUSTFLEX

flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21576

<b>Temperature range</b>	flexible -30°C to +70°C fixed installation -40°C to +80°C
<b>Peak operating voltage</b>	UL (AWM) to +80°C 125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1000 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.65 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:  
No. 1: white-orange / orange  
No. 2: white-green / green
- Cores stranded in pairs with optimal lay lengths
- Foil wrapping
- Pairs stranded with optimal lay lengths

- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: blue
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, lubricating oils, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- conditionally suitable for drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

HELUKAT® 100IND CAT.5e SF/UTP PUR FLEX is designed for flexible use and in drag chain with low performance. Thanks to the PUR sheath, it also offers excellent resistance to typical oils (ASTM 1/2).

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	8.3	10.6	21.7	27.9
NEXT (dB)	59.0	56.0	48.0	45.0
ACR (dB/100m)	50.7	45.4	26.3	17.1

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805702	2 x 2 x AWG 26 /7	0.14	0.5	0.95	5.7	19.0	45.0



# HELUKAT® 250S CAT.6 CMG SF/UTP PVC CHAIN

highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-5-2, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG

<b>Temperature range</b>	flexible -25°C to +80°C fixed installation -40°C to +80°C UL (CMG) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	1500 V
<b>Conductor resistance at 20°C</b>	max. 90.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 180.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.69 MJ/m
<b>Minimum bending radius</b>	flexible 20x Outer-Ø fixed installation 3x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:  
No. 1: white-blue / blue  
No. 2: white-orange / orange  
No. 3: white-green / green  
No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

- Foil wrapping
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: UV radiation
- suitable for use in drag chains
- flame-retardant

## ■ TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3-24 / DIN EN 60332-3-24 / IEC 60332-3-24 (Cat. C)

## ■ APPLICATION

HELUKAT® 250S CAT.6 CMG SF/UTP PVC CHAIN was designed specially for extreme industrial applications. The copper data cable is especially well-suited for Category 6 Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. This version with PVC jacket and stranded conductor is designed specifically for trailing use under difficult industrial conditions.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	250
Attenuation (dB/100m)	9.0	11.4	23.2	29.9	43.7	49.5
NEXT (dB)	59.3	56.2	47.4	44.3	39.8	38.3
ACR (dB/100m)	50.3	44.8	24.2	13.4	-3.9	-11.2

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805658	4 x 2 x AWG 24 / 7	0.22	0.6	1.1	8.0	39.0	72.0



# HELUKAT® 250S CAT.6 CMX SF/UTP PUR CHAIN

flame-retardant



## TECHNICAL DATA

**Industrial Ethernet cable / Cat. 6 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-5-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21576**

<b>Temperature range</b>	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	700 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.35 MJ/m
<b>Minimum bending radius</b>	fixed 8x Outer-Ø fixed installation 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: PP
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- Inner sheath: halogen-free, flame retardant compound (FRNC)
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant
- suitable for use in drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

HELUKAT 250S CAT.6 CMX SF/UTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. It provides excellent transmission characteristics under extremely difficult conditions.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250
Attenuation (dB/100m)	7.7	9.9	20.8	26.7	43.1
NEXT (dB)	73.0	72.0	62.0	61.0	53.0
ACR (dB/100m)	65.3	62.1	41.2	34.3	9.9

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
803387	4 x 2 x AWG 26 /19	0.15	0.55	1.02	7.8	34.0	63.0

# HELUKAT 500S CAT.6<sub>A</sub> SF/FTP PVC CHAIN

highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6<sub>A</sub> acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-10-2, UL-Std. 444 (CM), CSA-Std. C22.2 No. 214 - CM

<b>Temperature range</b>	flexible -10°C to +70°C fixed installation -40°C to +80°C UL (CM) to +75°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes) 3000 V
<b>Test voltage core/core</b>	
<b>Conductor resistance at 20°C</b>	max. 87.6 Ohm/km
<b>Loop resistance at 20°C</b>	max. 175.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 75%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.69 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil
- suitable for use in drag chains
- flame-retardant

## TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 500S CAT.6<sub>A</sub> SF/FTP PVC CHAIN was designed specially for flexible applications in drag chains in extreme industrial environments. The copper data cable is especially well-suited for Category 6<sub>A</sub> Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions. The PVC version has UL CM listing.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	500
Attenuation (dB/100m)	6.6	8.4	17.3	22.0	31.4	38.9	51.2
NEXT (dB)	72.8	73.0	74.1	74.4	74.4	72.7	69.2
ACR (dB/100m)	66.2	64.6	56.8	52.4	43.0	33.8	18.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805704	4 x 2 x AWG 24 / 7	0.22	0.6	1.3	8.7	44.0	88.0

# HELUKAT 500S CAT.6<sub>A</sub> SF/FTP PUR CHAIN

halogen-free, highly flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6<sub>A</sub> acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-10-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21576

<b>Temperature range</b>	flexible -20°C to +60°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	3000 V
<b>Conductor resistance at 20°C</b>	max. 87.6 Ohm/km
<b>Loop resistance at 20°C</b>	max. 175.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 75%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.69 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2

## APPLICATION

HELUKAT® 500S CAT.6<sub>A</sub> SF/FTP PUR CHAIN was designed specially for extreme industrial applications for drag chain moving. The copper data cable is especially well-suited for Category 6<sub>A</sub> Ethernet applications. It guarantees excellent transmission characteristics and may be used even under the harshest conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	500
Attenuation (dB/100m)	6.6	8.4	17.3	22.0	31.4	38.9	51.2
NEXT (dB)	72.8	73.0	74.1	74.4	74.4	72.2	69.2
ACR (dB/100m)	66.2	64.6	56.8	52.4	43.0	33.8	18.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805703	4 x 2 x AWG 24 / 7	0.22	0.6	1.3	8.7	44.0	90.0

# HELUKAT 500S CAT.6<sub>A</sub> SF/FTP SLIM PUR CHAIN

halogen-free, flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 6<sub>A</sub> acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-10-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 21576

<b>Temperature range</b>	flexible -20°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 150.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 300.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 76%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 1.35 MJ/m
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed installation 8x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## ■ APPLICATION

HELUKAT® 500S CAT.6<sub>A</sub> SF/FTP SLIM PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. It provides excellent transmission characteristics under extremely difficult conditions.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	300	500
Attenuation (dB/100m)	9.0	11.0	23.0	29.0	51.0	68.0
NEXT (dB)	60.3	57.2	48.4	45.3	38.1	34.8
ACR (dB/100m)	59.4	56.1	46.1	42.6	33.0	28.0

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805548	4 x 2 x AWG 26 /7	0.14	0.55	1.05	7.8	34.0	81.0

# HELUKAT® 600S CAT.7 SF/FTP PUR CHAIN



CC-Link IE Field certified



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 7 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 20940

<b>Temperature range</b>	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	750 V
<b>Conductor resistance at 20°C</b>	max. 87.6 Ohm/km
<b>Loop resistance at 20°C</b>	max. 175.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 45 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.80 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- suitable for use in drag chains
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: CC-Link IE

## APPLICATION

HELUKAT® 600S CAT.7 SF/FTP PUR CHAIN is designed for use in cable carriers and the recurring loads caused by moving machine components. It provides excellent transmission characteristics under extremely difficult conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	250	500	600
Attenuation (dB/100m)	7.0	9.0	17.5	22.5	36.0	50.0	58.5
NEXT (dB)	100.0	100.0	100.0	100.0	97.0	90.0	89.0
ACR (dB/100m)	93.0	91.0	82.5	77.5	61.0	40.0	30.5

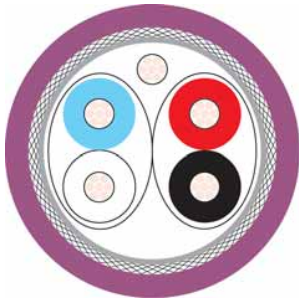
Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805614	4 x 2 x AWG 24 /7	0.22	0.6	1.3	8.7	46.0	95.0

# BUS Cables

DeviceNet™ high flexible thick + thin



PUR, high flexible



## Type Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Drain wire:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications 1x2xAWG18 + 1x2xAWG15

Copper, tinned (AWG 18/40)  
Copper, tinned (AWG 15/84)  
Cell PE  
PE  
light bu, wh  
rd, bk  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
PUR  
app. 12,2 mm ± 0,3 mm  
Violet similar to RAL 4001

## Drag chain applications 1x2xAWG24 + 1x2xAWG22

Copper, tinned (AWG 24/19)  
Copper, tinned (AWG 22/19)  
Cell PE  
PE  
light bu, wh  
rd, bk  
Double core  
-  
Al-Foil  
Cu braid, tinned  
yes  
PUR  
app. 6,9 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Attenuation:

120 Ohm ± 10 %  
22,6 Ohm/km  
0,2 GOhm x km  
45,2 Ohm/km max.  
39,8 nF/km nom.  
2 kV  
125 kHz < 4.1 dB/km  
500 kHz < 8.2 dB/km

120 Ohm ± 10 %  
90 Ohm/km  
0,2 GOhm x km  
45,2 Ohm/km max.  
39,8 nF/km nom.  
2 kV  
125 kHz < 9.5 dB/km  
500 kHz < 16.4 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 185 kg/km  
200 mm  
-40°C  
+80°C  
2,54 MJ/m  
90,00 kg/km

app. 68 kg/km  
70 mm  
-40°C  
+80°C  
0,76 MJ/m  
35,00 kg/km

## Norms

Applicable standards:

ODVA DeviceNet  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1  
CMX 75°C CL2X

ODVA DeviceNet  
Halogen-free acc. to 60754-1  
Flame-retardant acc. IEC 60332-2-1  
CMX 75°C CL2X

## Application

HELUKABEL® DeviceNet™ PUR highly flexible for use in cable carriers with outstanding resistance to common coolants/lubricants. The special aspect of this bus system is that a data pair and a power supply pair are **always** integrated in one cable. The small cross-section is used for short distances or as a point-to-point connection; the large cross-section as main conductor for long distances and frequently in combination with the thin conductor as drain wire.

## Part no.

**81909**, DeviceNet PUR

**81910**, DeviceNet PUR

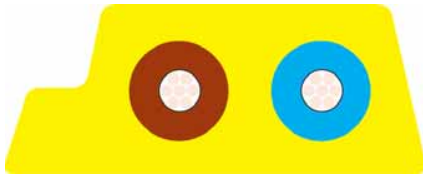
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# BUS Cables

A-BUS PUR 2X2.5 PUR, Long Distance, UL/CSA



PUR



## Type Cable structure

Inner conductor:  
Core insulation:  
Core colours:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Outer sheath colour:

## Drag chain applications 2x2.5 mm<sup>2</sup>

Copper, tinned  
PO  
bu, bn  
-  
-  
-  
PUR  
Yellow similar to RAL 1023

## Drag chain applications 2x2.5 mm<sup>2</sup>

Copper, tinned  
PO  
bu, bn  
-  
-  
-  
PUR  
Black similar to RAL 9005

## Electrical data

Conductor resistance, max.:  
Loop resistance:  
Nominal voltage:

8,21 Ohm/km  
16,42 Ohm/km max.  
32 V

8,21 Ohm/km  
16,42 Ohm/km max.  
48 V

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 140 kg/km  
30 mm  
-40°C  
+80°C  
0,90 MJ/m  
49,00 kg/km

app. 140 kg/km  
30 mm  
-40°C  
+80°C  
0,90 MJ/m  
49,00 kg/km

## Norms

Applicable standards:

ASI standard  
Halogen-free acc. to 60754-1  
Flame-retardant CSA FT2  
AWM Style 20549  
CSA FT2

ASI standard  
Halogen-free acc. to 60754-1  
Flame-retardant CSA FT2  
AWM Style 20549  
CSA FT2

## Application

AS components are interconnected with this special system cable. With the AS interface, the cable assembly from the control system to the sensor/actuator is not needed. The AS interface is the field bus system that transmits both data and power in one single cable. With fast contacting in penetration technique, the possibility of errors in cabling is largely reduced. The special outer jacket provides protection against oil, grease, and refrigerant lubricants, and the cable is therefore even suitable for applications in wet surroundings, in machinery and plant construction, as well as in the machine tool and automotive industry. The PUR variant is suitable for heavy-duty industrial environments.

Because of the cross section 2,5qmm it is possible to realize longer distances.

These types are certified for the American market (UL 1581, FT2) through the use of special materials.

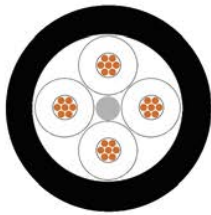
## Part no.

**804410**, A-BUS PUR

**804411**, A-BUS PUR

Dimensions and specifications may be changed without prior notice.





HELUKABEL® Li9Y11Y 4x1,5 ASI SW

## TECHNICAL DATA

Bus Cable acc. to UL-Std. 758 (AWM) Style 20233, in alignment with AS-Interface Specification

<b>Temperature range</b>	flexible -20°C to +80°C fixed -40°C to +80°C
<b>Peak operating voltage</b>	300 V (not for high power current installation purposes)
<b>Test voltage</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 13.3 Ohm/km
<b>Loop resistance at 20°C</b>	max. 26.6 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Caloric load</b>	approx. 1.45 MJ/m
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## ■ CABLE STRUCTURE

- Copper conductor bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification: white cores with consecutive labeling in black digits
- 4 cores twisted into a star quad with optimal lay lengths
- Outer sheath: PUR
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil
- suitable for use in drag chains
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404

## ■ APPLICATION

A-BUS round cable for quick and easy installation in drag chains without the need for separators, which are required with profile cables. Round cables meet the same electrical standards as profile cables.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11009063	4 x 1.5	16	1.6	2.35	7.7	58.0	100.0

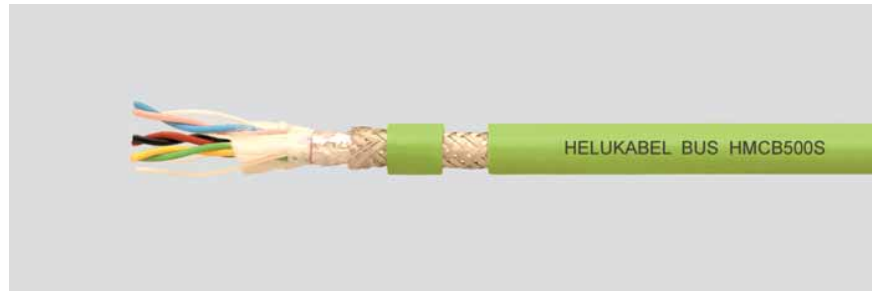


# BUS Cables

## HMCB500S Drag Chain



Drag Chain



### Type

#### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Drag chain applications

#### 2x2x0,22 + 1x2x0,38

Copper, bare (AWG 24/7)  
Copper, tinned (AWG 22/19)  
Foam-skin-PE  
PE  
gn, ye, pk, bu  
rd, bk  
Double core  
-  
-  
AL-Foil + braid  
PVC  
app. 6,95 mm ± 0,15 mm  
Green similar to RAL 6018

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
90 Ohm/km  
1 GOhm x km  
180 Ohm/km max.  
50 nF/km nom.  
0,5 kV

### Typical values

Frequency	(MHz)	10	16	62,5	100
Attenuation	(db/100m)	10,0	12,0	23,0	30,0
Next	(db)	47,0	44,0	35,0	32,0
ACR	(db)	37,0	36,0	12,0	2,0

### Technical data

Weight: app. 66 kg/km  
bending radius, repeated: 125 mm  
Operating temperature range min.: 0°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,00 MJ/m  
Copper weight: 38,00 kg/km

### Norms

Applicable standards: Flame-retardant acc. to IEC 60332-1-2  
UL Style: AWM Style 2502 AWM I/II A/B 80°C 30V FT1  
CSA standard: CSA FT1

### Application

HELUKABEL® HMCB500S is designed for occasional moving in cable carriers and ranges up to 100m without repeater. This cable is used in Siemens Systems.

Typical plugs are RJ45 Industrial IP20 Siemens or Y-Con RJ45 Yamaichi or round M-Connectors from Molex.

### Part no.

**803672**, HMCB500S

Dimensions and specifications may be changed without prior notice.

\* Drive Cliq is registered trademark from Siemens AG.

# BUS Cables

HMCB800 drag chain

**HELUKABEL**<sup>®</sup>

PUR



## Type

### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Core colours 1:  
Core colours 2:  
Stranding element 1:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications

### 2x2x0,20qmm + 1x2x0,38qmm

Copper, bare (AWG 25/19)  
Copper, tinned (AWG 22/19)  
PE  
PE  
gn, ye, pk, bu  
rd, bk  
Double core  
-  
-  
AL-Foil + braid  
PUR  
app. 6,95 mm ± 0,15 mm  
Green similar to RAL 6018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

100 Ohm ± 15 Ohm at 1 to 100 MHz  
100 Ohm/km  
1 GOhm x km  
270 Ohm/km max.  
50 nF/km nom.  
0,5 kV

## Typical values

Frequency (MHz)	10	16	62,5	100
Attenuation (db/100m)	8,0	10,0	20,0	27,0
Next (db)	47,0	44,0	35,0	32,0
ACR (db)	39,0	34,0	15,0	5,0

## Technical data

Weight: app. 61 kg/km  
bending radius, repeated: 75 mm  
Operating temperature range min.: -20°C  
Operating temperature range max.: +60°C  
Caloric load, approx. value: 0,90 MJ/m  
Copper weight: 37,00 kg/km

## Norms

Applicable standards: Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
UL Style: AWM Style 20236 AWM I/II A/B 80°C 30V FT1  
CSA standard: CSA FT1

## Application

HELUKABEL<sup>®</sup> HMCB800W is designed for the most demanding continuous moving requirements in cable carriers and ranges up to 70 m without repeater. This cable is ideal solution in Siemens systems.  
Typical plugs are RJ45 Industrial IP20 Siemens or Y-Con RJ45 Yamaichi or round M-Connectors from Molex.

## Part no.

**804767**, HMCB800

Dimensions and specifications may be changed without prior notice.

\* Drive Cliq is registered trademark from Siemens AG.

# BUS Cables

FIREWIRE drag chain

 **HELUKABEL®**

PUR



## Type

### Cable structure

Inner conductor diameter 1:  
Inner conductor diameter 2:  
Core insulation 1:  
Core insulation 2:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications

### 2x2xAWG26/ 19 + 2xAWG22/ 19

Copper, tinned (AWG 22/19)  
Copper, tinned (AWG 26/19)  
PP  
Foam-skin-PE  
Cu braid, tinned  
PUR  
app. 8,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance: 100 Ohm  $\pm$  15 %  
Conductor resistance, max.: 59,4 Ohm/km  
Insulation resistance, min.: 2 GOhm x km  
Loop resistance: 120 Ohm/km max.  
Mutual capacitance: 45 nF/km nom.  
Nominal voltage: 30 V  
Test voltage: 0,7 kV

## Typical values

Frequency (MHz)	250	400	500	800	1000
attenuation (db/5m)	2,5	3,0	3,6	4,7	5,6

## Technical data

Weight: app. 88 kg/km  
bending radius, repeated: 98 mm  
Operating temperature range min.: -30°C  
Operating temperature range max.: +70°C  
Caloric load, approx. value: 0,986 MJ/m  
Copper weight: 58,00 kg/km

## Norms

Applicable standards: Halogen-free acc. to 60754-1  
Flame-retardant CSA FT1  
UL Style: AWM Style 20236 AWM I/II A/B 80°C 30V FT1

## Application

HELUKABEL® FireWire™ Trailing will be used for permanent moving processes.

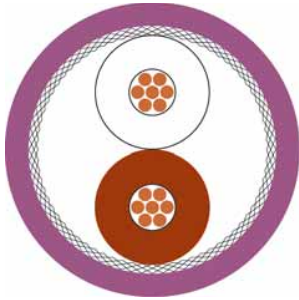
## Part no.

**805057**, FireWire™

Dimensions and specifications may be changed without prior notice.

# BUS Cables

## CAN Bus drag Chain



### Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

### Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

### Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

### Norms

Applicable standards:

### Application

HELUKABEL® CAN Bus is designed for guided continuous motion in cable carriers. The 2-pair version is designed with a star-quad twisting, i.e. diagonal conductors form an electrical pair and satisfy the requirements of the CAN standard. For cable lengths up to max. 40m (observe CAN specifications).

### Part no.

Dimensions and specifications may be changed without prior notice.

### Drag chain applications 1x2x0.25 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/19)  
PE  
wh/bn  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 6,1 mm ± 0,3 mm  
Violet similar to RAL 4001

120 Ohm ± 10 %  
87,6 Ohm/km  
1 GOhm x km  
175,2 Ohm/km max.  
50 nF/km nom.  
1,5 kV

app. 40 kg/km  
90 mm  
-30°C  
+70°C  
0,798 MJ/m  
18,00 kg/km

CAN Bus acc. to ISO 11898-2  
Halogen-free acc. to 60754-1

### Drag chain applications 4x1x0.25 mm<sup>2</sup> (stranded)

Copper, bare (AWG 24/19)  
PE  
wh, bn, gn, ye  
Star quad  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 6,5 mm ± 0,3 mm  
Violet similar to RAL 4001

120 Ohm ± 10 %  
85 Ohm/km  
1 GOhm x km  
170 Ohm/km max.  
50 nF/km nom.  
1,5 kV

app. 45 kg/km  
95 mm  
-30°C  
+70°C  
0,943 MJ/m  
25,00 kg/km

CAN Bus acc. to ISO 11898-2  
Halogen-free acc. to 60754-1

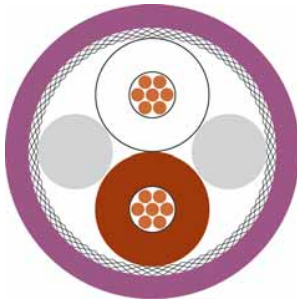
**81912**, CAN BUS, highly flexible

# BUS Cables

CAN Bus drag chain, UL

 **HELUKABEL®**

PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications 1x2x0.34 mm<sup>2</sup> (stranded)

Copper, bare (AWG 22)  
Foam-skin-PE  
wh/bn  
2 cores + 2 fillers stranded together  
-  
-  
Cu braid, tinned  
PUR  
app. 6,9 mm ± 0,3 mm  
Violet similar to RAL 4001

## Drag chain applications 4x1x0.34 mm<sup>2</sup> (stranded)

Copper, bare (AWG 22/43)  
Foam-skin-PE  
wh/bn, gn/ye  
Star quad  
-  
-  
Cu braid, tinned  
PUR  
app. 7,5 mm ± 0,3 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Nominal voltage:  
Test voltage:

120 Ohm ± 15 %  
56 Ohm/km  
5 GOhm x km  
170 Ohm/km max.  
40 nF/km nom.  
250 V  
1,5 kV

120 Ohm ± 15 %  
56 Ohm/km  
5 GOhm x km  
170 Ohm/km max.  
40 nF/km nom.  
250 V  
1,5 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 54 kg/km  
105 mm  
-30°C  
+70°C  
1,20 MJ/m  
30,00 kg/km

app. 64 kg/km  
130 mm  
-30°C  
+70°C  
1,20 MJ/m  
42,00 kg/km

## Norms

Applicable standards:

CAN Bus acc. to ISO 11898-2  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 444

CAN Bus acc. to ISO 11898-2  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 444

## Application

HELUKABEL® CAN Bus is designed for guided continuous motion in cable carriers. The 2-pair version is designed with star-quad twisting, i.e. diagonal conductors form an electrical pair and meets the requirements of the CAN standard. For cable lengths up to max. 40m (observe CAN specifications).

## Part no.

**802182**, CAN BUS, highly flexible

**802339**, CAN BUS, highly flexible

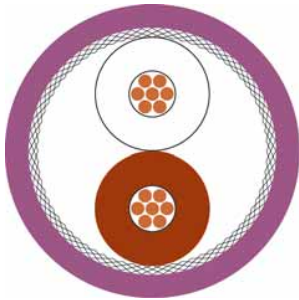
Dimensions and specifications may be changed without prior notice.

# BUS Cables

CAN Bus drag chain, UL

 **HELUKABEL®**

PUR



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Drag chain applications 1x2x0.5 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/30)  
Foam-skin-PE  
wh/bn  
Double core  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 7,9 mm ± 0,2 mm  
Violet similar to RAL 4001

## Drag chain applications 4x1x0.5 mm<sup>2</sup> (stranded)

Copper, bare (AWG 20/30)  
Foam-skin-PE  
wh, bn, gn, ye  
Star quad  
Polyester foil over stranded bundle  
-  
Cu braid, tinned  
PUR  
app. 8,1 mm ± 0,2 mm  
Violet similar to RAL 4001

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:

120 Ohm ± 10 %  
39 Ohm/km  
5 GOhm x km  
78 Ohm/km max.  
40 nF/km nom.  
1,5 kV

120 Ohm ± 10 %  
39 Ohm/km  
5 GOhm x km  
78 Ohm/km max.  
40 nF/km nom.  
1,5 kV

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 76 kg/km  
120 mm  
-30°C  
+70°C  
1,41 MJ/m  
41,00 kg/km

app. 87 kg/km  
122 mm  
-30°C  
+70°C  
1,51 MJ/m  
55,00 kg/km

## Norms

Applicable standards:

CAN Bus acc. to ISO 11898-2  
Acc. to ISO/IEC 11801  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
CSA FT1

CAN Bus acc. to ISO 11898-2  
Acc. to ISO/IEC 11801  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)  
CSA FT1

UL Style:

CSA standard:

## Application

HELUKABEL® CAN Bus is designed for guided continuous motion in cable carriers. For long cable lengths acc. ISO 11898 (observe CAN specifications). As 1- or 2-pair (starquad) version available

## Part no.

**805685**, CAN BUS, highly flexible

**805696**, CAN BUS, highly flexible

Dimensions and specifications may be changed without prior notice.



HELUKABEL® TOPFLEX® 611-PUR 4G2,5 QMM / 22871 0,6/1 kV CE

## TECHNICAL DATA

PUR motor supply cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Minimum bending radius</b>	flexible 7,5x Outer-Ø fixed 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 class 6 / IEC 60228 class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22870	4 G 1.5	16	8.3	58.0	125.0
22871	4 G 2.5	14	10.4	96.0	215.0
22872	4 G 4	12	12.1	154.0	310.0
22873	4 G 6	10	14.9	231.0	470.0
22874	4 G 10	8	18.6	384.0	760.0
22875	4 G 16	6	22.8	615.0	1250.0

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Used as an optimal supply cable for motor supply especially for DNC and servo motors. The cables are specially designed for use in energy supply chains, automatic handling machines, robots, machine tools and processing machines. Optimal materials for insulation ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids and numerous alkalis and solvents. Favourable outer diameters, reduced weights and improved torsional behaviour ensure use in multi-shift operations with extremely high alternating bending stress. Suitable for outdoor installation.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22876	4 G 25	4	26.3	960.0	1510.0
22877	4 G 35	2	32.4	1344.0	2100.0
22978	4 G 50	1	36.6	1920.0	2950.0
22979	4 G 70	2/0	41.8	2640.0	4090.0
22980	4 G 95	3/0	46.2	3648.0	5580.0
22981	4 G 120	4/0	50.9	4608.0	7040.0

# TOPFLEX® 611-C-PUR

EMC-preferred type, with inner sheath



## TECHNICAL DATA

PUR motor supply cable in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

<b>Temperature range</b>	flexible -30°C to +80°C fixed -40°C to +80°C
<b>Nominal voltage</b>	AC U <sub>0</sub> /U 600/1000 V
<b>Test voltage core/core</b>	4000 V
<b>Coupling resistance</b>	at 30 MHz, approx. 250 Ohm/km
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed 5x Outer-Ø

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 class 6 / IEC 60228 class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded in layers with optimally matched lay lengths
- Fleece wrapping
- Inner sheath: TPE
- Screen: braided screen of tinned copper, approx. coverage 85%
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: grey (RAL 7001)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion

- for outdoor use
- suitable for use in drag chains
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Used as an optimal supply cable for motor supply especially for DNC and servo motors. The cables are specially designed for use in energy supply chains, automatic handling machines, robots, machine tools and processing machines. Optimal materials for insulation ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids and numerous alkalis and solvents. Favourable outer diameters, reduced weights and improved torsional behaviour ensure use in multi-shift operations with extremely high alternating bending stress. Suitable for outdoor installation. EMC = Electromagnetic compatibility; in order to optimise the EMC properties, we recommend a double-sided and all-round large contact area of the copper braiding.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for further application parameters, please refer to the selection tables
  - 3) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22970	4 G 1.5	16	10.7	99.0	220.0
22971	4 G 2.5	14	13.2	169.0	340.0
22972	4 G 4	12	15.1	234.0	490.0
22973	4 G 6	10	18.3	316.0	680.0
22974	4 G 10	8	22.4	549.0	1035.0
22975	4 G 16	6	27.0	807.0	1460.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
22976	4 G 25	4	31.0	1169.0	1990.0
22977	4 G 35	2	37.7	1680.0	2535.0
22982	4 G 50	1	43.2	2370.0	3360.0
22983	4 G 70	2/0	47.9	3257.0	4650.0
22984	4 G 95	3/0	53.0	4060.0	6090.0
22985	4 G 120	4/0	58.4	5231.0	7380.0



# TOPSERV® 110 / 120 PUR servo cable with 1 or 2 signal pairs 0,6/1kV, high flexible, cable for drag chain, EMC preferred type



## Technical data

- Spezial-PUR drag chain cable adapted to DIN VDE 0295, 0250, DIN VDE 0285-525-1-1/DIN EN 50525-1
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
power supply cores  $U_0/U$  600/1000 V  
control cores  $U_0/U$  300/500 V
- **Test voltage**  
power supply cores 4000 V  
control cores 1000 V
- **Power rating**  
to DIN VDE 0298 part 4
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire
- Core insulation of halogen-free PP
- Core identification
- **power supply cores**  
core 1: black with imprint U/L1/C/L+  
core 2: black with imprint V/L2  
core 3: black with imprint W/L3/D/L-
- **control cores**  
**TOPSERV® 110**  
core 1 black with imprint BR1  
core 2 black with imprint BR2  
**TOPSERV® 120**  
pair 1: black with number no. 5+6  
pair 2: black with number no. 7+8
- GN-YE conductor
- Screening of the control cores in pairs, tinned drain wire and tinned Cu braid
- Control cores stranded in pairs and laid up in layers together with the power supply cores
- Foil wrapping
- Overall screening of tinned cu braid, visible coverage min. 80%
- Fleece wrapping
- Outer sheath of PUR
- Sheath colour petrol (RAL 5018)

## Properties

- low capacitance by using PP as core insulation
- PUR-outer sheath low adhesion, resistant to hydrolysis and microbial attack, halogen-free
- These highly flexible cables are fitted with an additional overall screen to assure EMC compatibility, i.e. the protection against electromagnetic interference
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.
- Servo-cable and Feedback-cable **with UL-approval** to e.g. Siemens, Bosch Rexroth, Lenze etc. can be found in chapter N ...

## Application

The combination of feeder cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree as is the electromagnetic compatibility (EMC). These cables can also be used as drag chain cables. Manufacturing is based on specifications from renowned manufacturers of servo-actuators and servo-controls as well as in accordance with diverse VDE standards. Application for system SIMODRIVE.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### TOPSERV® 110 (1 pair screened and overall screening)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
71491	(4 G 1,5 + (2 x 1,0))	11,5	139,0	211,0	16
71493	(4 G 2,5 + (2 x 1,0))	13,6	188,0	273,0	14
71705	(4 G 4 + (2 x 1,0))	14,6	260,0	352,0	12
71706	(4 G 6 + (2 x 1,0))	16,0	360,0	500,0	10
71707	(4 G 10 + (2 x 1,0))	20,2	590,0	753,0	8
71708	(4 G 16 + (2 x 1,0))	23,8	845,0	1061,0	6
71709	(4 G 25 + (2 x 1,0))	27,0	1320,0	1499,0	4
71710	(4 G 35 + (2 x 1,0))	31,9	1840,0	1992,0	2
71711	(4 G 50 + (2 x 1,0))	36,7	2530,0	2880,0	1

### TOPSERV® 120 (2 pairs individually screened and overall screening)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
71990	(4 G 1,5 + 2 x (2 x 1,0))	12,6	186,0	242,0	16
71991	(4 G 2,5 + 2 x (2 x 1,0))	15,0	231,0	316,0	14
71992	(4 G 4 + 2 x (2 x 1,0))	16,0	308,0	415,0	12
71993	(4 G 6 + 2 x (2 x 1,0))	18,2	420,0	574,0	10
71994	(4 G 10 + 2 x (2 x 1,0))	22,8	647,0	805,0	8
71995	(4 G 16 + 2 x (2 x 1,0))	25,0	918,0	1122,0	6
71996	(4 G 25 + 2 x (2 x 1,0))	27,7	1400,0	1584,0	4
72106	(4 G 35 + 2 x (2 x 1,0))	32,0	1882,0	2185,0	2
71997	(4 G 50 + 2 x (2 x 1,0))	37,0	2574,0	2977,0	1

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPSERV® PUR high flexible motor and servo cable for drag chain 0,6/1 kV, for example according to Siemens 6FX8008PLUS, Lenze, Bosch Rexroth



## Technical data

- Special PUR drag chain cable acc. to UL AWM Style 21223 or 20234 CSA AWM VDE-recognized
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 600/1000 V  
UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz  
4000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, IEC 60228 cl.6
- Core insulation halogen-free PP
- Core identification
- **power supply cores**  
core 1: black with imprint U/L1/C/L+  
core 2: black with imprint V/L2  
core 3: black with imprint W/L3/D/L-
- **control cores**  
**TOPSERV® 109 PUR** without control cores  
**TOPSERV® 113 PUR** with 1 control cores  
[acc. to Siemens](#)  
core 1: black with imprint BR1  
core 2: white with imprint BR2  
[acc. to Lenze](#)  
core 1: brown with imprint BR1  
core 2: white with imprint BR2  
**TOPSERV® 121 PUR** with 2 control cores  
pair 1: black with number no. 5+6  
pair 2: black with number no. 7+8
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Fleece wrapping facilitates sliding
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PUR
- Sheath colour orange (RAL 2003)

## Properties

- Low adhesion, flame retardant, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack PUR sheath
- Optimized insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents.
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- These cables are produced to high quality specifications and conform to the DESINA® standard.
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Resistant to cleaning and disinfecting agents acc. to ECOLAB®

## Tests

- PUR outer sheath self-extinguishing and flame retardant to DIN VDE 0482-332-1-2, DIN EN 60332-1-2, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- For a corresponding encoder cables please check chapter **TOPGEBER 512 PUR**
- For servo cables with non or only slight drag chain application please check chapter **TOPSERV® PVC**
- Brackets ( ) indicate screen
- DESINA® explanation see introduction
- SIEMENS product designations 6FX 5008-plus are registered trademarks of Siemens AG and are to be used only for purposes of comparison
- Lenze product designations are registered trademarks of Lenze AG and are to be used only for purposes of comparison
- Bosch Rexroth product designations INK are registered trademarks of Bosch Rexroth AG and are to be used only for purposes of comparison

## Application

The combination of supply cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree by these cables. The cables have an additional overall screen to ensure EMC compatibility, i. e. for protection against electromagnetic interference. Production is based on the specifications of established manufacturers of servo-drives and controls, as well as on various VDE, UL and CSA standards. Applications include machine, plant and robot construction, automation, drive, control and production engineering. Attractive for export-oriented mechanical and system engineering. Please observe applicable installation regulations for use in energy supply chains.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

# TOPSERV® PUR high flexible motor and servo cable for

drag chain 0,6/1 kV, for example according to Siemens 6FX8008PLUS,  
Lenze, Bosch Rexroth



## TOPSERV® 109 PUR, acc.to Siemens 6FX8008PLUS

Part no.	No.cores x cross-sec. mm <sup>2</sup>	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
75943	(4 G 1,5)	Siemens	6FX8008-1BB11	Orange RAL 2003	8,9	90,0	142,0	16
75944	(4 G 2,5)	Siemens	6FX8008-1BB21	Orange RAL 2003	10,7	132,0	206,0	14
75945	(4 G 4)	Siemens	6FX8008-1BB31	Orange RAL 2003	12,2	204,0	290,0	12
75946	(4 G 6)	Siemens	6FX8008-1BB41	Orange RAL 2003	14,5	315,0	423,0	10
75947	(4 G 10)	Siemens	6FX8008-1BB51	Orange RAL 2003	17,5	488,0	672,0	8
75948	(4 G 16)	Siemens	6FX8008-1BB61	Orange RAL 2003	21,6	769,0	1038,0	6
75949	(4 G 25)	Siemens	6FX8008-1BB25	Orange RAL 2003	25,2	1100,0	1495,0	4
75950	(4 G 35)	Siemens	6FX8008-1BB35	Orange RAL 2003	28,6	1510,0	1936,0	2
75951	(4 G 50)	Siemens	6FX8008-1BB50	Orange RAL 2003	33,4	2133,0	2774,0	1
700437	(4 G 70)	Siemens	6FX8008-1BB70	Orange RAL 2003	39,9	3029,0	3803,0	2/0
700897	(4 G 95)	Siemens	-	Orange RAL 2003	49,5	4606,0	5102,0	3/0

## TOPSERV® 113 PUR, acc.to Siemens 6FX8008PLUS

Part no.	No.cores x cross-sec. mm <sup>2</sup>	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
78948	(4 G 1,5 + (2 x 1,5))	Siemens	6FX8008-1BA11	Orange RAL 2003	11,6	148,0	233,0	16
78949	(4 G 2,5 + (2 x 1,5))	Siemens	6FX8008-1BA21	Orange RAL 2003	13,2	187,0	315,0	14
78950	(4 G 4 + (2 x 1,5))	Siemens	6FX8008-1BA31	Orange RAL 2003	14,8	268,0	403,0	12
78951	(4 G 6 + (2 x 1,5))	Siemens	6FX8008-1BA41	Orange RAL 2003	16,3	358,0	555,0	10
78952	(4 G 10 + (2 x 1,5))	Siemens	6FX8008-1BA51	Orange RAL 2003	19,5	584,0	769,0	8
75956	(4 G 16 + (2 x 1,5))	Siemens	6FX8008-1BA61	Orange RAL 2003	23,1	825,0	1207,0	6
75957	(4 G 25 + (2 x 1,5))	Siemens	6FX8008-1BA25	Orange RAL 2003	26,8	1283,0	1642,0	4
75958	(4 G 35 + (2 x 1,5))	Siemens	6FX8008-1BA35	Orange RAL 2003	30,9	1850,0	2120,0	2
75959	(4 G 50 + (2 x 1,5))	Siemens	6FX8008-1BA50	Orange RAL 2003	34,2	2540,0	2918,0	1

## TOPSERV® 113 PUR, acc.to Lenze

Part no.	No.cores x cross-sec. mm <sup>2</sup>	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
707228	(4 G 1 + (2 x 0,5))	Lenze	-	Orange RAL 2003	10,5	88,0	166,0	16
707229	(4 G 1,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	11,5	106,0	206,0	16
707230	(4 G 2,5 + (2 x 0,5))	Lenze	-	Orange RAL 2003	13,2	152,0	268,0	14
707231	(4 G 4 + (2 x 1,0))	Lenze	-	Orange RAL 2003	14,6	229,0	387,0	12
707232	(4 G 6 + (2 x 1,0))	Lenze	-	Orange RAL 2003	17,6	333,0	523,0	10
707746	(4 G 10 + (2 x 1,0))	Lenze	-	Orange RAL 2003	20,1	508,0	766,0	8
707747	(4 G 16 + (2 x 1,0))	Lenze	-	Orange RAL 2003	23,8	751,0	1174,0	6

## TOPSERV® 113 PUR

Part no.	No.cores x cross-sec. mm <sup>2</sup>	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
77376	(4 G 1 + (2 x 0,75))	-	-	Orange RAL 2003	11,5	134,0	250,0	17
700199	(4 G 1,5 + (2 x 0,5))	-	-	Orange RAL 2003	11,5	127,0	240,0	16
74506	(4 G 1,5 + (2 x 1,0))	-	-	Orange RAL 2003	11,1	138,0	212,0	16
74507	(4 G 2,5 + (2 x 1,0))	-	-	Orange RAL 2003	12,5	177,0	274,0	14
74508	(4 G 4 + (2 x 1,0))	-	-	Orange RAL 2003	14,3	258,0	378,0	12
74514	(4 G 6 + (2 x 1,0))	-	-	Orange RAL 2003	16,2	348,0	493,0	10
74509	(4 G 10 + (2 x 1,0))	-	-	Orange RAL 2003	19,0	574,0	736,0	8
74510	(4 G 16 + (2 x 1,0))	-	-	Orange RAL 2003	22,2	815,0	1071,0	6
74511	(4 G 25 + (2 x 1,0))	-	-	Orange RAL 2003	26,2	1273,0	1616,0	4
74512	(4 G 35 + (2 x 1,0))	-	-	Orange RAL 2003	29,8	1840,0	2080,0	2
74513	(4 G 50 + (2 x 1,0))	-	-	Orange RAL 2003	33,7	2530,0	2854,0	1

## TOPSERV® 121 PUR, acc.to Bosch Rexroth

Part no.	No.cores x cross-sec. mm <sup>2</sup>	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
706003	(4 G 0,75 + (2 x 0,5))	Bosch Rexroth	INK-0670	Orange RAL 2003	9,2	77,0	138,0	17
73774	(4 G 1 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0653	Orange RAL 2003	11,5	148,0	254,0	17
76103	(4 G 1,5 + 2 x (2 x 0,5))	-	-	Orange RAL 2003	12,4	145,0	250,0	17
73579	(4 G 1,5 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	12,6	182,0	262,0	16
700561	(4 G 1,5 + 2 x (2 x 0,75))	Bosch Rexroth	INK-0650	Orange RAL 2003	12,2	170,0	290,0	16
73580	(4 G 2,5 + 2 x (2 x 1,0))	Bosch Rexroth	INK-0602	Orange RAL 2003	14,6	229,0	336,0	14
78955	(4 G 2,5 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	15,6	241,0	350,0	14
74094	(4 G 4 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	16,2	312,0	475,0	12
700562	(4 G 4 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0603	Orange RAL 2003	16,0	318,0	485,0	12
78956	(4 G 4 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	16,7	324,0	490,0	12
74095	(4 G 6 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	18,2	376,0	606,0	10
700563	(4 G 6 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0604	Orange RAL 2003	18,8	398,0	615,0	10
78957	(4 G 6 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	19,0	450,0	621,0	10
74096	(4 G 10 + 2 x (2 x 1,0))	-	-	Orange RAL 2003	21,5	609,0	905,0	8
700564	(4 G 10 + (2 x 1,0) + (2 x 1,5))	Bosch Rexroth	INK-0605	Orange RAL 2003	22,4	610,0	915,0	8
78958	(4 G 10 + 2 x (2 x 1,5))	-	-	Orange RAL 2003	22,4	625,0	925,0	8
75978	(4 G 16 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0606	Orange RAL 2003	26,9	904,0	1226,0	6
75979	(4 G 25 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0607	Orange RAL 2003	28,0	1323,0	1595,0	4
75980	(4 G 35 + 2 x (2 x 1,5))	Bosch Rexroth	INK-0667	Orange RAL 2003	32,5	1621,0	2196,0	2
700565	(4 G 50 + 2 x (2 x 2,5))	Bosch Rexroth	INK-0668	Orange RAL 2003	37,0	2600,0	3000,0	1

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPSERV® 600 VFD EMC-preferred type, high flexible motor

power supply cable, oil-resistant, NFPA 79 Edition 2012



## Technical data

- TPE motor supply cable acc. to UL-Std. 1277 and UL-Std. 2277
- **Temperature range**  
-25°C to +90°C
- **Nominal voltage**  
TC 600 V  
WTTC 1000 V
- **Test voltage** 4000 V
- **Minimum bending radius**  
flexing 5x cable Ø  
permanently flexing 7,5 cable Ø
- **Coupling resistance**  
max. 250 Ohm/km

## Cable structure

- Tinned copper conductor, extra fine wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Black cores with continuous white numbering
- GN-YE conductor in the outer layer
- Cores stranded in layers with optimal lay-length
- Fleece
- 1. Screening with special aluminium foil
- 2. Screening with braid of tinned copper wires, optimal coverage approx. 85%
- Separator
- Outer sheath of special TPE
- Sheath colour black (RAL 9005) or orange (RAL 2003)
- with length marking in feet

## Properties

- self-extinguishing and flame retardant acc. to CSA FT4
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

## Tests

- **UL:**  
TC-ER, WTTC 1000 V, MTW, NFPA 79 2012, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, Cold Bend Test -40°C Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:**  
c (UL) CIC-TC FT4  
AWM I/II A/B FT4

## Note

- VFD = Variable Frequency Drive

## Application

Highly-flexible, extremely oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 edition 2012 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### Sheath colour black

Part no.	No. cores x AWG-No.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62607	4 x 18	0,963	9,9	38,0	163,0
62608	4 x 16	1,31	11,4	51,0	184,0
62609	4 x 14	2,08	12,5	80,0	197,0
62610	4 x 12	3,31	14,0	127,0	266,0
62611	4 x 10	5,26	17,1	230,0	401,0
62612	4 x 8	8,37	22,3	384,0	669,0
62613	4 x 6	13,31	25,4	614,0	917,0
62614	4 x 4	21,21	30,1	960,0	1364,0
62615	4 x 2	33,6	35,3	1344,0	1990,0

### Sheath colour orange

Part no.	No. cores x AWG-No.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
62616	4 x 18	0,963	9,9	38,0	163,0
62617	4 x 16	1,31	11,4	51,0	184,0
62618	4 x 14	2,08	12,5	80,0	197,0
62619	4 x 12	3,31	14,0	127,0	266,0
62620	4 x 10	5,26	17,1	230,0	401,0
62621	4 x 8	8,37	22,3	384,0	669,0
62622	4 x 6	13,31	25,4	614,0	917,0
62623	4 x 4	21,21	30,1	960,0	1364,0
62624	4 x 2	33,6	35,3	1344,0	1990,0

Dimensions and specifications may be changed without prior notice. (RN01)

# TOPSERV® 650 VFD EMC-preferred type, high flexible motor power supply cable with control cores, oil-resistant, NFPA 79 Edition 2012



## Technical data

- TPE motor supply cable acc. to UL-Std.1277 and UL-Std.2277
- **Temperature range** flexing -25°C to +105°C
- **Nominal voltage** TC 600 V WTTTC 1000 V
- **Test voltage** power supply cores 4000 V control cores 2000 V
- **Minimum bending radius** flexing 5x cable Ø permanently flexing 7,5x cable Ø
- **Coupling resistance** max. 250 Ohm/km

## Cable structure

- Tinned copper-conductor, extra fine-wire with AWG dimensions
- Core insulation of special PVC with transparent nylon skin
- Core identification black cores with continuous white numbering
  - power supply cores no. 1-4
  - control cores no. 5+6
- GN-YE conductor in the outer layer
- Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
- Control cores stranded in pairs and laid up in layers with optimal lay-length with the power supply cores
  1. Screen with plastic-coated aluminium foil
  2. Tinned copper braided screen, approx. 85% coverage
- Separator
- Outer sheath of special TPE
- Sheath colour black (RAL 9005) or orange (RAL 2003)
- with length marking in feet

## Properties

- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- UV-resistant

## Tests

- self-extinguishing and flame retardant acc. to CSA FT4
- **UL:** TC-ER, WTTTC 1000 V, MTW, NFPA 79 2012, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12) OIL RES I & II, 90°C dry / 75°C wet, Cold Bend Test -40°C Class 1 Div. 2 per NEC Art. 336, 392, 501
- **CSA:** c (UL) CIC-TC FT4 AWM I/II A/B FT4

## Note

- VFD = Variable Frequency Drive

## Application

Highly flexible, extremely oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 edition 2012 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

## Sheath colour black

Part no.	No. cores x AWG-No.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
59837	4x AWG 16 +2x AWG 18	1,31 / 0,824	13,0	88,0	259,0
59838	4x AWG 14 +2x AWG 18	2,08 / 0,824	14,0	133,0	370,0
59839	4x AWG 14 +2x AWG 14	2,08 / 2,08	14,6	159,0	399,0
59840	4x AWG 12 +2x AWG 18	3,31 / 0,824	15,3	197,0	435,0
59841	4x AWG 12 +2x AWG 14	3,31 / 2,08	15,7	224,0	466,0
59842	4x AWG 10 +2x AWG 14	5,26 / 2,08	18,2	301,0	703,0
59843	4x AWG 8 +2x AWG 14	8,37 / 2,08	24,1	457,0	901,0
59844	4x AWG 6 +2x AWG 14	13,31 / 2,08	27,4	615,0	1275,0
59845	4x AWG 4 +2x AWG 14	21,21 / 2,08	33,4	1450,0	1861,0

## Sheath colour orange

Part no.	No. cores x AWG-No.	Cross-section mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
59846	4x AWG 16 +2x AWG 18	1,31 / 0,824	13,0	88,0	259,0
59847	4x AWG 14 +2x AWG 18	2,08 / 0,824	14,0	133,0	370,0
59848	4x AWG 14 +2x AWG 14	2,08 / 2,08	14,6	159,0	399,0
59849	4x AWG 12 +2x AWG 18	3,31 / 0,824	15,3	197,0	435,0
59850	4x AWG 12 +2x AWG 14	3,31 / 2,08	15,7	224,0	466,0
59851	4x AWG 10 +2x AWG 14	5,26 / 2,08	18,2	301,0	703,0
59852	4x AWG 8 +2x AWG 14	8,37 / 2,08	24,1	457,0	901,0
59853	4x AWG 6 +2x AWG 14	13,31 / 2,08	27,4	615,0	1275,0
59854	4x AWG 4 +2x AWG 14	21,21 / 2,08	33,4	1450,0	1861,0

Dimensions and specifications may be changed without prior notice. (RN01)



# TOPSERV® Hybrid

Hybrid cable for SICK Hiperface DSL® motorfeedbacksystems



## Technical data

- **TOPSERV® PUR**
- Special PUR drag chain cable acc. to UL AWM Style 21223 CSA AWM
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +90°C
- **Nominal voltage**  
VDE  
power supply cores U<sub>0</sub>/U 600/1000 V  
control cores U<sub>0</sub>/U 300/500 V  
UL/CSA 1000 V
- **A.c. test voltage**, 50 Hz  
power supply cores 4000 V  
control cores 1000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Coupling resistance**  
max. 250 Ohm/km
- **Minimum bending radius**  
flexing 7,5x cable Ø  
fixed installation 4x cable Ø  
min. 5 mio. cycles

## Cable structure

- Bare copper conductor, to DIN VDE 0295 cl.6, extra fine wire, IEC 60228 cl.6
- Core insulation halogen-free PP
- Core identification  
**power supply cores**  
core 1: black with imprint U/L1/C/L+  
core 2: black with imprint V/L2  
core 3: black with imprint W/L3/D/L-  
**control cores**  
pair 1: black with number no. 5+6  
pair 2: white and blue
- GN-YE conductor
- Screening of the control cores in pairs wrapped with tinned copper braid
- Power supply cores laid up with optimal lay length and stabilising filler
- Overall screening from tinned copper braid, optimal coverage approx. 85%
- Outer sheath of PVC or PUR
- Sheath colour: orange (RAL 2003)  
acc. to DESINA®

## Properties

- Low capacitance
  - PUR outer sheath: low adhesion, extremely abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack
  - Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
  - These cables are produced to high quality specifications and conform to the DESINA® standard.
  - The materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers
- ### Tests
- PUR outer sheath self-extinguishing and flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Note

- The technical data for **TOPSERV® Hybrid PVC** cables are available on request.

## Application

The supply conductors for these cables are ideally combined with the control conductors for the brake function and the transmission of the Sick Hiperface DSL protocols. Applications include machine, plant and robot construction. Please observe applicable installation regulations for use in energy supply chains.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

### TOPSERV® Hybrid PVC for fixed or not constantly movements

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
709930	(4G0,5 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,3	72,0	123,0	26
709931	(4G0,75 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,9	88,0	153,0	26
709932	(4G1 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	11,6	130,0	208,0	22
709933	(4G1,5 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	12,2	152,0	248,0	22
709934	(4G2,5 + (2x1) + (2x22 AWG))	Orange RAL 2003	13,8	207,0	326,0	22
709935	(4G4 + (2x1) + (2x22 AWG))	Orange RAL 2003	15,3	273,0	415,0	22
709936	(4G6 + (2x1) + (2x22 AWG))	Orange RAL 2003	17,2	357,0	538,0	22
709937	(4G10 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	20,3	530,0	752,0	22
709938	(4G16 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	22,6	768,0	1005,0	22

### TOPSERV® Hybrid PUR, high flexible for drag chain

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
709703	(4G0,5 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,3	76,0	127,0	26
709704	(4G0,75 + (2x0,34) + (2x26 AWG))	Orange RAL 2003	9,9	88,0	153,0	26
708543	(4G1 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	11,6	133,0	212,0	22
710081	(4G1,5 + (2x0,75) + (2x24 AWG))	Orange RAL 2003	11,7	146,0	229,0	24
708544	(4G1,5 + (2x0,75) + (2x22 AWG))	Orange RAL 2003	12,7	155,0	269,0	22
708545	(4G2,5 + (2x1) + (2x22 AWG))	Orange RAL 2003	13,9	205,0	310,0	22
708546	(4G4 + (2x1) + (2x22 AWG))	Orange RAL 2003	15,7	280,0	420,0	22
708547	(4G6 + (2x1) + (2x22 AWG))	Orange RAL 2003	18,0	363,0	540,0	22
708548	(4G10 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	21,0	538,0	760,0	22
709705	(4G16 + (2x1,5) + (2x22 AWG))	Orange RAL 2003	23,4	775,0	1020,0	22

Dimensions and specifications may be changed without prior notice.

# Feedback cables PUR high flexible feedback cables for drag chain, EMC-preferred type, meter marking



## Technical data

- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
TOPFLEX®-PUR 350 V  
Tachofeedback-cable-C-PUR 450 V  
Incremental Feedback-cable-C-PUR 250 V
- **Test voltage**  
core/core 2000 V  
core/screen 1000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Coupling resistance**  
max. 250 Ohm/km
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper-conductor, to  
DIN VDE 0295 cl.6, extra fine-wire,  
BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of PP
- Part No. 22847 Cu-screen of single pairs  
or single cores and PETP (polyethylene  
terephthalate) sheath
- Core identification see table below
- Single cores or pairs stranded  
in layer with optimal lay-length  
(pairs part no. 22818)
- Drain wire
- Tinned copper braided screen,  
approx. 85% coverage
- Outer sheath of special PUR, matt
- Sheath colour see table below

## Properties

- Special PUR outer sheath low adhesion
- **Resistant to**  
Oils and fats  
Acids and alkalis  
Hydraulic fluids  
Oxygen and ozone  
UV-radiation  
Hydrolysis  
Microbial attack  
Water and weathering effects
- The high abrasion resistance and notch  
resistance meet the highest requirements
- The materials used in manufacture are  
cadmium-free and contain no silicone  
and free from substances harmful to  
the wetting properties of lacquers

## Note

- For extreme applications extending beyond  
standard solutions we recommend that  
you request our questionnaire, which has  
been especially designed for energy supply  
systems.
- Please observe the assembly instruction  
for use in energy supply chains.
- AWG sizes are approximate equivalent  
values. The actual cross-section is in mm<sup>2</sup>.

## Application

Both cables fulfil different tasks for the control of servo-motors. The tachofeedback-cable or response cable serves the regulation of the motor speed and measurement of the actual values. The incremental feedback-cable or position response cable transfers the control signals for positioning and engineering characteristics and is used as the flexible connecting cable for tachometer, brakes and pulse transmitter in case of high mechanical stress in plant, machine and control engineering in dry, moist and wet rooms. Particularly suitable for continuous operating in drag chains, industrial robotics and handling equipment as these cables enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available. The braided screen guarantees reliable signal transmission. Optimum functionality, long service life and an excellent cost-performance ratio are given for the mentioned applications by the special compounds used for insulation and sheath.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

### TOPFLEX®-PUR

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Core marking 0,14 mm <sup>2</sup>	Core marking 0,5 mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22847	(3 x (2 x 0,14) + (2 x 0,5))	DIN 47100	WH, BN	Grey	8,3	78,0	103,0	26
22852	4 x 2 x 0,14 + 4 x 0,5	BN+GN, YE+VT, GY+PK, RD+BU	WH, BN, WH/GN, BN/GN	Grey	8,4	73,0	105,0	26
22849	(10 x 0,14 + 2 x 0,5)	DIN 47100	WH, BN	Grey	7,2	39,0	83,0	26

### Tachofeedback-cable

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Core marking 0,5 mm <sup>2</sup>	Core marking -	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22823	(9 x 0,5)	WH, BN, GN, YE, GY, PK, BU, RD, BK	-	Orange	8,8	80,8	128,0	20

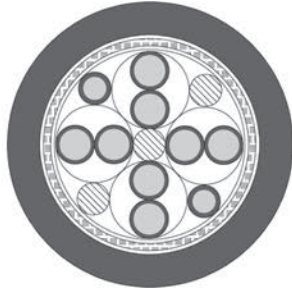
### Incremental feedback cable

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Core marking 0,14 mm <sup>2</sup>	Core marking 1 mm <sup>2</sup>	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
22818	(4 x 2 x 0,25 + 2 x 1,0)	RD+BK, BN+GN, YE+VT, GN+PK	WH, BN	Orange	8,8	65,2	105,0	24

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPGEBER 512 PUR high flexible Feedback cable for

drag chain according to Siemens, Bosch Rexroth, Lenze and other Standards



## Technical data

- Special PUR drag chain feedback cable acc. to UL AWM style 20233 and 20236 and CSA
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
acc. to Siemens 30 V  
acc. to Bosch Rexroth and Lenze 300 V  
further details on request
- **A.c. test voltage**, 50 Hz  
core/core 2000 V  
core/screen 1000 V
- **Mutual capacitance** at 800 Hz  
core/core approx. 70 nF/km  
core/screen approx. 110 nF/km
- **Insulation resistance**  
min. 20 MOhm x km
- **Coupling resistance**  
max. 250 Ohm
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 6x cable Ø

## Cable structure

- tinned copper, to  
DIN VDE 0295 cl.6, extra fine-wire,  
BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special polypropylene
- Core colours on demand
- Fleece wrapping facilitates sliding
- Overall screening of tinned copper wire braid with tinned drain wire, coverage approx. 85%
- Polyester foil
- Outer sheath of PUR
- Sheath colour green (RAL 6018)  
acc. to DESINA® or orange

## Properties

- PUR outer sheath, low adhesion, extremely abrasion resistant, halogen-free, resistant to UV-, oil-, hydrolysis and microbial attack
- Special feature: These cables are produced to high quality specifications and conform to the DESINA®-standard
- Due to the high grade special core insulation, the PUR sheath and the highly flexible conductor, these cables are ideally suitable for use in drag chains and provide high functional reliability
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- Particularly attractive for export-oriented markets due to UL/CSA approval
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Resistant to cleaning and disinfecting agents acc. to ECOLAB®

## Note

- For a corresponding motor- and servocables please check chapter **TOPSERV® PUR**
- Encoder cables for static application please check chapter **TOPGEBER 511 PVC**
- Brackets ( ) indicate screen.
- SIEMENS product designations 6FX 8008-... are registered trademarks of Siemens AG and are to be used only for purposes of comparison.
- Bosch Rexroth product designations INK- are registered trademarks of Bosch-Rexroth AG and are to be used only for purposes of comparison.
- DESINA®: Explanation: see introduction.

## Application

These low-capacitance incremental encoder cables or position feedback cables transmit the control pulses for positioning and operating characteristics of servomotors. These cables are used as connecting cables for tachos, brakes and pulse generators in applications subjected to heavy mechanical stresses in industrial equipment, machine tools, control and automation equipment. Please observe applicable installation regulations for use in energy supply chains.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.



# TOPGEBER 512 PUR high flexible Feedback cable for

drag chain according to Siemens, Bosch Rexroth, Lenze and other Standards



Part no.	No. cores x cross-sec. mm <sup>2</sup>	for system	OEM Part no.	Sheath colour	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
700655	( 8 x 2 x 0,18)	Siemens	6FX 8008-1BD11	Green	7,8	54,0	79,0	24
78081	( 4 x 2 x 0,34 + 4 x 0,5)	Siemens	6FX 8008-1BD21	Green	9,8	83,0	135,0	21
707400	( 3 x (2 x 0,14) + 2 x 0,5)	Siemens	6FX 8008-1BD31	Green	9,0	74,0	119,0	21
700657	( 3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5)	Siemens	6FX 8008-1BD41	Green	8,9	66,0	120,0	26
700540	( 3 x (2 x 0,14) + 4 x 0,14 + 4 x 0,25 + 2 x 0,5)	Siemens	6FX 8008-1BD51	Green	9,6	75,0	138,0	-
700654	( 4 x 2 x 0,18)	Siemens	6FX 8008-1BD61	Green	6,4	35,0	57,0	-
700653	( 2 x 2 x 0,18)	Siemens	6FX 8008-1BD71	Green	5,0	24,0	42,0	-
78079	( 12 x 0,22)	Siemens	6FX 8008-1BD81	Green	7,5	65,0	74,0	24
804767	( 2 x 2 x 0,2 + 2 x 0,38)	Siemens	6FX 8008-2DC00	Green	7,0	40,0	74,0	-
706333	( 5 x 2 x 0,25 + 2 x 0,5)	Berger Lahr	-	Green	8,8	69,0	127,0	24
705413	( 3 x 2 x 0,25 + 2 x 0,5)	Elau	-	Green	7,4	43,0	82,0	24
707403	( 3 x 2 x 0,25)	B+R	-	Green	6,5	31,0	60,0	24
707404	( 5 x 2 x 0,14 + 2 x 0,5)	B+R	-	Green	8,7	48,0	98,0	24
707405	3 x (2 x 0,14) + (2 x 0,5)	Lenze	-	Green	9,8	42,0	98,0	24
707406	4 x (2 x 0,14) + (2 x 1,0)	Lenze	-	Green	11,3	66,0	144,0	24
707407	3 x (2 x 0,14) + (3 x 0,14)	Lenze	-	Green	10,3	41,0	127,0	24
702050	( 4 x 2 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0209 grün	Green	8,8	64,0	99,0	24
78080	( 4 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0448 grün	Green	8,5	51,0	106,0	24
77741	( 9 x 0,5)	Bosch Rexroth	INK-0208 grün	Green	8,8	69,0	124,0	20
707738	( 4 x 2 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0209	Orange	8,8	64,0	99,0	20
707739	( 4 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0448	Orange	8,5	51,0	106,0	20
707740	( 9 x 0,5)	Bosch Rexroth	INK-0208	Orange	8,8	69,0	124,0	20
707408	( 4 x 2 x 0,14 + 4 x 1,0 + (4 x 0,14))	Bosch Rexroth	INK-0532	Orange	9,7	81,0	142,0	20
707418	( 3 x (2 x 0,25) + 3 x 0,25 + 2 x 1,0)	Bosch Rexroth	INK-0280	Orange	9,0	84,0	134,7	20
707409	( 2 x 2 x 0,25 + 2 x 0,5)	Bosch Rexroth	INK-0750	Orange	7,2	38,0	79,0	20
77743	( 3 x (2 x 0,14) + 2 x (1 x 0,5))	Heidenhain	-	Green	8,4	81,0	109,0	-
79513	( 4 x 2 x 0,14 + 4 x 0,5)	Heidenhain	-	Green	8,5	52,0	100,0	26
707410	( 3 x 2 x 0,14 + 2 x 1,0)	Heidenhain	-	Green	9,1	72,0	132,0	26
700560	( 4 x 2 x 0,14 + (4 x 0,14) + 4 x 0,5)	Heidenhain	-	Green	8,3	67,0	104,0	-
77753	( 10 x 0,14 + 2 x 0,5)	Heidenhain	-	Green	7,2	43,0	83,0	26
78963	( 5 x 2 x 0,14 + 2 x 0,5)	Baumüller	-	Green	9,0	72,0	98,0	26
78828	( 3 x 2 x 0,25)	-	-	Green	7,2	55,0	83,0	24
79613	( 5 x 2 x 0,38 + 2 x 0,5)	-	-	Green	8,6	69,0	130,0	21
77744	( 3 x (2 x 0,14) + 2 x 1,0)	-	-	Green	8,2	71,0	107,0	26
78372	( 3 x 2 x 0,14 + 2 x 0,5)	-	-	Green	7,2	35,0	67,0	26
77750	( 4 x (2 x 0,25) + 2 x 1,0)	-	-	Green	10,5	93,0	175,0	24
705221	( 4 x 2 x 0,25)	-	-	Green	7,5	39,0	88,0	24

Dimensions and specifications may be changed without prior notice. (RN07)



## TECHNICAL DATA

Reelable control and connection cable acc. to DIN VDE 0250-814

Temperature range	flexible -25°C to +80°C fixed -40°C to +80°C
Nominal voltage	AC U <sub>0</sub> /U 600/1000 V
Max. permissible operating voltage	alternating current (AC) conductor/earth 700 V three-phase alternating current (AC) conductor/conductor 1200 V direct current (DC) conductor/earth 900 V direct current (DC) conductor/conductor 1800 V
Test voltage core/core	2500 V
Tensile stress	during installation and operation, 15 N/mm <sup>2</sup>
Minimum bending radius	flexible ≤ 20 mm: 5x Outer-ø > 20 mm: 6x Outer-ø

## ■ CABLE STRUCTURE

- Copper conductor tinned, finely stranded acc. to DIN VDE 0295 Class 5 / IEC 60228 Class 5
- Core insulation: rubber acc. to DIN VDE 0207-20 (compound type 3GI3)
- Core identification acc. to DIN VDE 0293-308, 3 - 5 core(s): colour coded  
7 - 50 core(s): black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, in the outer layer
- Cores stranded in layers with optimal lay lengths
- Textile bandage
- Inner sheath: rubber
- Anti-torsion protective layer

- Outer sheath: rubber acc. to DIN VDE 0207-21 (compound type 5GM3)
- Sheath colour: black

## ■ PROPERTIES

- resistant to: oil, ozone, solvents, petrol, acids, chemicals, greases
- abrasion-resistant
- for outdoor use
- operating parameters for reeling applications  
acceleration (max.): 0.4 m/s<sup>2</sup>  
velocity (max.): 120 m/min
- for horizontal reeling operations

## ■ TESTS

- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- certifications and approvals:  
EAC

## ■ APPLICATION

Reeling cables are used for applications involving high mechanical stress, especially for applications requiring frequent winding and unwinding with simultaneous tensile and torsional stress; for construction machinery, conveying and lifting equipment and crane systems. For use as a robust and weather resistant cable in roughest operations such as mobile transport equipment, railway engines and in mining. Suitable for installation in dry, damp and wet rooms as well as outdoors.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in reeling applications:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend that you contact us and complete our form for reelable cables

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
26001	3 G 1.5	16	11.3 - 14.8	43.0	236.0
26029	4 G 1.5	16	12.1 - 15.6	58.0	274.0
26002	5 G 1.5	16	13.0 - 16.5	72.0	316.0
26003	7 G 1.5	16	15.0 - 19.0	101.0	440.0
26004	12 G 1.5	16	19.1 - 21.9	173.0	606.0
26005	16 G 1.5	16	20.9 - 23.1	230.0	696.0
26006	18 G 1.5	16	21.7 - 25.0	260.0	750.0
26007	24 G 1.5	16	24.6 - 28.6	346.0	1150.0
26008	30 G 1.5	16	25.8 - 29.6	432.0	1325.0
26009	3 G 2.5	14	12.7 - 16.3	72.0	305.0
26010	4 G 2.5	14	14.8 - 17.7	96.0	350.0
26011	5 G 2.5	14	15.9 - 18.8	120.0	465.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
26012	7 G 2.5	14	16.8 - 21.1	168.0	576.0
26013	12 G 2.5	14	21.0 - 25.1	288.0	850.0
26014	18 G 2.5	14	24.9 - 28.7	432.0	1181.0
26015	24 G 2.5	14	29.2 - 33.2	576.0	1550.0
26016	30 G 2.5	14	30.7 - 34.4	720.0	1810.0
26017	40 G 2.5	14	35.6 - 39.4	960.0	3110.0
26018	50 G 2.5	14	43.9 - 45.6	1200.0	3200.0
26019	4 G 4	12	16.4 - 19.2	154.0	510.0
26030	5 G 4	12	17.7 - 20.4	192.0	635.0
26020	4 G 6	10	17.6 - 20.6	230.0	650.0
26031	5 G 6	10	19.8 - 23.2	288.0	800.0
26021	4 G 10	8	21.8 - 24.9	384.0	1010.0

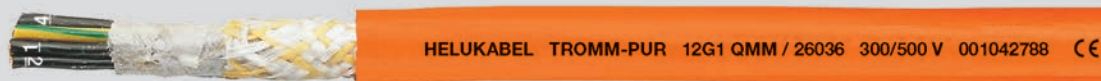
# NSHTÖU

reelable, oil resistant



Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
26022	5 G 10	8	24.4 - 26.7	480.0	1200.0
26023	4 G 16	6	25.1 - 29.1	614.0	1300.0
26032	5 G 16	6	27.1 - 31.4	768.0	1700.0
26024	4 G 25	4	31.6 - 35.5	960.0	2000.0
26025	4 G 35	2	33.7 - 38.3	1344.0	2610.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer-Ø min - max mm	Cu factor per km	Weight kg/km, approx.
26026	4 G 50	1	39.4 - 43.6	1920.0	3500.0
26027	4 G 70	2/0	43.8 - 48.7	2688.0	4600.0
26028	4 G 95	3/0	50.1 - 57.3	3648.0	6100.0
72328	4 G 120	4/0	55.7 - 62.0	4860.0	7200.0



## Technical data

- Special PUR insulation and sheath adapted to DIN VDE 0250
- Strain bearing support strand
- **Temperature range**  
-40°C to +80°C  
(up to +100°C for short periods)
- **Nominal voltage**  
up to 1 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
from 1,5 mm<sup>2</sup> U<sub>0</sub>/U 450/750 V
- **Test voltage**  
up to 1 mm<sup>2</sup> = 2000 V  
from 1,5 mm<sup>2</sup> = 2500 V
- **Breakdown voltage**  
up to 1 mm<sup>2</sup> = 4000 V  
from 1,5 mm<sup>2</sup> = 5000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Minimum bending radius**  
10x cable Ø
- **Radiation resistance**  
up to 100x10<sup>6</sup> cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6 col.4, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special PUR
- Support core
- Core identification to DIN VDE 0293 (flexible cables)
- Cores stranded in layers with optimal lay-length
- Core wrapping with fleece
- Support braiding of synthetic fibres
- Outer sheath of halogen-free PUR
- Sheath colour orange

## Properties

- High flexibility at low temperatures
- Usable for foodstuffs
- Abrasion and tear resistant
- Loadable under torsional stress

## Resistant to

- Oils and fats
- Non-alcoholic fuels and kerosene
- Atmospheric influences
- UV-radiation
- Oxygen and ozone
- Microbes and rotting
- Sea and waste water
- Vibrations

## Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

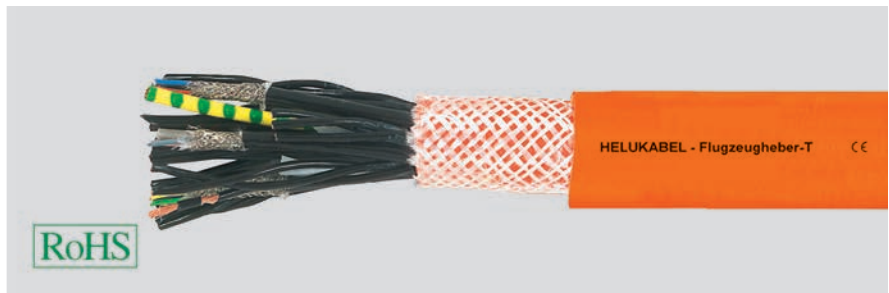
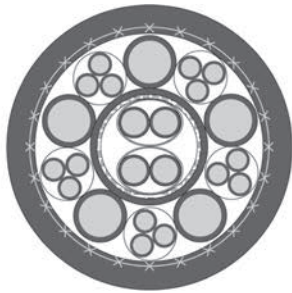
TROMMPUR® has taken the development of the neoprene type cables one step further. It is a robust, all-weather cable, halogen-free, tear and abrasion resistant and suitable for use in drag-chains, in ship docks, on building sites, for conveyor systems, in mining, for tunnels and roadbuilding. For the connecting the ski lift terminal positions to the control unit, surveillance of the joining rods in ski lift cables, as feeder cables for very high currents as for example in pump engineering, mining, locomotive and rail-carriage construction, for oil rig platforms, emergency power generators etc.

CE The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	Breaking strain ca. kp	AWG-No.
26035	14 G 0,75	16,5	154,0	320,0	250	19
26036	12 G 1	17,5	115,0	300,0	500	18
26037	18 G 1	23,0	173,0	480,0	500	18
26038	3 G 1,5	9,5	43,0	110,0	200	16
26039	5 G 1,5	12,5	72,0	220,0	200	16
26040	7 G 1,5	15,5	101,0	270,0	250	16
26041	12 G 1,5	21,0	173,0	450,0	750	16
26042	18 G 1,5	27,0	259,0	620,0	750	16
26043	24 G 1,5	30,0	346,0	850,0	750	16
26044	30 G 1,5	34,0	533,0	1100,0	750	16
26045	42 G 1,5	40,0	605,0	1600,0	750	16
26046	4 G 2,5	14,0	96,0	250,0	200	14
26047	5 G 2,5	15,0	120,0	280,0	250	14
26048	7 G 2,5	18,0	168,0	360,0	300	14
26049	12 G 2,5	25,0	288,0	740,0	750	14
26050	24 G 2,5	36,0	576,0	1400,0	750	14
26051	30 G 2,5	40,0	864,0	1740,0	750	14
26052	36 G 2,5	44,0	998,0	2050,0	750	14
26053	7 G 4	22,0	269,0	600,0	500	12
26054	4 G 10	22,0	384,0	650,0	500	8
26055	4 G 16	27,0	614,0	1100,0	500	6
26059	5 G 16	34,0	768,0	1600,0	750	6
26056	4 G 25	30,0	960,0	1600,0	500	4
26057	4 G 35	36,0	1344,0	2050,0	1000	2
26058	4 G 50	42,0	1920,0	2800,0	1000	1

Dimensions and specifications may be changed without prior notice. (RG01)

# Flugzeugheber-T trailing, PUR



## Technical data

- **Temperature range**  
flexing -20°C to +80°C
- **Nominal voltage**  
control cores 300/500 V  
power supply cores 600/1000 V
- **A.C. test voltage**, 50 Hz  
control cores 1500 V  
power supply cores 4000 V
- **Minimum bending radius**  
for flexible installation 15x cable Ø

## Cable structure

### Part no. 70736

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- **Power supply cores** (4 mm<sup>2</sup>) and **control cores** (0,75 mm<sup>2</sup>)
  - Core insulation of cold flexible special PVC
  - Core identification black with numbering 4 mm<sup>2</sup> No.1-5 + 0,75 mm<sup>2</sup> No.6-20
- **Data pair** ( 0,34 mm<sup>2</sup>)
  - Core insulation data pair of polyethylene
  - Core identification to DIN 47100
  - Cores twisted in pairs
  - Foil wrapping
  - Tinned copper braided screen, approx. 85% coverage
  - Inner sheath of cold flexible special PVC
- Cores stranded with elements
- Inner sheath of cold flexible special PVC
- Outer sheath of PUR with integrated support braiding
- Sheath colour grey (RAL 7001)

### Part no. 77548

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- **Power supply cores** (2,5 mm<sup>2</sup>) and **control cores** (1 mm<sup>2</sup>)
  - Core insulation of TPE-E
  - Core identification black with numbering
  - GN-YE conductor
- **Data pair** ( 0,34 mm<sup>2</sup>)
  - Core insulation of polyethylene
  - Core identification to DIN 47100
  - Cores twisted in pairs
  - Foil wrapping of aluminium-coated polyester
  - Tinned copper braided screen, approx. 85% coverage
- Cores stranded with elements
- Outer sheath of PUR with integrated support braiding
- Sheath colour orange (RAL 2003)

## Properties

- PUR outer sheath: low adhesion, extremely abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack

## Application

This hybrid cable is designed for the aircraft industry, and contains cores for power supply, control cores, and cores for a positioning laser. The cable is used to control and position a support robot, which absorbs loads at specific points when loading extremely heavy items, for example during loading of aircraft assemblies in large transport aircraft of the Airbus industry. The cable is trailing, UV and weather-resistant, and is provided with an extremely wear-resistant and petrol-resistant special sheath. Part no. 77548 is designed for similar applications, as a load-reducing lifter in aircraft assembly.

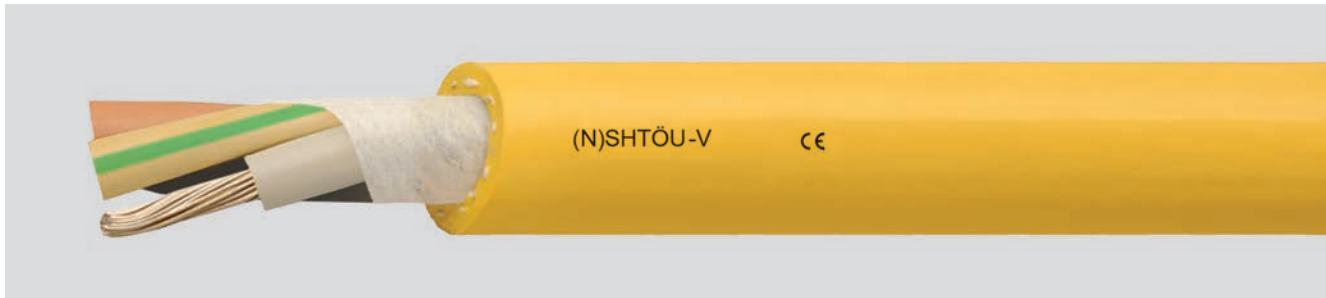
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
70736	5 x 4 + 5 x 3 G 0,75 + 2 x 2 x 0,34	25,6	390,0	600,0	12	77548	5 x 2,5 + 18 G 1,0 + 4 x 2 x 0,34	27,0	461,0	750,0	14

Dimensions and specifications may be changed without prior notice.

# (N)SHTÖU-V

Trailing cable



## Technical data

- Special trailing cable adapted to DIN VDE 0250, Part 814
- **Temperature range** flexing -25°C to +80°C
- **Max. Temperature at conductor** in operation +90°C in short-circuit +250°C
- **Nominal voltage**  $U_0/U$  0,6/1 kV
- **Max. permissible operating voltage** - in three-phase and one-phase a.c. systems  $U_0/U$  0,7/1,2 kV - in d.c. systems  $U_0/U$  0,9/1,8 kV
- **Test voltage** 4 kV
- **Minimum bending radius** 7,5x cable Ø

## Cable structure

- Tinned copper conductor, to DIN VDE 0295 cl.5, fine wire, BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of special rubber compound type 3GI3 to DIN VDE 207 part 20
- Core identification to DIN VDE 0293-308
- GN-YE conductor
- Cores stranded
- Depending on dimension/structure with Kevlar fillers
- Inner sheath of special rubber compound type 5GM5 to DIN VDE 0207 part 21
- Torsion protection between inner and outer sheath
- Outer sheath of special rubber compound type 5GM5 to DIN VDE 0207 part 21
- Sheath colour: yellow

## Properties

- Designed and developed for vertical reeling applications.
  - **Resistant against** acids, fats, gasoline, solvents and chemicals.
- Tests**
- Behaviour in fire to DIN VDE 0482-332-1-2 (equivalent DIN VDE 0472 part 804 test method B)
  - Oil resistant to DIN VDE 0473-811-404, DIN EN 60811-404

## Note

- Permitted running speed up 180 m/min
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

## Application

For vertical drum operation under extreme mechanical stress and on moving cable carriers. Used as a rugged feeder to construction machines, conveyor, transport and crane systems in dry, damp, wet environments and outdoors. For applications which go beyond standard solutions we recommend that you fill out our especially developed questionnaire for reeling cables. Please read the installation instructions, see chapter "Technical Informations".

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

## Power supply Cable

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	Tensile strain max. N	AWG-No.
31040	3 G 1,5	10,9 - 13,6	45,0	191,0	130	16
31041	3 G 2,5	12,3 - 14,8	74,0	240,0	220	14
31042	3 G 4	14,9 - 17,6	115,0	362,0	360	12
31043	3 G 6	16,2 - 18,9	173,0	450,0	540	10
31044	3 G 10	19,6 - 22,6	288,0	682,0	900	8
31045	3 G 16	21,8 - 24,9	461,0	890,0	1440	6
31046	3 G 25	27,5 - 30,8	720,0	1200,0	2250	4
31047	3 x 50 + 3 G 25/3	36,9 - 40,6	1685,0	2810,0	4500	1
31048	3 x 70 + 3 G 35/3	40,4 - 44,4	2355,0	3760,0	6300	2/0
31049	3 x 95 + 3 G 50/3	46,6 - 50,8	3215,0	4700,0	8550	3/0
31050	3 x 120 + 3 G 70/3	50,8 - 55,2	4130,0	5950,0	10800	4/0
31051	3 x 150 + 3 G 70/3	55,4 - 60,0	4990,0	7050,0	13500	300 kcmil
31052	3 x 185 + 3 G 95/3	60,8 - 65,7	6250,0	8800,0	16650	350 kcmil
31053	3 x 240 + 3 G 120/3	68,8 - 74,0	8065,0	11700,0	21600	500 kcmil
31054	4 G 1,5	11,8 - 14,5	58,0	220,0	180	16
31055	4 G 2,5	14,4 - 17,1	99,0	330,0	300	14
31056	4 G 4	16,2 - 18,8	158,0	440,0	480	12
31057	4 G 6	17,4 - 20,2	241,0	530,0	720	10
31058	4 G 10	24,4 - 21,3	404,0	835,0	1200	8
31059	4 G 16	24,7 - 27,9	642,0	1175,0	1920	6
31060	4 G 25	31,4 - 34,9	1005,0	1850,0	3000	4
31061	4 G 35	37,5 - 33,9	1344,0	2250,0	4200	2
31062	4 G 50	40,3 - 44,2	2010,0	3210,0	6000	1
31063	4 G 70	44,5 - 48,6	2687,0	4210,0	8400	2/0
31064	4 G 95	51,1 - 55,5	3646,0	5550,0	11400	3/0
31065	4 G 120	57,4 - 62,0	4605,0	7010,0	14400	4/0
31066	4 G 150	62,6 - 67,6	5765,0	8450,0	18000	300 kcmil
31067	4 G 185	68,1 - 73,2	7110,0	10000,0	22200	350 kcmil
31068	5 G 1,5	12,8 - 15,5	73,0	258,0	220	16
31069	5 G 2,5	15,5 - 18,2	124,0	389,0	370	14
31070	5 G 4	17,4 - 20,2	220,0	511,0	600	12
31071	5 G 6	19,6 - 22,7	317,0	688,0	900	10
31072	5 G 10	23,2 - 26,3	508,0	1002,0	1500	8
31073	5 G 16	26,7 - 30,2	768,0	1395,0	2400	6
31074	5 G 25	34,1 - 37,7	1200,0	2205,0	3750	4
31075	5 G 35	38,3 - 42,2	1680,0	2960,0	5250	2
31076	5 G 50	43,8 - 47,8	2400,0	3950,0	7500	1
31077	5 G 70	50,2 - 54,6	3360,0	5455,0	10500	2/0

Dimensions and specifications may be changed without prior notice. (RG01)

## Control Cable (Kevlar fillers)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Cu factor per km	Weight app. kg / km	Tensile strain max. N	AWG-No.
31078	49 G 1	31,0 - 34,5	470,0	1420,0	3450	18
31079	7 G 1,5	14,6 - 16,9	115,0	320,0	2318	16
31080	12 G 1,5	20,6 - 23,4	196,0	620,0	2540	16
31081	18 G 1,5	20,3 - 22,9	271,0	650,0	2810	16
31082	24 G 1,5	24,2 - 27,4	390,0	930,0	3080	16
31083	30 G 1,5	27,7 - 31,1	432,0	1190,0	3350	16
31084	36 G 1,5	27,9 - 31,3	518,0	1240,0	3620	16
31085	44 G 1,5	31,2 - 34,8	634,0	1530,0	3980	16
31086	48 G 1,5	31,8 - 35,4	691,0	1610,0	4160	16
31087	56 G 1,5	35,9 - 39,7	807,0	2020,0	4520	16
31088	7 G 2,5	17,5 - 19,8	168,0	480,0	2520	14
31089	12 G 2,5	23,8 - 26,7	308,0	915,0	2900	14
31090	18 G 2,5	23,4 - 26,2	451,0	945,0	3350	14
31091	24 G 2,5	28,2 - 31,1	615,0	1330,0	3800	14
31092	30 G 2,5	31,1 - 34,4	770,0	1615,0	4250	14
31093	36 G 2,5	31,3 - 34,7	866,0	1710,0	4680	14
31094	44 G 2,5	36,2 - 40,2	1057,0	2240,0	5250	14
31095	48 G 2,5	37,2 - 41,0	1153,0	2410,0	5550	14
31096	56 G 2,5	41,6 - 46,0	1344,0	2930,0	6150	14



## Technical data

- Medium voltage power cable adapted to VDE 0250 part 813
- **Temperature range**  
flexing -20°C to +60°C  
fixed installation -20°C to +80°C
- **Nominal voltages**  
U<sub>0</sub>/U 3,6/6 kV  
U<sub>0</sub>/U 6/10 kV  
U<sub>0</sub>/U 8,7/15 kV  
U<sub>0</sub>/U 12/20 kV
- **Operating voltages max.**  
3,6/6 kV = 4,2/7,2 kV  
6/10 kV = 6,9/12 kV  
8,7/15 kV = 10,4/18 kV  
12/20 kV = 13,9/24 kV
- **Test voltages**  
3,6/6 kV = 11 kV  
6/10 kV = 17 kV  
8,7/15 kV = 24 kV  
12/20 kV = 29 kV
- **Minimum bending radius**  
15x outer Ø

## Cable structure

- Tinned copper-conductor, to DIN VDE 0295 cl.5, fine-wire, BS 6360 cl.5, IEC 60228 cl.5
- Inner semi-conducting layer
- Core insulation of HEPR
- Outer semi-conducting layer
- Ground conductor with semi-conductive layer
- Cores concentrically stranded
- Inner sheath, sheath colour red
- Antitorsional protection
- Outer sheath of chloroprene rubber compound type 5GM3
- Sheath colour red

## Properties

- maximum permissible speed 200 m/min is allowed when operating drums in one direction
- extremely torsion resistant
- resistant against oils and fats, atmospheric exposure and UV-radiation

## Note

- Further dimensions and special designs on request

## Application

Reeling medium voltage supply train for use in high mechanical stresses, such as in in container cranes or large mobile equipment as well as excavators in the mining industry for days, in dry, damp, wet areas and outdoors.

### 3,6/6kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cu factor per km	Weight app. kg / km
38533	3 x 25 + 3 x 10	37,0 - 40,0	1500	2200	1008,0	2280,0
38534	3 x 35 + 3 x 10	40,0 - 43,0	2000	3100	1292,0	2750,0
38535	3 x 50 + 3 x 10	44,0 - 47,0	3000	4300	1728,0	3400,0
38536	3 x 70 + 3 x 16	47,0 - 50,0	4100	5100	2477,0	4100,0
38537	3 x 95 + 3 x 16	52,0 - 56,0	5600	7000	3197,0	5450,0
38538	3 x 120 + 3 x 25	56,0 - 60,0	7100	8500	4176,0	6650,0

### 6/10kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cu factor per km	Weight app. kg / km
38539	3 x 25 + 3 x 10	39,0 - 42,0	1500	2200	1008,0	2400,0
38540	3 x 35 + 3 x 10	42,0 - 45,0	2000	3100	1292,0	2900,0
38541	3 x 50 + 3 x 10	45,0 - 48,0	3000	4300	1728,0	3450,0
38542	3 x 70 + 3 x 16	50,0 - 54,0	4100	5100	2477,0	4600,0
38543	3 x 95 + 3 x 16	54,0 - 58,0	5600	7000	3197,0	5770,0
38544	3 x 120 + 3 x 25	58,0 - 62,0	7100	8500	4176,0	6900,0

### 8,7/15kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cu factor per km	Weight app. kg / km
38545	3 x 25 + 3 x 10	43,0 - 46,0	1500	2200	1008,0	2750,0
38546	3 x 35 + 3 x 10	46,0 - 48,0	2000	3100	1292,0	3210,0
38547	3 x 50 + 3 x 10	49,0 - 52,0	3000	4300	1728,0	3950,0
39040	3 x 70 + 3 x 16	53,0 - 57,0	4100	5100	2477,0	5000,0
39041	3 x 95 + 3 x 16	58,0 - 62,0	5600	7000	3197,0	6150,0
39042	3 x 120 + 3 x 25	63,0 - 67,0	7100	8500	4176,0	7700,0

### 12/20kV

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø min. - max. mm	Permanent load N	Tensile strain max. N	Cu factor per km	Weight app. kg / km
39043	3 x 25 + 3 x 10	46,0 - 49,0	1500	2200	1008,0	3040,0
39044	3 x 35 + 3 x 10	49,0 - 52,0	2000	3100	1292,0	3510,0
39045	3 x 50 + 3 x 10	53,0 - 57,0	3000	4300	1728,0	4410,0
39046	3 x 70 + 3 x 16	57,0 - 61,0	4100	5100	2477,0	5420,0
39047	3 x 95 + 3 x 16	62,0 - 66,0	5600	7000	3197,0	6750,0
39048	3 x 120 + 3 x 25	67,0 - 70,0	7100	8500	4176,0	8050,0

Dimensions and specifications may be changed without prior notice. (RQ03)



## Technical data

- Trailing cable acc. to UL AWM Style 20235 CSA/AWM
- **Temperature range**  
flexing -40°C to +80°C  
fixed installation -50°C to +80°C
- **Nominal voltage**  
DIN VDE 600/1000 V  
UL 1000 V
- **A.c. test voltage**, 50 Hz  
core/core 4000 V
- **Insulation resistance**  
min. 20 MOhm x km
- **Speed of motion**  
up to 250 m/min
- **Minimum bending radius**  
6x cable Ø

## Cable structure

- Bare copper-conductor, to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of TPE
- Core identification to DIN VDE 0293  
- up to 5 cores coloured  
- from 6 cores, black with continuous white numbering
- GN-YE conductor
- Cores stranded around support element
- Polyester fleece wrapping
- Outer sheath of PUR with integrated support braiding
- Sheath colour yellow

## Properties

- PUR outer sheath, low adhesion, abrasion resistant, halogen-free, resistant to UV, oil, hydrolysis and microbial attack
- Due to the PUR outer sheath, the cable is resistant against ozone and radiation, as well as oils, greases and petrol

## Note

- AWG sizes are approximate equivalent values. The actual cross-section is in mm².

## Application

Significantly smaller external diameters, smaller bending radii and reduced weights compared to NSHTÖU cables enable the use of smaller drive motors and drums, thus providing significant cost savings. Trailing cables are used for high mechanical stress, especially for applications with frequent winding and unwinding with simultaneous tensile and torsional stress, for building machinery, conveyors and lifting systems, and cranes. They are used as robust and all-weather resistant cables in the harshest operating environments in mining and in flexible handling equipment and railway motors. The cables are suitable for installation in dry, damp and wet environments, as well as outdoors.

## Notes

- During installation and operation the tensile stress on the cable must not exceed 25 N/mm²
- Acceleration must not exceed 0,4 m/s²
- 1 to 2 turns should remain on the drum during operation

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

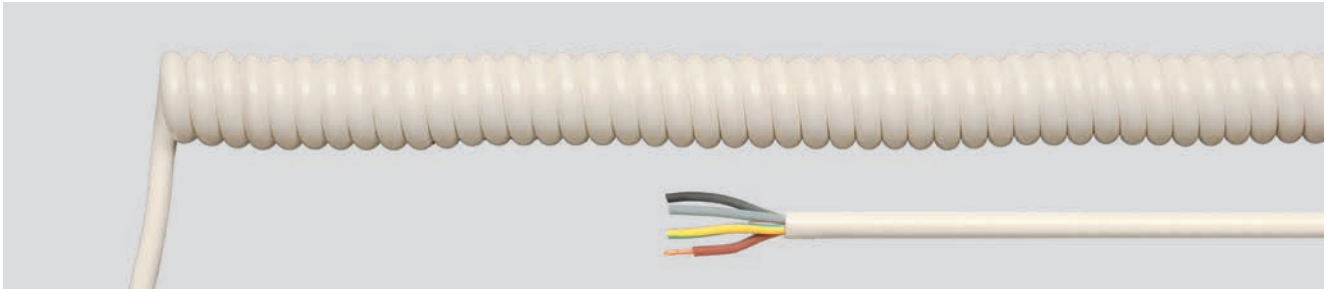
Part no.	No. cores x cross-sec. mm²	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
77144	4 G 1,5	10,2	58,0	157,0	16
77145	5 G 1,5	10,8	72,0	176,0	16
77146	7 G 1,5	12,9	101,0	245,0	16
77147	12 G 1,5	18,4	173,0	337,0	16
77148	18 G 1,5	18,6	259,0	526,0	16
77149	24 G 1,5	21,3	345,6	662,0	16
77150	30 G 1,5	24,6	432,0	901,0	16
77151	42 G 1,5	26,5	604,8	1056,0	16
77152	4 G 2,5	11,7	96,0	208,0	14
77153	5 G 2,5	12,7	120,0	263,0	14
77154	7 G 2,5	14,8	168,0	327,0	14
77155	12 G 2,5	20,4	288,0	533,0	14
77156	18 G 2,5	21,1	432,0	725,0	14
77157	24 G 2,5	24,8	576,0	988,0	14
77158	30 G 2,5	27,6	720,0	1242,0	14
77159	40 G 2,5	30,0	960,0	1500,0	14
77160	50 G 2,5	34,3	1200,0	1800,0	14

Part no.	No. cores x cross-sec. mm²	Outer Ø app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
77161	4 G 4	12,5	154,0	270,0	12
77172	5 G 4	14,3	192,0	362,0	12
77162	4 G 6	16,9	230,0	409,0	10
77173	5 G 6	17,8	288,0	511,0	10
77163	4 G 10	19,6	384,0	633,0	8
77174	5 G 10	20,9	480,0	766,0	8
77164	4 G 16	23,8	614,0	936,0	6
77175	5 G 16	25,3	768,0	1170,0	6
77165	4 G 25	27,7	960,0	1485,0	4
77166	4 G 35	30,1	1344,0	2115,0	2
77167	4 G 50	35,2	1920,0	2600,0	1
77168	4 G 70	40,3	2688,0	3700,0	2/0
77169	4 G 95	50,6	3648,0	4800,0	3/0
77170	4 G 120	53,0	4608,0	5900,0	4/0
77171	4 G 150	56,0	5760,0	7100,0	300 kcmil

Dimensions and specifications may be changed without prior notice.



# PVC spiral cables black and white



## Technical data

- **Temperature range**  
flexing -5°C to +70°C
- **Nominal voltage**  
H03VV-F:  $U_0/U$  300/300 V  
H05VV-F:  $U_0/U$  300/500 V
- **Test voltage** 2000 V
- **Expansion ratio** 1:3
- **straight ends**  
in each case 200 mm

## Application

- Lighting industry
- Data installations
- Shops
- Telecommunication

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.5, fine wire,  
BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of PVC
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Cores stranded in layers
- Outer sheath of PVC
- Sheath colour: see table below

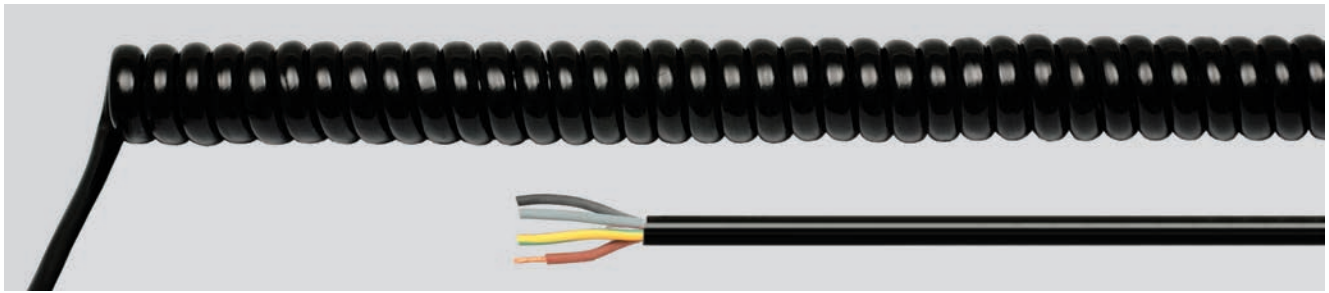
## Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

Part no. black	white	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral- outer Ø app. mm	Cu factor per km	AWG-No.
84500	84700	2 x 0,75	200	6,2	21,4	34,6	18
84502	84702	2 x 0,75	400	6,2	21,4	63,4	18
84504	84704	2 x 0,75	600	6,2	21,4	92,2	18
84506	84706	2 x 0,75	800	6,2	21,4	121,0	18
84508	84708	2 x 0,75	1000	6,2	21,4	149,8	18
84509	84709	2 x 0,75	1200	6,2	21,4	178,6	18
84510	84710	2 x 0,75	1400	6,2	21,4	207,4	18
84517	84717	3 G 0,75	200	6,6	22,2	51,9	18
84519	84719	3 G 0,75	400	6,6	22,2	95,1	18
84521	84721	3 G 0,75	600	6,6	22,2	138,3	18
84523	84723	3 G 0,75	800	6,6	22,2	181,5	18
84525	84725	3 G 0,75	1000	6,6	22,2	224,7	18
84526	84726	3 G 0,75	1200	6,6	22,2	267,8	18
84527	84727	3 G 0,75	1400	6,6	22,2	311,1	18
84534	84734	2 x 1,0	200	6,6	22,2	43,2	17
84536	84736	2 x 1,0	400	6,6	22,2	65,3	17
84538	84738	2 x 1,0	600	6,6	22,2	122,8	17
84540	84740	2 x 1,0	800	6,6	22,2	161,3	17
84542	84742	2 x 1,0	1000	6,6	22,2	199,7	17
84543	84743	2 x 1,0	1200	6,6	22,2	238,1	17
84544	84744	2 x 1,0	1400	6,6	22,2	276,5	17
84585	84785	2 x 1,5	200	7,7	26,4	69,6	16
84587	84787	2 x 1,5	400	7,7	26,4	127,0	16
84589	84789	2 x 1,5	600	7,7	26,4	185,6	16
84591	84791	2 x 1,5	800	7,7	26,4	243,6	16
84593	84793	2 x 1,5	1000	7,7	26,4	301,6	16
84594	84794	2 x 1,5	1200	7,7	26,4	359,6	16
84595	84795	2 x 1,5	1400	7,7	26,4	417,6	16
84602	84802	3 G 1,5	200	8,5	29,0	103,2	16
84604	84804	3 G 1,5	400	8,5	29,0	189,2	16
84606	84806	3 G 1,5	600	8,5	29,0	275,2	16
84608	84808	3 G 1,5	800	8,5	29,0	361,2	16
84610	84810	3 G 1,5	1000	8,5	29,0	447,2	16
84611	84811	3 G 1,5	1200	8,5	29,0	533,2	16
84612	84812	3 G 1,5	1400	8,5	29,0	619,2	16

Dimensions and specifications may be changed without prior notice.

# PUR spiral cables black



## Technical data

- **Temperature range**  
-25°C to +70°C
- **Nominal voltage**  
H05BQ-F  $U_0/U$  300/500 V  
H07BQ-F  $U_0/U$  450/750 V
- **Test voltage**  
H05BQ-F 2000 V  
H07BQ-F 2500 V
- **Expansion ratio** 1:4
- **Straight ends**  
in each case 200 mm

## Application

- Machine Construction
- Electrical Tools
- Building Industry
- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.5, fine wire,  
BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Outer sheath of PUR
- Sheath colour: black

## Note

- On request closed spiral lengths up to max. 5000 mm possible.
- As well in axial constructio
- AWG sizes are approximate equivalent values. The actual cross section is in mm<sup>2</sup>.

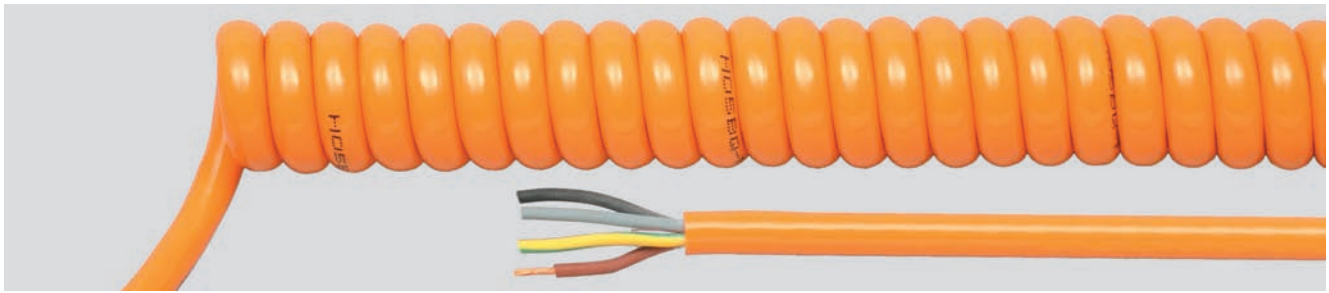
Part no. black	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral- outer Ø app. mm	Cu factor per km	AWG-No.
86303	2 x 0,75	500	6,5	23,0	77,8	18
86306	2 x 0,75	1000	6,5	23,0	149,8	18
86308	2 x 0,75	1400	6,5	23,0	207,4	18
86311	2 x 0,75	2000	6,5	23,0	293,8	18
86315	2 x 0,75	3000	6,5	23,0	437,8	18
86319	3 G 0,75	500	7,1	25,2	116,7	18
86322	3 G 0,75	1000	7,1	25,2	224,7	18
86324	3 G 0,75	1400	7,1	25,2	311,1	18
86327	3 G 0,75	2000	7,1	25,2	440,6	18
86331	3 G 0,75	3000	7,1	25,2	656,6	18
86335	4 G 0,75	500	7,9	28,8	156,6	18
86338	4 G 0,75	1000	7,9	28,8	301,6	18
86340	4 G 0,75	1400	7,9	28,8	417,6	18
86343	4 G 0,75	2000	7,9	28,8	591,6	18
86347	4 G 0,75	3000	7,9	28,8	881,6	18
86351	5 G 0,75	500	8,6	31,2	194,4	18
86354	5 G 0,75	1000	8,6	31,2	374,4	18
86356	5 G 0,75	1400	8,6	31,2	518,4	18
86359	5 G 0,75	2000	8,6	31,2	734,4	18
86363	5 G 0,75	3000	8,6	31,2	1094,4	18
86367	2 x 1,0	500	6,8	24,6	103,7	17
86370	2 x 1,0	1000	6,8	24,6	199,7	17
86372	2 x 1,0	1400	6,8	24,6	276,5	17
86375	2 x 1,0	2000	6,8	24,6	391,7	17
86379	2 x 1,0	3000	6,8	24,6	583,7	17
84903	3 G 1,0	500	7,2	26,4	156,6	17
84906	3 G 1,0	1000	7,2	26,4	301,6	17
84908	3 G 1,0	1400	7,2	26,4	417,6	17
84911	3 G 1,0	2000	7,2	26,4	591,6	17
84915	3 G 1,0	3000	7,2	26,4	881,6	17
86383	4 G 1,0	500	7,8	28,6	207,4	17
86386	4 G 1,0	1000	7,8	28,6	399,4	17
86388	4 G 1,0	1400	7,8	28,6	553,0	17
86391	4 G 1,0	2000	7,8	28,6	783,4	17
86395	4 G 1,0	3000	7,8	28,6	1167,4	17
86399	5 G 1,0	500	9,0	32,0	259,2	17
86402	5 G 1,0	1000	9,0	32,0	499,2	17
86404	5 G 1,0	1400	9,0	32,0	691,2	17
86407	5 G 1,0	2000	9,0	32,0	979,2	17
86411	5 G 1,0	3000	9,0	32,0	1459,2	17

# PUR spiral cables black

Part no. black	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral-outer Ø app. mm	Cu factor per km	AWG-No.
86415	7 G 1,0	500	11,1	39,0	361,8	17
86418	7 G 1,0	1000	11,1	39,0	696,8	17
86420	7 G 1,0	1400	11,1	39,0	964,8	17
86423	7 G 1,0	2000	11,1	39,0	1366,8	17
86427	7 G 1,0	3000	11,1	39,0	2036,8	17
86463	2 x 1,5	500	8,5	30,0	156,6	16
86466	2 x 1,5	1000	8,5	30,0	301,6	16
86468	2 x 1,5	1400	8,5	30,0	417,6	16
86471	2 x 1,5	2000	8,5	30,0	591,6	16
86475	2 x 1,5	3000	8,5	30,0	881,6	16
84919	3 G 1,5	500	8,9	32,8	232,2	16
84922	3 G 1,5	1000	8,9	32,8	447,2	16
84924	3 G 1,5	1400	8,9	32,8	619,2	16
84927	3 G 1,5	2000	8,9	32,8	877,2	16
84931	3 G 1,5	3000	8,9	32,8	1307,2	16
84951	5 G 1,5	500	10,9	38,8	388,8	16
84954	5 G 1,5	1000	10,9	38,8	748,8	16
84956	5 G 1,5	1400	10,9	38,8	1036,8	16
84959	5 G 1,5	2000	10,9	38,8	1468,8	16
84963	5 G 1,5	3000	10,9	38,8	2188,8	16
84967	7 G 1,5	500	12,2	46,4	545,4	16
84970	7 G 1,5	1000	12,2	46,4	1050,4	16
84972	7 G 1,5	1400	12,2	46,4	1454,1	16
84975	7 G 1,5	2000	12,2	46,4	2060,4	16
84979	7 G 1,5	3000	12,2	46,4	3070,4	16
86479	3 G 2,5	500	10,6	38,2	388,8	14
86482	3 G 2,5	1000	10,6	38,2	748,8	14
86484	3 G 2,5	1400	10,6	38,2	1036,8	14
86487	3 G 2,5	2000	10,6	38,2	1468,8	14
86491	3 G 2,5	3000	10,6	38,2	2188,8	14

Dimensions and specifications may be changed without prior notice.

# PUR spiral cables orange



## Technical data

- **Temperature range**  
-25°C to +70°C
- **Nominal voltage**  
H05BQ-F: 300/500 V  
H07BQ-F: 450/750 V
- **Test voltage**  
2000/2500 V
- **Expansion ratio** 1:4
- **straight ends**  
in each case 200 mm

## Application

- Machine Construction
- Electrical Tools
- Building Industry
- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.5, fine wire,  
BS 6360 cl.5, IEC 60228 cl.5
- Core insulation of rubber
- Core identification to DIN VDE 0293-308
- GN-YE conductor, 3 cores and above
- Outer sheath of PUR
- Sheath colour: orange

## Note

- On request closed spiral lengths up to max.  
5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent  
values. The actual cross section is in mm<sup>2</sup>.

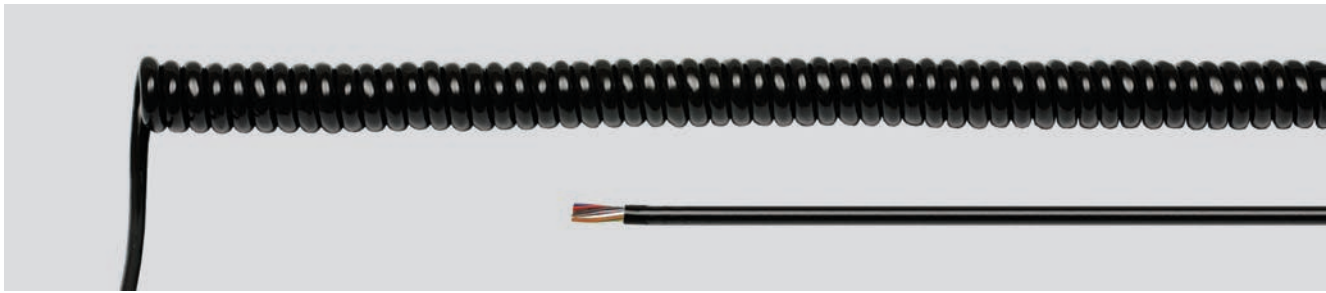
Part no. orange	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral- outer Ø app. mm	Cu factor per km	AWG-No.
85221	2 x 0,75	300	6,5	23,0	59,0	18
85357	2 x 1,5	300	8,5	30,0	98,6	16
85223	2 x 0,75	500	6,5	23,0	77,8	18
85359	2 x 1,5	500	8,5	30,0	156,6	16
85226	2 x 0,75	1000	6,5	23,0	149,8	18
85362	2 x 1,5	1000	8,5	30,0	301,6	16
85229	2 x 0,75	1500	6,5	23,0	221,8	18
85365	2 x 1,5	1500	8,5	30,0	446,6	16
85236	2 x 0,75	3000	6,5	23,0	437,8	18
85372	2 x 1,5	3000	8,5	30,0	881,6	16
85238	3 G 0,75	300	7,1	25,2	73,5	18
85374	3 G 1,5	300	8,9	32,8	146,2	16
85240	3 G 0,75	500	7,1	25,2	116,7	18
85376	3 G 1,5	500	8,9	32,8	232,2	16
85243	3 G 0,75	1000	7,1	25,2	224,7	18
85379	3 G 1,5	1000	8,9	32,8	447,2	16
85246	3 G 0,75	1500	7,1	25,2	332,6	18
85382	3 G 1,5	1500	8,9	32,8	662,2	16
85253	3 G 0,75	3000	7,1	25,2	656,6	18
85389	3 G 1,5	3000	8,9	32,8	1307,2	16
85255	4 G 0,75	300	7,9	28,8	98,6	18
85408	5 G 1,5	300	10,9	38,8	244,8	16
85257	4 G 0,75	500	7,9	28,8	156,6	18
85410	5 G 1,5	500	10,9	38,8	388,8	16
85260	4 G 0,75	1000	7,9	28,8	301,6	18
85413	5 G 1,5	1000	10,9	38,8	748,8	16
85263	4 G 0,75	1500	7,9	28,8	446,6	18
85416	5 G 1,5	1500	10,9	38,8	1108,8	16
85270	4 G 0,75	3000	7,9	28,8	881,6	18
85423	5 G 1,5	3000	10,9	38,8	2188,8	16
85272	5 G 0,75	300	8,6	31,2	122,4	18
85425	7 G 1,5	300	12,6	46,4	343,4	16
85274	5 G 0,75	500	8,6	31,2	194,4	18
85427	7 G 1,5	500	12,6	46,4	545,4	16
85277	5 G 0,75	1000	8,6	31,2	374,4	18
85430	7 G 1,5	1000	12,6	46,4	1050,4	16
85280	5 G 0,75	1500	8,6	31,2	554,4	18
85433	7 G 1,5	1500	12,6	46,4	1555,4	16
85287	5 G 0,75	3000	8,6	31,2	1094,4	18
85440	7 G 1,5	3000	12,6	46,4	3070,4	16

# PUR spiral cables orange

Part no. orange	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral-outer Ø app. mm	Cu factor per km	AWG-No.
85289	2 x 1,0	300	6,8	24,6	65,3	17
85442	12 G 1,5	300	16,6	65,2	588,2	16
85291	2 x 1,0	500	6,8	24,6	103,7	17
85444	12 G 1,5	500	16,6	65,2	934,2	16
85294	2 x 1,0	1000	6,8	24,6	199,7	17
85447	12 G 1,5	1000	16,6	65,2	1799,2	16
85297	2 x 1,0	1500	6,8	24,6	295,7	17
85450	12 G 1,5	1500	16,6	65,2	2664,2	16
85304	2 x 1,0	3000	6,8	24,6	583,7	17
85457	12 G 1,5	3000	16,6	65,2	5259,2	16
85306	3 G 1,0	300	7,2	26,4	98,6	17
85459	3 G 2,5	300	10,6	38,2	244,8	14
85308	3 G 1,0	500	7,2	26,4	156,6	17
85461	3 G 2,5	500	10,6	38,2	388,8	14
85311	3 G 1,0	1000	7,2	26,4	301,6	17
85464	3 G 2,5	1000	10,6	38,2	748,8	14
85314	3 G 1,0	1500	7,2	26,4	446,6	17
85467	3 G 2,5	1500	10,6	38,2	1108,8	14
85321	3 G 1,0	3000	7,2	26,4	881,6	17
85474	3 G 2,5	3000	10,6	38,2	2188,8	14
85323	4 G 1,0	300	7,8	28,6	130,6	17
85493	5 G 2,5	300	13,2	48,4	408,0	14
85325	4 G 1,0	500	7,8	28,6	207,4	17
85495	5 G 2,5	500	13,2	48,4	648,0	14
85328	4 G 1,0	1000	7,8	28,6	399,4	17
85498	5 G 2,5	1000	13,2	48,4	1248,0	14
85331	4 G 1,0	1500	7,8	28,6	591,4	17
85501	5 G 2,5	1500	13,2	48,4	1848,0	14
85338	4 G 1,0	3000	7,8	28,6	1167,4	17
85508	5 G 2,5	3000	13,2	48,4	3648,0	14
85340	5 G 1,0	300	9,0	32,0	163,2	17
85342	5 G 1,0	500	9,0	32,0	259,2	17
85345	5 G 1,0	1000	9,0	32,0	499,2	17
85348	5 G 1,0	1500	9,0	32,0	739,2	17
85355	5 G 1,0	3000	9,0	32,0	1459,2	17

Dimensions and specifications may be changed without prior notice.

# PUR electronic spiral cables unscreened



## Technical data

- **Temperature range**  
-25°C to +70°C
- **Nominal voltage**  
up to 0,14 mm<sup>2</sup> 300 V  
from 0,25 mm<sup>2</sup> 500 V
- **Test voltage**  
1000 V
- **Expansion ratio** 1:4
- **straight ends**  
in each case 200 mm

## Application

- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors
- In all fields in which  
low-current cables are used

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.6, extra fine wire,  
BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of TPE-E
- Core identification to DIN 47100
- Cores stranded in layers
- Outer sheath of PUR
- Colour black

## Note

- On request closed spiral lengths up to max.  
5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent  
values. The actual cross section is in mm<sup>2</sup>.

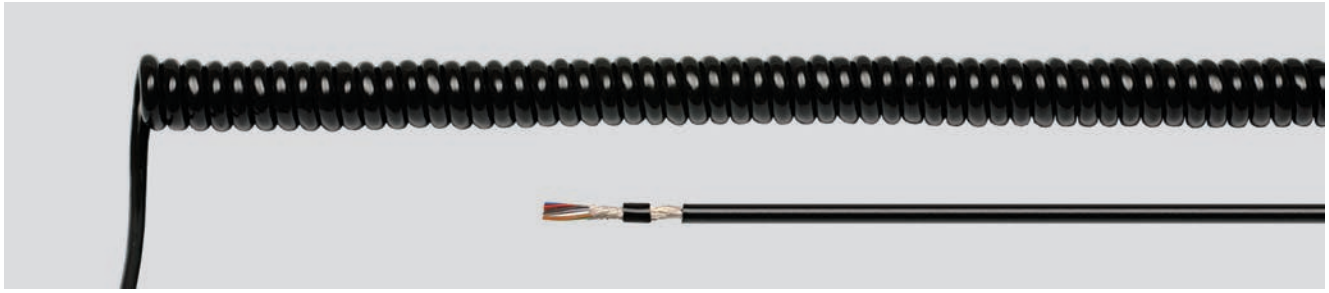
Part no. black	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral- outer Ø app. mm	Cu factor per km	AWG-No.
85550	2 x 0,14	300	3,5	13,0	9,2	26
85551	2 x 0,14	400	3,5	13,0	11,9	26
85552	2 x 0,14	500	3,5	13,0	15,6	26
85555	2 x 0,14	1000	3,5	13,0	28,1	26
85566	4 x 0,14	300	4,0	14,0	18,4	26
85567	4 x 0,14	400	4,0	14,0	23,8	26
85568	4 x 0,14	500	4,0	14,0	29,2	26
85571	4 x 0,14	1000	4,0	14,0	56,2	26
85574	5 x 0,14	300	4,4	15,8	22,8	26
85575	5 x 0,14	400	4,4	15,8	29,5	26
85576	5 x 0,14	500	4,4	15,8	36,2	26
85579	5 x 0,14	1000	4,4	15,8	69,7	26
85582	6 x 0,14	300	4,9	17,8	27,5	26
85583	6 x 0,14	400	4,9	17,8	36,7	26
85584	6 x 0,14	500	4,9	17,8	43,8	26
85587	6 x 0,14	1000	4,9	17,8	84,2	26
85590	7 x 0,14	300	5,2	18,4	32,0	26
85591	7 x 0,14	400	5,2	18,4	42,4	26
85592	7 x 0,14	500	5,2	18,4	50,8	26
85595	7 x 0,14	1000	5,2	18,4	97,8	26
85598	8 x 0,14	300	5,4	19,8	36,7	26
85599	8 x 0,14	400	5,4	19,8	47,5	26
85600	8 x 0,14	500	5,4	19,8	58,3	26
85603	8 x 0,14	1000	5,4	19,8	112,3	26
85638	2 x 0,25	300	3,9	13,8	16,3	24
85639	2 x 0,25	400	3,9	13,8	21,1	24
85640	2 x 0,25	500	3,9	13,8	25,9	24
85643	2 x 0,25	1000	3,9	13,8	49,9	24
85654	4 x 0,25	300	4,6	17,2	36,7	24
85655	4 x 0,25	400	4,6	17,2	42,2	24
85656	4 x 0,25	500	4,6	17,2	51,8	24
85659	4 x 0,25	1000	4,6	17,2	99,8	24
85662	5 x 0,25	300	5,4	19,8	40,8	24
85663	5 x 0,25	400	5,4	19,8	52,8	24
85664	5 x 0,25	500	5,4	19,8	64,8	24
85667	5 x 0,25	1000	5,4	19,8	124,8	24
85670	6 x 0,25	300	5,5	20,0	48,9	24
85671	6 x 0,25	400	5,5	20,0	63,4	24
85672	6 x 0,25	500	5,5	20,0	77,8	24
85675	6 x 0,25	1000	5,5	20,0	149,8	24

# PUR electronic spiral cables unscreened

Part no. black	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral-outer Ø app. mm	Cu factor per km	AWG-No.
85686	8 x 0,25	300	6,4	23,8	65,3	24
85687	8 x 0,25	400	6,4	23,8	84,5	24
85688	8 x 0,25	500	6,4	23,8	103,7	24
85691	8 x 0,25	1000	6,4	23,8	199,7	24
85702	12 x 0,25	300	6,9	24,8	97,9	24
85703	12 x 0,25	400	6,9	24,8	126,7	24
85704	12 x 0,25	500	6,9	24,8	155,5	24
85707	12 x 0,25	1000	6,9	24,8	299,5	24
85726	2 x 0,5	300	4,6	16,2	32,6	20
85727	2 x 0,5	400	4,6	16,2	42,3	20
85728	2 x 0,5	500	4,6	16,2	51,8	20
85731	2 x 0,5	1000	4,6	16,2	99,8	20
85742	4 x 0,5	300	5,0	18,0	65,3	20
85743	4 x 0,5	400	5,0	18,0	84,5	20
85744	4 x 0,5	500	5,0	18,0	103,7	20
85747	4 x 0,5	1000	5,0	18,0	201,8	20
85758	6 x 0,5	300	6,2	22,4	97,9	20
85759	6 x 0,5	400	6,2	22,4	126,7	20
85760	6 x 0,5	500	6,2	22,4	155,5	20
85763	6 x 0,5	1000	6,2	22,4	299,5	20
85774	8 x 0,5	300	7,4	26,8	130,6	20
85775	8 x 0,5	400	7,4	26,8	169,0	20
85776	8 x 0,5	500	7,4	26,8	207,4	20
85779	8 x 0,5	1000	7,4	26,8	399,4	20
85790	12 x 0,5	300	8,2	29,4	195,8	20
85791	12 x 0,5	400	8,2	29,4	254,3	20
85792	12 x 0,5	500	8,2	29,4	311,1	20
85795	12 x 0,5	1000	8,2	29,4	599,1	20

Dimensions and specifications may be changed without prior notice.

# PUR electronic spiral cables screened



## Technical data

- **Temperature range**  
-25°C to +70°C
- **Nominal voltage**  
up to 0,14 mm<sup>2</sup> 300 V  
from 0,25 mm<sup>2</sup> 500 V
- **Test voltage**  
2000 V
- **Expansion ratio** 1:4
- **straight ends**  
in each case 200 mm

## Application

- Handling Equipment
- Entertainment Equipment
- Medical devices
- Measurement instruments
- Rolling doors
- In all fields in which  
low-current cables are used

## Cable structure

- Bare copper conductor, to  
DIN VDE 0295 cl.6, extra fine wire,  
BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of TPE-E
- Core identification to DIN 47100
- Cores stranded in layers
- Overall screening
- Outer sheath of PUR
- Sheath colour: black

## Note

- On request closed spiral lengths up to max.  
5000 mm possible.
- As well in axial construction
- AWG sizes are approximate equivalent  
values. The actual cross section is in mm<sup>2</sup>.

Part no. black	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral- outer Ø app. mm	Cu factor per km	AWG-No.
85900	2 x 0,14	300	3,8	13,6	30,6	26
85901	2 x 0,14	400	3,8	13,6	39,6	26
85902	2 x 0,14	500	3,8	13,6	48,6	26
85905	2 x 0,14	1000	3,8	13,6	93,6	26
600154	3 x 0,14	300	4,1	15,2	44,2	26
600155	3 x 0,14	400	4,1	15,2	55,8	26
600156	3 x 0,14	500	4,1	15,2	67,5	26
600157	3 x 0,14	1000	4,1	15,2	135,0	26
85916	4 x 0,14	300	4,6	16,2	47,6	26
85917	4 x 0,14	400	4,6	16,2	61,6	26
85918	4 x 0,14	500	4,6	16,2	75,6	26
85921	4 x 0,14	1000	4,6	16,2	145,6	26
85924	5 x 0,14	300	4,6	17,2	54,4	26
85925	5 x 0,14	400	4,6	17,2	70,4	26
85926	5 x 0,14	500	4,6	17,2	86,4	26
85929	5 x 0,14	1000	4,6	17,2	166,4	26
85932	6 x 0,14	300	5,2	19,4	64,6	26
85933	6 x 0,14	400	5,2	19,4	83,6	26
85934	6 x 0,14	500	5,2	19,4	102,6	26
85937	6 x 0,14	1000	5,2	19,4	197,6	26
85940	7 x 0,14	300	5,5	20,0	68,0	26
85941	7 x 0,14	400	5,5	20,0	88,0	26
85942	7 x 0,14	500	5,5	20,0	108,0	26
85945	7 x 0,14	1000	5,5	20,0	208,0	26
85948	8 x 0,14	300	5,6	20,2	74,8	26
85949	8 x 0,14	400	5,6	20,2	96,8	26
85950	8 x 0,14	500	5,6	20,2	118,8	26
85953	8 x 0,14	1000	5,6	20,2	228,8	26
85980	2 x 0,25	300	4,5	16,0	51,0	24
85981	2 x 0,25	400	4,5	16,0	66,0	24
85982	2 x 0,25	500	4,5	16,0	81,0	24
85985	2 x 0,25	1000	4,5	16,0	156,0	24
85988	4 x 0,25	300	5,0	18,0	74,8	24
85989	4 x 0,25	400	5,0	18,0	96,8	24
85990	4 x 0,25	500	5,0	18,0	118,8	24
85993	4 x 0,25	1000	5,0	18,0	228,8	24
85996	5 x 0,25	300	5,4	19,8	85,0	24
85997	5 x 0,25	400	5,4	19,8	110,0	24
85998	5 x 0,25	500	5,4	19,8	135,0	24
86001	5 x 0,25	1000	5,4	19,8	260,0	24



# PUR electronic spiral cables screened

Part no. black	Cross-section mm <sup>2</sup>	Spiral length unexpanded (WL in mm)	Cable Ø app. mm	Spiral-outer Ø app. mm	Cu factor per km	AWG-No.
86004	6 x 0,25	300	5,7	20,4	102,0	24
86005	6 x 0,25	400	5,7	20,4	132,0	24
86006	6 x 0,25	500	5,7	20,4	162,0	24
86009	6 x 0,25	1000	5,7	20,4	312,0	24
86012	8 x 0,25	300	6,5	23,0	119,0	24
86013	8 x 0,25	400	6,5	23,0	154,0	24
86014	8 x 0,25	500	6,5	23,0	189,0	24
86017	8 x 0,25	1000	6,5	23,0	364,0	24
86020	12 x 0,25	300	7,1	26,2	170,0	24
86021	12 x 0,25	400	7,1	26,2	220,0	24
86022	12 x 0,25	500	7,1	26,2	270,0	24
86025	12 x 0,25	1000	7,1	26,2	520,0	24
86036	2 x 0,5	300	5,5	20,0	78,2	20
86037	2 x 0,5	400	5,5	20,0	101,2	20
86038	2 x 0,5	500	5,5	20,0	124,2	20
86041	2 x 0,5	1000	5,5	20,0	239,2	20
86044	4 x 0,5	300	5,8	21,6	153,0	20
86045	4 x 0,5	400	5,8	21,6	198,0	20
86046	4 x 0,5	500	5,8	21,6	243,0	20
86049	4 x 0,5	1000	5,8	21,6	648,0	20
86052	6 x 0,5	300	7,0	26,0	231,2	20
86053	6 x 0,5	400	7,0	26,0	299,2	20
86054	6 x 0,5	500	7,0	26,0	367,2	20
86057	6 x 0,5	1000	7,0	26,0	707,2	20
86060	8 x 0,5	300	8,0	29,0	289,0	20
86061	8 x 0,5	400	8,0	29,0	374,0	20
86062	8 x 0,5	500	8,0	29,0	459,0	20
86065	8 x 0,5	1000	8,0	29,0	884,0	20
86068	12 x 0,5	300	8,8	31,6	380,8	20
86069	12 x 0,5	400	8,8	31,6	492,8	20
86070	12 x 0,5	500	8,8	31,6	604,8	20
86073	12 x 0,5	1000	8,8	31,6	1164,8	20

Dimensions and specifications may be changed without prior notice.



HELUPOWER® ROBOFLEX® PUR UL/CSA 4G2,5 QMM E170315 AWM STYLE 21209 CE

## TECHNICAL DATA

**PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B**

<b>Temperature range</b>	flexible -30°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V
<b>Test voltage core/core</b>	3000 V
<b>Minimum bending radius</b>	fixed 5x Outer-Ø flexible: see properties

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: see table
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters  
Acceleration (max.): 60 °/s<sup>2</sup>  
Velocity (max.): 180 °/s  
Minimum bending radius: 10x Outer-Ø  
Torsional stress up to 180 °/m: 10 Mio. Cycles (max.)  
Torsional stress up to 360 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters  
Acceleration (max.): 10 m/s<sup>2</sup>  
Velocity (max.), unsupported: 3 m/s  
Velocity (max.), gliding: 2 m/s  
Traverse path (max.): 10 m  
Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø  
Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø  
Bending cycles (max.): 10 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Power supply cable designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

### Sheath color: black (RAL 9005)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022415	3 G 2.5	14	9.4	72.0	132.0
11022416	4 G 2.5	14	10.3	96.0	167.0

### Sheath colour: yellow (RAL 1021)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022425	3 G 2.5	4	22.9	729.6	986.0

Continued on next page

# HELUPOWER® ROBOFLEX® PUR UL/CSA



## Sheath color: black (RAL 9005)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022417	3 G 4	12	10.5	115.2	184.0
11022418	4 G 4	12	11.5	156.6	234.0
11022419	4 G 6	10	14.0	234.0	351.0
11022420	3 G 10	8	15.8	294.4	429.0
11022421	3 G 16	6	18.3	467.2	630.0
11022422	3 G 25	4	22.9	729.6	986.0
11022423	3 G 35	2	26.3	972.7	1295.0
11022424	3 G 50	1	30.9	1459.1	1895.0

## Sheath colour: orange (RAL 2003)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022426	3 G 35	2	26.3	972.7	1295.0

# HELUPOWER® ROBOFLEX®-D PUR UL/CSA

EMC-preferred type



HELUPOWER® ROBOFLEX®-D PUR UL/CSA 4G2,5 QMM E170315 AWM STYLE 21209 CE

## TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V
Test voltage core/core	3000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Cores stranded with optimally matched lay lengths
- Fleece wrapping
- Screen: helically wound tinned copper wires, approx. coverage 90%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: see table
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters  
Acceleration (max.): 60 °/s<sup>2</sup>  
Velocity (max.): 180 °/s  
Minimum bending radius: 10x Outer-Ø  
Torsional stress up to 180 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters  
Acceleration (max.): 10 m/s<sup>2</sup>  
Velocity (max.), unsupported: 3 m/s  
Velocity (max.), gliding: 2 m/s  
Traverse path (max.): 10 m  
Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø  
Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø  
Bending cycles (max.): 5 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Power supply cable designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the D-screen on both ends.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

# HELUPOWER® ROBOFLEX®-D PUR UL/CSA



EMC-preferred type

## Sheath color: black (RAL 9005)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022453	3 G 1.5	16	8.0	62.2	106.0
11022454	4 G 1.5	16	8.8	81.0	133.0
11022455	3 G 2.5	14	10.0	96.9	163.0
11022456	4 G 2.5	14	11.0	126.1	207.0
11022457	4 G 4	12	12.3	188.6	282.0
11022458	4 G 6	10	14.5	292.5	412.0

## Sheath colour: grey (RAL 7001)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022459	4 G 1.5	16	8.8	79.9	133.0
11022460	4 G 2.5	14	11.0	126.1	207.0
11022461	4 G 4	12	12.3	188.6	282.0
11022462	4 G 6	10	14.5	292.5	412.0

# HELUPOWER® ROBOFLEX® HYBRID-D PUR UL/CSA



Hybrid cable, EMC-preferred type



HELUPOWER® ROBOFLEX® HYBRID-D PUR UL/CSA 4G1,5+(2x0,5)D E170315 AWM STYLE 21209 CE

## TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B, in alignment with DIN VDE 0285-525-1 / DIN EN 50525-1

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U <sub>0</sub> /U 600/1000 V UL (AWM) AC 1000 V
Test voltage core/core	3000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

## ■ CABLE STRUCTURE

- Copper wire bare, 0.5 - 6 mm<sup>2</sup>: extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Wire structure: 0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits; Identification of control pairs:  
0.25 mm<sup>2</sup>: acc. to DIN 47100 (paired stranding)  
0.5 - 1.5 mm<sup>2</sup>: 1 pair - numbers 5+6; 2 pairs - numbers 5+6, 7+8
- G = with protective conductor GN-YE,  
x = without protective conductor
- Control cores stranded in pairs with optimal lay lengths
- Fleece wrapping of the pairs
- Screening element: control pairs, helically wound tinned copper wires, approx. coverage 90%, Fleece wrapping
- Control pairs and power cores stranded with optimally matched lay lengths
- Fleece wrapping
- Screen: helically wound tinned copper wires, approx. coverage 90%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters  
Acceleration (max.): 60 °/s<sup>2</sup>  
Velocity (max.): 180 °/s  
Minimum bending radius: 10x Outer-Ø  
Torsional stress up to 180 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters  
Acceleration (max.): 10 m/s<sup>2</sup>  
Velocity (max.), unsupported: 3 m/s  
Velocity (max.), gliding: 2 m/s  
Traverse path (max.): 10 m  
Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø  
Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø  
Bending cycles (max.): 5 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Hybrid cable designed for combined torsion and bending movements consisting of components for power supply and the transmission of control signals; for use in robot control devices, assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the D-screen.

## ■ NOTES

- Part no. 11022491: Power cores stranded in pairs; identification: number 1+2, number 3+GN-GE
- for use in energy supply systems:  
1) the assembly instructions must be observed  
2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

# HELUPOWER® ROBOFLEX® HYBRID-D PUR UL/CSA



Hybrid cable, EMC-preferred type



Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022484	(4 G 1.5 + (2 x 0.5)D)D	10.3	111.0	185.0
11022485	(4 G 2.5 + (2 x 0.5)D)D	12.4	156.0	256.0
11022486	(4 G 2.5 + (2 x 1)D)D	12.8	171.0	279.0
11022487	(4 G 4 + (2 x 0.5)D)D	13.5	216.0	329.0
11022488	(4 G 4 + (2 x 0.75)D)D	14.0	225.0	346.0
11022489	(4 G 4 + (2 x 1)D)D	14.0	233.0	348.0
11022490	(4 G 6 + (2 x 1)D)D	15.9	330.0	455.0
11022491	(4 G 1.5 + 2 x (2 x 1.5)D)D	14.4	203.0	314.0
11022492	(4 G 2.5 + 2 x (2 x 0.75)D)D	14.0	200.0	322.0
11022493	(4 G 2.5 + 2 x (2 x 1.5)D)D	15.4	241.0	385.0
11022494	(4 G 4 + 4 x (2 x 0.25)D)D	16.3	216.0	329.0

# HELUCONTROL® ROBOFLEX® PUR UL/CSA



## Control cable



HELUCONTROL® ROBOFLEX® PUR UL/CSA 4G1,5 QMM E170315-9A AWM STYLE 21209 CE

### TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
Test voltage core/core	2000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

### CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE, x = without protective conductor
- Stranding:
  - 2 - 8 core(s): cores stranded into one layer with an optimally matched lay length
  - 12 - 41 core(s): cores stranded into bundles with optimally matched lay lengths; bundles stranded together around a tensile core
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

### PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters
  - Acceleration (max.): 60 °/s<sup>2</sup>
  - Velocity (max.): 180 °/s
  - Minimum bending radius: 10x Outer-Ø
  - Torsional stress up to 180 °/m: 10 Mio. Cycles (max.)
  - Torsional stress up to 360 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters
  - Acceleration (max.): 10 m/s<sup>2</sup>
  - Velocity (max.), unsupported: 3 m/s
  - Velocity (max.), gliding: 2 m/s
  - Traverse path (max.): 10 m
  - Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø
  - Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø
  - Bending cycles (max.): 10 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

### APPLICATION

Control cable to transmit control signals specifically designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience.

### NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022017	12 G 0.5	20	10.9	60.7	141.0
11022018	16 G 0.5	20	12.6	81.0	181.0
11022019	18 G 0.5	20	13.1	91.1	200.0
11022022	25 G 0.5	20	15.1	126.5	260.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022024	4 G 0.75	19	6.8	28.8	63.0
11022026	7 G 0.75	19	8.6	50.4	104.0
11022039	12 G 0.75	19	12.0	91.1	184.0
11022040	14 G 0.75	19	13.1	106.3	210.0



# HELUCONTROL® ROBOFLEX® PUR UL/CSA



## Control cable

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022041	2 x 1	18	6.5	19.2	51.0
11022042	3 G 1	18	6.8	28.8	63.0
11022043	4 G 1	18	7.4	38.4	78.0
11022044	7 G 1	18	9.3	67.2	129.0
11022045	12 G 1	18	13.0	121.4	220.0
11022046	18 G 1	18	15.6	182.2	321.0
11022047	25 G 1	18	18.4	253.0	435.0
11022048	34 G 1	18	22.7	344.1	600.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022049	41 G 1	18	25.0	414.9	724.0
11022050	3 G 1.5	16	7.5	43.2	84.0
11022051	4 G 1.5	16	8.1	57.6	102.0
11022052	5 G 1.5	16	8.8	72.0	125.0
11022053	8 G 1.5	16	11.1	115.2	191.0
11022054	12 G 1.5	16	14.6	182.2	300.0
11022055	18 G 1.5	16	18.2	273.2	463.0
11023004	25 G 1.5	16	21.4	379.5	628.0

# HELUCONTROL® ROBOFLEX®-D PUR UL/CSA

Control cable, EMC-preferred type



HELUCONTROL® ROBOFLEX®-D PUR UL/CSA 7G0,75 QMM E170315 AWM STYLE 21209 CE

## TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U <sub>0</sub> /U 300/500 V UL (AWM) AC 600 V
Test voltage core/core	2000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Core insulation: PP
- Core identification acc. to DIN VDE 0293-334, black cores with consecutive labeling in white digits
- G = with protective conductor GN-YE
- Stranding:
  - 3 - 7 core(s): cores stranded into one layer with an optimally matched lay length
  - 12 - 25 core(s): cores stranded into bundles with optimally matched lay lengths; bundles stranded together around a tensile core
- Fleece wrapping
- Screen: helically wound tinned copper wires, approx. coverage 90%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters
  - Acceleration (max.): 60 °/s<sup>2</sup>
  - Velocity (max.): 180 °/s
  - Minimum bending radius: 10x Outer-Ø
  - Torsional stress up to 180 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters
  - Acceleration (max.): 10 m/s<sup>2</sup>
  - Velocity (max.), unsupported: 3 m/s
  - Velocity (max.), gliding: 2 m/s
  - Traverse path (max.): 10 m
  - Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø
  - Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø
  - Bending cycles (max.): 5 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Control cable to transmit control signals specifically designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience. EMC= Electromagnetic compatibility; to optimize the EMC features we recommend a large round contact of the D-screen on both ends.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022437	12 G 0.5	20	11.5	94.0	184.0
11022438	18 G 0.5	20	13.6	131.4	255.0
11022439	25 G 0.5	20	15.7	173.7	331.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022440	4 G 0.75	19	7.4	46.0	86.0
11022441	5 G 0.75	19	8.0	54.0	102.0
11022442	7 G 0.75	19	9.1	75.6	133.0

# HELUCONTROL® ROBOFLEX®-D PUR UL/CSA



Control cable, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022443	12 G 0.75	19	12.5	126.6	228.0
11022444	18 G 0.75	19	15.0	185.1	320.0
11022445	25 G 0.75	19	17.4	243.7	417.0
11022446	3 G 1	18	7.3	45.9	84.0
11022447	12 G 1	18	13.5	164.0	271.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022448	18 G 1	18	16.2	233.1	386.0
11022449	25 G 1	18	19.0	310.6	509.0
11022450	12 G 1.5	16	15.2	226.8	358.0
11022451	18 G 1.5	16	19.0	335.2	550.0
11022452	25 G 1.5	16	22.0	495.0	763.0

# HELUDATA® ROBOFLEX®-recycle PUR UL/CSA

welding spark resistant sensor cable



HELUDATA® ROBOFLEX®-recycle PUR UL/CSA 4x0,34 QMM E170315 AWM STYLE 20233 CE

## TECHNICAL DATA

Robot cable acc. to UL-Std. 758 (AWM) Style 20233, CSA-Std. C22.2 No. 210 - AWM I/II A/B

<b>Temperature range</b>	flexible -30°C to +105°C fixed -40°C to +105°C UL (AWM) to +80°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/300 V UL (AWM) AC 300 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 5x Outer-Ø flexible: see properties

## ■ CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:  
0.34 mm<sup>2</sup>: approx. 42 x 0.1 mm
- Core insulation: TPE
- Core identification:  
3 core(s): brown, blue, black  
4 core(s): brown, blue, black, white  
5 core(s): brown, blue, black, white, grey
- x = without protective conductor
- Cores stranded with optimally matched lay lengths
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane
- Sheath colour: see table
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater, welding sparks
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- for outdoor use
- torsion rated

- suitable for use in drag chains
- Torsion parameters  
Acceleration (max.): 60 °/s<sup>2</sup>  
Velocity (max.): 180 °/s  
Minimum bending radius: 10x Outer-Ø  
Torsional stress up to 360 °/m: 10 Mio. Cycles (max.)
- Drag chain parameters  
Acceleration (max.): 10 m/s<sup>2</sup>  
Velocity (max.), unsupported: 3 m/s  
Velocity (max.), gliding: 2 m/s  
Traverse path (max.): 10 m  
Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø  
Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø  
Bending cycles (max.): 10 Mio.
- halogen-free
- recyclable
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## ■ APPLICATION

Welding spark and oil-resistant sensor cable for use in robots (torsional load) as well as in drag chains (dynamic load); for applications in automation technology, machine and plant engineering, assembly and welding robots, machine tools, foundries and rolling mills. Temperature resistance of up to 105°C enables use in environments close to engines and other areas with increased heat radiation. Highly abrasion and notch resistant outer sheath ensures long service life and economy. Recyclable jacket material offers advantages in operational environmental protection management.

## ■ NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:  
1) the assembly instructions must be observed  
2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

# HELUDATA® ROBOFLEX®-recycle PUR UL/CSA

welding spark resistant sensor cable



## Sheath color: black (RAL 9005)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022475	3 x 0.34	22	5.1	9.6	32.0
11022476	4 x 0.34	22	5.4	12.8	38.0
11022477	5 x 0.34	22	5.9	16.0	46.0

## Sheath colour: grey (RAL 7001)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022478	3 x 0.34	22	5.1	9.6	32.0
11022479	4 x 0.34	22	5.4	12.8	38.0
11022480	5 x 0.34	22	5.9	16.0	46.0

## Sheath colour: yellow (RAL 1021)

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022481	3 x 0.34	22	5.1	9.6	32.0
11022482	4 x 0.34	22	5.4	12.8	38.0
11022483	5 x 0.34	22	5.9	16.0	46.0



## Data cable



HELUDATA® ROBOFLEX® PUR UL/CSA 7x0,25 QMM E170315 AWM STYLE 21209 CE

### TECHNICAL DATA

**PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B**

<b>Temperature range</b>	flexible -30°C to +90°C fixed -40°C to +90°C
<b>Nominal voltage</b>	VDE AC U <sub>0</sub> /U 300/300 V UL (AWM) AC 300 V
<b>Test voltage core/core</b>	2000 V
<b>Minimum bending radius</b>	fixed 5x Outer-Ø flexible: see properties

### CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:  
0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm  
0.34 mm<sup>2</sup>: approx. 42 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Stranding:  
2 - 7 core(s): cores stranded into one layer with an optimally matched lay length  
12 - 25 core(s): cores stranded into bundles with optimally matched lay lengths; bundles stranded together around a tensile core
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

### PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters  
Acceleration (max.): 60 °/s<sup>2</sup>  
Velocity (max.): 180 °/s  
Minimum bending radius: 10x Outer-Ø  
Torsional stress up to 180 °/m: 10 Mio. Cycles (max.)  
Torsional stress up to 360 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters  
Acceleration (max.): 10 m/s<sup>2</sup>  
Velocity (max.), unsupported: 3 m/s  
Velocity (max.), gliding: 2 m/s  
Traverse path (max.): 10 m  
Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø  
Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø  
Bending cycles (max.): 10 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

### TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

### APPLICATION

Data cable to transmit data and monitoring signals specifically designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience.

### NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:  
1) the assembly instructions must be observed  
2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022005	7 x 0.25	24	6.3	17.1	49.0
11022007	12 x 0.25	24	8.6	30.8	82.0
11022008	25 x 0.25	24	11.7	64.3	151.0
11022009	2 x 0.34	22	4.9	6.4	27.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022010	3 x 0.34	22	5.1	9.6	32.0
11022013	7 x 0.34	22	6.6	22.4	57.0
11022014	12 x 0.34	22	9.1	40.5	96.0

# HELUDATA® ROBOFLEX®-D PUR UL/CSA



Data cable, EMC-preferred type



HELUDATA® ROBOFLEX®-D PUR UL/CSA 10x0,14 QMM E170315 AWM STYLE 21209 CE

## TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U <sub>0</sub> /U 300/300 V UL (AWM) AC 300 V
Test voltage core/core	2000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:  
0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm  
0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm  
0.34 mm<sup>2</sup>: approx. 42 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN 47100, colour coded
- x = without protective conductor
- Stranding:  
10 core(s): cores stranded into one layer with an optimally matched lay length  
12 - 25 core(s): cores stranded into bundles with optimally matched lay lengths; bundles stranded together around a tensile core
- Fleece wrapping
- Screen: helically wound tinned copper wires, approx. coverage 90%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters  
Acceleration (max.): 60 °/s<sup>2</sup>  
Velocity (max.): 180 °/s  
Minimum bending radius: 10x Outer-Ø  
Torsional stress up to 180 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters  
Acceleration (max.): 10 m/s<sup>2</sup>  
Velocity (max.), unsupported: 3 m/s  
Velocity (max.), gliding: 2 m/s  
Traverse path (max.): 10 m  
Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø  
Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø  
Bending cycles (max.): 5 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Data cable to transmit data and monitoring signals specifically designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the D-screen.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:  
1) the assembly instructions must be observed  
2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022427	10 x 0.14	26	7.8	32.1	80.0
11022428	12 x 0.14	26	8.3	39.1	89.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022429	18 x 0.14	26	9.7	50.8	119.0
11022430	25 x 0.14	26	11.0	66.6	149.0

# HELUDATA® ROBOFLEX®-D PUR UL/CSA



Data cable, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022431	12 x 0.25	24	9.1	54.5	112.0
11022432	18 x 0.25	24	10.7	74.1	151.0
11022433	25 x 0.25	24	12.2	99.5	194.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022434	12 x 0.34	22	9.6	66.3	128.0
11022435	18 x 0.34	22	11.3	93.8	177.0
11022436	25 x 0.34	22	13.0	121.6	227.0



# HELUDATA® ROBOFLEX®-PAIR-D PUR UL/CSA



Data cable, EMC-preferred type



## TECHNICAL DATA

PUR robot cable acc. to UL-Std. 758 (AWM) Style 21209, CSA-Std. C22.2 No. 210 - AWM I/II A/B

Temperature range	flexible -30°C to +90°C fixed -40°C to +90°C
Nominal voltage	VDE AC U <sub>0</sub> /U 300/300 V UL (AWM) AC 300 V
Test voltage core/core	2000 V
Minimum bending radius	fixed 5x Outer-Ø flexible: see properties

## CABLE STRUCTURE

- Copper wire bare, extra finely stranded, 0.5 mm<sup>2</sup>: extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Wire structure:
  - 0.14 mm<sup>2</sup>: approx. 18 x 0.1 mm
  - 0.25 mm<sup>2</sup>: approx. 32 x 0.1 mm
  - 0.34 mm<sup>2</sup>: approx. 42 x 0.1 mm
- Core insulation: PP
- Core identification acc. to DIN 47100 (paired stranding), colour coded
- x = without protective conductor
- Cores stranded in pairs with optimal lay lengths
- Fleece wrapping of the pairs
- Pairs stranded in layers with optimal lay lengths
- Fleece wrapping
- Screen: helically wound tinned copper wires, approx. coverage 90%
- Fleece wrapping
- Outer sheath: Special grade of full polyurethane acc. to DIN VDE 0207-363-10-2 / DIN EN 50363-10-2 (compound type TMPU)
- Sheath colour: black (RAL 9005)
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, ozone, oxygen, weathering effects, hydrolysis, microbes, coolants, hydraulic fluids, acids, alkalis, greases, seawater and wastewater
- highly abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- smooth, high-quality core insulation for eased sliding and optimized core stranding ensure long service-life within applications that request combined bending and torsion movements
- for outdoor use

- torsion rated
- suitable for use in drag chains
- Torsion parameters
  - Acceleration (max.): 60 °/s<sup>2</sup>
  - Velocity (max.): 180 °/s
  - Minimum bending radius: 10x Outer-Ø
  - Torsional stress up to 180 °/m: 5 Mio. Cycles (max.)
- Drag chain parameters
  - Acceleration (max.): 10 m/s<sup>2</sup>
  - Velocity (max.), unsupported: 3 m/s
  - Velocity (max.), gliding: 2 m/s
  - Traverse path (max.): 10 m
  - Minimum bending radius (Traverse path ≤ 3m): 10x Outer-Ø
  - Minimum bending radius (Traverse path > 3m): 12.5x Outer-Ø
  - Bending cycles (max.): 5 Mio.
- halogen-free
- the materials used during manufacturing are cadmium-free, contain no silicone and are free from substances harmful to the wetting properties of lacquers

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, UL VW-1, CSA FT1
- oil-resistant acc. to DIN VDE 0473-811-404 / DIN EN 60811-404 / IEC 60811-404
- UV-resistant acc. to DIN EN ISO 4892-2
- weather-resistant acc. to DIN EN ISO 4892-2

## APPLICATION

Data cable to transmit data and monitoring signals specifically designed for combined torsion and bending movements; for use in assembly and welding robots, in material handlings and automation centres, in transport and conveyor systems, on rotary and swivel tables and wherever a defined cable routing with only alternating bending movements is not applicable, but 3D-movements and torsional load have an impact on the cable; for applications with the highest requirements on mechanical, chemical and thermal resilience. EMC = Electromagnetic Compatibility; in order to optimise EMC properties, we recommend a double-sided and all-round large contact area of the D-screen.

## NOTES

- the conductor is metrically (mm<sup>2</sup>) constructed, AWG numbers are approximated, and are for reference only
- for use in energy supply systems:
  - 1) the assembly instructions must be observed
  - 2) for special applications, we recommend contacting us and using our data entry form for energy supply systems

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022463	3 x 2 x 0.14	26	6.8	25.6	58.0
11022464	4 x 2 x 0.14	26	6.9	31.7	62.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022465	3 x 2 x 0.25	24	7.8	34.0	77.0
11022466	4 x 2 x 0.25	24	8.1	42.1	85.0

# HELUDATA® ROBOFLEX®-PAIR-D PUR UL/CSA



Data cable, EMC-preferred type

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022467	6 x 2 x 0.25	24	9.8	55.7	120.0
11022468	8 x 2 x 0.25	24	11.3	74.3	160.0
11022469	10 x 2 x 0.25	24	13.1	91.7	188.0
11022470	3 x 2 x 0.34	22	8.2	41.5	87.0

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11022471	4 x 2 x 0.34	22	8.8	51.5	103.0
11022472	5 x 2 x 0.34	22	9.6	60.9	122.0
11022473	8 x 2 x 0.34	22	12.0	87.8	180.0
11022474	5 x 2 x 0.5	20	11.4	90.1	177.0

# HELUKAT® 100T CAT.5e S/UTP PUR TORSION

flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, UL-Std. 758 (AWM) Style 20549

<b>Temperature range</b>	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 59.4 Ohm/km
<b>Loop resistance at 20°C</b>	max. 118.8 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 52 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 74%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 5 Ohm
<b>Caloric load</b>	approx. 0.45 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green

- Length marking: in metres

## PROPERTIES

- resistant to: oil, hydrolysis, microbes, coolants, greases, UV radiation (SUN RES)
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT2
- certifications and approvals: EAC

## APPLICATION

HELUKAT 100T CAT.5e S/UTP PUR TORSION offers excellent transmission characteristics and is designed for applications with torsion loads. The cable listed here corresponds to the classification for continuous movement.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.8	8.8	18.6	24.1
NEXT (dB)	76.1	66.6	60.8	54.0
ACR (dB/100m)	69.3	57.8	42.2	29.9

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
802186	2 x 2 x AWG 22 /19	0.38	0.75	1.5	6.5	32.0	54.0

# HELUKAT® 100T CAT.5 SF/UTP PUR TORSION

flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-2-2, UL-Std. 758 (AWM) Style 21161

<b>Temperature range</b>	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 140.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 280.0 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 1.23 MJ/m
<b>Minimum bending radius</b>	flexible 8x Outer-Ø fixed installation 4x Outer-Ø

## ■ CABLE STRUCTURE

- Copper wire bare, AWG sizes
- Core insulation: PP
- Core identification: colour coded, pairs:
  - No. 1: white-blue / blue
  - No. 2: white-orange / orange
  - No. 3: white-green / green
  - No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths
- Pairs stranded in layers with optimal lay lengths
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## ■ PROPERTIES

- resistant to: oil, UV radiation
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

## ■ TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2
- certifications and approvals: EAC

## ■ APPLICATION

HELUKAT 100T CAT.5 SF/UTP PUR TORSION is designed for applications with torsion loads, e.g. in robots, and characterized by high reserve capacity and outstanding performance, even after exposure to extreme conditions. Thanks to the clever structure, it is also possible to achieve a long service life mechanically.

## ■ NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only

## ■ TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	9.5	12.1	17.1	32.0
NEXT (dB)	50.3	47.2	38.4	35.3
ACR (dB/100m)	40.8	35.1	21.3	3.3

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
800067	4 x 2 x AWG 26 / 19	0.15	0.48	1.04	7.5	29.5	74.0

# HELUKAT® 600T CAT.7 SF/FTP PUR TORSION

CC-Link IE Field certified



## TECHNICAL DATA

**Industrial Ethernet cable / Cat. 7 acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 444 (CMX), CSA-Std. C22.2 No. 214 - CMX, UL-Std. 758 (AWM) Style 20940**

<b>Temperature range</b>	flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	750 V
<b>Conductor resistance at 20°C</b>	max. 87.6 Ohm/km
<b>Loop resistance at 20°C</b>	max. 175.2 Ohm/km
<b>Insulation resistance</b>	min. 5.0 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 45 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 77%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm
<b>Caloric load</b>	approx. 0.80 MJ/m
<b>Minimum bending radius</b>	flexible 15x Outer-Ø fixed installation 8x Outer-Ø

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
  - No. 1: white / blue
  - No. 2: white / orange
  - No. 3: white / green
  - No. 4: white / brown
- Cores stranded in pairs with optimal lay lengths

- Screening element: pairs, plastic-coated aluminium foil (St)
- Pairs with optimal lay lengths stranded around a central cross-shaped filler
- 1. Screen: metallised conductive fleece
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- torsion rated
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## APPLICATION

HELUKAT® 600T CAT.7 SF/FTP PUR TORSION Cable is designed for use in robots. It provides excellent transmission characteristics under extremely difficult conditions.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 600 V

## TYPICAL VALUES

Frequency (MHz)	10	16	62.5	100	200	300	600
Attenuation (dB/100m)	7.0	9.0	17.5	22.5	36.0	50.0	58.5
NEXT (dB)	100.0	100.0	100.0	100.0	97.0	90.0	89.0
ACR (dB/100m)	93.0	91.0	82.5	77.5	61.0	40.0	30.5

Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
805828	4 x 2 x AWG 24 / 7	0.22	0.6	1.3	8.7	46.0	95.0

# HELUKAT® PROFInet R+ CAT.5e SF/UTP PUR ROBOTIC



PROFInet Type R, flame-retardant



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, UL-Std. 758 (AWM) Style 21209

<b>Temperature range</b>	flexible -30°C to +90°C fixed installation -40°C to +90°C UL (AWM) to +90°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 60.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 120.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 50 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 66%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 0.55 MJ/m
<b>Minimum bending radius</b>	flexible 10x Outer-Ø fixed installation 5x Outer-Ø

- Outer sheath: PUR
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation, hydrolysis, microbes, coolants, greases
- abrasion-resistant, notch-resistant, tear-resistant, cut-resistant, wear-resistant, low adhesion
- halogen-free
- flame-retardant

## TESTS

- halogen-free acc. to DIN VDE 0482-754-1 / DIN EN 60754-1 / IEC 60754-1
- flame-retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2, CSA FT1

## APPLICATION

HELUKAT® PROFInet R+ CAT.5e SF/UTP PUR ROBOTIC offers excellent transmission characteristics with double shielding and is designed for applications with torsion loads, e.g. in robots. The cable listed here corresponds to the classification for continuous movement.

## NOTES

- Conductor sizes are based on the AWG measurement system, metric conductor sizes (mm<sup>2</sup>) are approximated and are for reference only
- UL Voltage Rating: 1000 V

## CABLE STRUCTURE

- Copper wire tinned, AWG sizes
- Core insulation: Polyolefin
- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires

## TYPICAL VALUES

Frequency (MHz)	1	10	16	20	62.5	100
Attenuation (dB/100m)	2.1	6.0	7.6	9.0	16.0	21.0
NEXT (dB)	80.0	70.0	65.0	63.0	55.0	50.0

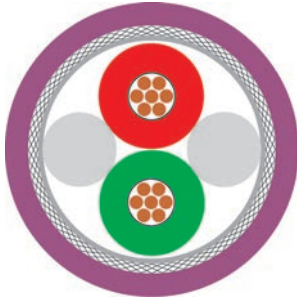
Part no.	No. cores x AWG-No.	Cross-sec. mm <sup>2</sup> , approx.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
11007800	2 x 2 x AWG 22 / 19	0.38	0.8	1.5	7.2	33.0	63.0

# BUS Cables

Profibus L2 high flexible TORSION + FESTOON

**HELUKABEL**<sup>®</sup>

PUR + PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsional applications 1x2x0.80 mm (stranded)

Copper, bare (AWG 22/19)  
Foam-skin-PE  
rd, gn  
2 cores + filler  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## FESTOON 1x2x0.65 mm (stranded)

Copper, bare (AWG 23/19)  
Cell PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,3 mm  
Petrol similar to RAL 5018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Relative propagation velocity:  
Attenuation:

150 Ohm ± 10 %  
57,6 Ohm/km  
5 GOhm x km  
115,2 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
-  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 3,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

150 Ohm ± 10 %  
66,5 Ohm/km  
1,6 GOhm x km  
133 Ohm/km max.  
28 nF/km nom.  
2 kV  
81 %  
9,6 kHz ≤ 3,0 dB/km  
38,4 kHz ≤ 4,0 dB/km  
4 MHz ≤ 25,0 dB/km  
16 MHz ≤ 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 66 kg/km  
120 mm  
-30°C  
+70°C  
0,89 MJ/m  
32,00 kg/km

app. 64 kg/km  
70 mm  
-40°C  
+60°C  
1,09 MJ/m  
23,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

UL Style:

CMG 75°C FT4 or CL2 or AWM 21694 600V  
SUN RES  
CSA FT 4

CSA standard:

-

## Application

HELUKABEL<sup>®</sup> Profibus Torsion is used in mobile applications in robots. The special torsion construction allows this cable to be twisted (torsioned) and is halogen-free thanks to use PU sheath. The Festoon version is used for hanging/moving loads in garland applications.

## Part no.

**800109**, Profibus L2

**800649**, Profibus L2

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 103w-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -35°C to +90°C  
fixed installation -40°C to +90°C  
installation -20°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three-phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10678 (to 300 mm<sup>2</sup>)  
Multicore UL Style 21179  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special heat-resistant insulation
- Core identification: see table
- Multiconductors cabled
- Sheath: special heat-resistant compound
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103w-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.



# HELWIND® WK 103w-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704809	4 G 0,34	22	7,1	29,0	86,0
704810	4 G 0,5	20	7,4	33,4	99,0
704811	6 G 0,5	20	8,6	51,2	121,0
704812	10 G 0,5	20	10,8	48,0	165,0
704813	12 G 0,5	20	11,1	84,0	208,0
704814	3 G 0,75	19	6,5	22,0	67,8
704815	4 G 0,75	19	7,9	29,0	100,0
704816	5 G 0,75	19	8,6	36,0	120,0
704817	7 G 0,75	19	9,5	51,0	137,4
704818	10 G 0,75	19	11,0	72,0	200,0
704819	12 G 0,75	19	11,8	87,0	220,0
704820	14 G 0,75	19	12,5	101,0	238,0
704821	16 G 0,75	19	13,2	116,0	271,0
704822	18 G 0,75	19	13,9	130,0	310,0
704823	21 G 0,75	19	15,2	152,0	380,0
704824	25 G 0,75	19	16,9	180,0	490,0
704825	32 G 0,75	19	18,2	231,0	560,0
704826	36 G 0,75	19	19,1	260,0	620,0
704827	40 G 0,75	19	20,5	288,0	729,0
704828	41 G 0,75	19	20,8	296,0	750,0
704829	50 G 0,75	19	23,5	441,0	990,0
704830	4 G 1	18	8,3	39,0	100,0
704831	5 G 1	18	9,0	48,0	110,0
704832	7 G 1	18	10,5	68,0	140,0
704833	10 G 1	18	13,0	96,0	220,0
704834	12 G 1	18	13,2	116,0	240,0
704835	14 G 1	18	13,4	135,0	280,0
704836	16 G 1	18	14,1	154,0	310,0
704837	18 G 1	18	15,1	173,0	360,0
704838	21 G 1	18	16,7	202,0	410,0
704839	25 G 1	18	18,4	240,0	500,0
704840	32 G 1	18	19,8	308,0	590,0
704841	36 G 1	18	20,6	346,0	700,0
704842	40 G 1	18	22,4	384,0	800,0
704843	41 G 1	18	22,4	394,0	810,0
704844	50 G 1	18	24,6	480,0	980,0
704845	2 x 1,5	16	7,9	29,0	75,0
703920	3 G 1,5	16	8,0	44,0	104,9
703921	4 G 1,5	16	8,9	58,0	132,0
703922	5 G 1,5	16	9,7	72,0	157,1
704366	7 G 1,5	16	12,0	101,0	230,8
704846	10 G 1,5	16	13,1	144,0	270,0
704847	12 G 1,5	16	14,3	173,0	360,0
704848	14 G 1,5	16	14,9	202,0	420,0
704849	16 G 1,5	16	15,7	231,0	450,0
704850	18 G 1,5	16	16,8	260,0	510,0
704851	21 G 1,5	16	17,8	303,0	590,0
704852	25 G 1,5	16	20,6	360,0	700,0
704853	32 G 1,5	16	22,2	460,0	900,0
704854	36 G 1,5	16	23,1	519,0	980,0

## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704855	40 G 1,5	16	25,0	576,0	1030,0
704856	41 G 1,5	16	25,0	591,0	1050,0
704857	50 G 1,5	16	27,7	720,0	1200,0
710226	2 x 2,5	14	8,4	48,0	115,7
704267	3 G 2,5	14	8,9	72,0	150,8
703925	4 G 2,5	14	9,7	96,0	230,0
703926	5 G 2,5	14	10,9	120,0	237,9
704858	7 G 2,5	14	14,4	168,0	360,0
704859	10 G 2,5	14	15,8	240,0	480,0
704367	12 G 2,5	14	16,3	288,0	527,0
705040	19 G 2,5	14	21,0	456,0	590,0
704368	3 G 4	12	10,8	116,0	227,5
703930	4 G 4	12	12,0	154,0	286,8
704269	5 G 4	12	13,6	192,0	365,7
704860	7 G 4	12	15,9	269,0	489,0
704861	12 G 4	12	19,6	461,0	740,0
704862	3 G 6	10	13,1	173,0	340,0
704863	4 G 6	10	14,6	230,4	460,0
704864	5 G 6	10	16,3	288,0	566,4
704865	7 G 6	10	19,6	404,0	780,0
706318	3 G 10	8	16,4	288,0	540,0
704866	4 G 10	8	18,2	384,0	670,0
703932	5 G 10	8	20,1	480,0	851,2
704867	7 G 10	8	23,5	672,0	1150,0
712561	3 G 16	6	20,6	461,0	1083,2
704868	4 G 16	6	20,7	615,0	1180,7
703933	5 G 16	6	25,4	768,0	1348,1
704869	4 G 25	4	26,4	960,0	1576,2
704870	5 G 25	4	28,2	1200,0	1900,0
704871	4 G 35	2	31,4	1344,0	2286,0
704872	5 G 35	2	35,4	1680,0	2770,6
704873	4 G 50	1	36,7	1920,0	2800,0

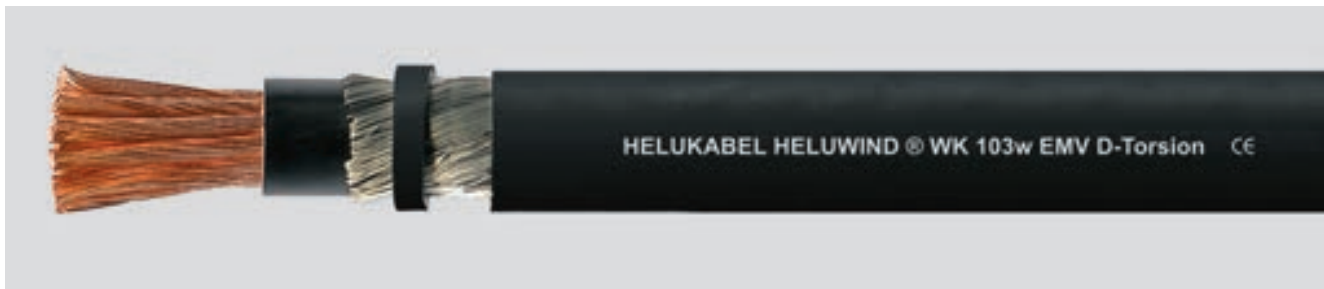
## Core identification black

Part no.	No.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
706337	1 x 25	4	11,4	240,0	318,1
704287	1 x 35	2	12,9	336,0	454,4
704288	1 x 50	1	15,6	480,0	630,2
704289	1 x 70	2/0	17,9	672,0	876,8
704874	1 x 95	3/0	21,4	912,0	1230,0
704291	1 x 120	4/0	23,1	1152,0	1535,1
704875	1 x 150	300 kcmil	24,7	1440,0	2966,8
704293	1 x 185	350 kcmil	27,5	1776,0	2284,0
704294	1 x 240	450 kcmil	31,2	2304,0	2966,8
704295	1 x 300	500 kcmil	34,2	2880,0	3672,0
704876	1 x 400	750 kcmil	39,3	3840,0	4500,0

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 103w EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -35°C to +90°C  
fixed installation -40°C to +90°C  
installation -20°C to +90°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Highest permissible voltage**
  - DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV
  - AC: Conductor/Earth 0,7 kV
  - Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10678  
Multicore UL Style 21179  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special heat-resistant insulation
- Core identification: see table
- Multiconductors cabled
- EMC-screened types have tinned copper wrapping
- Sheath: special heat-resistant compound
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103w EMV D-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper wrapping on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUWIND® WK 103w EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10678/21179 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704752	4 G 0,34	22	7,7	32,0	91,0
704755	4 G 0,5	20	8,0	37,8	105,0
704758	6 G 0,5	20	9,2	53,6	130,0
704762	10 G 0,5	20	11,4	73,0	170,0
704763	12 G 0,5	20	11,7	88,4	220,0
706599	2 x 0,75	19	6,7	36,0	70,5
704764	3 G 0,75	19	7,7	43,2	97,0
704765	4 G 0,75	19	7,8	52,6	101,6
704767	5 G 0,75	19	9,0	63,0	145,0
704369	7 G 0,75	19	9,7	82,8	162,6
705822	3 x 2 x 0,75	19	11,5	73,0	211,0
704769	4 x 2 x 0,75	19	12,7	91,0	211,0
704768	8 G 0,75	19	10,7	93,0	220,0
704771	12 G 0,75	19	12,2	126,9	257,5
704774	18 G 0,75	19	14,4	179,0	400,0
704775	12 x 2 x 0,75	19	17,6	223,0	520,0
704268	25 G 0,75	19	17,8	256,0	547,2
705228	40 G 0,75	19	21,2	385,0	805,4
704778	41 G 0,75	19	21,2	370,8	795,0
704779	50 G 0,75	19	23,5	441,0	900,0
704784	2 x 1,5	16	6,8	44,0	86,0
704785	3 G 1,5	16	8,8	68,1	133,0
704786	4 G 1,5	16	9,4	87,9	159,0
704788	5 G 1,5	16	10,3	104,0	195,0
704790	7 G 1,5	16	11,6	140,8	247,0
704792	12 G 1,5	16	14,7	226,8	410,0
704793	3 G 2,5	14	10,4	104,4	210,0
704794	4 G 2,5	14	10,5	132,7	218,4
704795	5 G 2,5	14	12,3	161,1	288,0
704796	7 G 2,5	14	13,5	223,1	355,1
704797	12 G 2,5	14	16,7	350,6	560,0
705039	19 G 2,5	14	21,7	561,0	638,0
704798	5 G 4	12	14,0	237,4	382,0
704799	7 G 4	12	16,3	325,0	582,0
704800	12 G 4	12	20,0	532,1	806,0
704801	5 G 6	10	17,4	341,0	640,0
704802	4 G 10	8	17,8	445,6	727,0
704803	5 G 10	8	20,7	550,2	935,0
704804	4 G 16	6	21,1	692,2	1072,0
704805	5 G 16	6	26,2	881,0	1667,3
704806	4 G 25	4	26,0	1059,0	1664,0
704807	5 G 25	4	28,6	1327,0	2014,0
704808	4 G 50	1	37,0	2080,0	3200,0

## Core identification acc. to DIN 47100

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704749	2 x 2 x 0,25	24	8,9	27,0	90,0
704750	4 x 2 x 0,25	24	9,9	39,0	115,0
704751	5 x 2 x 0,25	24	11,1	46,0	130,0
704753	2 x 2 x 0,34	22	9,6	35,0	110,0
704754	4 x 2 x 0,34	22	11,0	47,0	130,0
704756	2 x 2 x 0,5	20	9,8	39,0	115,0
704757	4 x 0,5	20	8,0	37,8	105,0
704759	6 x 0,5	20	9,2	53,6	130,0
704761	4 x 2 x 0,5	20	11,3	69,5	184,1
704766	2 x 2 x 0,75	19	10,4	54,0	130,0
705829	3 x 2 x 0,75	19	11,5	73,0	172,0
704770	4 x 2 x 0,75	19	12,7	91,0	214,5
704772	12 x 0,75	19	12,2	126,9	257,5
704773	8 x 2 x 0,75	19	17,1	170,0	410,0
704776	12 x 2 x 0,75	19	17,6	223,0	520,0
704777	32 x 0,75	19	18,8	294,0	610,0
704780	4 x 1	18	8,7	56,0	110,0
704781	6 x 1	18	10,2	82,0	150,0
704782	8 x 1	18	11,7	106,0	210,0
704783	12 x 1	18	13,3	150,0	280,0
704787	2 x 2 x 1,5	16	12,1	90,0	180,0
704789	3 x 2 x 1,5	16	14,0	120,0	235,0
704791	4 x 2 x 1,5	16	14,6	150,0	210,0

## Core identification black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
706601	4 x 0,75	19	7,8	52,6	101,6
703147	1 x 70	2/0	19,8	739,0	950,0
703148	1 x 95	3/0	22,5	989,0	1280,0
703041	1 x 120	4/0	23,0	1242,0	1742,6
703149	1 x 150	300 kcmil	27,5	1548,0	2000,0
703150	1 x 185	350 kcmil	27,8	1904,0	2395,8
703151	1 x 240	450 kcmil	31,6	2451,0	3150,0
703152	1 x 300	500 kcmil	34,4	3027,0	3920,0

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 103k-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +80°C  
fixed installation -40°C to +80°C  
installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10269  
Multicore UL Style 2570  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special insulation material flexible at low temperatures
- Core identification: see table
- Multiconductors cabled
- Special sheath compound flexible at low temperatures
- Sheath: colour black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103k-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELUWIND® WK 103k-Torsion

0,6/1 kV, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704941	4 G 0,5	20	7,4	33,4	99,0
704942	6 G 0,5	20	8,6	51,2	121,0
704943	10 G 0,5	20	10,8	48,0	165,0
704944	12 G 0,5	20	11,1	84,0	208,0
704945	3 G 0,75	19	7,3	22,0	77,0
704946	4 G 0,75	19	7,9	29,0	100,0
704947	5 G 0,75	19	8,6	36,0	120,0
704948	7 G 0,75	19	10,0	51,0	170,0
704949	10 G 0,75	19	11,0	72,0	200,0
704950	12 G 0,75	19	11,8	87,0	220,0
704951	14 G 0,75	19	12,5	101,0	238,0
704952	16 G 0,75	19	13,2	116,0	271,0
704953	18 G 0,75	19	13,9	130,0	310,0
704954	21 G 0,75	19	15,2	152,0	380,0
704955	25 G 0,75	19	16,9	180,0	490,0
704956	32 G 0,75	19	18,2	231,0	560,0
704957	36 G 0,75	19	19,1	260,0	620,0
704958	40 G 0,75	19	20,5	288,0	729,0
704959	41 G 0,75	19	20,8	296,0	729,0
704960	50 G 0,75	19	23,5	441,0	990,0
704961	4 G 1	18	8,3	39,0	100,0
704962	5 G 1	18	9,0	48,0	110,0
704963	7 G 1	18	10,5	68,0	140,0
704964	10 G 1	18	13,0	96,0	220,0
704965	12 G 1	18	13,2	116,0	240,0
704966	14 G 1	18	13,4	135,0	280,0
704967	16 G 1	18	14,1	154,0	310,0
704968	18 G 1	18	15,1	173,0	360,0
704969	21 G 1	18	16,7	202,0	410,0
704970	25 G 1	18	18,4	240,0	500,0
704971	32 G 1	18	19,8	308,0	590,0
704972	36 G 1	18	20,6	346,0	700,0
704973	40 G 1	18	22,4	384,0	800,0
704974	41 G 1	18	22,4	394,0	810,0
704975	50 G 1	18	24,6	480,0	980,0
704976	2 x 1,5	16	7,9	29,0	75,0
704977	3 G 1,5	16	8,0	44,0	110,0
704978	4 G 1,5	16	8,9	58,0	131,0
704979	5 G 1,5	16	9,7	72,0	165,0
704980	7 G 1,5	16	12,0	101,0	210,0
704981	10 G 1,5	16	13,1	144,0	270,0
704982	12 G 1,5	16	14,3	173,0	360,0
704983	14 G 1,5	16	14,9	202,0	420,0
704984	16 G 1,5	16	15,7	231,0	450,0
704985	18 G 1,5	16	16,8	260,0	510,0
704986	21 G 1,5	16	17,8	303,0	590,0
704987	25 G 1,5	16	20,6	360,0	700,0
704988	32 G 1,5	16	22,2	460,0	900,0
704989	36 G 1,5	16	23,1	519,0	980,0
704990	40 G 1,5	16	25,0	576,0	1030,0

## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704991	41 G 1,5	16	25,0	591,0	1050,0
704992	50 G 1,5	16	27,7	720,0	1200,0
704993	3 G 2,5	14	8,9	72,0	151,0
704994	4 G 2,5	14	9,7	96,0	230,0
704995	5 G 2,5	14	10,9	120,0	250,0
704996	7 G 2,5	14	14,4	168,0	360,0
704997	10 G 2,5	14	15,8	240,0	480,0
704998	12 G 2,5	14	16,3	288,0	560,0
705038	19 G 2,5	14	20,4	456,0	591,0
704999	3 G 4	12	10,8	116,0	250,0
705000	4 G 4	12	12,0	154,0	286,8
705001	5 G 4	12	13,6	192,0	370,0
705002	7 G 4	12	15,9	269,0	530,0
705003	12 G 4	12	19,6	461,0	740,0
705004	3 G 6	10	13,1	173,0	340,0
705005	4 G 6	10	14,6	231,0	460,0
705006	5 G 6	10	16,2	288,0	566,4
705007	7 G 6	10	19,6	404,0	780,0
705008	4 G 10	8	17,4	384,0	670,0
705009	5 G 10	8	20,1	480,0	870,0
705010	7 G 10	8	23,5	672,0	1150,0
705011	4 G 16	6	20,7	615,0	1000,0
705012	5 G 16	6	25,4	768,0	1250,0
705013	4 G 25	4	26,5	960,0	1580,0
705014	5 G 25	4	28,2	1200,0	1900,0
705016	4 G 35	2	31,4	1344,0	2286,0
705017	5 G 35	2	35,4	1680,0	2600,0
705018	4 G 50	1	36,7	1920,0	2800,0
704940	4 G 70	2/0	46,0	2688,0	3600,0

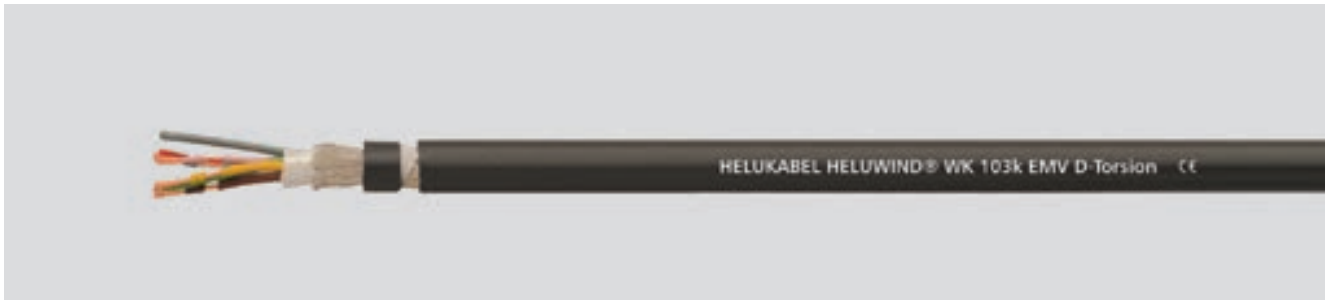
## Core identification black

Part no.	No.cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
705015	1 x 35	2	12,9	336,0	460,0
705019	1 x 70	2/0	17,9	672,0	1580,0
705020	1 x 95	3/0	21,9	912,0	1230,0
705021	1 x 120	4/0	23,1	1152,0	1540,0
705022	1 x 150	300 kcmil	27,2	1440,0	1870,0
705023	1 x 185	350 kcmil	27,5	1776,0	2284,0
705024	1 x 240	450 kcmil	31,2	2304,0	2966,8
705025	1 x 300	500 kcmil	35,0	2880,0	3730,0
705026	1 x 400	750 kcmil	39,3	3840,0	4500,0

Dimensions and specifications may be changed without prior notice.

# HELUWIND® WK 103k EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +80°C  
fixed installation -40°C to +80°C  
installation -40°C to +80°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V  
core/screen 2000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 10x cable Ø  
fixed installation 5x cable Ø
- **Torsion application**  
+/- 140° per 1m
- **Approvals**  
Singlecore UL Style 10269  
Multicore UL Style 2570  
cRUus
- **Flame test**  
FT1, VW-1, IEC 60332-1-2

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Special flexible insulation material for low temperatures
- Core identification: see table
- Multiconductors cabled
- EMC-screened types have tinned copper wrapping
- Special sheath compound flexible at low temperatures
- Sheath colour: black

## Properties

- UV resistant
- Multi-climate operation
- Torsion tested
- Flame retardant
- Oil resistant
- Recyclable
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 103k EMV D-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper wrapping on both ends.

☑ = Product conforms with Low-Voltage Directive 2014/35/EU.

# HELWIND® WK 103k EMV D-Torsion

0,6/1 kV, screened, UV resistant, UL/CSA-Style 10269/2570 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704880	4 G 0,34	22	7,7	32,0	91,0
704883	4 G 0,5	20	8,0	37,8	105,0
704886	6 G 0,5	20	9,2	53,6	130,0
704890	10 G 0,5	20	11,4	73,0	170,0
704891	12 G 0,5	20	11,7	88,4	220,0
704892	3 G 0,75	19	7,7	43,2	97,0
704893	4 G 0,75	19	8,3	52,6	122,0
704895	5 G 0,75	19	9,0	63,0	145,0
704896	7 G 0,75	19	9,7	82,8	200,0
704898	4 x 2 x 0,75	19	12,7	91,0	211,0
704897	8 G 0,75	19	10,7	93,0	220,0
704900	12 G 0,75	19	12,2	126,9	257,5
704903	18 G 0,75	19	14,4	179,0	400,0
704904	12 x 2 x 0,75	19	17,6	223,0	520,0
704906	25 G 0,75	19	17,8	256,0	552,0
704908	41 G 0,75	19	21,2	370,8	795,0
704909	50 G 0,75	19	23,5	441,0	900,0
704914	2 x 1,5	16	6,8	44,0	86,0
704915	3 G 1,5	16	8,8	68,1	133,0
704916	4 G 1,5	16	9,4	87,9	159,0
704918	5 G 1,5	16	10,3	104,0	195,0
704920	7 G 1,5	16	11,9	140,8	247,0
704922	12 G 1,5	16	14,7	229,0	410,0
704923	3 G 2,5	14	10,4	104,4	210,0
704924	4 G 2,5	14	11,2	132,8	264,0
704925	5 G 2,5	14	12,3	161,1	288,0
704926	7 G 2,5	14	14,8	223,1	411,0
704927	12 G 2,5	14	16,7	350,6	560,0
705037	19 G 2,5	14	21,7	561,0	638,0
704928	5 G 4	12	13,6	237,4	382,0
704929	7 G 4	12	16,3	325,0	582,0
704930	12 G 4	12	20,0	532,1	806,0
704931	5 G 6	10	17,4	341,0	640,0
704932	4 G 10	8	17,8	445,6	727,0
704933	5 G 10	8	19,8	550,2	935,0
704934	4 G 16	6	21,1	692,2	1072,0
704935	5 G 16	6	24,4	854,4	1330,0
704936	4 G 25	4	26,0	1059,0	1664,0
704937	5 G 25	4	28,6	1327,0	2014,0
704938	4 G 50	1	37,0	2080,0	3200,0

Dimensions and specifications may be changed without prior notice.

## Core identification acc. to DIN 47100

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
704877	2 x 2 x 0,25	24	8,9	27,0	90,0
704878	4 x 2 x 0,25	24	9,9	39,0	115,0
704879	5 x 2 x 0,25	24	11,1	46,0	130,0
704881	2 x 2 x 0,34	22	9,6	35,0	110,0
704882	4 x 2 x 0,34	22	11,0	47,0	130,0
704884	2 x 2 x 0,5	20	9,8	39,0	115,0
704885	4 x 0,5	20	8,0	37,8	105,0
704887	6 x 0,5	20	9,2	53,6	130,0
704889	8 x 0,5	20	11,3	42,0	150,0
704888	4 x 2 x 0,5	20	11,5	69,2	190,0
704894	2 x 2 x 0,75	19	10,4	54,0	130,0
704899	4 x 2 x 0,75	19	12,7	91,0	211,0
704901	12 x 0,75	19	12,2	126,9	257,5
704902	8 x 2 x 0,75	19	17,1	170,0	410,0
704905	12 x 2 x 0,75	19	17,6	223,0	520,0
704907	32 x 0,75	19	18,8	294,0	610,0
704910	4 x 1	18	8,7	56,0	110,0
704911	6 x 1	18	10,2	82,0	150,0
704912	8 x 1	18	11,7	106,0	210,0
704913	12 x 1	18	13,3	150,0	280,0
704917	2 x 2 x 1,5	16	12,1	90,0	180,0
704919	3 x 2 x 1,5	16	14,0	120,0	235,0
704921	4 x 2 x 1,5	16	14,6	150,0	210,0

## Core identification black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
78177	1 x 70	2/0	19,8	739,0	950,0
74006	1 x 95	3/0	21,2	959,0	1285,8
78178	1 x 120	4/0	25,0	1250,0	1644,2
78179	1 x 150	300 kcmil	28,4	1740,0	2000,0
78180	1 x 185	350 kcmil	30,1	1904,0	2450,0
703328	1 x 240	450 kcmil	32,5	2451,0	2953,3
704939	1 x 300	500 kcmil	39,0	3027,0	3920,0

# HELUWIND® WK 110-Torsion

0,6/1 kV, UV resistant, halogen-free



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C
- **Permissible conductor operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**
  - DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV
  - AC: Conductor/Earth 0,7 kV
  - Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 6x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/- 150° per 1m
- **Flame test**  
IEC 60332-1-2
- **Corrosiveness of combustion gases**  
IEC 60754-2
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-2
- **Oil**  
IEC 60811-2-1,  
acc. to IEC 60811-404

## Cable structure

- Special bare copper conductors, fine stranded acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Sheath: special compound
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Flame retardant
- Torsion tested
- Extremely oil resistant
- UV resistant
- Ozon-resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

## Application

The WK 110-Torsion has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant.

☑️ = Product conforms with Low-Voltage Directive 2014/35/EU.

### Core identification acc. to DIN VDE 0293-308

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
710751	3 G 1,5	-	8,4	43,2	111,9
710571	4 G 1,5	-	8,9	58,0	126,9
710752	5 G 1,5	-	9,9	72,0	154,6
710759	3 G 2,5	-	9,3	72,0	151,4
710760	4 G 2,5	-	10,1	96,0	181,4

### Core identification black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
710435	1 x 1,5	-	3,9	14,4	27,0
710436	1 x 2,5	-	4,6	24,0	37,0
710437	1 x 4	-	5,5	38,4	52,0
710438	1 x 6	-	6,5	57,6	76,0

### Core identification black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
709855	1 x 10	-	8,3	96,0	158,0
709856	1 x 16	-	10,7	153,6	268,0
709857	1 x 25	-	11,8	240,0	381,0
709858	1 x 35	-	13,3	336,0	454,0
709859	1 x 50	-	15,8	480,0	625,0
709860	1 x 70	-	18,4	672,0	894,1
709861	1 x 95	-	20,4	912,0	1222,0
709862	1 x 120	-	22,9	1152,0	1490,0
709863	1 x 150	-	25,5	1440,0	1910,0
709864	1 x 185	-	27,8	1776,0	2310,0
709865	1 x 240	-	30,5	2304,0	2980,0
709866	1 x 300	-	33,5	2880,0	3600,0
709867	1 x 400	-	37,5	3840,0	4500,0

Dimensions and specifications may be changed without prior notice.



# HELUWIND® WK 137-Torsion FT4

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, UV resistant,  
UL/CSA-Style 10553/20234 Single-/Multicore



## Technical data

- **Temperature range**  
flexing -40°C to +90°C  
fixed installation -40°C to +90°C  
acc. to UL to +80°C
- Permissible conductor **operating temperature** +90°C
- **Nominal voltage**  
VDE U<sub>0</sub>/U 0,6/1 kV  
UL 1000 V
- **Test voltage**  
core/core 4000 V
- **Highest permissible voltage**  
- DC:  
Conductor/Conductor 1,8 kV  
Conductor/Earth 0,9 kV  
- AC: Conductor/Earth 0,7 kV  
- Three phase: Conductor/Conductor 1,2 kV
- **Minimum bending radius**  
flexing 8x cable Ø  
fixed installation 4x cable Ø
- **Torsion application**  
+/-150° per 1m
- **Approvals**  
Singlecore UL Style 10553  
Multicore UL Style 20234  
cRUus
- **Flame test**  
FT4, IEC 60332-3-24  
UL 758, Cable flame test
- **Halogen-free**  
IEC 60754-1
- **Smoke density**  
IEC 61034-1+2
- **Oil**  
acc. to oil res II
- **WTTC** in preparation

## Application

The WK 137-Torsion FT4 has been designed for flexible use, and specifically for torsional load in the cable loop of a wind power plant. The voltage level has been configured as 0.6/1 kV for all dimensions, which means that the cables can also be laid in parallel in compliance with UL standards. It is no longer necessary to separate the cable routes. Additionally, this cable meets the strict requirements of CSA flame test FT4 and, thanks to its highly durable sheath and absence of halogen, is ideal for use in offshore wind power plants. The WK series has been successfully tested for more than 18,000 torsion cycles and thus offers optimum operational reliability far beyond the service life of the wind power plant. Advantages of WK 137-Torsion FT4 over H07BN4-F: Fire behaviour in accordance with IEC 60332-3-24 and FT4, increased wear resistance.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

## Cable structure

- Special bare copper conductor, acc. to IEC 60228
- Insulation: special compound
- Core identification: see table
- Multiconductors cabled
- Sheath: special compound SSH
- Sheath colour: black

## Properties

- Halogen-free
- Extremely abrasion resistant
- Low adhesion
- High flame retardant
- Torsion tested
- Suitable for offshore applications
- Extremely oil resistant
- UV resistant
- Multi-climate operation
- Designed for CCV application
- Easy to assemble

## Note

For more information, especially on custom cables, please contact us: [wind@helukabel.de](mailto:wind@helukabel.de)

# HELWIND® WK 137-Torsion FT4

0,6/1 kV, 90°C (80°C acc. to UL), suitable offshore, UV resistant,  
UL/CSA-Style 10553/20234 Single-/Multicore



## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
705741	3 G 0,75	19	7,1	22,0	88,0
705742	5 G 0,75	19	8,6	36,0	122,0
705743	7 G 0,75	19	10,0	51,0	170,0
705744	12 G 0,75	19	11,8	87,0	220,0
705745	18 G 0,75	19	13,9	130,0	310,0
705719	3 G 1	18	7,8	49,0	133,0
705746	5 G 1	18	9,0	48,0	110,0
705747	7 G 1	18	10,5	68,0	140,0
705748	12 G 1	18	13,2	116,0	240,0
705749	18 G 1	18	15,1	173,0	360,0
705720	3 G 1,5	16	8,4	44,0	113,5
705721	4 G 1,5	16	9,1	58,0	139,8
705722	5 G 1,5	16	9,9	72,0	166,5
705723	7 G 1,5	16	11,5	101,0	235,2
705724	12 G 1,5	16	14,3	173,0	360,0
705725	18 G 1,5	16	16,8	260,0	524,6
705726	3 G 2,5	14	9,3	72,0	151,4
705727	5 G 2,5	14	11,1	120,0	227,6
705750	7 G 2,5	14	14,4	168,0	360,0
705751	3 G 4	12	10,8	116,0	222,0
705752	5 G 4	12	13,2	192,0	382,0
705753	7 G 4	12	15,9	269,0	530,0
705754	3 G 6	10	13,1	173,0	340,0
705728	4 G 6	10	14,6	231,0	460,0
705729	5 G 6	10	16,3	288,0	508,6
705755	7 G 6	10	19,6	404,0	780,0

## Core identification black with white numbers, 3 cores and more with GN-YE

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
705730	4 G 10	8	17,4	384,0	670,0
705756	5 G 10	8	20,9	480,0	893,6
705757	4 G 16	6	20,7	615,0	1000,0
705731	5 G 16	6	25,8	768,0	1390,0
705732	4 G 25	4	26,2	960,0	1556,6
705758	5 G 25	4	28,2	1200,0	1900,0
705759	4 G 35	2	31,0	1344,0	2234,6
705733	5 G 35	2	34,7	1680,0	2747,3

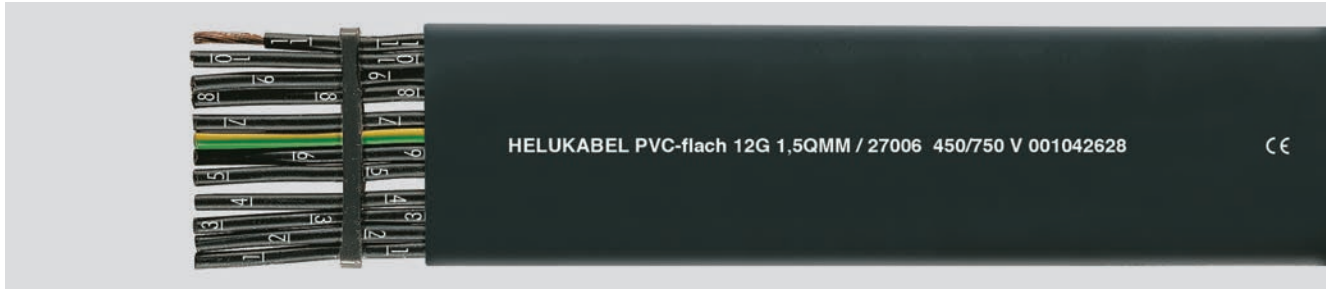
## Core identification black

Part no.	No. cores x cross-sec. mm <sup>2</sup>	AWG-No.	Outer Ø app. mm	Cu factor per km	Weight app. kg / km
708974	1 x 25	4	11,4	240,0	454,0
708975	1 x 35	2	13,4	336,0	476,0
708976	1 x 50	1	15,6	480,0	630,0
708977	1 x 70	2/0	18,2	672,0	894,0
708978	1 x 95	3/0	21,9	912,0	1222,0
708979	1 x 120	4/0	22,9	1152,0	1314,0
708980	1 x 150	300 kcmil	24,7	1440,0	1814,0
708981	1 x 185	350 kcmil	26,1	1776,0	2186,0
708982	1 x 240	450 kcmil	30,2	2304,0	2810,0
708983	1 x 300	500 kcmil	32,8	2880,0	3518,0
708984	1 x 400	750 kcmil	39,3	3840,0	4500,0

Dimensions and specifications may be changed without prior notice.

# PVC-flat

300/500 V and 450/750 V



## Technical data

- PVC-flat cable in reference to EN 50214 / DIN VDE 0283-2
- Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +80°C
- Nominal voltage**  
≤ 1 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
≥ 1,5 mm<sup>2</sup> U<sub>0</sub>/U 450/750 V
- Test voltage**  
≤ 1 mm<sup>2</sup> 2000 V  
≥ 1,5 mm<sup>2</sup> 2500 V
- Minimum bending radius**  
10x cable thickness

## Cable structure

- Bare copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of PVC
- Core identification acc. to DIN VDE 0293  
≤ 5 cores: coloured  
≥ 6 cores: black with continuous white numbering
- GN-YE conductor
- Cores laying parallel
- Outer sheath of PVC
- Sheath colour: black (RAL 9005)

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Information"
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packeting possibility
- Tests**  
Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Note

- Part no. 27012 (6x4)
- G = with GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

PVC type of flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. Not suitable for outdoor use.

## Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolley on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trolleys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross section which lays on the bedding surface and will be builded successively so that the biggest cross section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross section, smaller than 2,5 mm<sup>2</sup>, is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
26980	4 G 0,75	4,3 x 12,6	28,8	90,0	19
26981	5 G 0,75	4,3 x 16,1	36,0	115,0	19
26982	6 G 0,75	4,3 x 19,4	43,2	141,0	19
26983	9 G 0,75	4,3 x 26,4	64,8	198,0	19
26984	10 G 0,75	4,3 x 30,1	72,0	224,0	19
26985	12 G 0,75	4,3 x 33,8	86,4	258,0	19
26986	16 G 0,75	4,3 x 44,4	115,2	340,0	19
26987	18 G 0,75	4,3 x 49,2	129,6	380,0	19
26988	20 G 0,75	4,3 x 55,0	144,0	424,0	19
26989	24 G 0,75	4,3 x 65,6	172,8	509,0	19
26990	3 G 1	4,5 x 10,8	28,8	80,0	18
26991	4 G 1	4,5 x 13,4	38,4	104,0	18
26992	5 G 1	4,5 x 16,0	48,0	134,0	18
26993	6 G 1	4,5 x 20,6	57,6	161,0	18
26994	9 G 1	4,5 x 28,4	86,4	230,0	18
26995	10 G 1	4,5 x 30,0	96,0	256,0	18
26996	12 G 1	4,5 x 36,2	115,2	298,0	18
26997	16 G 1	4,5 x 47,6	153,6	395,0	18
26998	18 G 1	4,5 x 52,8	172,8	441,0	18
26999	20 G 1	4,5 x 59,0	192,0	495,0	18
27000	24 G 1	4,5 x 70,4	230,4	590,0	18
27001	4 G 1,5	4,5 x 13,7	58,0	133,0	16
27002	5 G 1,5	4,5 x 17,9	72,0	169,0	16
27003	7 G 1,5	4,5 x 23,5	101,0	235,0	16
27004	8 G 1,5	4,5 x 26,8	115,0	265,0	16
27005	10 G 1,5	4,5 x 33,5	144,0	332,0	16

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
27006	12 G 1,5	4,5 x 38,9	173,0	421,0	16
27028	16 G 1,5	4,5 x 51,5	230,4	555,0	16
27030	24 G 1,5	4,5 x 83,0	346,0	820,0	16
27007	4 G 2,5	5,5 x 17,0	96,0	205,0	14
27008	5 G 2,5	5,5 x 21,5	120,0	256,0	14
27009	7 G 2,5	5,5 x 30,3	168,0	344,0	14
27010	8 G 2,5	5,5 x 31,9	192,0	389,0	14
27011	12 G 2,5	5,8 x 47,1	288,0	580,0	14
27029	16 G 2,5	5,8 x 55,1	384,0	674,0	14
27012	24 G 2,5	15,0 x 63,0	604,0	950,0	14
27027	24 G 2,5	5,8 x 120,0	604,0	950,0	14
27013	4 G 4	7,0 x 21,8	154,0	344,0	12
27014	5 G 4	7,0 x 27,4	192,0	428,0	12
27015	7 G 4	7,9 x 36,6	269,0	590,0	12
27016	4 G 6	8,2 x 24,8	230,0	424,0	10
27017	5 G 6	8,2 x 31,8	288,0	530,0	10
27018	7 G 6	8,2 x 42,6	403,0	760,0	10
27019	4 G 10	10,0 x 29,6	384,0	710,0	8
27020	4 G 16	11,2 x 34,4	614,0	1014,0	6
27025	5 G 16	13,0 x 46,6	768,0	1370,0	6
27021	4 G 25	13,7 x 42,6	960,0	1365,0	4
27026	5 G 25	15,5 x 55,5	1200,0	2000,0	4
27022	4 G 35	15,4 x 47,6	1344,0	2100,0	2
27023	4 G 50	18,2 x 57,0	1920,0	2940,0	1
27024	4 G 70	20,0 x 64,2	2688,0	4090,0	2/0

Dimensions and specifications may be changed without prior notice. (RJ01)

# PVC-flat-CY

screened, EMC-preferred type



HELUKABEL PVC-flach-CY 5x4x0,5 QMM / 27101 300/500 V 001042630



## Technical data

- PVC-flat cable, screened, in reference to EN 50214 / DIN VDE 0283-2
- **Temperature range**  
flexing -5°C to +70°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  
U<sub>0</sub>/U 300/500 V
- **Test voltage**  
3000 V
- **Minimum bending radius**  
15x cable thickness

## Cable structure

- Bare copper conductor, fine wire acc. to DIN VDE 0295 cl.5 / IEC 60228 cl.5
- Core insulation of PVC
- Core identification see table below
- Cores screened individually or in bunches
- Copper screened braiding, approx. 85% coverage
- Outer sheath of PVC
- Sheath colour: black (RAL 9005)

## Properties

- Extensively oil resistant, oil-/chemical resistance see "Technical Information"
  - Extremely small bending radius
  - High flexibility
  - Minimum waste of space
  - Packeting possibility
- Tests**
- Flame retardant acc. to DIN VDE 0482-332-1-2 / DIN EN 60332-1-2 / IEC 60332-1-2

## Note

- G = with GN-YE conductor  
x = without GN-YE conductor
- The conductor is metrically constructed (mm<sup>2</sup>). The AWG designation is approximate and purely informative.

## Application

PVC screened flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. Not suitable for outdoor use.

## Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolley on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trolleys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross section which lays on the bedding surface and will be builded successively so that the biggest cross section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross section, smaller than 2,5 mm<sup>2</sup>, is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

EMC = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

CE = Product conforms with Low-Voltage Directive 2014/35/EU.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Core marking	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
27100	5 G 0,5	Colour coded, DIN VDE 0293	21,0 x 5,0	64,0	140,0	20
11008503	5 x 0,5	Colour coded, DIN VDE 0293	21,0 x 5,0	64,0	140,0	20
27101	5 x 4 x 0,5	Colour coded, (blue, red, green, yellow)	37,4 x 7,2	175,0	280,0	20
27102	8 x 7 x 0,5	Cont. white numbering, DIN VDE 0293	68,6 x 11,7	480,0	1180,0	20
27090	4 G 0,75	Colour coded, DIN VDE 0293	15,0 x 5,0	70,0	147,0	19
26754	4 x 4 x 1	Colour coded, (blue, red, green, yellow)	33,5 x 11,0	310,0	625,0	18
27103	4 x 4 G 1	Cont. white numbering	33,5 x 11,0	310,0	625,0	18
27091	4 G 1,5	Colour coded, DIN VDE 0293	18,7 x 5,9	116,0	210,0	16
27092	8 G 1,5	Cont. white numbering	35,6 x 5,9	217,0	400,0	16
27093	12 G 1,5	Cont. white numbering	52,1 x 5,9	330,0	610,0	16
26688	12 x 1,5	Cont. white numbering	52,1 x 5,9	330,0	610,0	16
27094	4 G 2,5	Colour coded, DIN VDE 0293	21,0 x 6,9	170,0	270,0	14
27104	6 G 2,5	Cont. white numbering, DIN VDE 0293	37,4 x 7,2	240,0	320,0	14
27095	4 G 4	Colour coded, DIN VDE 0293	24,5 x 7,7	225,0	400,0	12
27096	4 G 6	Colour coded, DIN VDE 0293	30,1 x 9,2	328,0	520,0	10
27097	4 G 10	Colour coded, DIN VDE 0293	35,8 x 10,5	525,0	840,0	8
27098	4 G 16	Colour coded, DIN VDE 0293	41,3 x 12,6	788,0	1280,0	6
27099	4 G 25	Colour coded, DIN VDE 0293	48,4 x 14,4	1170,0	1800,0	4

Dimensions and specifications may be changed without prior notice. (RJ01)



## Technical data

- Special Neoprene-flat cable adapted to DIN VDE 0250 part 809
- **Temperature range**  
flexing -30°C to +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**  
10x cable thickness
- **Radiation resistance**  
up to  $50 \times 10^6$  CJ/kg (up to 50 Mrad)

## Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295, BS 6360, IEC 60228
- Conductor construction  
35-120 mm<sup>2</sup> class 5: fine-wire  
1,5-25 mm<sup>2</sup> class 6 col.4: extra-fine-wire
- Special rubber core insulation
- Core identification to DIN VDE 0293  
- up to 5 cores coloured  
- from 7 cores, black with continuous white numbering
- Cores laying parallel
- GN-YE conductor
- Outer sheath of special rubber 5GM3, to DIN VDE 0207 part 21
- Sheath colour black

## Properties

- Special rubber outer sheath, cold-resistant
- Extensively oil resistant, oil-/chemical resistance see table Technical Informations
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packaging possibility
- Outdoor application

## Tests

- Behaviour in fire to DIN VDE 0482-332-1-2  
DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- Part no. 28007 and 28013 (6x4).
- AWG sizes are approximate equivalent values. The actual cross-section is in mm<sup>2</sup>.

## Application

Neoprene type of flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. These cables are also available for export with UL-approval on request.

## Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

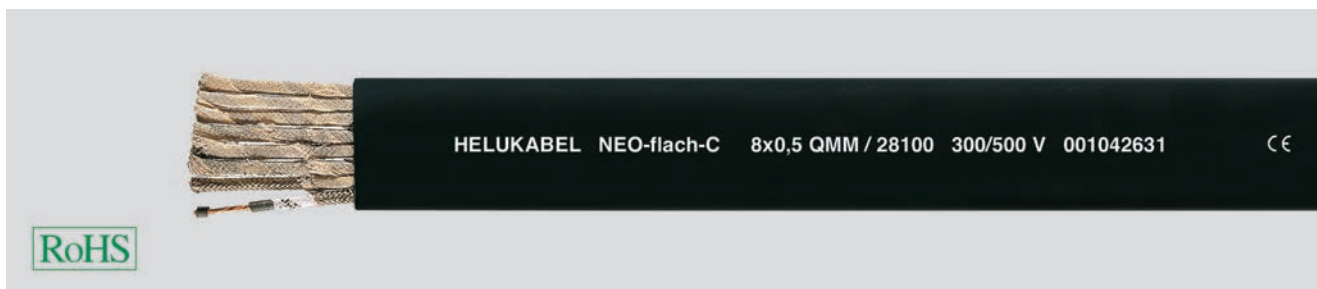
- Put the cable trolly on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trollys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than 2,5 mm<sup>2</sup>, is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28001	4 G 1,5	5,9 x 16,2	58,0	234,0	16
28002	5 G 1,5	5,9 x 23,7	72,0	304,0	16
28003	7 G 1,5	5,9 x 30,5	101,0	391,0	16
28004	8 G 1,5	5,9 x 34,0	115,0	441,0	16
28005	10 G 1,5	5,9 x 43,5	144,0	460,0	16
28006	12 G 1,5	6,5 x 50,4	173,0	646,0	16
28007	24 G 1,5 (6 x 4)	13,0 x 56,0	346,0	1290,0	16
28008	4 G 2,5	7,2 x 19,6	96,0	316,0	14
28009	5 G 2,5	7,2 x 27,8	120,0	391,0	14
28010	7 G 2,5	7,2 x 36,1	168,0	533,0	14
28011	8 G 2,5	7,2 x 40,2	192,0	602,0	14
28012	12 G 2,5	7,8 x 59,4	288,0	890,0	14
28013	24 G 2,5 (6 x 4)	15,5 x 66,8	576,0	1480,0	14
28014	4 G 4	8,8 x 24,2	154,0	506,0	12
28015	5 G 4	8,8 x 33,4	192,0	621,0	12
28016	7 G 4	8,8 x 42,5	269,0	851,0	12
28017	4 G 6	9,6 x 27,4	230,0	661,0	10
28018	5 G 6	9,6 x 37,4	288,0	740,0	10
28019	7 G 6	9,6 x 47,2	403,0	1004,0	10
28020	4 G 10	10,4 x 30,8	384,0	1027,0	8
28021	5 G 10	10,4 x 41,6	480,0	1171,0	8

Part no.	No. cores x cross-sec. mm <sup>2</sup>	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28022	4 G 16	11,6 x 35,6	614,0	1430,0	6
28023	5 G 16	12,2 x 48,2	768,0	1590,0	6
28024	4 G 25	14,1 x 45,8	960,0	1890,0	4
28025	5 G 25	14,7 x 58,3	1200,0	2215,0	4
28026	7 G 25	15,3 x 78,7	1680,0	3000,0	4
28027	4 G 35	15,8 x 50,8	1344,0	2460,0	2
28028	5 G 35	16,4 x 64,4	1680,0	2880,0	2
28029	7 G 35	16,4 x 86,4	2352,0	4100,0	2
28030	4 G 50	18,6 x 60,2	1920,0	3385,0	1
28031	4 G 70	21,0 x 68,0	2688,0	4480,0	2/0
28032	4 G 95	24,1 x 78,6	3648,0	5990,0	3/0
28033	4 G 120	25,5 x 84,2	4608,0	7240,0	4/0

Dimensions and specifications may be changed without prior notice. (RJ01)



## Technical data

- Special-Neoprene-flat cable, screened, adapted to DIN VDE 0250 part 809
- **Temperature range**  
flexing -30°C bis +80°C  
fixed installation -40°C to +80°C
- **Nominal voltage**  $U_0/U$  300/500 V
- **Test voltage** 3000 V
- **Minimum bending radius**  
15x cable thickness
- **Radiation resistance**  
up to  $50 \times 10^6$  cJ/kg (up to 50 Mrad)

## Cable structure

- Copper-conductor bare or tinned to DIN VDE 0295 cl.6, extra fine-wire, BS 6360 cl.6, IEC 60228 cl.6
- Core insulation of special rubber
- Core identification to DIN VDE 0293  
- up to 5 cores coloured  
- from 7 cores, black with continuous white numbering
- GN-YE conductor
- Cores screened individually
- Cores laying parallel
- Copper screened braiding, approx. 85% coverage
- Outer sheath of special Neoprene
- Outer sheath color black (RAL 9005)

## Properties

- Outer sheath cold resistant
- Extensively oil resistant
- Extremely small bending radius
- High flexibility
- Minimum waste of space
- Packeting possibility
- The high degree of screening density assures disturbance-free transmission of all signal and impulses
- Outdoor application

## Tests

- Behaviour in fire to DIN VDE 0482-332-1-2  
DIN EN 60332-2-1, IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)

## Note

- G = with green-yellow conductor
- AWG sizes are approximate equivalent values. The actual cross-section is in  $\text{mm}^2$ .

## Application

Neoprene screened flat cables are used mainly as trailing cable for crane installations, floor conveyer systems and shelf control units. These cables are also available for export with UL-approval on request.

## Installation notes

Cables reels with flat cables must be transported in standing position on the flange. A bending flexibility can be achieved on a plane surface. For this purpose, the corresponding fitting instructions should be followed.

- Put the cable trolley on the guiding rail or upon carrier beam and push them together at the starting point. The distance between the bedding surface of two cable trolleys must be wider than the double thickness of a cable-packet.
- During the packeting performance, it must be started with the smaller cross-section which lays on the bedding surface and will be builded successively so that the biggest cross-section is laying on the top.
- Further, be careful of a symmetrical load distribution.
- In case of multicore flat cables with small cross-section, smaller than  $2,5 \text{ mm}^2$ , is very critical due to its low tensile stress. In such case, you should add 10% reserve wire for calculation.

**EMC** = Electromagnetic compatibility

To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

**CE** = The product is conformed with the EC Low-Voltage Directive 2006/95/EC.

Part no.	No. cores x cross-sec. $\text{mm}^2$	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.	Part no.	No. cores x cross-sec. $\text{mm}^2$	Outer dimension app. mm	Cu factor per km	Weight app. kg / km	AWG-No.
28100	8 G 1,5	7,9 x 42,0	231,0	520,0	16	28103	6 G 2,5	8,5 x 34,5	247,0	540,0	14
28101	12 G 1,5	7,9 x 61,0	346,0	790,0	16	28104	12 G 2,5	8,9 x 68,0	494,0	1000,0	14
28102	4 G 2,5	8,5 x 25,5	164,0	420,0	14	28302	4 G 25	16,0 x 51,0	1116,0	1650,0	4

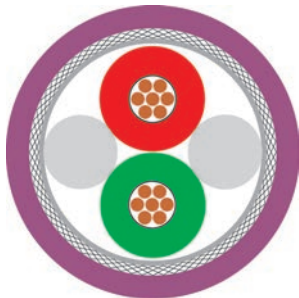
Dimensions and specifications may be changed without prior notice. (RJ01)

# BUS Cables

Profibus L2 high flexible TORSION + FESTOON

 **HELUKABEL®**

PUR + PVC



## Type Cable structure

Inner conductor diameter:  
Core insulation:  
Core colours:  
Stranding element:  
Separator:  
Shielding 1:  
Total shielding:  
Outer sheath material:  
Cable external diameter:  
Outer sheath colour:

## Torsional applications 1x2x0.80 mm (stranded)

Copper, bare (AWG 22/19)  
Foam-skin-PE  
rd, gn  
2 cores + filler  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PUR  
app. 8,0 mm ± 0,4 mm  
Violet similar to RAL 4001

## FESTOON 1x2x0.65 mm (stranded)

Copper, bare (AWG 23/19)  
Cell PE  
rd, gn  
2 cores + 2 fillers stranded together  
Polyester foil over stranded bundle  
Al-Foil  
Cu braid, tinned  
PVC  
app. 8,0 mm ± 0,3 mm  
Petrol similar to RAL 5018

## Electrical data

Characteristic impedance:  
Conductor resistance, max.:  
Insulation resistance, min.:  
Loop resistance:  
Mutual capacitance:  
Test voltage:  
Relative propagation velocity:  
Attenuation:

150 Ohm ± 10 %  
57,6 Ohm/km  
5 GOhm x km  
115,2 Ohm/km max.  
30 nF/km nom.  
1,5 kV  
-  
9,6 kHz < 2,5 dB/km  
38,4 kHz < 3,0 dB/km  
4 MHz < 25,0 dB/km  
16 MHz < 49,0 dB/km

150 Ohm ± 10 %  
66,5 Ohm/km  
1,6 GOhm x km  
133 Ohm/km max.  
28 nF/km nom.  
2 kV  
81 %  
9,6 kHz ≤ 3,0 dB/km  
38,4 kHz ≤ 4,0 dB/km  
4 MHz ≤ 25,0 dB/km  
16 MHz ≤ 49,0 dB/km

## Technical data

Weight:  
bending radius, repeated:  
Operating temperature range min.:  
Operating temperature range max.:  
Caloric load, approx. value:  
Copper weight:

app. 66 kg/km  
120 mm  
-30°C  
+70°C  
0,89 MJ/m  
32,00 kg/km

app. 64 kg/km  
70 mm  
-40°C  
+60°C  
1,09 MJ/m  
23,00 kg/km

## Norms

Applicable standards:

Profibus acc. to DIN 19245 T3 and EN50170  
Halogen-free acc. to 60754-1  
Flame-retardant acc. to IEC 60332-1-2  
CMX 75°C (shielded)

Profibus acc. to DIN 19245 T3 and EN50170  
Flame-retardant acc. to IEC 60332-1-2

UL Style:

CMG 75°C FT4 or CL2 or AWM 21694 600V  
SUN RES  
CSA FT 4

CSA standard:

## Application

HELUKABEL® Profibus Torsion is used in mobile applications in robots. The special torsion construction allows this cable to be twisted (torsioned) and is halogen-free thanks to use PU sheath. The Festoon version is used for hanging/moving loads in garland applications.

## Part no.

**800109**, Profibus L2

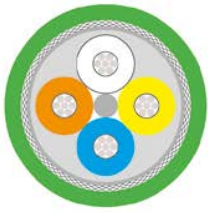
**800649**, Profibus L2

Dimensions and specifications may be changed without prior notice.



# HELUKAT® PROFINet B CAT.5e SF/UTP PVC FESTOON

PROFINet Type B, FastConnect (SK) capable, highly flame-retardant, for festoon suspension



## TECHNICAL DATA

Industrial Ethernet cable / Cat. 5e acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, PROFINet Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

<b>Temperature range</b>	flexible -10°C to +80°C fixed installation -10°C to +80°C UL (CMG) to +75°C UL (AWM) to +60°C
<b>Peak operating voltage</b>	125 V (not for high power current installation purposes)
<b>Test voltage core/core</b>	2000 V
<b>Conductor resistance at 20°C</b>	max. 60.0 Ohm/km
<b>Loop resistance at 20°C</b>	max. 120.0 Ohm/km
<b>Insulation resistance</b>	min. 0.5 GOhm x km
<b>Mutual capacitance core/core</b>	at 800 Hz, approx. 52 pF/m
<b>Rel. Velocity of Propagation</b>	approx. 67%
<b>Characteristic impedance</b>	at 1 to 100 MHz, 100 Ohm ± 15 Ohm
<b>Caloric load</b>	approx. 1.20 MJ/m
<b>Minimum bending radius</b>	flexible 11x Outer-Ø fixed installation 5x Outer-Ø

- Core identification: white, yellow, blue, orange
- Cores twisted into a star quad with optimal lay lengths
- Foil wrapping
- Inner sheath: PVC
- 1. Screen: plastic-coated aluminium foil (St)
- 2. Screen: braided screen of tinned copper wires
- Outer sheath: PVC
- Sheath colour: green
- Length marking: in metres

## PROPERTIES

- resistant to: oil, UV radiation
- highly flame-retardant

## TESTS

- flame-retardant acc. to CSA FT4
- bundle fire test acc. to DIN VDE 0482-332-3 / DIN EN 60332-3 / IEC 60332-3
- certifications and approvals: EAC

## APPLICATION

HELUKAT® PROFINet Typ B Kategorie 5e FESTOON designed specially for FESTOON applications.

## NOTES

- UL Voltage Rating: 600 V

## CABLE STRUCTURE

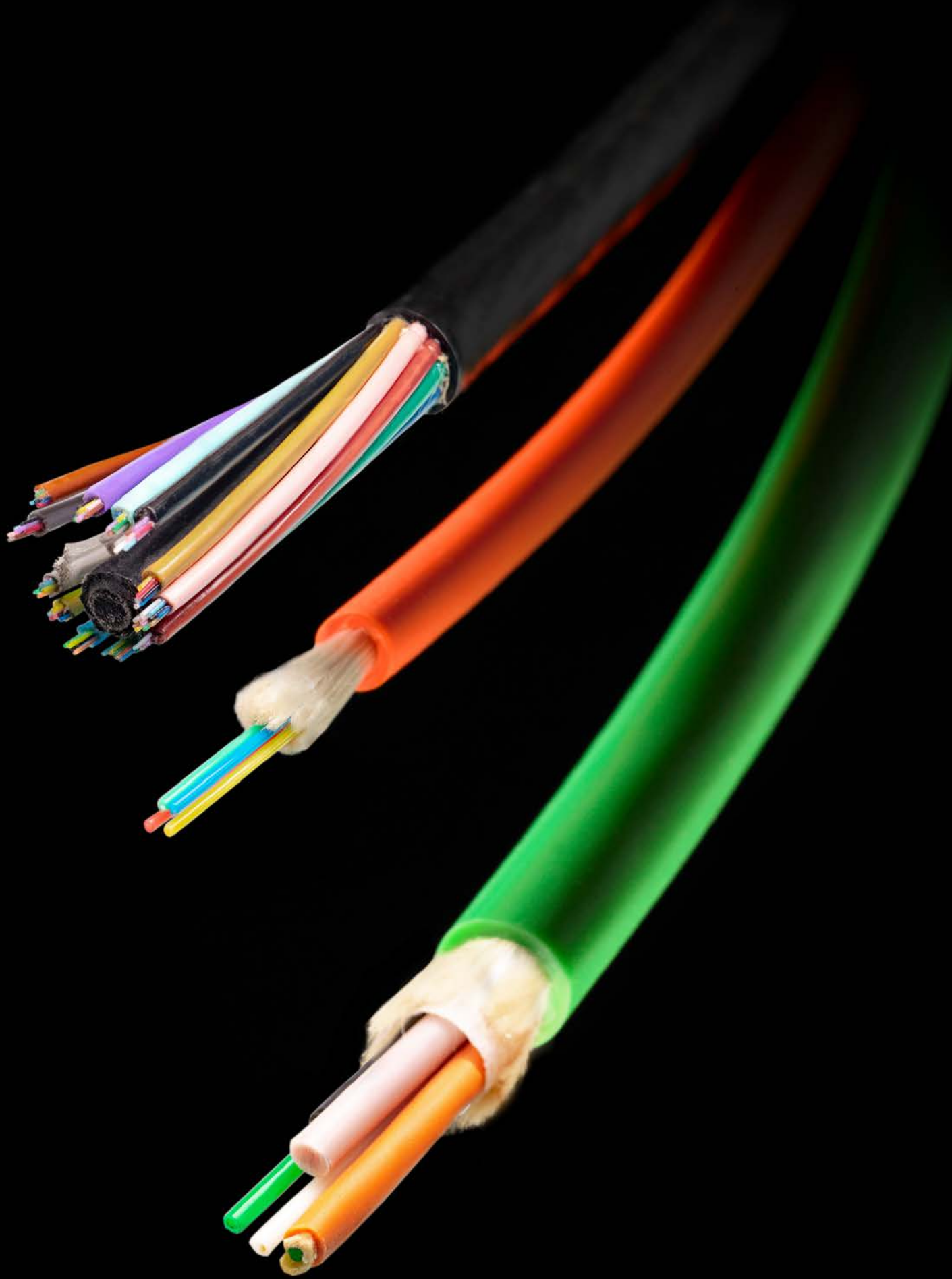
- Copper wire tinned, AWG sizes
- Core insulation: PE

## TYPICAL VALUES

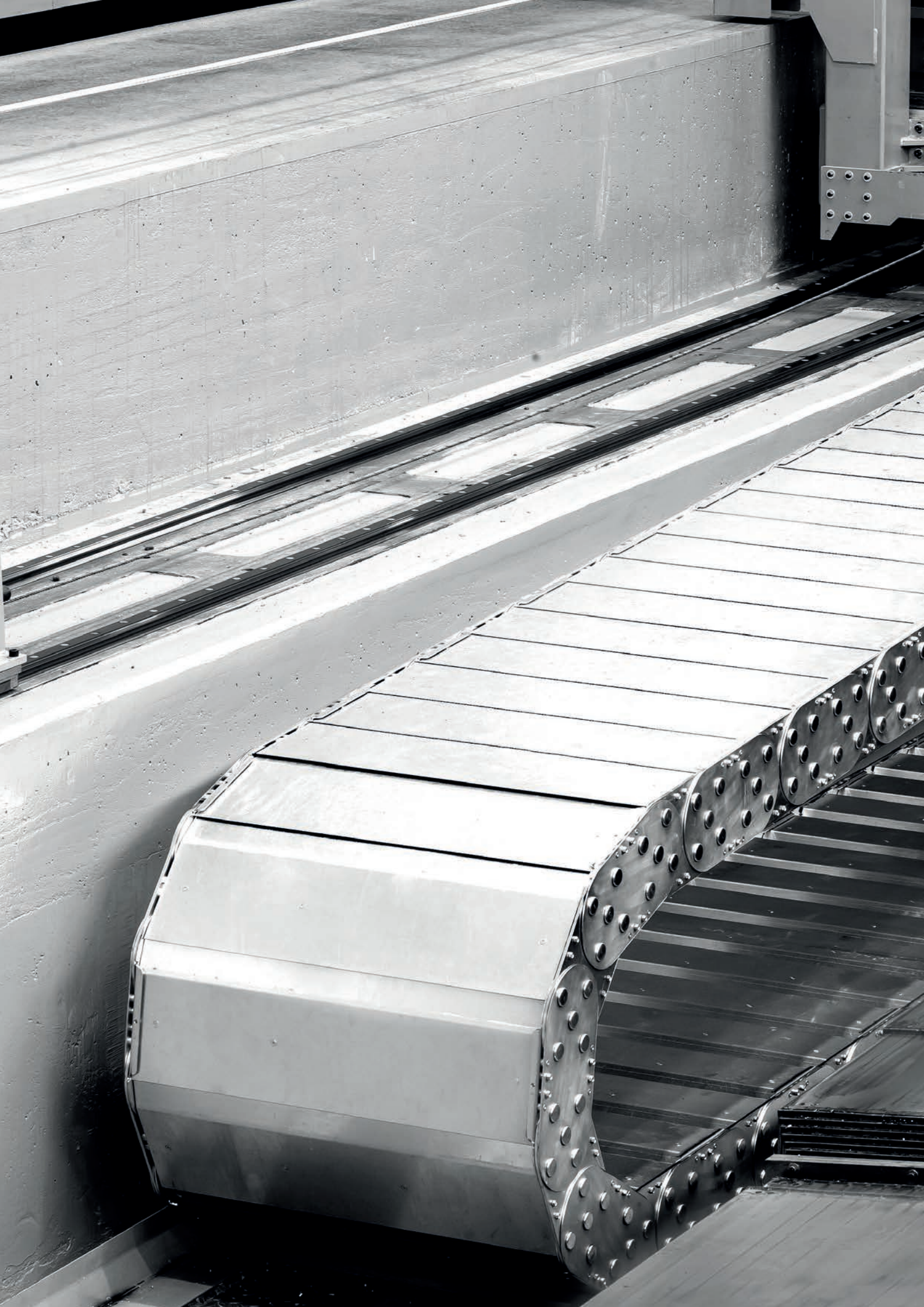
Frequency (MHz)	10	16	62.5	100
Attenuation (dB/100m)	6.0	7.6	16.0	21.0
NEXT (dB)	70.0	65.0	55.0	50.0
ACR (dB/100m)	64.0	57.4	39.0	29.0

Part no.	No. cores x AWG-No.	Conductor Ø mm, approx.	Core Ø mm, approx.	Outer Ø mm, approx.	Cu factor per km	Weight kg/km, approx.
803295	2 x 2 x AWG 22 /7	0.75	1.55	6.5	32.0	68.0











# Accessori

Pressacavi plastica	820
Pressacavi metallici	841
Pressacavi metallici EMC	877
Pressacavi robust	888
Pressacavi zona pericolosa	899
Pressacavi montaggi in condizioni speciali	922
Pressacavi condizioni speciali di pressione	928
Guaine corrugate	931
Guaine rinforzate	970
Guaine anaconda	992
Guaine cablaggio	1013
Guaine cablaggio termorestringenti	1023
Fascette e sistemi di fissaggio	1035
Terminali preisolati	1056
Terminali non isolati	1075
Gestione bobine e cavi	1105



## TECHNICAL DATA

PA plastic cable gland

**Temperature range** -20°C to +100°C  
short term -30°C to +150°C

**Protection class** IP 68 - 5 bar / IP 66

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)

## ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- with vibration protection

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Protection class IP 68, if the bore diameter in the sealing insert area is equal to the cable diameter.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

## metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	100	<b>93908</b>	<b>93923</b>	<b>93937</b>
M16 x 1.5	4.0 - 8.0	8.0	19	50	<b>93909</b>	<b>93924</b>	<b>93938</b>
M16 x 1.5	5.0 - 10.0	8.0	19	50	<b>907275</b>	<b>907276</b>	<b>907277</b>
M16 x 1.5	5.0 - 10.0	10.0	22	50	<b>92667</b>	<b>92668</b>	<b>92669</b>
M20 x 1.5	6.0 - 12.0	10.0	24	50	<b>93910</b>	<b>93925</b>	<b>93939</b>
M25 x 1.5	11.0 - 17.0	8.0	29	50	<b>93911</b>	<b>93926</b>	<b>93940</b>
M32 x 1.5	15.0 - 21.0	10.0	36	25	<b>93912</b>	<b>93927</b>	<b>93941</b>
M40 x 1.5	18.0 - 28.0	10.0	46	20	<b>93913</b>	<b>93928</b>	<b>93942</b>
M50 x 1.5	30.0 - 38.0	18.0	60	10	<b>93914</b>	<b>93929</b>	<b>93943</b>
M63 x 1.5	34.0 - 44.0	18.0	65	10	<b>93915</b>	<b>93930</b>	<b>93944</b>

## metric thread - with reducing seal

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
M12 x 1.5	2.0 - 5.0	8.0	15	100	<b>903532</b>	<b>903542</b>	<b>903552</b>
M16 x 1.5	2.0 - 6.0	8.0	19	50	<b>903533</b>	<b>903543</b>	<b>903553</b>
M20 x 1.5	5.0 - 9.0	10.0	24	50	<b>903534</b>	<b>903544</b>	<b>903554</b>
M25 x 1.5	9.0 - 13.0	8.0	29	50	<b>903535</b>	<b>903545</b>	<b>903555</b>
M32 x 1.5	11.0 - 15.0	10.0	36	25	<b>903536</b>	<b>903546</b>	<b>903556</b>
M40 x 1.5	16.0 - 23.0	10.0	46	20	<b>903537</b>	<b>903547</b>	<b>903557</b>
M50 x 1.5	25.0 - 31.0	18.0	60	10	<b>903538</b>	<b>903548</b>	<b>903558</b>
M63 x 1.5	29.0 - 35.0	18.0	65	10	<b>903539</b>	<b>903549</b>	<b>903559</b>

## PG thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
PG 7	3.0 - 6.5	8.0	15	100	<b>99300</b>	<b>99310</b>	<b>99320</b>
PG 9	4.0 - 8.0	8.0	19	50	<b>99301</b>	<b>99311</b>	<b>99321</b>
PG 11	5.0 - 10.0	8.0	22	50	<b>99302</b>	<b>99312</b>	<b>99322</b>
PG 13.5	6.0 - 12.0	10.0	24	50	<b>99303</b>	<b>99313</b>	<b>99323</b>
PG 16	10.0 - 14.0	10.0	27	50	<b>99304</b>	<b>99314</b>	<b>99324</b>
PG 21	13.0 - 18.0	11.0	33	25	<b>99305</b>	<b>99315</b>	<b>99325</b>
PG 29	18.0 - 25.0	11.0	42	20	<b>99306</b>	<b>99316</b>	<b>99326</b>
PG 36	22.0 - 32.0	13.0	53	10	<b>99307</b>	<b>99317</b>	<b>99327</b>
PG 42	30.0 - 38.0	13.0	60	10	<b>99308</b>	<b>99318</b>	<b>99328</b>
PG 48	34.0 - 44.0	14.0	65	10	<b>99309</b>	<b>99319</b>	<b>99329</b>

## NPT thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
NPT 3/8"	5.0 - 10.0	15.0	22	50	<b>92780</b>	<b>92790</b>	<b>92800</b>
NPT 1/2"	6.0 - 12.0	15.0	24	50	<b>92781</b>	<b>92791</b>	<b>92801</b>
NPT 1/2"	10.0 - 14.0	15.0	27	50	<b>92782</b>	<b>92792</b>	<b>92802</b>
NPT 3/4"	13.0 - 18.0	15.0	33	25	<b>92783</b>	<b>92793</b>	<b>92803</b>
NPT 1"	18.0 - 25.0	18.0	42	20	<b>92784</b>	<b>92794</b>	<b>92804</b>



## TECHNICAL DATA

### PA plastic cable gland

<b>Temperature range</b>	-20°C to +100°C short term -30°C to +150°C
<b>Protection class</b>	IP 68 - 5 bar, 30 min. / IP 66

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- Dust protection: Foam rubber
- pre-assembled dust protection

### ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

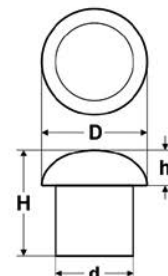
### ■ NOTES

- The information of the protection classification applies only by use as cable gland, not as dust cap.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

## metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
					(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	100	<b>94530</b>	<b>94540</b>	<b>94550</b>
M16 x 1.5	5.0 - 10.0	10.0	22	50	<b>94531</b>	<b>94541</b>	<b>94551</b>
M20 x 1.5	6.0 - 12.0	10.0	24	50	<b>94532</b>	<b>94542</b>	<b>94552</b>
M25 x 1.5	13.0 - 18.0	10.0	33	25	<b>94533</b>	<b>94543</b>	<b>94553</b>
M32 x 1.5	18.0 - 25.0	15.0	42	20	<b>94534</b>	<b>94544</b>	<b>94554</b>
M40 x 1.5	22.0 - 32.0	18.0	53	10	<b>94535</b>	<b>94545</b>	<b>94555</b>
M50 x 1.5	30.0 - 38.0	18.0	60	10	<b>94536</b>	<b>94546</b>	<b>94556</b>
M63 x 1.5	34.0 - 44.0	18.0	65	10	<b>94537</b>	<b>94547</b>	<b>94557</b>

# HELUTOP® SP



## TECHNICAL DATA

PA-Sealing plug

### ■ STRUCTURE

- Material: Polyamide (PA) 6

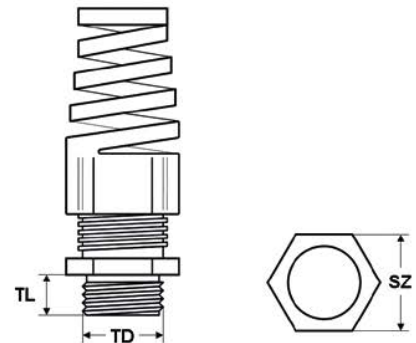
### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For sealing of not assigned cable glands HELUTOP® HT.

### ■ NOTES

- Colours: black
- Protection tab 903492 only for cable glands type HELUTOP® with clamping range 5-10mm.
- Legend:  
Dimensions  
H - Height  
H - Height without thread  
D - Outer diameter  
D - Outer diameter of upper part

Part no.	Size	Size	Clamping area from / up to mm	Outer Ø of upper part mm	Outer dimensions mm, approx.	Height mm	Hight without thread mm	Packaging unit (in pc.)
905924	M12 x 1.5	PG 7	3.00 - 6.50	9.2	6.4	11	4	100
905925	M16 x 1.5	PG 9	4.00 - 8.00	10.5	8.0	16	5	100
903492	M16 x 1.5	PG 11	5.00 - 10.00	13.3	9.7	20.7	5.7	100
903493	M20 x 1.5	PG 13.5	6.00 - 12.00	15.8	12.0	18	8	100
905928	M20 x 1.5	PG 16	10.00 - 14.00	19	13.6	18.7	8.7	100
903494	M25 x 1.5		11.00 - 17.00	19.9	16.4	18.3	7.3	50
905929	M25 x 1.5	PG 21	13.00 - 18.00	22.2	17.8	21	9.7	100
903495	M32 x 1.5		15.00 - 21.00	24.1	20.4	21.2	9.2	100
903496	M40 x 1.5		19.00 - 28.00	32	27.5	25	9	100



## TECHNICAL DATA

### PA plastic cable gland

<b>Temperature range</b>	-20°C to +100°C short term -30°C to +150°C
<b>Protection class</b>	IP 68 - 5 bar / IP 66

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)

### ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- with anti-kink spiral for mobile use

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

## metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	100	<b>93867</b>	<b>93856</b>	<b>93878</b>
M16 x 1.5	5.0 - 10.0	10.0	22	50	<b>93868</b>	<b>93857</b>	<b>93879</b>
M20 x 1.5	6.0 - 12.0	10.0	24	50	<b>93869</b>	<b>93858</b>	<b>93880</b>
M20 x 1.5	10.0 - 14.0	10.0	27	50	<b>93870</b>	<b>93859</b>	<b>93881</b>
M25 x 1.5	13.0 - 18.0	10.0	33	25	<b>93871</b>	<b>93860</b>	<b>93882</b>

## PG thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
PG 7	3.0 - 6.5	8.0	15	100	<b>93861</b>	<b>93850</b>	<b>93872</b>



Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
					(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
PG 9	4.0 - 8.0	8.0	19	50	<b>93862</b>	<b>93851</b>	<b>93873</b>
PG 11	5.0 - 10.0	8.0	22	50	<b>93863</b>	<b>93852</b>	<b>93874</b>
PG 13.5	6.0 - 12.0	10.0	24	50	<b>93864</b>	<b>93853</b>	<b>93875</b>
PG 16	10.0 - 14.0	10.0	27	50	<b>93865</b>	<b>93854</b>	<b>93876</b>
PG 21	13.0 - 18.0	11.0	33	25	<b>93866</b>	<b>93855</b>	<b>93877</b>

## NPT thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
					(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
NPT 3/8"	5.0 - 10.0	15.0	22	50	<b>99804</b>	<b>99901</b>	<b>99905</b>
NPT 1/2"	6.0 - 12.0	15.0	24	50	<b>99805</b>	<b>99902</b>	<b>99906</b>
NPT 3/4"	13.0 - 18.0	15.0	33	50	<b>99806</b>	-	-
NPT 3/4"	13.0 - 18.0	15.0	33	25	-	<b>99903</b>	<b>99907</b>



## TECHNICAL DATA

### PA cable gland

#### Temperature range

-40°C to +100°C

#### Protection class

IP 68 - 10 bar / IP 69K - within the specific clamping range with additional o-ring

## ■ STRUCTURE

- Material: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)

## ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- For the intrinsically safe area, type "i" cable glands in blue, RAL 5012, are used.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	50	<b>97558</b>	<b>97550</b>
M16 x 1.5	4.0 - 8.0	8.0	19	50	<b>96967</b>	<b>97551</b>
M16 x 1.5	5.0 - 10.0	8.0	22	50	<b>97956</b>	<b>97960</b>
M20 x 1.5	6.0 - 12.0	9.0	24	50	<b>96968</b>	<b>97552</b>
M20 x 1.5	10.0 - 14.0	9.0	27	50	<b>97957</b>	<b>97961</b>
M25 x 1.5	13.0 - 18.0	11.0	33	50	<b>96969</b>	<b>97553</b>
M32 x 1.5	18.0 - 25.0	11.0	42	25	<b>96970</b>	<b>97554</b>
M40 x 1.5	22.0 - 32.0	13.0	53	10	<b>96971</b>	<b>97555</b>
M50 x 1.5	32.0 - 38.0	13.0	60	5	<b>96972</b>	<b>97556</b>
M63 x 1.5	37.0 - 44.0	14.0	65 / 68	5	<b>96973</b>	<b>97557</b>

### metric thread - with reducing seal

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
M12 x 1.5	2.0 - 5.0	8.0	15	50	<b>97873</b>	<b>98205</b>
M16 x 1.5	2.0 - 6.0	8.0	19	50	<b>96974</b>	<b>97977</b>
M20 x 1.5	5.0 - 9.0	9.0	24	50	<b>96975</b>	<b>97979</b>
M25 x 1.5	9.0 - 16.0	11.0	33	50	<b>96976</b>	<b>97981</b>
M32 x 1.5	13.0 - 20.0	11.0	42	25	<b>96977</b>	<b>97982</b>
M40 x 1.5	20.0 - 26.0	13.0	53	10	<b>96978</b>	<b>97983</b>
M50 x 1.5	25.0 - 31.0	13.0	60	5	<b>96979</b>	<b>97984</b>
M63 x 1.5	29.0 - 35.0	14.0	65 / 68	5	<b>96980</b>	<b>97985</b>

### metric thread - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	50	<b>97967</b>
M16 x 1.5	4.0 - 8.0	8.0	19	50	<b>97968</b>
M16 x 1.5	5.0 - 10.0	8.0	22	50	<b>97969</b>
M20 x 1.5	6.0 - 12.0	9.0	24	50	<b>97970</b>
M20 x 1.5	10.0 - 14.0	9.0	27	50	<b>97971</b>
M25 x 1.5	13.0 - 18.0	11.0	33	50	<b>97972</b>
M32 x 1.5	18.0 - 25.0	11.0	42	25	<b>97973</b>
M40 x 1.5	22.0 - 32.0	13.0	53	10	<b>97974</b>
M50 x 1.5	32.0 - 38.0	13.0	60	5	<b>97975</b>
M63 x 1.5	37.0 - 44.0	14.0	65 / 68	5	<b>97976</b>

### metric thread - with reducing seal - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
M12 x 1.5	2.0 - 5.0	8.0	15	50	<b>91826</b>
M16 x 1.5	2.0 - 6.0	8.0	19	50	<b>91827</b>
M20 x 1.5	5.0 - 9.0	9.0	24	50	<b>91828</b>
M25 x 1.5	9.0 - 16.0	11.0	33	50	<b>91829</b>
M32 x 1.5	13.0 - 20.0	11.0	42	25	<b>91830</b>
M40 x 1.5	20.0 - 26.0	13.0	53	10	<b>91831</b>
M50 x 1.5	25.0 - 31.0	13.0	60	5	<b>91832</b>
M63 x 1.5	29.0 - 35.0	14.0	65 / 68	5	<b>91833</b>

### PG thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
PG 7	3.0 - 6.5	8.0	15	50	<b>90000</b>	<b>90020</b>
PG 9	4.0 - 8.0	8.0	19	50	<b>90001</b>	<b>90021</b>
PG 11	5.0 - 10.0	8.0	22	50	<b>90002</b>	<b>90022</b>
PG 13.5	6.0 - 12.0	9.0	24	50	<b>90003</b>	<b>90023</b>
PG 16	10.0 - 14.0	10.0	27	50	<b>90004</b>	<b>90024</b>
PG 21	13.0 - 18.0	11.0	33	50	<b>90005</b>	<b>90025</b>
PG 29	18.0 - 25.0	11.0	42	25	<b>90006</b>	<b>90026</b>
PG 36	22.0 - 32.0	13.0	53	10	<b>90007</b>	<b>90027</b>
PG 42	32.0 - 38.0	13.0	60	5	<b>90008</b>	<b>90028</b>
PG 48	37.0 - 44.0	14.0	65	5	<b>90009</b>	<b>90029</b>

### PG thread - with reducing seal

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
PG 7	2.0 - 5.0	8.0	15	50	<b>90010</b>	<b>98290</b>
PG 9	2.0 - 6.0	8.0	19	50	<b>90011</b>	<b>96883</b>
PG 11	3.0 - 7.0	8.0	22	50	<b>90012</b>	<b>96104</b>
PG 13.5	5.0 - 9.0	9.0	24	50	<b>90013</b>	<b>96544</b>
PG 16	7.0 - 12.0	10.0	27	50	<b>90014</b>	<b>96105</b>
PG 21	9.0 - 16.0	11.0	33	50	<b>90015</b>	<b>97306</b>
PG 29	13.0 - 20.0	11.0	42	25	<b>90016</b>	<b>96403</b>
PG 36	20.0 - 26.0	13.0	53	10	<b>90017</b>	<b>98202</b>
PG 42	25.0 - 31.0	13.0	60	5	<b>90018</b>	<b>98203</b>
PG 48	29.0 - 35.0	14.0	65	5	<b>90019</b>	<b>98204</b>

### PG thread - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
PG 7	3.0 - 6.5	8.0	15	50	<b>96106</b>
PG 9	4.0 - 8.0	8.0	19	50	<b>96107</b>
PG 11	5.0 - 10.0	8.0	22	50	<b>96108</b>
PG 13.5	6.0 - 12.0	9.0	24	50	<b>96456</b>
PG 16	10.0 - 14.0	10.0	27	50	<b>96455</b>
PG 21	13.0 - 18.0	11.0	33	50	<b>96912</b>
PG 29	18.0 - 25.0	11.0	42	25	<b>97802</b>
PG 36	22.0 - 32.0	13.0	53	10	<b>97803</b>
PG 42	32.0 - 38.0	13.0	60	5	<b>97965</b>
PG 48	37.0 - 44.0	14.0	65	5	<b>97966</b>

### PG thread - with reducing seal - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
PG 7	2.0 - 5.0	8.0	15	50	<b>91816</b>
PG 9	2.0 - 6.0	8.0	19	50	<b>91817</b>
PG 11	3.0 - 7.0	8.0	22	50	<b>91818</b>
PG 13.5	5.0 - 9.0	9.0	24	50	<b>91819</b>
PG 16	7.0 - 12.0	10.0	27	50	<b>91820</b>
PG 21	9.0 - 16.0	11.0	33	50	<b>91821</b>
PG 29	13.0 - 20.0	11.0	42	25	<b>91822</b>
PG 36	20.0 - 26.0	13.0	53	10	<b>91823</b>
PG 42	25.0 - 31.0	13.0	60	5	<b>91824</b>
PG 48	29.0 - 35.0	14.0	65	5	<b>91825</b>

### NPT thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
NPT 3/8"	4.0 - 8.0	15.0	19 / 22	50	<b>91630</b>	<b>91637</b>
NPT 1/2"	6.0 - 12.0	13.0	24	50	<b>91631</b>	<b>91638</b>
NPT 1/2"	10.0 - 14.0	13.0	27	50	<b>91632</b>	<b>91639</b>
NPT 3/4"	13.0 - 18.0	14.0	33	50	<b>91633</b>	<b>91640</b>
NPT 1"	18.0 - 25.0	19.0	42	25	<b>91634</b>	<b>91641</b>

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
NPT 1 1/4"	18.0 - 25.0	16.0	42 / 46	10	<b>91635</b>	<b>91642</b>
NPT 1 1/2"	22.0 - 32.0	20.0	53	5	<b>91636</b>	<b>91643</b>

### NPT thread - with reducing seal

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
NPT 3/8"	2.0 - 6.0	15.0	19 / 22	50	<b>92610</b>	<b>92620</b>
NPT 1/2"	5.0 - 9.0	13.0	24	50	<b>92611</b>	<b>92621</b>
NPT 1/2"	7.0 - 12.0	13.0	27	50	<b>92612</b>	<b>92622</b>
NPT 3/4"	9.0 - 16.0	14.0	33	50	<b>92613</b>	<b>92623</b>
NPT 1"	13.0 - 20.0	19.0	42	25	<b>92614</b>	<b>92624</b>
NPT 1 1/4"	13.0 - 20.0	16.0	42 / 46	10	<b>92615</b>	<b>92625</b>
NPT 1 1/2"	20.0 - 26.0	20.0	53	5	<b>92616</b>	<b>92626</b>

### NPT thread - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
NPT 3/8"	4.0 - 8.0	15.0	19 / 22	50	<b>91644</b>
NPT 1/2"	6.0 - 12.0	13.0	24	50	<b>91645</b>
NPT 1/2"	10.0 - 14.0	13.0	27	50	<b>91646</b>
NPT 3/4"	13.0 - 18.0	14.0	33	50	<b>91647</b>
NPT 1"	18.0 - 25.0	19.0	42	25	<b>91648</b>
NPT 1 1/4"	18.0 - 25.0	16.0	42 / 46	10	<b>91649</b>
NPT 1 1/2"	22.0 - 32.0	20.0	53	5	<b>91650</b>

### NPT thread - with reducing seal - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
NPT 3/8"	2.0 - 6.0	15.0	19 / 22	50	<b>92630</b>
NPT 1/2"	5.0 - 9.0	13.0	24	50	<b>92631</b>
NPT 1/2"	7.0 - 12.0	13.0	27	50	<b>92632</b>
NPT 3/4"	9.0 - 16.0	14.0	33	50	<b>92633</b>
NPT 1"	13.0 - 20.0	19.0	42	25	<b>92634</b>
NPT 1 1/4"	13.0 - 20.0	16.0	42 / 46	10	<b>92635</b>
NPT 1 1/2"	20.0 - 26.0	20.0	53	5	<b>92636</b>



## TECHNICAL DATA

### PA cable gland

#### Temperature range

-40°C to +100°C

#### Protection class

IP 68 - 10 bar / IP 69K - within the specific clamping range with additional o-ring

## ■ STRUCTURE

- Material: Polyamide (PA) 6, V0 acc. to UL 94
- Seal: Nitrile butadiene rubber (NBR)
- with long threaded connection

## ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- For the intrinsically safe area, type "i" cable glands in blue, RAL 5012, are used.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
M12 x 1.5	3.0 - 6.5	15.0	15	50	<b>91690</b>	<b>91700</b>
M16 x 1.5	4.0 - 8.0	15.0	19	50	<b>91691</b>	<b>91701</b>
M16 x 1.5	5.0 - 10.0	15.0	22	50	<b>99841</b>	<b>99849</b>
M20 x 1.5	6.0 - 12.0	15.0	24	50	<b>99842</b>	<b>99850</b>
M20 x 1.5	10.0 - 14.0	15.0	27	50	<b>99843</b>	<b>99851</b>
M25 x 1.5	13.0 - 18.0	15.0	33	50	<b>99844</b>	<b>99852</b>
M32 x 1.5	18.0 - 25.0	15.0	42	25	<b>99845</b>	<b>99853</b>
M40 x 1.5	22.0 - 32.0	18.0	53	10	<b>99846</b>	<b>99854</b>
M50 x 1.5	32.0 - 38.0	18.0	60	5	<b>99847</b>	<b>99855</b>
M63 x 1.5	37.0 - 44.0	18.0	65 / 68	5	<b>99848</b>	<b>99856</b>

## metric thread - with reducing seal

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
M20 x 1.5	5.0 - 9.0	15.0	24	50	<b>91692</b>	<b>91702</b>
M25 x 1.5	9.0 - 16.0	15.0	33	50	<b>91693</b>	<b>91703</b>
M32 x 1.5	13.0 - 20.0	15.0	42	25	<b>91694</b>	<b>91704</b>
M40 x 1.5	20.0 - 26.0	18.0	53	10	<b>91695</b>	<b>91705</b>
M50 x 1.5	25.0 - 31.0	18.0	60	5	<b>91696</b>	<b>91706</b>
M63 x 1.5	29.0 - 35.0	18.0	65 / 68	5	<b>91697</b>	<b>91707</b>

## metric thread - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
M12 x 1.5	3.0 - 6.5	15.0	15	50	<b>91710</b>
M16 x 1.5	4.0 - 8.0	15.0	19	50	<b>91711</b>
M16 x 1.5	5.0 - 10.0	15.0	22	50	<b>99857</b>
M20 x 1.5	6.0 - 12.0	15.0	24	50	<b>99858</b>
M20 x 1.5	10.0 - 14.0	15.0	27	50	<b>99859</b>
M25 x 1.5	13.0 - 18.0	15.0	33	50	<b>99860</b>
M32 x 1.5	18.0 - 25.0	15.0	42	25	<b>99861</b>
M40 x 1.5	22.0 - 32.0	18.0	53	10	<b>99862</b>
M50 x 1.5	32.0 - 38.0	18.0	60	5	<b>99863</b>
M63 x 1.5	37.0 - 44.0	18.0	65 / 68	5	<b>99864</b>

## metric thread - with reducing seal - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012)
					Part no.
M20 x 1.5	5.0 - 9.0	15.0	24	50	<b>91712</b>
M25 x 1.5	9.0 - 16.0	15.0	33	50	<b>91713</b>
M32 x 1.5	13.0 - 20.0	15.0	42	25	<b>91714</b>
M40 x 1.5	20.0 - 26.0	18.0	53	10	<b>91715</b>
M50 x 1.5	25.0 - 31.0	18.0	60	5	<b>91716</b>
M63 x 1.5	29.0 - 35.0	18.0	65 / 68	5	<b>91717</b>

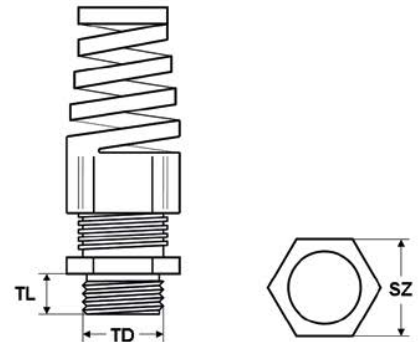
## PG thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
PG 7	3.0 - 6.5	15.0	15	50	<b>90040</b>	<b>97418</b>
PG 9	4.0 - 8.0	15.0	19	50	<b>90041</b>	<b>97419</b>
PG 11	5.0 - 10.0	15.0	22	50	<b>90042</b>	<b>96405</b>
PG 13.5	6.0 - 12.0	15.0	24	50	<b>90043</b>	<b>96404</b>
PG 16	10.0 - 14.0	15.0	27	50	<b>90044</b>	<b>96003</b>
PG 21	13.0 - 18.0	15.0	33	50	<b>90045</b>	<b>97767</b>
PG 29	18.0 - 25.0	15.0	42	25	<b>90046</b>	<b>96004</b>
PG 36	22.0 - 32.0	18.0	53	10	<b>90047</b>	<b>96253</b>
PG 42	32.0 - 38.0	18.0	60	5	<b>90048</b>	<b>96254</b>
PG 48	37.0 - 44.0	18.0	65	5	<b>90049</b>	<b>96256</b>

## PG thread - for intrinsically safe application

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	blue (RAL 5012) Part no.
PG 7	3.0 - 6.5	15.0	15	50	<b>91680</b>
PG 9	4.0 - 8.0	15.0	19	50	<b>91681</b>
PG 11	5.0 - 10.0	15.0	22	50	<b>91682</b>
PG 13.5	6.0 - 12.0	15.0	24	50	<b>91683</b>
PG 16	10.0 - 14.0	15.0	27	50	<b>91684</b>
PG 21	13.0 - 18.0	15.0	33	50	<b>91685</b>
PG 29	18.0 - 25.0	15.0	42	25	<b>91686</b>
PG 36	22.0 - 32.0	18.0	53	10	<b>91687</b>
PG 42	32.0 - 38.0	18.0	60	5	<b>91688</b>
PG 48	37.0 - 44.0	18.0	65	5	<b>91689</b>





## TECHNICAL DATA

### PA cable gland

<b>Temperature range</b>	-40°C to +100°C
<b>Protection class</b>	IP 68 - 10 bar / IP 69K - within the specific clamping range with additional o-ring

### ■ STRUCTURE

- Material: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- with anti-kink spiral

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

## metric thread

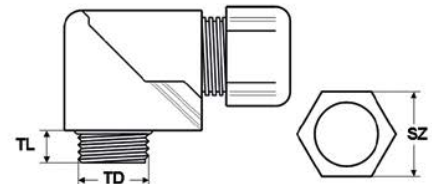
Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	50	<b>98005</b>	<b>98011</b>
M16 x 1.5	4.0 - 8.0	8.0	19	50	<b>98006</b>	<b>98012</b>
M20 x 1.5	6.0 - 12.0	9.0	24	50	<b>98008</b>	<b>98014</b>
M20 x 1.5	10.0 - 14.0	9.0	27	25	<b>98009</b>	<b>98015</b>
M25 x 1.5	13.0 - 18.0	11.0	33	20	<b>98010</b>	<b>98016</b>

## PG thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
PG 7	3.0 - 6.5	8.0	15	50	<b>90320</b>	<b>90326</b>
PG 9	4.0 - 8.0	8.0	19	50	<b>90321</b>	<b>90327</b>
PG 11	5.0 - 10.0	8.0	22	50	<b>90322</b>	<b>90328</b>
PG 13.5	6.0 - 12.0	9.0	24	50	<b>90323</b>	<b>90329</b>
PG 16	10.0 - 14.0	10.0	27	25	<b>90324</b>	<b>90330</b>
PG 21	13.0 - 18.0	11.0	33	20	<b>90325</b>	<b>90331</b>

## NPT thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
NPT 3/8"	4.0 - 8.0	15.0	22 / 19	50	<b>92300</b>	<b>92305</b>
NPT 1/2"	6.0 - 12.0	13.0	24	50	<b>92301</b>	<b>92306</b>
NPT 1/2"	10.0 - 14.0	13.0	27	25	<b>92302</b>	<b>92307</b>
NPT 3/4"	13.0 - 18.0	14.0	33	20	<b>92303</b>	<b>92308</b>



## TECHNICAL DATA

### PA elbow gland

Temperature range	-40°C to +100°C
Protection class	IP 68

### ■ STRUCTURE

- Material: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For simple cable insertion. The profile can be re-opened at any time.

### ■ NOTES

- Elbow gland with NPT thread without O-Ring
- Legend:  
Dimensions  
TL - Thread Length  
TD - Thread Diameter  
SZ - Spanner Size

## metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
M16 x 1.5	4.0 - 8.0	8.0	19	25	<b>91284</b>	<b>91840</b>
M20 x 1.5	6.0 - 12.0	9.0	24	25	<b>91285</b>	<b>91841</b>
M25 x 1.5	13.0 - 18.0	11.0	33	10	<b>91286</b>	<b>91842</b>
M32 x 1.5	18.0 - 25.0	11.0	42	5	<b>91287</b>	<b>91843</b>

## PG thread

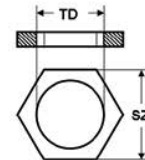
Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
PG 9	4.0 - 8.0	8.0	19	25	<b>96981</b>	<b>96581</b>
PG 11	5.0 - 10.0	8.0	22	25	<b>96982</b>	<b>96103</b>

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
PG 13.5	6.0 - 12.0	9.0	24	25	<b>96983</b>	<b>96582</b>
PG 16	10.0 - 14.0	10.0	27	25	<b>96984</b>	<b>96583</b>
PG 21	13.0 - 18.0	11.0	33	10	<b>96985</b>	<b>96584</b>
PG 29	18.0 - 25.0	11.0	42	5	<b>96986</b>	<b>96406</b>

## NPT thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	black (RAL 9005)
					Part no.	Part no.
NPT 3/8"	4.0 - 8.0	15.0	19	25	<b>92690</b>	<b>92700</b>
NPT 1/2"	6.0 - 12.0	13.0	24	25	<b>92691</b>	<b>92701</b>
NPT 1/2"	10.0 - 14.0	13.0	27	25	<b>92692</b>	<b>92702</b>
NPT 3/4"	13.0 - 18.0	13.0	33	20	<b>92693</b>	<b>92703</b>
NPT 1"	18.0 - 25.0	19.0	42	5	<b>92694</b>	<b>92704</b>

# KMK-PA-MB



## TECHNICAL DATA

PA counter nut

Temperature range -40°C to +100°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- with collar

## ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- Has a bigger sealing area - sealing with an additional O-ring will be simplified.

## ■ NOTES

- Legend:  
SZ - Spanner Size  
TD - Thread Diameter

### metric thread – female

Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
M12 x 1.5	18	100	<b>97816</b>	<b>94260</b>	<b>98163</b>
M16 x 1.5	22	100	<b>97817</b>	<b>94261</b>	<b>98164</b>
M20 x 1.5	26	100	<b>97818</b>	<b>94262</b>	<b>98165</b>
M25 x 1.5	32	100	<b>97819</b>	<b>94263</b>	<b>98166</b>
M32 x 1.5	41	100	<b>97820</b>	<b>94264</b>	<b>98167</b>
M40 x 1.5	50	50	<b>97821</b>	<b>94265</b>	<b>98168</b>
M50 x 1.5	60	50	<b>97822</b>	<b>94266</b>	<b>98169</b>
M63 x 1.5	75	25	<b>97823</b>	<b>94267</b>	<b>98170</b>

### PG thread – female

Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
PG 7	19	100	<b>90710</b>	<b>94250</b>	<b>96458</b>
PG 9	22	100	<b>90711</b>	<b>94251</b>	<b>96228</b>
PG 11	24	100	<b>90712</b>	<b>94252</b>	<b>96459</b>

# KMK-PA-MB

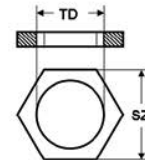
Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
PG 13.5	27	100	<b>90713</b>	<b>94253</b>	<b>96460</b>
PG 16	30	100	<b>90714</b>	<b>94254</b>	<b>96461</b>
PG 21	36	100	<b>90715</b>	<b>94255</b>	<b>96176</b>
PG 29	46	50	<b>90716</b>	<b>94256</b>	<b>96177</b>
PG 36	60	25	<b>90717</b>	<b>94257</b>	<b>96462</b>
PG 42	65	25	<b>90718</b>	<b>94258</b>	<b>96463</b>
PG 48	70	25	<b>90719</b>	<b>94259</b>	<b>96464</b>

## NPT thread – female

Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
NPT 3/8"	22	100	<b>97317</b>	<b>90870</b>	<b>90875</b>
NPT 1/2"	27	100	<b>97316</b>	<b>90871</b>	<b>90876</b>
NPT 3/4"	33	100	<b>97315</b>	<b>90872</b>	<b>90877</b>
NPT 1"	47	100	<b>98366</b>	-	-
NPT 1"	47	50	-	<b>90873</b>	<b>90878</b>

# KMK-PA-OB

without collar



## TECHNICAL DATA

PA counter nut

Temperature range -40°C to +100°C

## STRUCTURE

- Material: Polyamide (PA) 6

## PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

## APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## NOTES

- Legend:  
SZ - Spanner Size  
TD - Thread Diameter

### metric thread – female

Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
M12 x 1.5	18	100	<b>94630</b>	<b>94640</b>	<b>94650</b>
M16 x 1.5	22	100	<b>94631</b>	<b>94641</b>	<b>94651</b>
M20 x 1.5	26	100	<b>94632</b>	<b>94642</b>	<b>94652</b>
M25 x 1.5	32	100	<b>94633</b>	<b>94643</b>	<b>94653</b>
M32 x 1.5	41	100	<b>94634</b>	<b>94644</b>	<b>94654</b>
M40 x 1.5	50	50	<b>94635</b>	<b>94645</b>	<b>94655</b>
M50 x 1.5	60	50	<b>94636</b>	<b>94646</b>	<b>94656</b>
M63 x 1.5	75	25	<b>94637</b>	<b>94647</b>	<b>94657</b>

### PG thread – female

Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
PG 7	19	100	<b>94270</b>	<b>94280</b>	<b>94290</b>
PG 9	22	100	<b>94271</b>	<b>94281</b>	<b>94291</b>
PG 11	24	100	<b>94272</b>	<b>94282</b>	<b>94292</b>
PG 13.5	27	100	<b>94273</b>	<b>94283</b>	<b>94293</b>

# KMK-PA-OB

without collar

Size	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
			(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
PG 16	30	100	<b>94274</b>	<b>94284</b>	<b>94294</b>
PG 21	36	100	<b>94275</b>	<b>94285</b>	<b>94295</b>
PG 29	46	50	<b>94276</b>	<b>94286</b>	<b>94296</b>
PG 36	60	25	<b>94277</b>	<b>94287</b>	<b>94297</b>
PG 42	65	25	<b>94278</b>	<b>94288</b>	<b>94298</b>
PG 48	70	25	<b>94279</b>	<b>94289</b>	<b>94299</b>





## TECHNICAL DATA

Nickel plated brass cable gland

**Temperature range** -20°C to +100°C  
short term -40°C to +150°C

**Protection class** IP 68 - 5 bar / IP 66

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90760	M12 x 1.5	3.0 - 6.5	6.0	14	50
99960	M16 x 1.5	5.0 - 10.0	7.0	20	50
90762	M20 x 1.5	6.0 - 12.0	8.0	22	50
99961	M25 x 1.5	11.0 - 17.0	8.0	27	25
94624	M32 x 1.5	15.0 - 21.0	8.0	34	10
99962	M40 x 1.5	19.0 - 28.0	9.0	43	10
99963	M50 x 1.5	27.0 - 38.0	9.0	58	5
90767	M63 x 1.5	34.0 - 44.0	10.0	64 / 68	5
906199	M63 x 1.5	37.0 - 53.0	10.0	75	5

#### metric thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
903560	M12 x 1.5	2.0 - 5.0	6.0	14	50
903561	M16 x 1.5	2.0 - 6.0	7.0	17 / 18	50
903562	M20 x 1.5	5.0 - 9.0	8.0	22	50
903563	M25 x 1.5	7.0 - 12.0	8.0	24 / 27	25

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
903564	M32 x 1.5	9.0 - 16.0	9.0	30 / 34	10
903565	M40 x 1.5	12.0 - 20.0	9.0	40 / 43	10
903566	M50 x 1.5	20.0 - 26.0	9.0	50 / 55	5
903567	M63 x 1.5	29.0 - 35.0	14.0	64 / 68	5

## PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90750	PG 7	3.0 - 6.5	6.0	14	50
90751	PG 9	4.0 - 8.0	6.0	17	50
90752	PG 11	5.0 - 10.0	6.0	20	50
90753	PG 13.5	6.0 - 12.0	6.5	22	50
90754	PG 16	10.0 - 14.0	6.5	24	25
90755	PG 21	13.0 - 18.0	7.2	30	25
90756	PG 29	18.0 - 25.0	8.0	40	10
90757	PG 36	22.0 - 32.0	9.0	50	5
90758	PG 42	30.0 - 38.0	12.0	58	5
90759	PG 48	34.0 - 44.0	14.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99965	NPT 3/8"	4.0 - 8.0	11.5	17 / 19	50
99966	NPT 1/2"	6.0 - 12.0	13.0	22	50
99967	NPT 3/4"	13.0 - 18.0	13.0	30	25
99968	NPT 1"	18.0 - 25.0	13.0	40 / 43	10



## TECHNICAL DATA

Nickel plated brass cable gland

Temperature range -40°C to +100°C  
 Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for high performance applications

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98285	M12 x 1.5	3.0 - 6.5	6.5	14	50
90292	M16 x 1.5	4.0 - 8.0	6.0	17 / 19	50
98033	M16 x 1.5	5.0 - 10.0	6.0	20	50
90293	M20 x 1.5	6.0 - 12.0	6.0	22	50
98034	M20 x 1.5	10.0 - 14.0	6.0	24	50
90294	M25 x 1.5	13.0 - 18.0	7.0	30	25
90295	M32 x 1.5	18.0 - 25.0	8.0	40	25
90296	M40 x 1.5	22.0 - 32.0	8.0	50	10
90297	M50 x 1.5	32.0 - 38.0	9.0	57	5
90298	M63 x 1.5	37.0 - 44.0	10.0	64 / 68	5

#### metric thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98035	M12 x 1.5	2.0 - 5.0	6.5	14	50
98036	M16 x 1.5	2.0 - 6.0	6.0	17 / 19	50

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98038	M20 x 1.5	5.0 - 9.0	6.0	22	50
98040	M25 x 1.5	9.0 - 16.0	7.0	30	25
98041	M32 x 1.5	13.0 - 20.0	8.0	40	25
98042	M40 x 1.5	20.0 - 26.0	8.0	50	10
98043	M50 x 1.5	25.0 - 31.0	9.0	57	5
98044	M63 x 1.5	29.0 - 35.0	10.0	64 / 68	5

## PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90300	PG 7	3.0 - 6.5	5.0	14	50
90301	PG 9	4.0 - 8.0	6.0	17	50
90302	PG 11	5.0 - 10.0	6.0	20	50
90303	PG 13.5	6.0 - 12.0	6.5	22	50
90304	PG 16	10.0 - 14.0	6.5	24	50
90305	PG 21	13.0 - 18.0	7.0	30	25
90306	PG 29	18.0 - 25.0	8.0	40	25
90307	PG 36	22.0 - 32.0	8.0	50	10
90308	PG 42	32.0 - 38.0	9.0	57	5
90309	PG 48	37.0 - 44.0	10.0	64	5

## PG thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99208	PG 7	2.0 - 5.0	5.0	14	50
99209	PG 9	2.0 - 6.0	6.0	17	50
99210	PG 11	3.0 - 7.0	6.0	20	50
99211	PG 13.5	5.0 - 9.0	6.5	22	50
99212	PG 16	7.0 - 12.0	6.5	24	50
99213	PG 21	9.0 - 16.0	7.0	30	25
99214	PG 29	13.0 - 20.0	8.0	40	25
99215	PG 36	20.0 - 26.0	8.0	50	10
99216	PG 42	25.0 - 31.0	9.0	57	5
99217	PG 48	29.0 - 35.0	10.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
91845	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	50
91846	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50
91847	NPT 3/4"	13.0 - 18.0	13.0	30	25
91848	NPT 1"	18.0 - 25.0	19.0	40	25

## NPT thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
96678	NPT 3/8"	2.0 - 6.0	15.0	17 / 19	50
97103	NPT 1/2"	5.0 - 9.0	13.0	22 / 24	50
97661	NPT 3/4"	9.0 - 16.0	13.0	30	25
97662	NPT 1"	13.0 - 20.0	19.0	40	25



## TECHNICAL DATA

Nickel plated brass cable gland

Temperature range -40°C to +100°C  
Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)
- with long threaded connection

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
91720	M12 x 1.5	3.0 - 6.5	10.0	14	50
91721	M16 x 1.5	4.0 - 8.0	10.0	17 / 19	50
94559	M20 x 1.5	10.0 - 14.0	10.0	24	50
903527	M25 x 1.5	13.0 - 18.0	12.0	30	25
93539	M32 x 1.5	18.0 - 25.0	12.0	40	25
91725	M40 x 1.5	20.0 - 26.0	15.0	50	10
91726	M50 x 1.5	25.0 - 31.0	15.0	57	5
91727	M63 x 1.5	29.0 - 35.0	15.0	64 / 68	5

#### metric thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
91722	M20 x 1.5	5.0 - 9.0	10.0	22	50
91723	M25 x 1.5	9.0 - 16.0	12.0	30	25
91724	M32 x 1.5	13.0 - 20.0	12.0	40	25

# HSK-MS-L



## PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90310	PG 7	3.0 - 6.5	10.0	14	50
90311	PG 9	4.0 - 8.0	10.0	17	50
90312	PG 11	5.0 - 10.0	10.0	20	50
90313	PG 13.5	6.0 - 12.0	10.0	22	50
90314	PG 16	10.0 - 14.0	10.0	24	50
90315	PG 21	13.0 - 18.0	12.0	30	25
90316	PG 29	18.0 - 25.0	12.0	40	25
90317	PG 36	22.0 - 32.0	15.0	50	10
90318	PG 42	32.0 - 38.0	15.0	57	5
90319	PG 48	37.0 - 44.0	15.0	64	5



## TECHNICAL DATA

Nickel plated brass cable gland

Temperature range -40°C to +100°C  
 Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)
- Anti-kink spring: Stainless steel ( 1.4310)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- with anti-kink spiral

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92917	M12 x 1.5	3.0 - 6.5	6.5	14	50
92918	M16 x 1.5	4.0 - 8.0	6.0	19	50
92919	M16 x 1.5	5.0 - 10.0	6.0	20	50
92920	M20 x 1.5	6.0 - 12.0	6.0	22	50
92921	M20 x 1.5	10.0 - 14.0	6.0	24	25
92922	M25 x 1.5	13.0 - 18.0	7.0	30	20

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92911	PG 7	3.0 - 6.5	5.0	14	50
92912	PG 9	4.0 - 8.0	6.0	17	50
92913	PG 11	5.0 - 10.0	6.0	20	50
92914	PG 13.5	6.0 - 12.0	6.5	22	50
92915	PG 16	10.0 - 14.0	6.5	24	25
92916	PG 21	13.0 - 18.0	7.0	30	20

# HSK-MS-B



## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92923	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	50
92924	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50
92925	NPT 3/4"	13.0 - 18.0	13.0	33	20





## TECHNICAL DATA

Nickel plated brass sealing gland

Temperature range -40°C to +130°C  
 Protection class IP 68 - 10 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: thermoplastic elastomers (TPE)
- with colour-coded TPE inserts

### ■ PROPERTIES

- optimum strain relief through rubber seal
- easy to assemble, time and cost savings
- Large-area sealing
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

## metric thread

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904061	M12 x 1.5	yellow / short	4.0 - 6.5	5.0	14	50
904062	M16 x 1.5	yellow	4.0 - 6.5	6.0	18	50
904063	M16 x 1.5	grey	5.0 - 8.0	6.0	18	50
904064	M16 x 1.5	black	6.5 - 9.5	6.0	18	50
904065	M20 x 1.5	yellow	4.0 - 6.5	6.5	22	50
904066	M20 x 1.5	grey	5.0 - 8.0	6.5	22	50
904067	M20 x 1.5	black	6.5 - 9.5	6.5	22	50
904068	M20 x 1.5	green	7.0 - 10.5	6.5	22	50
904069	M20 x 1.5	red	9.0 - 13.0	6.5	22	50
904070	M25 x 1.5	yellow	4.0 - 6.5	7.5	28	50
904071	M25 x 1.5	grey	5.0 - 8.0	7.5	28	50
904072	M25 x 1.5	black	6.5 - 9.5	7.5	28	50
904073	M25 x 1.5	green	7.0 - 10.5	7.5	28	50
904074	M25 x 1.5	red	9.0 - 13.0	7.5	28	50
904075	M25 x 1.5	white	11.5 - 15.5	7.5	28	50
904076	M32 x 1.5	green	7.0 - 10.5	8.0	35	25
904077	M32 x 1.5	red	9.0 - 13.0	8.0	35	25
904078	M32 x 1.5	white	11.5 - 15.5	8.0	35	25
904079	M32 x 1.5	blue	14.0 - 18.0	8.0	35	25
904080	M32 x 1.5	brown	17.0 - 20.5	8.0	35	25

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904081	M40 x 1.5	blue	14.0 - 18.0	8.0	43	10
904082	M40 x 1.5	brown	17.0 - 20.5	8.0	43	10
904083	M40 x 1.5	orange	20.0 - 25.0	8.0	43	10
904084	M40 x 1.5	light yellow	24.0 - 28.0	8.0	43	10
904085	M50 x 1.5	anthracite	27.0 - 32.0	10.0	54	5
904086	M50 x 1.5	light blue	29.0 - 34.0	10.0	54	5
904087	M50 x 1.5	pink	32.0 - 36.0	10.0	54	5

## PG thread

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904088	PG 7	yellow	4.0 - 6.5	5.0	14	50
904089	PG 9	yellow	4.0 - 6.5	6.0	17	50
904090	PG 9	grey	5.0 - 8.0	6.0	17	50
904091	PG 9	black	6.5 - 9.5	6.0	17	50
904092	PG 11	yellow	4.0 - 6.5	6.0	20	50
904094	PG 11	black	6.5 - 9.5	6.0	20	50
904095	PG 11	green	7.0 - 10.5	6.0	20	50
904100	PG 13.5	red	9.0 - 13.0	6.5	22	50
904102	PG 16	grey	5.0 - 8.0	6.5	24	50
904103	PG 16	black	6.5 - 9.5	6.5	24	50
904105	PG 16	red	9.0 - 13.0	6.5	24	50
904106	PG 16	white	11.5 - 15.5	6.5	24	50
904107	PG 21	green	7.0 - 10.5	7.0	30	25
904108	PG 21	red	9.0 - 13.0	7.0	30	25
904109	PG 21	white	11.5 - 15.5	7.0	30	25
904110	PG 21	blue	14.0 - 18.0	7.0	30	25
904111	PG 21	brown	17.0 - 20.5	7.0	30	25
904112	PG 29	blue	14.0 - 18.0	8.0	40	10
904113	PG 29	brown	17.0 - 20.5	8.0	40	10
904114	PG 29	orange	20.0 - 25.0	8.0	40	10
904115	PG 29	light yellow	24.0 - 28.0	8.0	40	10
904116	PG 36	anthracite	27.0 - 32.0	9.0	50	10
904117	PG 36	light blue	29.0 - 34.0	9.0	50	10
904118	PG 36	pink	32.0 - 36.0	9.0	50	10
904119	PG 42	white	36.0 - 40.0	10.0	57	5
904120	PG 48	white	39.0 - 44.0	10.0	64	5



## TECHNICAL DATA

Nickel plated brass sealing gland

Temperature range -40°C to +130°C  
 Protection class IP 65

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: thermoplastic elastomers (TPE)
- with multiple TPE sealing inserts

### ■ PROPERTIES

- optimum strain relief through rubber seal
- easy to assemble, time and cost savings
- Large-area sealing

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Protection classification IP 68, provided that the bore diameter in the sealing insert area is equal to the cable diameter.
- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

## metric thread

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904125	M16 x 1.5	2 x 1.2	9.0	19	50
904126	M16 x 1.5	2 x 3.0	9.0	19	50
905024	M16 x 1.5	3 x 3.0	9.0	19	50
904127	M16 x 1.5	4 x 3.0	6.0	19	50
904128	M16 x 1.5	2 x 4.0	9.0	19	50
904129	M16 x 1.5	1 x 5.0	9.0	19	50
904130	M20 x 1.5	6 x 2.0	9.0	24	50
904131	M20 x 1.5	2 x 2.3	9.0	24	50
904132	M20 x 1.5	6 x 2.5	9.0	24	50
904133	M20 x 1.5	2 x 3.0	9.0	24	50
904134	M20 x 1.5	3 x 3.0	9.0	24	50
904135	M20 x 1.5	2 x 5.0	9.0	24	50
904136	M25 x 1.5	7 x 2.0	9.0	30	50
904137	M25 x 1.5	2 x 4.0	9.0	30	50
904138	M25 x 1.5	4 x 4.0	9.0	30	50
904139	M25 x 1.5	6 x 4.0	9.0	30	50
904140	M25 x 1.5	2 x 6.0	9.0	30	50
904141	M25 x 1.5	3 x 7.0	9.0	30	50
904142	M32 x 1.5	21 x 2.0	11.0	36	25
904143	M32 x 1.5	8 x 3.0	11.0	36	25

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904144	M32 x 1.5	6 x 4.0	11.0	36	25
904145	M32 x 1.5	8 x 4.0	11.0	36	25
904146	M32 x 1.5	4 x 5.0	11.0	36	25
904147	M32 x 1.5	4 x 6.0	11.0	36	25
904148	M32 x 1.5	6 x 6.5	11.0	36	25
904149	M32 x 1.5	3 x 7.0	11.0	36	25
904150	M32 x 1.5	4 x 8.0	11.0	36	25
904151	M32 x 1.5	2 x 9.0	11.0	36	25
904152	M40 x 1.5	6 x 6.0	11.5	46	10
904153	M40 x 1.5	10 x 6.0	11.5	46	10
904154	M40 x 1.5	4 x 6.5	11.5	46	10
904155	M40 x 1.5	6 x 8.0	11.5	46	10
904156	M40 x 1.5	4 x 9.0	11.5	46	10
904157	M40 x 1.5	5 x 9.0	11.5	46	10
904158	M40 x 1.5	5 x 10.0	11.5	46	10
904159	M40 x 1.5	2 x 11.0	11.5	46	10
904160	M50 x 1.5	15 x 5.0	14.0	55	5
904161	M50 x 1.5	8 x 9.0	14.0	55	5
904162	M50 x 1.5	3 x 10.0	14.0	55	5
904163	M50 x 1.5	2 x 15.0	14.0	55	5

## PG thread

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904164	PG 9	2 x 1.2	9.0	19	50
904165	PG 9	2 x 3.0	9.0	19	50
904166	PG 9	4 x 3.0	9.0	19	50
904167	PG 9	2 x 4.0	9.0	19	50
904168	PG 9	1 x 5.0	9.0	19	50
904169	PG 11	6 x 2.0	9.0	22	50
904170	PG 11	2 x 2.3	9.0	22	50
904171	PG 11	6 x 2.5	9.0	22	50
904172	PG 11	2 x 3.0	9.0	22	50
904173	PG 11	3 x 3.0	9.0	22	50
904174	PG 11	2 x 5.0	9.0	22	50
904175	PG 13.5	3 x 2.0	9.0	24	50
904176	PG 13.5	10 x 2.0	9.0	24	50
904177	PG 13.5	2 x 3.0	9.0	24	50
904178	PG 13.5	3 x 3.0	9.0	24	50
904179	PG 13.5	6 x 3.5	9.0	24	50
904180	PG 13.5	2 x 5.0	9.0	24	50
904181	PG 13.5	2 x 6.0	9.0	24	50
904182	PG 16	7 x 2.0	9.0	27	50
904183	PG 16	2 x 4.0	9.0	27	50
904184	PG 16	4 x 4.0	9.0	27	50
904185	PG 16	6 x 4.0	9.0	27	50
904186	PG 16	2 x 6.0	9.0	27	50
904187	PG 16	3 x 7.0	9.0	27	50
904188	PG 21	21 x 2.0	11.0	33	25
904189	PG 21	8 x 3.0	11.0	33	25
904190	PG 21	6 x 4.0	11.0	33	25
904191	PG 21	8 x 4.0	11.0	33	25
904192	PG 21	4 x 5.0	11.0	33	25
904193	PG 21	4 x 6.0	11.0	33	25
904194	PG 21	6 x 6.5	11.0	33	25
904195	PG 21	3 x 7.0	11.0	33	25
904196	PG 21	4 x 8.0	11.0	33	25
904197	PG 21	2 x 9.0	11.0	33	25
904198	PG 29	6 x 6.0	11.0	43	10
904199	PG 29	10 x 6.0	11.0	43	10
904200	PG 29	4 x 6.5	11.0	43	10
904201	PG 29	6 x 8.0	11.0	43	10
904202	PG 29	4 x 9.0	11.0	43	10
904203	PG 29	5 x 9.0	11.0	43	10
904204	PG 29	5 x 10.0	11.0	43	10
904205	PG 29	2 x 11.0	11.0	43	10

# UNI-DICHT-MFD-MS



Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904207	PG 36	15 x 5.0	14.0	53	10
904206	PG 36	8 x 9.0	14.0	53	10
904208	PG 36	3 x 10.0	14.0	53	10
904209	PG 36	2 x 15.0	14.0	53	10

# UNI-DICHT-VK-MS



## TECHNICAL DATA

Nickel plated brass gland body

Temperature range up to +200°C

## ■ STRUCTURE

- Material: Brass, nickel plated
- with TPE sealing inserts

## ■ PROPERTIES

- easy to assemble, time and cost savings

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Gland body M20x1.5 (part no. 904212) is populated by inserts PG11; part no. 904213 is used with inserts PG13.5. Part No. 904215 and 904225 cap aperture 18mm. Part No. 904216 and 904226 cap aperture 21mm.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

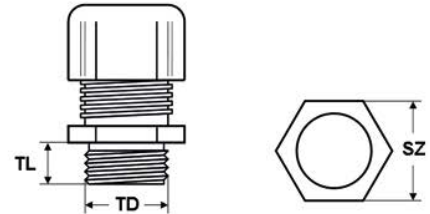
Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904210	M12 x 1.5	5.0	14	50
904211	M16 x 1.5	6.0	18	50
904213	M20 x 1.5	6.5	22	50
904212	M20 x 1.5	6.5	22	50
904214	M25 x 1.5	7.5	28	50
904215	M32 x 1.5	8.0	35	25
904216	M32 x 1.5	8.0	35	25
904217	M40 x 1.5	8.0	43	10
904218	M50 x 1.5	10.0	54	5
904219	M63 x 1.5	10.0	68	5

### PG thread

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904220	PG 7	5.0	14	50
904221	PG 9	6.0	17	50
904222	PG 11	6.0	20	50
904223	PG 13.5	6.5	22	50

# UNI-DICHT-VK-MS

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904224	PG 16	6.5	24	50
904226	PG 21	7.0	30	25
904225	PG 21	7.0	30	25
904227	PG 29	8.0	40	10
904228	PG 36	9.0	50	10
904229	PG 42	10.0	57	5
904230	PG 48	10.0	64	5



## TECHNICAL DATA

Nickel plated brass sealing gland

Temperature range -40°C to +135°C  
Protection class IP 68 - 10 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: thermoplastic vulcanizates (TPV)
- with inserts made of TPV, profile fits to ASI- bus line

### ■ PROPERTIES

- optimum strain relief through rubber seal
- easy to assemble, time and cost savings
- Large-area sealing

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904121	M20 x 1.5	grey, left	-	6.5	22	50
904122	M20 x 1.5	grey, right	-	6.5	22	50

#### PG thread

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904123	PG 13.5	grey, left	-	6.5	22	50
904124	PG 13.5	grey, right	-	6.5	22	50



# KVA-MS



## TECHNICAL DATA

### Nickel plated brass sealing gland

Temperature range	-20°C to +105°C
Protection class	IP 68 - 10 bar

## ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: Soft PVC
- O-ring: Nitrile butadiene rubber (NBR)
- with colour-coded Soft PVC inserts

## ■ PROPERTIES

- easy to assemble, time and cost savings
- Large-area sealing
- large clamping areas

## ■ TESTS

- Test standard EN 60423 (metric thread)

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90800	M12 x 1.5	yellow	4.0 - 6.5	6.0	14	100
90801	M16 x 1.5	yellow	4.0 - 6.5	6.5	17	100
90802	M16 x 1.5	grey	5.0 - 8.0	6.5	17	100
90803	M16 x 1.5	black	6.5 - 9.5	6.5	17	100
90804	M20 x 1.5	yellow	4.0 - 6.5	7.0	22	50
90805	M20 x 1.5	grey	5.0 - 8.0	7.0	22	50
90807	M20 x 1.5	black	6.5 - 9.5	7.0	22	50
90808	M20 x 1.5	green	7.0 - 10.5	7.0	22	50
90809	M20 x 1.5	red	9.0 - 13.0	7.0	22	50
90811	M25 x 1.5	yellow	4.0 - 6.5	7.5	27	50
90812	M25 x 1.5	grey	5.0 - 8.0	7.5	27	50
90813	M25 x 1.5	black	6.5 - 9.5	7.5	27	50
90814	M25 x 1.5	green	7.0 - 10.5	7.5	27	50
90815	M25 x 1.5	red	9.0 - 13.0	7.5	27	50
90816	M25 x 1.5	white	11.5 - 15.5	7.5	27	50
90817	M32 x 1.5	green	7.0 - 10.5	8.0	35	25
90818	M32 x 1.5	red	9.0 - 13.0	8.0	35	25
90819	M32 x 1.5	white	11.5 - 15.5	8.0	35	25
90820	M32 x 1.5	blue	14.0 - 18.0	8.0	35	25
90821	M32 x 1.5	brown	17.0 - 21.0	8.0	35	25

# KVA-MS

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90822	M40 x 1.5	blue	14.0 - 18.0	8.0	43	10
90823	M40 x 1.5	brown	17.0 - 21.0	8.0	43	10
90824	M40 x 1.5	orange	20.0 - 25.0	8.0	43	10
90825	M40 x 1.5	light yellow	24.0 - 28.0	8.0	43	10
90826	M50 x 1.5	anthracite	27.0 - 32.0	10.0	54	10
90827	M50 x 1.5	light blue	29.0 - 34.0	10.0	54	10
90828	M50 x 1.5	pink	32.0 - 37.0	10.0	54	10

## PG thread

Part no.	Size	Sealing insert colour	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90354	PG 7	yellow	4.0 - 6.5	5.0	14	100
90355	PG 9	yellow	4.0 - 6.5	6.0	17	100
90356	PG 9	grey	5.0 - 8.0	6.0	17	100
90357	PG 9	black	6.5 - 9.5	6.0	17	100
96149	PG 11	yellow	4.0 - 6.5	6.0	20	50
90358	PG 11	grey	5.0 - 8.0	6.0	20	50
90359	PG 11	black	6.5 - 9.5	6.0	20	50
90360	PG 11	green	7.0 - 10.5	6.0	20	50
97119	PG 13.5	yellow	4.0 - 6.5	6.5	22	50
97120	PG 13.5	grey	5.0 - 8.0	6.5	22	50
90361	PG 13.5	black	6.5 - 9.5	6.5	22	50
90362	PG 13.5	green	7.0 - 10.5	6.5	22	50
90363	PG 13.5	red	9.0 - 13.0	6.5	22	50
90364	PG 13.5	white	11.0 - 15.5	6.5	24	50
91974	PG 16	yellow	4.0 - 6.5	6.5	24	50
92093	PG 16	grey	5.0 - 8.0	6.5	24	50
90365	PG 16	black	6.5 - 9.5	6.5	24	50
90366	PG 16	green	7.0 - 10.5	6.5	24	50
90367	PG 16	red	9.0 - 13.0	6.5	24	50
90368	PG 16	white	11.5 - 15.0	6.5	24	50
90369	PG 21	green	7.0 - 10.5	7.0	30	25
90370	PG 21	red	9.0 - 13.0	7.0	30	25
90371	PG 21	white	11.5 - 15.5	7.0	30	25
90372	PG 21	blue	14.0 - 18.0	7.0	30	25
90373	PG 21	brown	17.0 - 21.0	7.0	30	25
90374	PG 29	blue	14.0 - 18.0	8.0	40	10
90375	PG 29	brown	17.0 - 21.0	8.0	40	10
90376	PG 29	orange	20.0 - 25.0	8.0	40	10
96526	PG 29	light yellow	24.0 - 28.0	8.0	40	10
90390	PG 36	anthracite	27.0 - 32.0	9.0	50	10
90391	PG 36	light blue	29.0 - 34.0	9.0	50	10
90392	PG 36	pink	32.0 - 37.0	9.0	50	10
90393	PG 42	white	36.0 - 41.0	10.0	60	5
90394	PG 48	white	39.0 - 45.0	10.0	65	10

# KVA-MFD-MS



## TECHNICAL DATA

Nickel plated brass sealing gland

Temperature range -20°C to +105°C  
Protection class IP 68 - 10 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: Soft PVC
- O-ring: Nitrile butadiene rubber (NBR)
- with multiple sealing inserts made of Soft PVC inserts

### ■ PROPERTIES

- easy to assemble, time and cost savings
- Large-area sealing

### ■ TESTS

- Test standard EN 60423 (metric thread)

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Protection class IP 68, if the bore diameter in the sealing insert area is equal to the cable diameter.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

## metric thread

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
93400	M16 x 1.5	2 x 1.0	6.5	17	100
93401	M16 x 1.5	2 x 3.0	6.5	17	100
93402	M16 x 1.5	4 x 3.0	6.5	17	100
93403	M16 x 1.5	2 x 4.0	6.5	17	100
93404	M16 x 1.5	1 x 5.0	6.5	17	100
93405	M20 x 1.5	6 x 2.0	7.0	22	50
93406	M20 x 1.5	2 x 2.3	7.0	22	50
93407	M20 x 1.5	6 x 2.5	7.0	22	50
93408	M20 x 1.5	2 x 3.0	7.0	22	50
93409	M20 x 1.5	3 x 3.0	7.0	22	50
93410	M20 x 1.5	2 x 5.0	7.0	22	50
93411	M25 x 1.5	7 x 2.0	7.5	27	50
93412	M25 x 1.5	2 x 4.0	7.5	27	50
93413	M25 x 1.5	4 x 4.0	7.5	27	50
93414	M25 x 1.5	6 x 4.0	7.5	27	50
93415	M25 x 1.5	2 x 6.0	7.5	27	50
93416	M25 x 1.5	3 x 7.0	7.5	27	50
93417	M32 x 1.5	21 x 2.0	8.0	35	25
93418	M32 x 1.5	8 x 3.0	8.0	35	25
93419	M32 x 1.5	6 x 4.0	8.0	35	25

# KVA-MFD-MS

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
93420	M32 x 1.5	8 x 4.0	8.0	35	25
93421	M32 x 1.5	4 x 5.0	8.0	35	25
93422	M32 x 1.5	4 x 6.0	8.0	35	25
93423	M32 x 1.5	6 x 6.5	8.0	35	25
93424	M32 x 1.5	3 x 7.0	8.0	35	25
93425	M32 x 1.5	4 x 8.0	8.0	35	25
93426	M32 x 1.5	2 x 9.0	8.0	35	25
93429	M40 x 1.5	6 x 6.0	8.0	43	10
93427	M40 x 1.5	10 x 6.0	8.0	43	10
93428	M40 x 1.5	4 x 6.5	8.0	43	10
93430	M40 x 1.5	6 x 8.0	8.0	43	10
93431	M40 x 1.5	4 x 9.0	8.0	43	10
93432	M40 x 1.5	5 x 9.0	8.0	43	10
93433	M40 x 1.5	5 x 10.0	8.0	43	10
93434	M40 x 1.5	2 x 11.0	8.0	43	10
93436	M50 x 1.5	15 x 5.0	10.0	54	10
93435	M50 x 1.5	8 x 9.0	10.0	54	10
93437	M50 x 1.5	3 x 10.0	10.0	54	10
93438	M50 x 1.5	2 x 15.0	10.0	54	10

## PG thread

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92094	PG 9	2 x 1.0	6.0	17	100
92039	PG 9	2 x 3.0	6.0	17	100
92041	PG 9	4 x 3.0	6.0	17	100
92042	PG 9	2 x 4.0	6.0	17	100
92043	PG 9	1 x 5.0	6.0	17	100
92044	PG 11	6 x 2.0	6.0	20	50
92045	PG 11	2 x 2.3	6.0	20	50
92046	PG 11	6 x 2.5	6.0	20	50
92047	PG 11	2 x 3.0	6.0	20	50
92048	PG 11	3 x 3.0	6.0	20	50
96881	PG 11	2 x 5.0	6.0	20	50
92052	PG 13.5	3 x 2.0	6.5	24	50
92053	PG 13.5	10 x 2.0	6.5	24	50
92054	PG 13.5	2 x 3.0	6.5	24	50
92055	PG 13.5	3 x 3.0	6.5	24	50
92095	PG 13.5	6 x 3.5	6.5	24	50
92096	PG 13.5	2 x 5.0	6.5	24	50
92057	PG 13.5	2 x 6.0	6.5	24	50
92058	PG 16	7 x 2.0	6.5	24	50
92097	PG 16	2 x 4.0	6.5	24	50
92060	PG 16	4 x 4.0	6.5	24	50
92061	PG 16	6 x 4.0	6.5	24	50
92062	PG 16	2 x 6.0	6.5	24	50
96434	PG 16	3 x 7.0	6.5	24	50
92064	PG 21	21 x 2.0	7.0	30	25
92065	PG 21	8 x 3.0	7.0	30	25
92066	PG 21	6 x 4.0	7.0	30	25
92067	PG 21	8 x 4.0	7.0	30	25
96956	PG 21	4 x 5.0	7.0	30	50
92069	PG 21	4 x 6.0	7.0	30	25
92068	PG 21	6 x 6.5	7.0	30	25
92070	PG 21	3 x 7.0	7.0	30	25
92072	PG 21	4 x 8.0	7.0	30	25
92098	PG 21	2 x 9.0	7.0	30	25
96430	PG 29	6 x 6.0	8.0	40	25
97327	PG 29	10 x 6.0	8.0	40	25
92099	PG 29	4 x 6.5	8.0	40	10
96710	PG 29	6 x 8.0	8.0	40	10
92074	PG 29	4 x 9.0	8.0	40	10
96564	PG 29	5 x 9.0	8.0	40	10
92075	PG 29	5 x 10.0	8.0	40	10
92076	PG 29	2 x 11.0	8.0	40	10
92077	PG 36	15 x 5.0	8.5	50	10

# KVA-MFD-MS

Part no.	Size	Number holes x cable-Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
96336	PG 36	8 x 9.0	8.5	50	10
92079	PG 36	3 x 10.0	8.5	50	10
96397	PG 36	2 x 15.0	8.5	50	10

# KVA-VK-MS

with Soft PVC



## TECHNICAL DATA

Nickel plated brass gland body

Temperature range -30°C to +100°C

### ■ STRUCTURE

- Material: Brass, nickel plated
- O-ring: Nitrile butadiene rubber (NBR)

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For fitting with inserts.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90788	M12 x 1.5	6.0	14	100
90789	M16 x 1.5	6.5	17	100
90790	M20 x 1.5	7.0	22	50
90792	M25 x 1.5	7.5	27	50

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
91367	M32 x 1.5	8.0	35	25
90794	M40 x 1.5	8.0	43	10
90795	M50 x 1.5	10.0	54	10
90796	M63 x 1.5	10.0	65	5

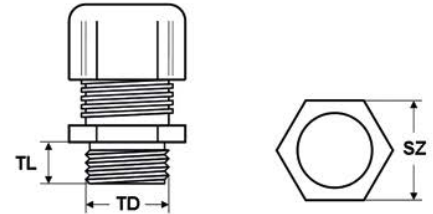
#### PG thread

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
96033	PG 7	5.0	14	100
96034	PG 9	6.0	17	100
96035	PG 11	6.0	20	50
96036	PG 13.5	6.5	22	50
96037	PG 16	6.5	24	50

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
96038	PG 21	7.0	30	25
96039	PG 29	8.0	40	10
96040	PG 36	9.0	50	10
96041	PG 42	10.0	57	5
96042	PG 48	10.0	64	10

# KVA-XXL-MS

for very large cable diameters



## TECHNICAL DATA

Nickel plated brass sealing gland

Temperature range -40°C to +135°C  
 Protection class IP 68 - 10 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: thermoplastic vulcanizates (TPV)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- easy to assemble, time and cost savings
- Large-area sealing

- large clamping areas

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905957	M63 x 1.5	42.0 - 48.0	10.0	70	1
93569	M63 x 1.5	45.0 - 51.0	10.0	70	1
92779	M72 x 2.0	46.0 - 52.0	15.0	80	1
93727	M72 x 2.0	51.0 - 55.0	15.0	80	1
905958	M75 x 1.5	51.0 - 55.0	15.0	80	1
905959	M75 x 1.5	54.0 - 58.0	15.0	80	1
93105	M80 x 2.0	58.0 - 64.0	15.0	95	1
905960	M80 x 2.0	63.0 - 70.0	15.0	95	1
905961	M90 x 2.0	65.0 - 75.0	20.0	110	1
905962	M90 x 2.0	69.0 - 80.0	20.0	110	1
905963	M100 x 2.0	74.0 - 85.0	20.0	110	1
905964	M105 x 2.0	79.0 - 90.0	20.0	120	1
905965	M110 x 2.0	84.0 - 95.0	20.0	120	1
905966	M115 x 2.0	84.0 - 95.0	20.0	120	1

# KVA-XXL-VK-MS



## TECHNICAL DATA

Nickel plated brass gland body

Temperature range -20°C to +105°C

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ TESTS

- Test standard EN 60423

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For large cable diameters sealing inserts.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
920144	M72 x 2.0	15.0	80	1
920145	M75 x 1.5	15.0	80	1

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
920146	M80 x 2.0	15.0	95	1



# VMK-SD

## gas and watertight gland



### TECHNICAL DATA

Nickel plated brass cable gland

Temperature range -40°C to +100°C  
Protection class IP 68 - 5 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: thermoplastic elastomers (TPE)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- The quality is similar to an incision sealing ring and guarantees extensive clamping ranges.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98108	M12 x 1.5	5.0 - 7.0	5.0	14	100
98109	M16 x 1.5	5.0 - 10.0	5.5	17	50
98110	M20 x 1.5	8.0 - 14.0	6.0	22	50
98111	M25 x 1.5	12.0 - 19.0	7.0	30	25
98112	M32 x 1.5	15.0 - 22.0	8.0	34	25
98113	M40 x 1.5	22.0 - 28.0	8.0	44	10

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90586	PG 7	5.0 - 7.0	5.0	14	100
90587	PG 9	5.0 - 10.0	6.0	17	50
90588	PG 11	5.0 - 10.0	6.0	20	50
90589	PG 13.5	8.0 - 14.0	6.5	22	50

# VMK-SD

## gas and watertight gland

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90590	PG 16	10.0 - 15.0	6.5	24	50
90591	PG 21	12.0 - 19.0	7.0	30	25
90592	PG 29	22.0 - 28.0	8.0	40	25
90593	PG 36	28.0 - 36.0	9.0	50	10
90594	PG 42	35.0 - 45.0	10.0	60	1
90595	PG 48	34.0 - 49.0	11.0	65	5

# SD-XXL

## gas and watertight gland



### TECHNICAL DATA

#### Nickel plated brass cable gland

Temperature range	-20°C to +100°C
Protection class	IP 68 - 5 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- easy to assemble, time and cost savings
- Large-area sealing

- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- For very large cable diameters. The quality is similar to an incision sealing ring and guarantees extensive clamping ranges.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905570	M72 x 2.0	56.0 - 62.0	16.0	77	4
905506	M75 x 1.5	56.0 - 62.0	16.0	77	4
905571	M75 x 2.0	56.0 - 64.0	16.0	90	4
905573	M80 x 2.0	50.0 - 56.0	18.0	90	2
905572	M80 x 2.0	60.0 - 67.0	18.0	90	2
905575	M85 x 2.0	63.0 - 70.0	22.0	95	2
905574	M85 x 2.0	68.0 - 77.0	22.0	95	2
905576	M90 x 2.0	68.0 - 77.0	22.0	100 / 95	2
905577	M110 x 2.0	60.0 - 82.0	25.0	125 / 120	2



## TECHNICAL DATA

Nickel plated hexagonal brass cable gland acc. to DIN 46320

Temperature range -20°C to +60°C  
 Protection class IP 54

## ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: Natural rubber (NR)
- Thrust rings: Galvanised steel

## ■ PROPERTIES

- large clamping areas

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Protection classification IP 65 with additional O-ring mounted at the thread.
- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98098	M12 x 1.5	4.0 - 6.0	5.0	14	100
98099	M16 x 1.5	8.0 - 10.0	5.0	18	100
98100	M20 x 1.5	8.0 - 10.0	6.0	22	50
98101	M20 x 1.5	10.0 - 12.0	6.0	22	50
98102	M20 x 1.5	12.0 - 14.0	6.0	24	50
98103	M25 x 1.5	17.0 - 19.0	7.0	30	50
98104	M32 x 1.5	26.0 - 27.0	8.0	39	25
98105	M40 x 1.5	23.0 - 34.0	8.0	50	10
98107	M63 x 1.5	35.0 - 46.0	10.0	66	5

### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90540	PG 7	6.0 - 8.0	5.0	14 / 13	50
90541	PG 9	8.0 - 10.0	6.0	17 / 15	50
90542	PG 11	6.5 - 12.0	6.0	20 / 18	50
90543	PG 13.5	10.0 - 12.0	6.5	22 / 20	50
90544	PG 16	14.0 - 16.0	6.5	24 / 22	50
90545	PG 21	17.0 - 19.0	7.0	30 / 28	50

# STS

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90546	PG 29	26.0 - 28.0	8.0	40 / 37	25
90547	PG 36	33.0 - 35.0	9.0	50 / 47	10
90548	PG 42	39.0 - 41.0	10.0	57 / 54	10
90549	PG 48	45.0 - 47.0	10.0	64 / 60	10

# STV

## cuttable sealing ring



### TECHNICAL DATA

Nickel plated hexagonal brass cable gland acc. to DIN 46320

Temperature range -30°C to +80°C  
Protection class IP 54

#### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: cuttable sealing ring, Natural rubber (NR)
- Thrust rings: Galvanised steel
- with cuttable sealing ring

#### ■ PROPERTIES

- protection against ingress of water and foreign material into enclosure

#### ■ TESTS

- Test standard EN 62444

#### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

#### ■ NOTES

- Protection classification IP 65 with additional O-ring mounted at the thread.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90090	M16 x 1.5	5.0 - 10.0	5.0	18	100
90091	M20 x 1.5	7.5 - 12.5	6.0	22	50
90092	M20 x 1.5	7.5 - 15.0	6.0	24	50
90093	M25 x 1.5	10.0 - 19.0	6.0	30	50
90094	M32 x 1.5	18.0 - 27.0	6.0	39	25
90095	M40 x 1.5	24.0 - 33.0	7.0	50	10
90096	M50 x 1.5	30.0 - 39.0	8.0	57	5
90097	M63 x 1.5	36.0 - 45.0	9.0	66	5

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90550	PG 9	5.0 - 10.0	6.0	17	100
90551	PG 11	7.5 - 12.5	6.0	20	50
90552	PG 13.5	7.5 - 12.5	6.5	22	50
90553	PG 16	7.5 - 15.0	6.5	24	50
90554	PG 21	10.0 - 19.0	7.0	30	50

# STV

## cutable sealing ring

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90555	PG 29	18.0 - 27.0	8.0	40	25
90556	PG 36	24.0 - 33.0	9.0	50	20
90557	PG 42	30.0 - 39.0	10.0	57	10
90558	PG 48	36.0 - 45.0	10.0	64	5



## TECHNICAL DATA

Nickel plated round brass cable gland acc. to DIN 46320

Temperature range -30°C to +90°C  
Protection class IP 54

### ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: Natural rubber (NR)

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Protection classification IP 65 with additional O-ring mounted at the thread.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98088	M12 x 1.5	4.0 - 6.0	5.0	12	100
98089	M16 x 1.5	8.0 - 10.0	5.0	15	100
98090	M20 x 1.5	8.0 - 10.0	6.0	18	50
98091	M20 x 1.5	10.0 - 12.0	6.0	20	50
98092	M20 x 1.5	12.0 - 14.0	6.0	22	50
98093	M25 x 1.5	17.0 - 19.0	7.0	28	50
98094	M32 x 1.5	26.0 - 27.0	8.0	37	25
98095	M40 x 1.5	23.0 - 34.0	8.0	47	10
98096	M50 x 1.5	39.0 - 41.0	9.0	54	5
98097	M63 x 1.5	35.0 - 40.0	10.0	60	10

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90530	PG 7	4.0 - 6.0	5.0	13	100
90531	PG 9	8.0 - 10.0	6.0	15	100
90532	PG 11	8.0 - 10.0	6.0	18	50
90533	PG 13.5	10.0 - 12.0	6.5	20	50
90534	PG 16	12.0 - 14.0	6.5	22	50
90535	PG 21	17.0 - 19.0	7.0	28	50



# STR

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90536	PG 29	26.0 - 28.0	8.0	37	25
90537	PG 36	23.0 - 34.0	9.0	47	10
90538	PG 42	39.0 - 41.0	10.0	54	10

# STS-F



## TECHNICAL DATA

Nickel plated brass flat cable gland

Temperature range -40°C to +100°C  
Protection class IP 54

## ■ STRUCTURE

- Material: Brass, nickel plated
- Seal: thermoplastic elastomers (TPE)
- Thrust rings: Galvanised steel
- Thrust washers: Galvanised steel

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Protection classification IP 65 with an additional O-ring on the external thread.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

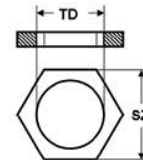
Part no.	Size	Cable thickness from / to mm	Cable width from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
94484	M20 x 1.5	1.0 - 5.0	3.0 - 16.0	6.0	24 / 22	50
94485	M25 x 1.5	3.0 - 8.0	9.0 - 20.0	7.0	30 / 28	50
94486	M32 x 1.5	4.0 - 11.0	11.0 - 27.0	8.0	39 / 37	25
94487	M40 x 1.5	4.0 - 11.0	24.0 - 34.0	8.0	50 / 47	10
94488	M50 x 1.5	5.0 - 12.0	29.0 - 44.0	9.0	57 / 54	5
94489	M63 x 1.5	5.0 - 12.0	34.0 - 50.0	10.0	66 / 60	5

### PG thread

Part no.	Size	Cable thickness from / to mm	Cable width from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90100	PG 16	1.0 - 5.0	3.0 - 16.0	6.5	24 / 22	50
90101	PG 21	3.0 - 8.0	9.0 - 20.0	7.0	30 / 28	50
90102	PG 29	4.0 - 11.0	11.0 - 27.0	8.0	40 / 37	25
90103	PG 36	4.0 - 11.0	24.0 - 34.0	9.0	50 / 47	20
90104	PG 42	5.0 - 12.0	29.0 - 44.0	10.0	57 / 54	10
90105	PG 48	5.0 - 12.0	34.0 - 50.0	10.0	64 / 60	5

# VM-KM

galvanic nickel-coated brass



## TECHNICAL DATA

Nickel plated brass counter nut

Temperature range up to +200°C

## ■ STRUCTURE

- Material: Brass, nickel plated

## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
SZ - Spanner Size

### metric thread – female

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M12 x 1.5	15	100	90175
M16 x 1.5	19	100	90176
M20 x 1.5	24	100	90177
M25 x 1.5	30	100	90178

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M32 x 1.5	36	100	90179
M40 x 1.5	46	50	90180
M50 x 1.5	60	25	90181
M63 x 1.5	70	25	90182

### metric thread – female – for large cable diameters

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M72 x 2.0	80	5	98314
M75 x 1.5	80	5	90067

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M80 x 2.0	95	5	90489

### PG thread – female

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
PG 7	15	100	90610
PG 9	18	100	90611
PG 11	21	100	90612
PG 13.5	23	100	90613
PG 16	26	100	90614

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
PG 21	32	100	90615
PG 29	41	100	90616
PG 36	51	50	90617
PG 42	60	50	90618
PG 48	64	50	90619

### NPT thread – female

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP 1/2"	27	50	905870

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP 3/4"	32	20	905871

# VM-KM

## galvanic nickel-coated brass

### NPT thread – female

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP 1"	36	20	905872
BSP 1 1/4"	46	20	905873

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP 1 1/2"	54	10	905874
BSP 2"	70	10	905875

### BSP thread – female

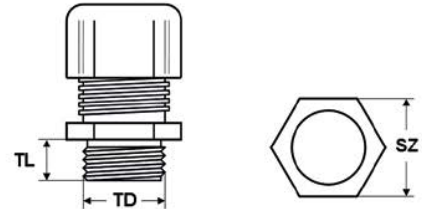
Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP G 1"	38	100	90190
BSP G 1 1/2"	51	50	90193
BSP G 1/2"	24	100	90187

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP G 2"	66	50	90195
BSP G 3/4"	30	100	90189
BSP G 3/8"	19	100	90186

### BSP thread - female - for large cable diameters

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP G 2 1/2"	80	25	90197
BSP G 3"	95	25	90198

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
BSP G 4"	125	1	90199
BSP G 5"	150	1	97785



## TECHNICAL DATA

**Nickel plated brass EMC cable gland und earthing gland**

**Temperature range** -20°C to +100°C  
short term -40°C to +150°C

**Protection class** IP 68 - 5 bar

## ■ STRUCTURE

- Material: Brass, nickel plated
- Contact system: Copper-Beryllium
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Nitrile butadiene rubber (NBR)
- with integrated contact system

## ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

## ■ APPLICATION

- For safe, quick assembly and contacting.

## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90770	PG 7	3.0 - 6.5	6.0	14	50
90771	PG 9	4.0 - 8.0	6.0	17	50
90772	PG 11	5.0 - 10.0	6.0	20	50
90773	PG 13.5	6.0 - 12.0	6.5	22	50
90774	PG 16	10.0 - 14.0	6.5	24	25
90775	PG 21	13.0 - 18.0	7.2	30	25
90776	PG 29	18.0 - 25.0	8.0	40	10
90777	PG 36	22.0 - 32.0	9.0	50	5
90778	PG 42	30.0 - 38.0	12.0	58	5
90779	PG 48	34.0 - 44.0	14.0	64	5

### NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99808	NPT 3/8"	5.0 - 10.0	11.5	20	50
99809	NPT 1/2"	6.0 - 12.0	13.0	22	50
99810	NPT 3/4"	13.0 - 18.0	13.0	30	25
99811	NPT 1"	18.0 - 25.0	13.0	40	10

# HELUTOP® MS-EP

Contact system patented



## TECHNICAL DATA

Nickel plated brass EMC cable gland und earthing gland

Temperature range -20°C to +100°C  
Protection class IP 68 - 5 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Contact system: Copper-Beryllium
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Nitrile butadiene rubber (NBR)
- with integrated contact system

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- automatic secure connection when closed
- excellent screening attenuation and current discharge

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For safe and quick assembly as well as contacting.

### ■ NOTES

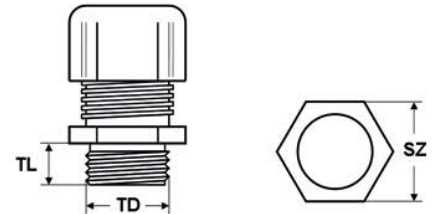
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

## metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99950	M12 x 1.5	3.0 - 6.5	6.0	14	50
99951	M16 x 1.5	5.0 - 10.0	7.0	20	50
99952	M20 x 1.5	6.0 - 12.0	8.0	22	50
99953	M25 x 1.5	11.0 - 17.0	8.0	27	25
99954	M32 x 1.5	15.0 - 21.0	8.0	34	10
99955	M40 x 1.5	19.0 - 28.0	9.0	43	5
99956	M50 x 1.5	27.0 - 38.0	9.0	58	5
99957	M63 x 1.5	34.0 - 44.0	14.0	64 / 68	5

# HELUTOP® MS-EP4

Contact system patented



## TECHNICAL DATA

Nickel plated brass EMC cable gland

Temperature range -20°C to +100°C  
Protection class IP 68 - 5 bar

## ■ STRUCTURE

- Material: Brass, nickel plated
- Contact system: Copper-Beryllium
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Nitrile butadiene rubber (NBR)
- with integrated contact system

## ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- excellent vibration resistance

- large clamping areas
- automatic secure connection when closed
- excellent screening attenuation and current discharge

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905181	M12 x 1.5	3.0 - 6.5	6.0	14	50
905182	M16 x 1.5	5.0 - 10.0	6.0	20	50
905183	M20 x 1.5	6.0 - 12.0	6.0	22	50
905184	M20 x 1.5	7.5 - 14.0	8.0	24	50
905185	M25 x 1.5	10.0 - 18.0	8.0	30	25
905186	M32 x 1.5	16.0 - 25.0	9.0	40	10
905187	M40 x 1.5	22.0 - 32.0	9.0	50	5
905188	M50 x 1.5	30.0 - 38.0	9.0	58	5
905189	M63 x 1.5	34.0 - 44.0	14.0	64 / 68	5
905248	M63 x 1.5	37.0 - 53.0	10.0	75	5



## TECHNICAL DATA

Nickel plated brass EMC cable gland

Temperature range -40°C to +100°C  
 Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- For sheathed cables.

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97335	M12 x 1.5	3.0 - 6.5	6.5	14	50
97336	M16 x 1.5	5.0 - 10.0	6.0	20	50
97337	M20 x 1.5	10.0 - 14.0	6.0	24	50
97338	M25 x 1.5	13.0 - 18.0	7.0	30	25
97339	M32 x 1.5	18.0 - 25.0	8.0	40	25
97340	M40 x 1.5	22.0 - 32.0	8.0	50	10
90397	M50 x 1.5	32.0 - 38.0	9.0	57	5
90398	M63 x 1.5	37.0 - 44.0	10.0	64 / 68	5

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90423	PG 7	3.0 - 6.5	5.0	14	50
90424	PG 9	4.0 - 8.0	6.0	17	50
90425	PG 11	5.0 - 10.0	6.0	20	50
90426	PG 13.5	6.0 - 12.0	6.5	22	50
90427	PG 16	10.0 - 14.0	6.5	24	50
90428	PG 21	13.0 - 18.0	7.0	30	25



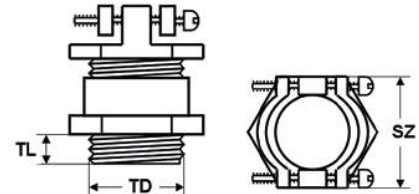
# HSK-MS-E



Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90429	PG 29	18.0 - 25.0	8.0	40	25
90430	PG 36	22.0 - 32.0	8.0	50	10
90431	PG 42	32.0 - 38.0	9.0	57	5
90432	PG 48	37.0 - 44.0	10.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92905	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	50
92906	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50
92907	NPT 3/4"	13.0 - 18.0	13.0	30	25



## TECHNICAL DATA

Nickel plated brass EMC cable gland

Temperature range -40°C to +100°C  
 Protection class IP 68 - 10 bar / IP 69K

## ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)
- with double bracket strain relief

## ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings

- watertight, dust-tight
- large clamping areas

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology

## ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98070	M12 x 1.5	3.0 - 6.5	6.5	14	50
98071	M16 x 1.5	5.0 - 10.0	6.0	20	50
98072	M20 x 1.5	10.0 - 14.0	6.0	24	50
98073	M25 x 1.5	13.0 - 18.0	7.0	30	25
98074	M32 x 1.5	18.0 - 25.0	8.0	40	25
98075	M40 x 1.5	22.0 - 32.0	8.0	50	10
90162	M50 x 1.5	32.0 - 38.0	9.0	57	5
90163	M63 x 1.5	37.0 - 44.0	10.0	64 / 68	5

### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98061	PG 7	3.0 - 6.5	5.0	14	50
98062	PG 9	4.0 - 8.0	6.0	17	50
98063	PG 11	5.0 - 10.0	6.0	20	50
98064	PG 13.5	6.0 - 12.0	6.5	22	50
98065	PG 16	10.0 - 14.0	6.5	24	50

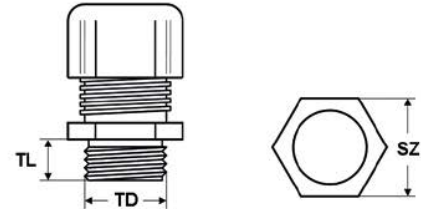
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Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98201	PG 21	13.0 - 18.0	7.0	30	25
98066	PG 29	18.0 - 25.0	8.0	40	25
98067	PG 36	22.0 - 32.0	8.0	50	10
98068	PG 42	32.0 - 38.0	9.0	57	5
98069	PG 48	37.0 - 44.0	10.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92908	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	50
92909	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50
92910	NPT 3/4"	13.0 - 18.0	13.0	30	25



## TECHNICAL DATA

Nickel plated brass EMC cable gland

Temperature range -40°C to +100°C  
 Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) metal-plated
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- To meet stringent requirements in technology. Time-saving and simple handling through metallised terminal insert, which is automatically contacted when the gland is closed.

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98055	M12 x 1.5	3.0 - 6.5	6.5	14	50
98056	M16 x 1.5	5.0 - 10.0	6.0	20	50
98057	M20 x 1.5	10.0 - 14.0	6.0	24	50
98058	M25 x 1.5	13.0 - 18.0	7.0	30	25
98059	M32 x 1.5	18.0 - 25.0	8.0	40	25
98060	M40 x 1.5	24.0 - 32.0	8.0	50	10
90160	M50 x 1.5	32.0 - 38.0	9.0	64	5
90161	M63 x 1.5	37.0 - 44.0	10.0	64 / 68	5

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97655	PG 7	3.0 - 6.5	5.0	14	50
97656	PG 9	4.0 - 8.0	6.0	17	50
97657	PG 11	5.0 - 10.0	6.0	20	50
97658	PG 13.5	6.0 - 12.0	6.5	22	50
97659	PG 16	10.0 - 14.0	6.5	24	50
97660	PG 21	13.0 - 18.0	7.0	30	25

# HSK-MS-E-D



Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97752	PG 29	18.0 - 25.0	8.0	40	25
97788	PG 36	24.0 - 32.0	8.0	50	10



## TECHNICAL DATA

Nickel plated brass EMC sealing gland

Temperature range -40°C to +135°C  
Protection class IP 68 - 10 bar

### ■ STRUCTURE

- Material: Brass, nickel plated
- Contact system: Stainless steel (1.4310)
- Seal: thermoplastic vulcanizates (TPV)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- easy to assemble, time and cost savings
- Large-area sealing
- large clamping areas

### ■ TESTS

- Test standard EN 60423 (metric thread)

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- For particularly large cable diameters.

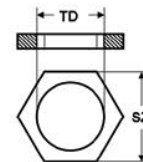
### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Outer Ø Shielding from / up to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98257	M63 x 1.5	40.0 - 45.0	36.0 - 41.0	10.0	65	1
96560	M63 x 1.5	45.0 - 51.0	36.0 - 45.0	10.0	70	1
94218	M63 x 1.5	45.0 - 51.0	40.0 - 48.0	10.0	70	1
94189	M72 x 2.0	40.0 - 45.0	36.0 - 41.0	15.0	70	1
93728	M75 x 1.5	42.0 - 48.0	40.0 - 48.0	15.0	70	1
94847	M72 x 2.0	45.0 - 51.0	40.0 - 48.0	15.0	70	1
91600	M75 x 1.5	45.0 - 51.0	40.0 - 48.0	15.0	70	1
98725	M63 x 1.5	51.0 - 55.0	40.0 - 48.0	10.0	80	1
905498	M72 x 2.0	51.0 - 55.0	40.0 - 48.0	15.0	80	1
94208	M72 x 2.0	51.0 - 55.0	46.0 - 54.0	15.0	80	1
94188	M72 x 2.0	54.0 - 58.0	40.0 - 48.0	15.0	80	1
90068	M75 x 1.5	54.0 - 58.0	46.0 - 54.0	15.0	80	1
97066	M80 x 2.0	58.0 - 64.0	46.0 - 54.0	15.0	95	1
98908	M80 x 2.0	63.0 - 70.0	46.0 - 54.0	15.0	95	1
905303	M80 x 2.0	63.0 - 70.0	46.0 - 58.0	15.0	95	1

# KM-EMV



## TECHNICAL DATA

Nickel plated brass EMC counternut

Temperature range up to +200°C

### ■ STRUCTURE

- Material: Brass, nickel plated
- with cutting edges

### ■ PROPERTIES

- increased vibration resistance

### ■ APPLICATION

- For secure fixing of EMC cable glands. For cutting through painted surfaces to ensure optimum contact with equipotential bonding.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
SZ - Spanner Size

#### metric thread – female

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M12 x 1.5	15	100	90165
M16 x 1.5	19	100	90166
M20 x 1.5	24	100	90167
M25 x 1.5	30	100	90168

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M32 x 1.5	36	100	90169
M40 x 1.5	46	25	90170
M50 x 1.5	60	10	90171
M63 x 1.5	70	10	90172

#### metric thread – female – for large cable diameters

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M72 x 2.0	80	10	99875
M75 x 1.5	80	10	93209

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
M80 x 2.0	95	1	98698

#### PG thread – female

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
PG 7	15	100	97243
PG 9	18	100	97244
PG 11	21	100	97166
PG 13.5	23	100	97167
PG 16	26	100	97168

Size	Spanner size mm	Packaging unit (in pc.)	Part no.
PG 21	32	100	97169
PG 29	41	100	97170
PG 36	51	25	97171
PG 42	60	10	97245
PG 48	64	10	97246



## TECHNICAL DATA

Stainless steel cable gland

Temperature range -20°C to +100°C  
Protection class IP 68 - 5 bar

### ■ STRUCTURE

- Material: Stainless steel 1.4305 / AISI 303
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- high corrosion resistance

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For use under heavy loads.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99980	M12 x 1.5	3.0 - 6.5	6.0	14	50
99981	M16 x 1.5	5.0 - 10.0	7.0	22	50
99982	M20 x 1.5	6.0 - 12.0	8.0	22	25
99983	M25 x 1.5	11.0 - 17.0	8.0	27	10
99984	M32 x 1.5	15.0 - 21.0	8.0	36	5
99985	M40 x 1.5	19.0 - 28.0	9.0	46	5
99986	M50 x 1.5	27.0 - 38.0	9.0	60	5
99987	M63 x 1.5	34.0 - 44.0	14.0	65 / 70	50

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99970	PG 7	3.0 - 6.5	6.0	14	50
99971	PG 9	4.0 - 8.0	6.0	17	50
99972	PG 11	5.0 - 10.0	6.0	22	50
99973	PG 13.5	6.0 - 12.0	6.5	22	50





Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99974	PG 16	10.0 - 14.0	6.5	24	25
99975	PG 21	13.0 - 18.0	7.2	30	25
99976	PG 29	18.0 - 25.0	8.0	41	10
99977	PG 36	22.0 - 32.0	9.0	50	5
99978	PG 42	30.0 - 38.0	12.0	60	5
99979	PG 48	34.0 - 44.0	14.0	65	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
99800	NPT 3/8"	5.0 - 10.0	11.5	20 / 22	50
99801	NPT 1/2"	6.0 - 12.0	13.0	22 / 27	50
99802	NPT 3/4"	13.0 - 18.0	13.0	30	25
99803	NPT 1"	18.0 - 25.0	13.0	41	10



## TECHNICAL DATA

### PVDF cable gland

#### Temperature range

-35°C to +150°C

#### Protection class

IP 68 - 10 bar / IP 69K - within the specific clamping range with additional o-ring

- easy to assemble, time and cost savings
- watertight, dust-tight
- large temperature range
- large clamping areas

## TESTS

- Test standard EN 62444

## STRUCTURE

- Material: Polyvinylidenfluorid (PVDF) V0 acc. to UL 94
- Clamp: Polyvinylidenfluorid (PVDF)
- Seal: Fluoro rubber (FPM)

## APPLICATION

- For use in the chemical industry, at high temperatures, under long-term UV exposure. The cable gland to meet stringent requirements in technology.

## PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella

## NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	natural Part no.
M12 x 1.5	3.0 - 6.5	8.0	15	50	<b>97527</b>
M16 x 1.5	4.0 - 8.0	8.0	19	50	<b>97528</b>
M20 x 1.5	6.0 - 12.0	9.0	24	50	<b>97529</b>
M25 x 1.5	13.0 - 18.0	11.0	33	50	<b>97530</b>
M32 x 1.5	18.0 - 25.0	11.0	42	25	<b>97531</b>

### metric thread - with reducing seal

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	natural Part no.
M12 x 1.5	2.0 - 5.0	8.0	15	50	<b>99630</b>
M16 x 1.5	2.0 - 6.0	8.0	19	50	<b>99631</b>
M20 x 1.5	5.0 - 9.0	9.0	24	50	<b>99632</b>

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	natural Part no.
M25 x 1.5	9.0 - 16.0	11.0	33	50	<b>99633</b>
M32 x 1.5	13.0 - 20.0	11.0	42	25	<b>99634</b>

## PG thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	natural Part no.
PG 7	3.0 - 6.5	8.0	15	50	<b>97184</b>
PG 9	4.0 - 8.0	8.0	19	50	<b>96748</b>
PG 11	5.0 - 10.0	8.0	22	50	<b>97185</b>
PG 13.5	6.0 - 12.0	9.0	24	50	<b>97186</b>
PG 16	10.0 - 14.0	10.0	27	50	<b>97187</b>
PG 21	13.0 - 18.0	11.0	33	50	<b>97188</b>
PG 29	18.0 - 25.0	11.0	42	25	<b>97189</b>
PG 36	22.0 - 32.0	13.0	53	10	<b>97190</b>
PG 42	32.0 - 38.0	13.0	60	5	<b>97191</b>
PG 48	37.0 - 44.0	14.0	65	5	<b>97192</b>

## NPT thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)	natural Part no.
NPT 3/8"	4.0 - 8.0	15.0	19 / 22	50	<b>91675</b>
NPT 1/2"	6.0 - 12.0	13.0	24	50	<b>91676</b>
NPT 1/2"	10.0 - 14.0	13.0	27	50	<b>91677</b>
NPT 3/4"	13.0 - 18.0	14.0	33	50	<b>91678</b>



## TECHNICAL DATA

### Nickel plated brass cable gland

<b>Temperature range</b>	-35°C to +150°C
<b>Protection class</b>	IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyvinylidenfluorid (PVDF)
- Seal: Fluoro rubber (FPM)
- O-ring: Fluoro rubber (FPM)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large temperature range

- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Cable gland to meet stringent requirements in technology. Polyvinylidene fluoride for use in the chemical industry, at high temperatures, under long-term UV exposure.

### ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97571	M12 x 1.5	3.0 - 6.5	6.5	14	50
97572	M16 x 1.5	4.0 - 8.0	6.0	17 / 19	50
905084	M16 x 1.5	5.0 - 10.0	6.0	20	50
97573	M20 x 1.5	10.0 - 14.0	6.0	24	50
97574	M25 x 1.5	13.0 - 18.0	7.0	30	25
97575	M32 x 1.5	18.0 - 25.0	8.0	40	25
97576	M40 x 1.5	22.0 - 32.0	8.0	50	10

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97565	PG 7	3.0 - 6.5	5.0	14	50
97500	PG 9	4.0 - 8.0	6.0	17	50
97445	PG 11	5.0 - 10.0	6.0	20	50
97446	PG 13.5	6.0 - 12.0	6.5	22	50
97447	PG 16	10.0 - 14.0	6.5	24	50
97566	PG 21	13.0 - 18.0	7.0	30	25
97567	PG 29	18.0 - 25.0	8.0	40	25
97568	PG 36	22.0 - 32.0	8.0	50	10

# HSK-MS-PVDF



Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97569	PG 42	32.0 - 38.0	9.0	57	5
97570	PG 48	37.0 - 44.0	10.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
97663	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	25
97664	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50



## TECHNICAL DATA

Stainless steel cable gland

Temperature range -40°C to +100°C  
 Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Stainless steel 1.4305 / AISI 303
- Clamp: Polyamide (PA)
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

- high corrosion resistance

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98076	M12 x 1.5	3.0 - 6.5	6.5	14	10
98078	M16 x 1.5	5.0 - 10.0	6.0	22	10
98080	M20 x 1.5	10.0 - 14.0	6.0	24	10
98082	M25 x 1.5	13.0 - 18.0	7.0	30	10
98084	M32 x 1.5	18.0 - 25.0	8.0	41	5
98086	M40 x 1.5	22.0 - 32.0	8.0	50	5
905734	M50 x 1.5	32.0 - 38.0	9.0	60	5
905736	M63 x 1.5	37.0 - 44.0	10.0	64 / 68	5

#### metric thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98077	M12 x 1.5	2.0 - 5.0	6.5	14	10
98079	M16 x 1.5	3.0 - 7.0	6.0	22	10
98081	M20 x 1.5	7.0 - 12.0	6.0	24	10
98083	M25 x 1.5	9.0 - 16.0	7.0	30	10
98085	M32 x 1.5	13.0 - 20.0	8.0	41	5
98087	M40 x 1.5	20.0 - 26.0	8.0	50	5

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905733	M50 x 1.5	25.0 - 31.0	9.0	60	5
905735	M63 x 1.5	29.0 - 35.0	10.0	64 / 68	5

## PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90210	PG 7	3.0 - 6.5	5.0	14	10
90212	PG 9	4.0 - 8.0	6.0	17	10
90214	PG 11	5.0 - 10.0	6.0	22	10
90216	PG 13.5	6.0 - 12.0	6.5	22	10
90218	PG 16	10.0 - 14.0	6.5	24	10
90377	PG 21	13.0 - 18.0	7.0	30	10
98286	PG 29	18.0 - 25.0	8.0	41	5
98288	PG 36	22.0 - 32.0	8.0	50	5
905738	PG 42	32.0 - 38.0	9.0	57	5
905740	PG 48	37.0 - 44.0	10.0	64	5

## PG thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90211	PG 7	2.0 - 5.0	5.0	14	10
90213	PG 9	2.0 - 6.0	6.0	17	10
90217	PG 13.5	5.0 - 9.0	6.5	22	10
90219	PG 16	7.0 - 12.0	6.5	24	10
90378	PG 21	9.0 - 16.0	7.0	30	10
98287	PG 29	13.0 - 20.0	8.0	41	5
98289	PG 36	20.0 - 26.0	8.0	50	5
905737	PG 42	25.0 - 31.0	9.0	57	5
905739	PG 48	29.0 - 35.0	10.0	64	5

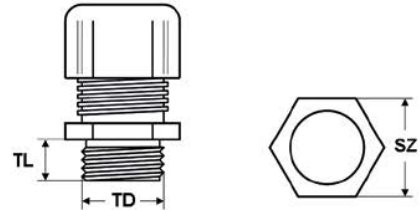
## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905742	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	5
905744	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	10
905746	NPT 3/4"	13.0 - 18.0	13.0	30	5
905748	NPT 1"	18.0 - 25.0	19.0	41	10

## NPT thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905741	NPT 3/8"	2.0 - 6.0	15.0	17 / 19	5
905743	NPT 1/2"	5.0 - 9.0	13.0	22 / 24	10
905745	NPT 3/4"	9.0 - 16.0	13.0	30	5
905747	NPT 1"	13.0 - 20.0	19.0	41	10

# UNI-DICHT-VK-PVDF



## TECHNICAL DATA

PVDF gland body

Temperature range -40°C to +150°C

## ■ STRUCTURE

- Material: Polyvinylidenfluorid (PVDF)

## ■ PROPERTIES

- phosphor-free
- cadmium-free
- large temperature range

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- chemical industry
- Food and beverage industry
- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- For populating with inserts made of TPE or silicone. For use in chemical industry, at high temperatures, or long lasting UV-stress.

## ■ NOTES

- Use short-sized inserts when using gland bodies of size M12x1.5 or M20x1.5.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904240	M12 x 1.5	8.0	15	50
904241	M16 x 1.5	9.0	19	50
904242	M20 x 1.5	9.0	24	50
904243	M25 x 1.5	9.0	29	50
904244	M32 x 1.5	11.0	38	25
904245	M40 x 1.5	11.5	46	10
904246	M50 x 1.5	13.0	56	5



# UNI-DICHT-VK-SS



## TECHNICAL DATA

Stainless steel gland body

Temperature range up to +200°C

## ■ STRUCTURE

- Material: Stainless steel 1.4305 / AISI 303

## ■ PROPERTIES

- large temperature range
- high corrosion resistance

## ■ TESTS

- Test standard EN 62444

## ■ APPLICATION

- chemical industry
- Food and beverage industry
- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- For populating with inserts made of TPE or silicone. For use in chemical industry, at high temperatures, or long lasting UV-stress.

## ■ NOTES

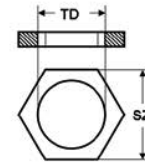
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904247	M12 x 1.5	5.0	14	50
904248	M16 x 1.5	6.0	19	50
904249	M20 x 1.5	6.5	22	50
904250	M25 x 1.5	7.5	27	50

Part no.	Size	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904251	M32 x 1.5	8.0	36	25
904252	M40 x 1.5	8.0	46	10
904253	M50 x 1.5	10.0	55	5

# KM-INOX



## TECHNICAL DATA

Stainless steel counter nut

Temperature range up to +200°C

## ■ STRUCTURE

- Material: Stainless steel 1.4305 / AISI 303

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
SZ - Spanner Size

### metric thread – female

Part no.	Size	Spanner size mm	Packaging unit (in pc.)
920605	M12 x 1.5	15	10
920606	M16 x 1.5	19	10
920607	M20 x 1.5	24	10
920608	M25 x 1.5	30	10

Part no.	Size	Spanner size mm	Packaging unit (in pc.)
920609	M32 x 1.5	36	5
920610	M40 x 1.5	46	5
920611	M50 x 1.5	60	2
920612	M63 x 1.5	70	1

### PG thread – female

Part no.	Size	Spanner size mm	Packaging unit (in pc.)
92970	PG 7	17	100
92971	PG 9	19	100
92972	PG 11	22	100
92973	PG 13.5	24	100

Part no.	Size	Spanner size mm	Packaging unit (in pc.)
92974	PG 16	27	100
92975	PG 21	32	100
92976	PG 29	41	100
92977	PG 36	60	25



## TECHNICAL DATA

### PA EX cable gland

<b>Temperature range</b>	-40°C to +80°C
<b>Protection class</b>	IP 66 / IP 68
<b>Impact-resistant</b>	4 Joule

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Chloroprene rubber (CR)

### ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-7:2007, EN 60079-11:2012, EN 60079-31:2014, IEC 60079-0:2011, IEC 60079-7:2006, IEC 60079-11:2011, IEC 60079-31:2013

### ■ APPLICATION

- Zone 1
- Zone 2
- Zone 2.1
- Zone 2.2
- IIA
- IIB
- IIC

### ■ NOTES

- Certificate of Conformity: IMQ 13 ATEX 010 X, IEC Ex IM2 13.003
- Marking: Ex II 2GD Exe IIC Gb, Ex tb IIIC Db
- Legend:  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size  
 H - Height

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)
906691	M20 x 1.5	6.0 - 12.0	10.0	24	32.4	50
906938	M20 x 1.5	6.0 - 12.0	15.0	24	32.4	50
906692	M20 x 1.5	10.0 - 14.0	10.0	27	31.9	50
906939	M20 x 1.5	10.0 - 14.0	15.0	27	31.9	50
906694	M25 x 1.5	11.0 - 17.0	10.0	29	37.7	50
906693	M25 x 1.5	13.0 - 18.0	10.0	33	38.4	25
906940	M25 x 1.5	13.0 - 18.0	15.0	33	38.4	25
906695	M32 x 1.5	15.0 - 21.0	10.0	36	42.3	25
906696	M32 x 1.5	18.0 - 25.0	15.0	42	43.3	20
906697	M40 x 1.5	19.0 - 28.0	10.0	46	47.4	20
906698	M40 x 1.5	22.0 - 32.0	18.0	53	52.4	10
906699	M50 x 1.5	30.0 - 38.0	18.0	60	54.8	10
906700	M63 x 1.5	34.0 - 44.0	18.0	65	54.9	10



## TECHNICAL DATA

### PA EX cable gland

Temperature range	-40°C to +70°C
Protection class	IP 66 / IP 68
Impact-resistant	7 Joule

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- Flat seal: Chloroprene rubber (CR)

### ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-7:2007, EN 60079-11:2012, EN 60079-31:2014, IEC 60079-0:2011, IEC 60079-7:2006, IEC 60079-11:2011, IEC 60079-31:2013

### ■ APPLICATION

- Zone 1
- Zone 2
- Zone 21
- Zone 22
- IIA
- IIB
- IIC

### ■ NOTES

- For intrinsically safe area type "i", in blue on request.  
Certificate of Conformity: IMQ 13 ATEX 010 X  
IECEx IMQ 13.0003X  
Approval: EX II 2GD  
Ex e IIC Gb/Ex tb IIIC Db IP 66/68
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
H - Height  
SZ - Spanner Size

### metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)	black (RAL 9005) Part no.
M12 x 1.5	4.0 - 6.5	10.0	15	30.3	100	<b>908080</b>
M12 x 1.5	3.0 - 6.5	15.0	15	30.3	100	<b>908081</b>
M16 x 1.5	4.0 - 8.0	10.0	19	33.6	50	<b>908082</b>
M16 x 1.5	4.0 - 10.0	10.0	22	37.2	50	<b>908083</b>
M20 x 1.5	4.0 - 10.0	10.0	22	37.2	50	<b>908085</b>
M16 x 1.5	4.0 - 10.0	15.0	22	37.2	50	<b>908084</b>
M20 x 1.5	6.0 - 12.0	10.0	24	37.8	50	<b>908086</b>
M20 x 1.5	6.0 - 12.0	15.0	24	37.8	50	<b>908087</b>
M20 x 1.5	4.0 - 13.0	10.0	25	38.4	50	<b>908088</b>
M20 x 1.5	8.0 - 14.0	10.0	27	37	50	<b>908089</b>
M25 x 1.5	8.0 - 14.0	10.0	27	37.8	25	<b>908091</b>
M20 x 1.5	8.0 - 14.0	15.0	27	37	50	<b>908090</b>



Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)	black (RAL 9005) Part no.
M25 x 1.5	8.0 - 14.0	15.0	27	37.8	25	<b>908092</b>
M25 x 1.5	9.0 - 17.0	10.0	29	42.2	25	<b>908094</b>
M25 x 1.5	9.0 - 17.0	15.0	29	42.2	20	<b>908093</b>
M25 x 1.5	10.0 - 18.0	10.0	33	43.6	25	<b>908095</b>
M25 x 1.5	10.0 - 18.0	15.0	33	43.6	25	<b>908096</b>
M32 x 1.5	12.0 - 21.0	10.0	36	47.3	20	<b>908098</b>
M32 x 1.5	16.0 - 21.0	15.0	42	48.7	20	<b>908099</b>
M32 x 1.5	19.0 - 25.0	15.0	42	48.7	20	<b>908468</b>
M40 x 1.5	17.0 - 28.0	10.0	46	52.4	15	<b>908100</b>
M40 x 1.5	17.0 - 28.0	15.0	46	52.4	10	<b>908101</b>
M40 x 1.5	21.0 - 32.0	18.0	53	57.9	10	<b>908102</b>
M50 x 1.5	22.0 - 38.0	18.0	60	60.1	10	<b>908103</b>
M63 x 1.5	28.0 - 44.0	18.0	65	60.4	10	<b>908104</b>



## TECHNICAL DATA

### PA EX cable gland

Temperature range	-60°C to +70°C
Protection class	IP 66 / IP 68
Impact-resistant	7 Joule

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Silicone
- Flat seal: Silicone

### ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-7:2007, EN 60079-11:2012, EN 60079-31:2014, IEC 60079-0:2011, IEC 60079-7:2006, IEC 60079-11:2011, IEC 60079-31:2013

### ■ APPLICATION

- Zone 1
- Zone 2
- Zone 21
- Zone 22
- IIA
- IIB
- IIC

### ■ NOTES

- For intrinsically safe area type "i", in blue on request.  
Certificate of Conformity:IMQ 13 ATEX 010 X  
IECEx IMQ 13.0003X  
Approval: EX II 2GD  
Ex e IIC Gb/Ex tb IIIC Db IP 66/68
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)	black (RAL 9005) Part no.
M12 x 1.5	4.0 - 6.5	10.0	15	30.3	100	<b>908105</b>
M12 x 1.5	4.0 - 6.5	15.0	15	30.3	100	<b>908106</b>
M16 x 1.5	5.0 - 8.0	10.0	19	33.6	50	<b>908107</b>
M16 x 1.5	6.0 - 10.0	10.0	22	37.2	50	<b>908108</b>
M16 x 1.5	6.0 - 10.0	15.0	22	37.2	50	<b>908109</b>
M20 x 1.5	11.0 - 14.0	10.0	27	37	50	<b>908114</b>
M20 x 1.5	6.0 - 10.0	10.0	22	37.2	50	<b>908110</b>
M20 x 1.5	7.0 - 12.0	10.0	24	37.8	50	<b>908111</b>
M20 x 1.5	7.0 - 13.0	10.0	25	38.4	50	<b>908113</b>
M20 x 1.5	11.0 - 14.0	15.0	27	37	50	<b>908115</b>
M20 x 1.5	7.0 - 12.0	15.0	24	37.8	50	<b>908112</b>
M25 x 1.5	11.0 - 14.0	10.0	27	37.8	25	<b>908116</b>

# HELUTOP® HT-PA-EX-Plus Silicone



Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)	black (RAL 9005) Part no.
M25 x 1.5	12.0 - 17.0	10.0	29	42.2	25	<b>908119</b>
M25 x 1.5	14.0 - 18.0	10.0	33	43.6	25	<b>908120</b>
M25 x 1.5	11.0 - 14.0	15.0	27	37.8	25	<b>908117</b>
M25 x 1.5	12.0 - 17.0	15.0	29	42.2	20	<b>908118</b>
M25 x 1.5	14.0 - 18.0	15.0	33	43.6	25	<b>908121</b>
M32 x 1.5	16.0 - 21.0	10.0	36	47.3	20	<b>908123</b>
M32 x 1.5	16.0 - 21.0	15.0	36	47.3	20	<b>908124</b>
M32 x 1.5	19.0 - 25.0	15.0	42	48.7	20	<b>908469</b>
M40 x 1.5	20.0 - 28.0	10.0	46	52.4	15	<b>908125</b>
M40 x 1.5	20.0 - 28.0	15.0	46	52.4	10	<b>908126</b>
M40 x 1.5	23.0 - 32.0	18.0	53	57.9	10	<b>908127</b>
M50 x 1.5	31.0 - 38.0	18.0	60	60.1	10	<b>908128</b>
M63 x 1.5	35.0 - 44.0	18.0	65	60.4	10	<b>908129</b>



## TECHNICAL DATA

### PA EX cable gland

Temperature range	-20°C to +85°C
Protection class	IP 68 - 10 bar

### ■ STRUCTURE

- Material: Polyamide (PA) V0 acc. to UL 94, Fibreglass reinforced
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-7:2007, EN 60079-31:2011, IEC 60079-0:2011, IEC 60079-7:2007, IEC 60079-31:2013

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- EC-Type Examination Certificate: BVS 14 ATEX E 025 X  
IECEx Certificate of Conformity: IECEx BVS 14.0020X  
Marking: II 2G Ex e IIC Gb, II 1D Ex ta IIIC Da  
Also available in blue, for the intrinsically safe area, on request.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size  
H - Height

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)
908540	M12 x 1.5	3.0 - 6.5	8.0	15	21	50
908541	M16 x 1.5	4.0 - 8.0	8.0	19	22	50
908542	M16 x 1.5	5.0 - 10.0	8.0	22	25	50
908543	M20 x 1.5	6.0 - 12.0	9.0	24	27	50
908544	M20 x 1.5	10.0 - 14.0	9.0	27	28	50
908545	M25 x 1.5	13.0 - 18.0	11.0	33	31	50
908546	M32 x 1.5	18.0 - 25.0	11.0	42	39	25
908547	M40 x 1.5	22.0 - 32.0	13.0	53	48	10
908548	M50 x 1.5	32.0 - 38.0	13.0	60	49	5
908549	M63 x 1.5	37.0 - 44.0	14.0	65 / 68	49	5



# HSK-EX-Active



## metric thread - with reducing seal

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)
908550	M12 x 1.5	2.0 - 5.0	8.0	15	21	50
908551	M16 x 1.5	3.0 - 6.0	8.0	19	22	50
908552	M16 x 1.5	3.0 - 7.0	8.0	22	25	50
908553	M20 x 1.5	5.0 - 9.0	9.0	24	27	50
908554	M20 x 1.5	7.0 - 12.0	9.0	27	28	50
908555	M25 x 1.5	9.0 - 16.0	11.0	33	31	50
908556	M32 x 1.5	13.0 - 20.0	11.0	42	39	25
908557	M40 x 1.5	20.0 - 26.0	13.0	53	48	10
908558	M50 x 1.5	25.0 - 31.0	13.0	60	49	5
908559	M63 x 1.5	29.0 - 35.0	14.0	65 / 68	49	5



## TECHNICAL DATA

Nickel plated brass EX cable gland

Temperature range -40°C to +80°C  
Protection class IP 66 / IP 68

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Chloroprene rubber (CR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-11:2012, EN 60079-31:2014, IEC 60079-0:2012, IEC 60079-1:2014, IEC 60079-7:2006, IEC 60079-11:2011, IEC 60079-31:2013

### ■ APPLICATION

- Zone 1
- Zone 2
- Zone 21
- Zone 22
- IIA
- IIB
- IIC

### ■ NOTES

- Certificate of Conformity: IMQ 13 ATEX 018X  
Marking: Ex-d, Ex-e, EX II 2GD, Exd IIC Gb, Exe IIC Gb, Ex t IIC DB  
Stainless steel 1.4404 and other temperature ranges available on request.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size  
H - Height

#### metric thread

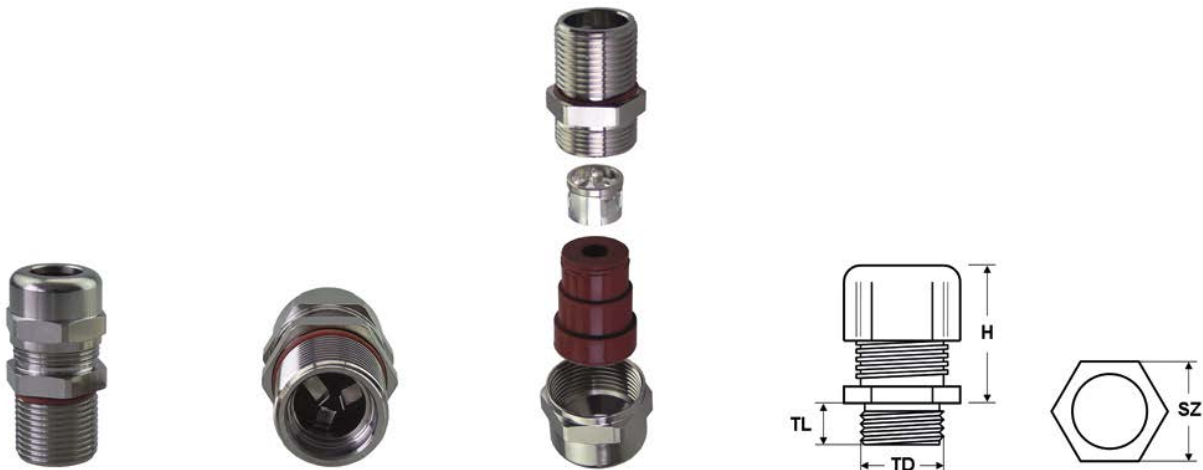
Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)
906941	M16 x 1.5	4.0 - 12.0	16.0	22	33	63
906942	M20 x 1.5	4.0 - 12.0	16.0	22	29	63
906943	M20 x 1.5	10.0 - 16.0	16.0	28	32	35
906944	M25 x 1.5	10.0 - 18.0	16.0	28	32.5	35
906945	M25 x 1.5	14.0 - 20.0	16.0	35	36	35
906946	M32 x 1.5	14.0 - 24.0	16.0	35	35	35
906947	M32 x 1.5	22.0 - 28.0	16.0	45	42.5	20
906948	M40 x 1.5	22.0 - 32.0	18.0	45	42.5	20
906949	M40 x 1.5	26.0 - 34.0	18.0	50	45.5	12
906950	M50 x 1.5	26.0 - 35.0	18.0	55 / 50	45.5	12
906951	M50 x 1.5	35.0 - 44.0	18.0	64	45	12
906952	M63 x 1.5	35.0 - 45.0	18.0	68 / 64	45	12
906953	M63 x 1.5	46.0 - 56.0	20.0	75 / 80	54	6
906954	M75 x 1.5	46.0 - 62.0	20.0	80	54	1

# HELUTOP® HT-MS-EX-d



Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)
906955	M75 x 1.5	60.0 - 69.0	20.0	95	57	1
906956	M90 x 1.5	60.0 - 75.0	20.0	95	57	1
906957	M90 x 1.5	75.0 - 82.0	20.0	105	56	1
906958	M100 x 1.5	75.0 - 85.0	20.0	105	56	1
906982	M110 x 1.5	85.0 - 95.0	20.0	115	58	1

# HELUTOP® HT-MS-EX-d 1 EMV



## TECHNICAL DATA

Nickel plated brass EX EMC cable gland

Temperature range -40°C to +80°C  
Protection class IP 66 / IP 68

### ■ STRUCTURE

- Material: Brass, nickel plated
- Contact system: Copper-Beryllium
- Clamp: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- O-ring: Chloroprene rubber (CR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-11:2012, EN 60079-31:2014, IEC 60079-0:2012, IEC 60079-1:2014, IEC 60079-7:2006, IEC 60079-11:2011, IEC 60079-31:2013

### ■ APPLICATION

- Zone 1
- Zone 2
- Zone 21
- Zone 22
- IIA
- IIB
- IIC

### ■ NOTES

- Also available in stainless steel 1.4404, further sizes or for other temperature ranges on request.  
Certificate of Conformity: IMQ 13 ATEX 018X  
Marking: Ex-d, Ex-e EX II 2GD Ex d IIC Gb, Ex e IIC Gb, Ex tb III CDb
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size  
H - Height without thread

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Height mm	Packaging unit (in pc.)
906959	M16 x 1.5	4.0 - 8.0	16.0	22	30.5	1
906960	M20 x 1.5	4.0 - 12.0	18.0	22	28.5	63
906961	M25 x 1.5	10.0 - 18.0	16.0	28	32.5	35
906962	M32 x 1.5	14.0 - 24.0	19.0	35	35	35
906963	M40 x 1.5	22.0 - 32.0	20.0	45	42.5	20
906964	M50 x 1.5	26.0 - 35.0	20.0	55 / 50	45	1

# HELUTOP® HT-MS-EX-d / e4

for armoured cables (copper or steel)



## TECHNICAL DATA

Nickel plated brass EX cable gland

Temperature range -40°C to +100°C  
Protection class IP 66 / IP 68

## STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

## PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas
- Explosive protection

## TESTS

- Test standard EN 60079-0:2012, EN 60079-1:2007, EN 60079-7:2007, EN 60079-11:2012, EN 60079-31:2014, IEC 60079-0:2012, IEC 60079-1:2014, IEC 60079-7:2006, IEC 60079-11:2011, IEC 60079-31:2013

## APPLICATION

- Zone 1
- Zone 2
- Zone 2.1
- Zone 2.2
- IIA
- IIB
- IIC

## NOTES

- Stainless steel 1.4404 and other temperature ranges on request.  
PVC shrouds and earth tags on request.  
Certificate of Conformity: CESI 13 ATEX 033X  
Marking: Ex II 2 GD, Exd IIC Gb / Exe IIC Gb, Extb IIIC Db
- Legend:  
Dimensions  
C - Corner dimension  
H - Height  
TD - Thread Diameter  
TL - Thread Length  
SZU - Spanner Size upper body  
SZL - Spanner Size lower body  
1 - Lower body  
2 - Lower sealing ring  
3 - O-Ring  
4 - Grounding cone  
5 - Swivel braid retainer  
6 - Middle body  
7 - Upper sealing ring  
8 - Pressure cap

### metric thread

Part no.	Size	Cable Ø from / to mm	Cable Ø Outer sheath from / to mm	Thread length mm	Spanner size SZL/SZU mm	Angle size mm	Height mm	Packaging unit (in pc.)
906965	M16 x 1.5	3.0 - 8.5	6.00 - 12.00	16.0	22 / 26	29.0	49.5	35
906966	M16 x 1.5	6.0 - 12.0	8.50 - 16.00	16.0	25 / 29	31.5	52	35
906967	M20 x 1.5	3.0 - 8.0	6.00 - 12.00	16.0	24 / 26	29.0	50	35
906968	M20 x 1.5	6.0 - 11.5	8.50 - 16.00	16.0	25 / 29	31.5	51.5	35
906970	M25 x 1.5	6.0 - 11.5	8.50 - 16.00	18.0	29 / 29	31.5	52.5	35
906972	M25 x 1.5	12.0 - 19.0	16.00 - 26.00	18.0	36 / 40	44.0	63	20
906973	M32 x 1.5	12.0 - 19.0	16.00 - 26.00	18.0	40 / 40	44.0	64	20
906974	M32 x 1.5	15.0 - 25.0	20.00 - 33.00	18.0	48 / 52	57.0	81	12
906975	M40 x 1.5	15.0 - 25.0	20.00 - 33.00	18.0	48 / 52	57.0	81	12
906976	M40 x 1.5	20.0 - 31.0	29.00 - 41.00	18.0	55 / 60	66.0	92	12

# HELUTOP® HT-MS-EX-d / e4



for armoured cables (copper or steel)

Part no.	Size	Cable Ø from / to mm	Cable Ø Outer sheath from / to mm	Thread length mm	Spanner size SZL/SZU mm	Angle size mm	Height mm	Packaging unit (in pc.)
906977	M50 x 1.5	22.0 - 34.0	33.00 - 48.00	18.0	60 / 70	83.0	100	6
906978	M50 x 1.5	27.0 - 40.0	36.00 - 52.00	18.0	70 / 70	81.8	104.5	12
906979	M63 x 1.5	35.0 - 44.0	43.00 - 57.00	20.0	75 / 80	89.5	109.5	5
906980	M63 x 1.5	40.0 - 50.0	47.00 - 60.00	20.0	85 / 85	94.0	111.5	5
906981	M75 x 1.5	40.0 - 50.0	47.00 - 60.00	20.0	85 / 85	94.0	111.5	4



## TECHNICAL DATA

Nickel plated brass EX cable gland

Temperature range -20°C to +95°C  
 Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6
- Seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- watertight, dust-tight
- large clamping areas

### ■ TESTS

- Test standard EN 62444

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Control cabinet construction
- Installation technology

### ■ NOTES

- Certificate of Conformity: DMT 03 ATEX E 051 X
- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

#### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
98045	M12 x 1.5	3.0 - 6.5	6.5	14	50
98046	M16 x 1.5	4.0 - 8.0	6.0	17 / 19	50
98047	M16 x 1.5	5.0 - 10.0	6.0	20	50
98048	M20 x 1.5	6.0 - 12.0	6.0	22	50
98049	M20 x 1.5	10.0 - 14.0	6.0	24	50
98050	M25 x 1.5	14.0 - 18.0	7.0	30	25
98051	M32 x 1.5	20.0 - 25.0	8.0	40	25
98052	M40 x 1.5	22.0 - 32.0	8.0	50	10
98053	M50 x 1.5	32.0 - 38.0	9.0	57	5
98054	M63 x 1.5	37.0 - 44.0	10.0	64 / 68	5

#### PG thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90200	PG 7	3.0 - 6.5	5.0	14	50
90201	PG 9	4.0 - 8.0	6.0	17	50
90202	PG 11	5.0 - 10.0	6.0	20	50
90203	PG 13.5	6.0 - 12.0	6.5	22	50

# HSK-MS-EX



Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
90204	PG 16	10.0 - 14.0	6.5	24	50
90205	PG 21	14.0 - 18.0	7.0	30	25
90206	PG 29	20.0 - 25.0	8.0	40	25
90207	PG 36	22.0 - 32.0	8.0	50	10
90208	PG 42	32.0 - 38.0	9.0	57	5
90209	PG 48	37.0 - 44.0	10.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92900	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	50
92901	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50
92902	NPT 3/4"	14.0 - 18.0	13.0	30	25
92903	NPT 1"	20.0 - 25.0	19.0	40	25





# HSK-MS-EX-E



Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92877	PG 36	22.0 - 32.0	8.0	50	10
92878	PG 42	32.0 - 38.0	9.0	57	5
92879	PG 48	37.0 - 44.0	10.0	64	5

## NPT thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
92890	NPT 3/8"	4.0 - 8.0	15.0	17 / 19	50
92891	NPT 1/2"	6.0 - 12.0	13.0	22 / 24	50
92892	NPT 3/4"	14.0 - 18.0	13.0	30	25

# Adapter PA-ATEX

for thread adjustment from PG to metric



## TECHNICAL DATA

PA EX adapter

Temperature range -20°C to +70°C  
Protection class IP 66

## ■ STRUCTURE

- Material: Polyamide (PA)

## ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

## ■ NOTES

- Approval: PTB 04 ATEX 1040 X
- Legend:  
TD - Thread Diameter  
SI - Size of the internal thread

## from PG to metric

Size outside	Size inside	Packaging unit (in pc.)	black (RAL 9005) Part no.
PG 21	M20 x 1.5	10	<b>904449</b>
PG 29	M20 x 1.5	10	<b>904450</b>
PG 29	M25 x 1.5	10	<b>904451</b>
PG 29	M32 x 1.5	10	<b>904452</b>
PG 36	M25 x 1.5	10	<b>904454</b>
PG 36	M32 x 1.5	10	<b>904455</b>
PG 36	M40 x 1.5	10	<b>904456</b>
PG 42	M20 x 1.5	5	<b>904457</b>
PG 42	M25 x 1.5	5	<b>904458</b>
PG 42	M32 x 1.5	5	<b>904459</b>
PG 42	M40 x 1.5	5	<b>904460</b>
PG 48	M20 x 1.5	5	<b>904461</b>
PG 48	M25 x 1.5	5	<b>904462</b>
PG 48	M32 x 1.5	5	<b>904463</b>
PG 48	M40 x 1.5	5	<b>904464</b>

# Adapter PA-ATEX

for thread adjustment from PG to metric

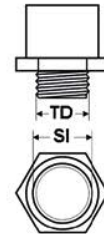


## from PG to metric - high-profile design

Size outside	Size inside	Packaging unit (in pc.)	black (RAL 9005) Part no.
PG 9	M12 x 1.5	25	<b>904468</b>
PG 9	M16 x 1.5	25	<b>904469</b>
PG 9	M20 x 1.5	25	<b>904470</b>
PG 11	M16 x 1.5	25	<b>904471</b>
PG 11	M20 x 1.5	25	<b>904472</b>
PG 11	M25 x 1.5	25	<b>904473</b>
PG 13.5	M16 x 1.5	25	<b>904474</b>
PG 13.5	M20 x 1.5	25	<b>904475</b>
PG 13.5	M25 x 1.5	25	<b>904476</b>
PG 16	M20 x 1.5	25	<b>904477</b>
PG 16	M25 x 1.5	25	<b>904478</b>
PG 16	M32 x 1.5	25	<b>904479</b>
PG 21	M25 x 1.5	10	<b>904480</b>
PG 21	M32 x 1.5	10	<b>904481</b>
PG 21	M40 x 1.5	10	<b>904482</b>
PG 29	M40 x 1.5	10	<b>904483</b>
PG 36	M63 x 1.5	10	<b>904486</b>
PG 42	M50 x 1.5	5	<b>904487</b>
PG 42	M63 x 1.5	5	<b>904488</b>

# EW PA-ATEX

Transition from small to large thread



## TECHNICAL DATA

PA EX extender

Temperature range -20°C to +70°C  
Protection class IP 66

## ■ STRUCTURE

- Material: Polyamide (PA)

## ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

## ■ NOTES

- Approval: PTB 04 ATEX 1040X
- Legend:  
TD - Thread Diameter  
SI - Size of the internal thread

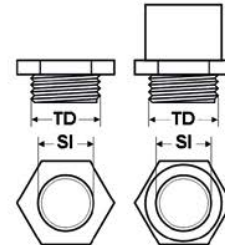
## from metric to metric

Size outside	Size inside	Packaging unit (in pc.)	black (RAL 9005) Part no.
M12 x 1.5	M16 x 1.5	100	<b>904421</b>
M16 x 1.5	M20 x 1.5	100	<b>904422</b>
M20 x 1.5	M25 x 1.5	100	<b>904423</b>
M25 x 1.5	M32 x 1.5	100	<b>904424</b>
M32 x 1.5	M40 x 1.5	50	<b>904425</b>
M40 x 1.5	M50 x 1.5	25	<b>904426</b>
M50 x 1.5	M63 x 1.5	25	<b>904427</b>

# RE PA-ATEX



## Transition from large to small thread



### TECHNICAL DATA

PA EX reducer

Temperature range -20°C to +70°C  
Protection class IP 66

### ■ STRUCTURE

- Material: Polyamide (PA)

### ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction

### ■ NOTES

- Approval: PTB 04 ATEX 1040X
- Legend:  
TD - Thread Diameter  
SI - Size of the internal thread

### from metric to metric

Size outside	Size inside	Packaging unit (in pc.)	black (RAL 9005) Part no.
M25 x 1.5	M12 x 1.5	100	<b>904428</b>
M25 x 1.5	M16 x 1.5	100	<b>904429</b>
M25 x 1.5	M20 x 1.5	100	<b>904430</b>
M32 x 1.5	M16 x 1.5	50	<b>904431</b>
M32 x 1.5	M20 x 1.5	50	<b>904432</b>
M32 x 1.5	M25 x 1.5	50	<b>904433</b>
M40 x 1.5	M20 x 1.5	25	<b>904434</b>
M40 x 1.5	M25 x 1.5	25	<b>904435</b>
M40 x 1.5	M32 x 1.5	25	<b>904436</b>
M50 x 1.5	M20 x 1.5	5	<b>904437</b>
M50 x 1.5	M25 x 1.5	5	<b>904438</b>
M50 x 1.5	M32 x 1.5	5	<b>904439</b>
M50 x 1.5	M40 x 1.5	5	<b>904440</b>
M63 x 1.5	M20 x 1.5	5	<b>904441</b>
M63 x 1.5	M25 x 1.5	5	<b>904442</b>
M63 x 1.5	M32 x 1.5	5	<b>904443</b>
M63 x 1.5	M40 x 1.5	5	<b>904444</b>
M63 x 1.5	M50 x 1.5	5	<b>904445</b>

# RE PA-ATEX

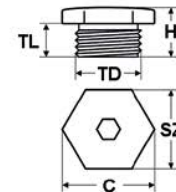


## Transition from large to small thread

from metric to metric - high-profile design

Size outside	Size inside	Packaging unit (in pc.)	black (RAL 9005) Part no.
M16 x 1.5	M12 x 1.5	100	<b>904446</b>
M20 x 1.5	M16 x 1.5	100	<b>904448</b>

# VSK-EX



## TECHNICAL DATA

PA EX screwed plug acc. to DIN EN 50014, DIN EN 50019

Temperature range -20°C to +90°C  
Protection class IP 68 - 10 bar / IP 69K

### ■ STRUCTURE

- Material: Polyamide (PA)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- halogen-free
- phosphor-free

### ■ TESTS

- Test standard EN 60079-0:2012, EN 60079-7:2007, EN 60079-31:2014

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Approval: DMT 03 ATEX E 049
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
H - Height  
SZ - Spanner Size  
C - Corner dimension

## metric thread

Size	Thread length mm	Height mm	Spanner size mm	Angle size mm	Packaging unit (in pc.)	black (RAL 9005) Part no.
M12 x 1.5	8.5	13	15	16.5	100	<b>98114</b>
M16 x 1.5	8.5	13	19	20.5	100	<b>98115</b>
M20 x 1.5	9.0	14.5	24	25.5	100	<b>96793</b>
M25 x 1.5	10.5	16	28	30.5	100	<b>98116</b>
M32 x 1.5	11.5	17.5	36	38.0	50	<b>97763</b>
M40 x 1.5	11.5	18	46	48.0	25	<b>98117</b>
M50 x 1.5	13.5	20	55	60.0	20	<b>98118</b>
M63 x 1.5	14.5	21	70	75.0	20	<b>98119</b>



# VSK-EX

## PG thread

Size	Thread length mm	Height mm	Spanner size mm	Angle size mm	Packaging unit (in pc.)	black (RAL 9005) Part no.
PG 7	8.5	13	15	16.5	100	<b>91447</b>
PG 9	8.5	13	19	20.5	100	<b>91448</b>
PG 11	9.0	14.5	24	25.5	100	<b>91449</b>
PG 13.5	9.0	14.5	24	25.5	100	<b>91450</b>
PG 16	10.5	16	28	30.5	100	<b>91451</b>
PG 21	11.5	17.5	36	38.0	100	<b>91452</b>
PG 29	11.5	18	46	48.0	50	<b>91453</b>
PG 36	13.5	20	55	60.0	25	<b>91454</b>
PG 42	13.5	20	60	65.0	20	<b>91455</b>
PG 48	14.5	21	70	75.0	20	<b>91456</b>



## TECHNICAL DATA

Threadless PA cable gland acc. to DIN EN 62444

Temperature range -20°C to +100°C  
short term -30°C to +150°C

Protection class IP 66 / IP 68 - 5 bar

## ■ STRUCTURE

- Material: Polyamide (PA) 6, V2 acc. to UL 94
- Seal: Chloroprene rubber (CR)
- with patented spring/snap system without tools

## ■ PROPERTIES

- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings

- eng nebeneinander montierbar
- watertight, dust-tight
- large clamping areas

## ■ APPLICATION

- Installation without the use of special tools. No threaded holes or lock nuts required. Compatibility with the HELUTOP® HT series enables problem-free integration into existing systems. For wall thickness range: 0,5-4,0 mm

## ■ NOTES

- Additional colors on request.
- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length

## metric thread

Ø Drill hole mm	Size	Cable Ø from / to mm	Spanner size mm	Packaging unit (in pc.)	grey (RAL 7035)	grey (RAL 7001)	black (RAL 9005)
					Part no.	Part no.	Part no.
16.3	M16	5.0 - 10.0	22	50	<b>908054</b>	<b>908060</b>	<b>908062</b>
20.3	M20	6.0 - 12.0	24	50	<b>908055</b>	<b>908061</b>	-
20.3	M20	6.0 - 12.0	24	25	-	-	<b>908063</b>
25.3	M25	11.0 - 17.0	29	25	<b>908368</b>	<b>908383</b>	<b>908385</b>
32.3	M32	15.0 - 21.0	36	25	<b>908369</b>	<b>908384</b>	-
32.3	M32	15.0 - 21.0	36	50	-	-	<b>908386</b>



## TECHNICAL DATA

Threadless PA cable gland

Temperature range -25°C to +100°C  
 Protection class IP 68 - 5 bar

### ■ STRUCTURE

- Material: Polyamide (PA) 6, V2 acc. to UL 94
- Seal: Chloroprene rubber (CR)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- halogen-free
- optimum strain relief through clamping lamella
- easy to assemble, time and cost savings
- eng nebeneinander montierbar

- watertight, dust-tight
- large clamping areas
- keine Kontermutter notwendig

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- For easy and quick installation.

### ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 W - Wall thickness  
 SZ - Spanner Size

#### Wall thickness range from 1mm to 2.5mm

Size	Cable Ø from / to mm	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
				(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
M12	2.5 - 6.5	15	50	<b>903120</b>	<b>903140</b>	<b>903130</b>
M16	6.0 - 9.5	20	50	<b>903121</b>	<b>903141</b>	<b>903131</b>
M20	7.0 - 12.0	24	50	<b>903122</b>	<b>903142</b>	<b>903132</b>
M25	11.0 - 16.0	28	25	<b>903123</b>	<b>903143</b>	<b>903133</b>
M32	14.0 - 21.0	36	25	<b>903124</b>	<b>903144</b>	<b>903134</b>

#### Wall thickness range from 2.5mm to 4mm

Size	Cable Ø from / to mm	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
				(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
M12	2.5 - 6.5	15	50	<b>903125</b>	<b>903145</b>	<b>903135</b>
M16	6.0 - 9.5	20	50	<b>903126</b>	<b>903146</b>	<b>903136</b>
M20	7.0 - 12.0	24	50	<b>903127</b>	<b>903147</b>	<b>903137</b>
M25	11.0 - 16.0	28	25	<b>903128</b>	<b>903148</b>	<b>903138</b>
M32	14.0 - 21.0	36	25	<b>903129</b>	<b>903149</b>	<b>903139</b>

**Wall thickness range from 1mm to 4mm**

Size	Cable Ø from / to mm	Spanner size mm	Packaging unit (in pc.)	grey	grey	black
				(RAL 7035) Part no.	(RAL 7001) Part no.	(RAL 9005) Part no.
M40	19.0 - 27.5	46	10	<b>900015</b>	<b>904278</b>	<b>904280</b>
M50	26.0 - 34.0	55	10	<b>900016</b>	-	-
M50	26.0 - 34.0	55	5	-	<b>904279</b>	<b>904281</b>



## TECHNICAL DATA

**Stainless steel cable gland**

**Temperature range** -20°C to +100°C  
short term -40°C to +150°C

**Protection class** IP 68 - 5 bar, 30 min. / IP 69K

## ■ STRUCTURE

- Material: Stainless steel 1.4305 / AISI 303
- Seal: thermoplastic elastomers (TPE)

## ■ PROPERTIES

- optimal strain relief through strain relief element
- easy to assemble, time and cost savings
- watertight, dust-tight
- protection against ingress of water and foreign material into enclosure
- smooth surface prevents to adhere harmful microorganisms and allows for easy cleaning
- internal thread prevents dirt accumulation
- suitable for high pressure steam cleaning
- resistant against chemical cleaning supplies
- high corrosion resistance
- ECOLAB certified

## ■ APPLICATION

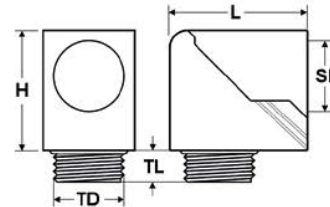
- Food and beverage industry
- Pharmaindustrie
- Reinraumtechnologie
- Biotechnologie
- chemical industry
- Highest requirements to cleanliness and cleaning.

## ■ NOTES

- for tightening from outside use the listed tightening tool
  - assembly with commercial socket wrench
  - delivery including counternut
- Legend:
  - Dimensions
  - D - Outer diameter of upper part
  - D2 - Inner diameter of thread
  - D4 - Inner diameter of upper part
  - H - Height without thread
  - TL - Thread Length
  - SZ - Spanner Size

## metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Outer Ø of upper part mm	Inner Ø of upper part mm	Inner Ø of thread mm	Hight without thread mm	Recommended cap counternut Nm	Packaging unit (in pc.)
906918	M16 x 1.5	5.0 - 10.0	7.0	18	20.2	10.3	10	34.5	4	5
906919	M20 x 1.5	6.0 - 12.0	8.0	22	24.1	12.3	13	35.5	5	5
906920	M25 x 1.5	12.0 - 17.0	10.0	28	30.1	17.3	17	41	6	5



## TECHNICAL DATA

PA folding profile

Temperature range -20°C to +80°C  
 Protection class IP 68

### ■ STRUCTURE

- Material: Polyamide (PA)
- O-ring: Nitrile butadiene rubber (NBR)

### ■ PROPERTIES

- halogen-free
- phosphor-free
- silicone-free
- cadmium-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For simple cable insertion. The profile can be re-opened at any time.

### ■ NOTES

- Legend:  
 Dimensions  
 TL - Thread Length  
 SI - Size of the internal thread

#### from metric to metric

Size	Thread length mm	Packaging unit (in pc.)	Spanner size mm	Height mm	Length mm	grey	black
						(RAL 7035) Part no.	(RAL 9005) Part no.
M16 x 1.5	8.0	25	19	23	28.5	<b>90271</b>	<b>91835</b>
M20 x 1.5	9.0	25	24	30.5	35.0	<b>90272</b>	<b>91836</b>
M25 x 1.5	11.0	10	33	40	49.0	<b>90273</b>	<b>91837</b>

#### from PG to PG

Size	Thread length mm	Packaging unit (in pc.)	Spanner size mm	Height mm	Length mm	grey	black
						(RAL 7035) Part no.	(RAL 9005) Part no.
PG 9	8.0	25	19	23	28.5	<b>90383</b>	<b>97110</b>
PG 11	8.0	25	22	27	31.5	<b>90384</b>	<b>97502</b>
PG 13.5	9.0	25	24	30.5	35.0	<b>90385</b>	<b>97073</b>
PG 16	10.0	25	27	32.5	37.5	<b>90386</b>	<b>94781</b>
PG 21	11.0	25	33	40	49.0	<b>90387</b>	<b>94782</b>



## TECHNICAL DATA

PA folding flange

**Temperature range** -40°C to +110°C  
short term up to +140°C

**Protection class** IP 65

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

## ■ PROPERTIES

- halogen-free
- phosphor-free
- cadmium-free
- easy to assemble, time and cost savings

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Opening flange angle for connection glands or cable glands. Flange angle opened to enable simple insertion of pre-assembled cables. Highly stable.

## ■ NOTES

- UR-tested Dimensions
- Threaded connection: metric to EN 45545-2:2016 3x HL
- Legend:  
Dimensions  
TD - Thread Diameter  
H - Height  
W - Width  
L - Length

## metric thread

Size	Height mm	Width mm	Length mm	Packaging unit (in pc.)	grey	black (RAL 9005)
					Part no.	Part no.
M16 x 1.5	35	47.0	49.0	10	<b>920507</b>	<b>920513</b>
M20 x 1.5	35	47.0	49.0	10	<b>920508</b>	<b>920514</b>
M25 x 1.5	44	65.0	69.0	10	<b>920509</b>	<b>920515</b>
M32 x 1.5	55	78.0	90.0	10	<b>920510</b>	<b>920516</b>
M40 x 1.5	66	94.0	99.0	10	<b>920511</b>	<b>920517</b>
M50 x 1.5	76	101.0	116.0	10	<b>920512</b>	<b>920518</b>

# HELUTOP® HT-AIR-PA



## TECHNICAL DATA

### PA cable gland

<b>Temperature range</b>	-20°C to +100°C short term -30°C to +150°C
<b>Protection class</b>	IP 66 / IP 67

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- Seal: Chloroprene rubber (CR)
- Flat seal: Nitrile butadiene rubber (NBR)
- Vent element: Polytetrafluoroethylene (PTFE)
- with integrated pressure compensation and ventilation system

## ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella

- easy to assemble, time and cost savings
- watertight, dust-tight
- protection against ingress of water and foreign material into enclosure
- Membrane allows that air humidity can leave the enclosure even at low pressure differences; Reduction of condensation water
- large clamping areas

## ■ TESTS

- Test standard EN 62444, EN 60423 (metric thread)

## ■ APPLICATION

- high sealing enclosures
- Environments with extensive temperature ranges
- prevents water condensation

## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
906990	M12 x 1.5	4.0 - 7.0	8.0	19	100
906991	M16 x 1.5	4.0 - 7.0	10.0	19	50
906992	M20 x 1.5	6.0 - 11.0	10.0	24	50



# HELUTOP® HT-AIR-MS



## TECHNICAL DATA

### Nickel plated brass cable gland

<b>Temperature range</b>	-20°C to +100°C short term -40°C to +150°C
<b>Protection class</b>	IP 66 / IP 67

## ■ STRUCTURE

- Material: Brass, nickel plated
- Clamp: Polyamide (PA) 6 - V2
- Seal: Chloroprene rubber (CR)
- Flat seal: Nitrile butadiene rubber (NBR)
- O-ring: Nitrile butadiene rubber (NBR)
- Vent element: Polytetrafluoroethylene (PTFE)
- with integrated pressure compensation and ventilation system

## ■ PROPERTIES

- phosphor-free
- silicone-free
- cadmium-free
- optimum strain relief through clamping lamella

- easy to assemble, time and cost savings
- watertight, dust-tight
- protection against ingress of water and foreign material into enclosure
- Membrane allows that air humidity can leave the enclosure even at low pressure differences; Reduction of condensation water
- large clamping areas

## ■ TESTS

- Test standard EN 62444, EN 60423 (metric thread)

## ■ APPLICATION

- high sealing enclosures
- Environments with extensive temperature ranges
- prevents water condensation

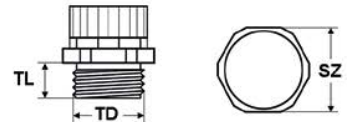
## ■ NOTES

- Legend:  
Dimensions  
TD - Thread Diameter  
TL - Thread Length  
SZ - Spanner Size

### metric thread

Part no.	Size	Cable Ø from / to mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
906993	M12 x 1.5	4.0 - 7.0	8.0	17	50
906994	M16 x 1.5	4.0 - 7.0	8.0	17	50
906995	M16 x 1.5	5.0 - 9.0	8.0	20	50
906996	M20 x 1.5	6.0 - 11.0	8.0	22	50

# PBE-K



## TECHNICAL DATA

**PA pressure balance element**

**Temperature range** -20°C to +105°C  
**Protection class** IP 68 / IP 69K

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- with semi permeable membrane that allows air flow but blocks moisture

## ■ APPLICATION

- Machine and plant construction
- Installation technology
- Control cabinet construction

## ■ NOTES

- Legend:  
 Dimensions  
 TD - Thread Diameter  
 TL - Thread Length  
 SZ - Spanner Size

## metric thread

Size	Spanner size mm	Thread length mm	Packaging unit (in pc.)	Part no.	Part no.
M12 x 1.5	17	6.6	100	<b>904492</b>	<b>904494</b>
M12 x 1.5	17	10.0	100	<b>904493</b>	<b>904495</b>



## TECHNICAL DATA

### PE Corrugated tubes

Temperature range	-40°C to +70°C short term up to +90°C
Capacity/100mm	approx. 125 N (NW: 17)

### ■ STRUCTURE

- Material: modified Polyethylene (PE)
- Flammability acc. to UL 94 (HB)

### ■ PROPERTIES

- halogen-free
- resistant to: bases

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- Cable protection tube for weak stress applications.

### ■ NOTES

- For fine or coarse profiles. Suitable connection glands: HELUquick.

## PE-F

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
10.0	9.8	12.7	50	<b>91621</b>	<b>90448</b>
12.0	11.6	15.6	50	<b>90433</b>	<b>90449</b>
17.0	16.3	20.8	50	<b>90435</b>	<b>90451</b>
23.0	22.9	27.9	50	<b>90436</b>	<b>90452</b>
29.0	28.9	34.0	25	<b>90437</b>	<b>90453</b>
37.0	33.5	41.5	25	<b>90438</b>	<b>90454</b>
50.0	45.2	53.4	25	<b>90439</b>	<b>90455</b>

## PE-B

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
21.0	21.7	28.2	50	<b>93781</b>	<b>93786</b>
29.0	27.9	34.2	25	<b>93782</b>	<b>93787</b>
36.0	35.5	42.3	25	<b>93783</b>	<b>93788</b>
48.0	47.5	54.5	25	<b>93784</b>	<b>93789</b>



## TECHNICAL DATA

### PA Corrugated tubes

Temperature range	-40°C to +120°C short term up to +150°C
Capacity/100mm	approx. 125 N (NW: 17)

### ■ STRUCTURE

- Material: modified Polyamide (PA) 6
- Flammability acc. to UL 94 (V2)

### ■ PROPERTIES

- halogen-free
- phosphor-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids
- UV resistant

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for light mechanical stress
- Cable protection tube for weak to medium stress applications

### ■ NOTES

- Fine profile. Suitable connection glands: HELUquick, HSSV.

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
7.5	6.8	10.0	50	<b>99610</b>	<b>99620</b>
10.0	10.0	12.8	50	<b>99611</b>	<b>99621</b>
12.0	12.5	15.7	50	<b>99612</b>	<b>99622</b>
14.0	14.2	18.5	50	<b>99613</b>	<b>99623</b>
17.0	16.8	21.1	50	<b>99614</b>	<b>99624</b>
23.0	23.4	28.4	50	<b>99615</b>	<b>99625</b>
29.0	29.2	34.5	25	<b>99616</b>	<b>99626</b>
37.0	34.0	42.2	25	<b>99617</b>	<b>99627</b>
50.0	46.0	53.8	25	<b>99618</b>	<b>99628</b>



## TECHNICAL DATA

### PA Corrugated tubes

<b>Temperature range</b>	-40°C to +120°C short term up to +150°C
<b>Capacity/100mm</b>	approx. 350 N (NW: 17)

### ■ STRUCTURE

- Material: modified Polyamide (PA) 6
- Flammability acc. to UL 94 (V2)

### ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Cable protection tube for medium to heavy-duty applications

### ■ NOTES

- Fine profile. Suitable connection glands: HELUquick, HSSV.

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
4.5	4.5	7.1	100	<b>920154</b>	<b>920155</b>
7.5	6.6	10.0	50	<b>92724</b>	<b>92723</b>
10.0	9.8	12.8	50	<b>92676</b>	<b>92713</b>
12.0	12.3	15.7	50	<b>92677</b>	<b>92714</b>
17.0	16.6	21.1	50	<b>92678</b>	<b>92715</b>
23.0	23.1	28.4	50	<b>92679</b>	<b>92716</b>
29.0	28.9	34.5	25	<b>92685</b>	<b>92717</b>
37.0	34.0	42.2	25	<b>92686</b>	<b>92718</b>
50.0	45.6	53.8	25	<b>92687</b>	<b>92719</b>



## TECHNICAL DATA

### PA Corrugated tubes

<b>Temperature range</b>	-40°C to +120°C short term up to +150°C
<b>Capacity/100mm</b>	approx. 350 N (NW: 16 / 17)

### ■ STRUCTURE

- Material: modified Polyamide (PA) 6
- Flammability acc. to UL 94 (HB)

### ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Cable protection tube for medium to heavy-duty applications

### ■ NOTES

- Fine or coarse profile. UL recognized / UR from trade size 16.0  
Suitable connection glands: HELUquick, HSSV.

## PA6-F

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
7.5	6.7	10.0	50	<b>92675</b>	<b>96806</b>
10.0	9.9	13.0	50	<b>90440</b>	<b>90456</b>
12.0	12.2	15.7	50	<b>90441</b>	<b>90457</b>
17.0	16.6	21.2	50	<b>90443</b>	<b>90459</b>
23.0	23.2	28.3	50	<b>90444</b>	<b>90460</b>
29.0	29.0	34.5	25	<b>90445</b>	<b>90461</b>
37.0	36.0	42.4	25	<b>90446</b>	<b>90462</b>
50.0	48.1	53.8	25	<b>90447</b>	<b>90463</b>

## PA6-B

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
16.0	15.9	21.0	50	<b>93790</b>	<b>93795</b>
21.0	21.7	28.2	50	<b>93791</b>	<b>93796</b>
29.0	27.9	34.2	25	<b>93792</b>	<b>93797</b>
36.0	35.5	42.3	25	<b>93793</b>	<b>93798</b>
48.0	47.5	54.5	25	<b>93794</b>	<b>93799</b>



## TECHNICAL DATA

### PA Corrugated tubes

<b>Temperature range</b>	-40°C to +140°C short term up to +160°C
<b>Capacity/100mm</b>	approx. 750 N (NW: 16 / 17)

### ■ STRUCTURE

- Material: modified Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Heavy-duty cable protection tube for heavy-duty mechanical applications

### ■ NOTES

- Fine or coarse profile. UL recognized / UR from trade size 12.0  
Suitable connection glands: HELUquick, HSSV.

## PA6-UL-F

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
7.5	6.7	10.0	50	<b>920384</b>	<b>920394</b>
10.0	9.8	13.0	50	<b>920385</b>	<b>920395</b>
12.0	12.0	15.8	50	<b>920386</b>	<b>920396</b>
17.0	16.8	21.0	50	<b>920387</b>	<b>920397</b>
23.0	22.9	28.5	50	<b>920388</b>	<b>920398</b>

## PA6-UL-B

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
16.0	15.9	21.0	50	<b>920389</b>	<b>920399</b>
21.0	21.7	28.2	50	<b>920390</b>	<b>920400</b>
29.0	27.9	34.2	25	<b>920391</b>	<b>920401</b>
36.0	35.5	42.3	25	<b>920392</b>	<b>920402</b>
48.0	47.5	54.5	25	<b>920393</b>	<b>920403</b>



## TECHNICAL DATA

### PA Corrugated tubes

<b>Temperature range</b>	-40°C to +120°C short term up to +150°C
<b>Capacity/100mm</b>	approx. 350 N (NW: 17)

### ■ STRUCTURE

- Material: modified Polyamide (PA) 12
- Flammability acc. to UL 94 (HB)

### ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Railway technology
- Installation technology
- Cable protection tube for heavy-duty applications.  
High flexible and high load rating

### ■ NOTES

- Fine or coarse profile. Suitable connection glands: HELUquick, HSSV.

## PA12-F

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
10.0	9.8	13.0	50	<b>920156</b>	<b>920163</b>
12.0	12.0	15.8	50	<b>920157</b>	<b>920164</b>
17.0	16.6	21.0	50	<b>920158</b>	<b>920165</b>

## PA12-B

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
21.0	22.0	28.5	50	<b>920159</b>	<b>920166</b>
29.0	27.5	34.5	25	<b>920160</b>	<b>920167</b>
36.0	35.2	42.5	25	<b>920161</b>	<b>920168</b>
48.0	46.5	54.5	25	<b>920162</b>	<b>905796</b>





## TECHNICAL DATA

### PP-corrugated tubes

<b>Temperature range</b>	-40°C to +130°C short term up to +150°C
<b>Capacity/100mm</b>	approx. 350 N (NW: 17)

### ■ STRUCTURE

- Material: Polypropylene (PP)
- Flammability acc. to UL 94 (HB)

### ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Chemical plants
- Heating and air-conditioning technology
- Cable protection tube for medium stress applications.

### ■ NOTES

- Fine profile.  
Suitable connection glands: HELUquick, HSSV.

Nominal size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
7.5	7.1	10.0	100	<b>920170</b>
10.0	9.9	13.0	50	<b>920171</b>
12.0	12.2	15.7	50	<b>920172</b>
14.0	14.2	18.2	50	<b>920173</b>
17.0	16.6	21.2	50	<b>920174</b>
23.0	23.2	28.3	50	<b>920175</b>
29.0	29.0	34.5	25	<b>920176</b>
37.0	36.0	42.4	25	<b>920177</b>
50.0	47.7	54.5	25	<b>920178</b>



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range -40°C to +120°C  
 Protection class IP 68 / IP 68

### ■ STRUCTURE

- Material: Polyamide (PA) 6

### ■ PROPERTIES

- halogen-free

- silicone-free
- cadmium-free
- resistant to: oil, petrol, weak acids, weak bases

### ■ APPLICATION

- Quick-insert glands with metallic female thread for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes

### ■ NOTES

- UR-tested  
 Disassembly without additional opener. Also available angled (45° and 90°).

## metric thread

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M12 x 1.50	7.5	11.5	16	50	<b>904797</b>	<b>904820</b>
M12 x 1.50	10.0	12.0	18	50	<b>904798</b>	<b>904821</b>
M16 x 1.50	10.0	11.5	18	50	<b>904799</b>	<b>904822</b>
M16 x 1.50	12.0	11.5	21	50	<b>904800</b>	<b>904823</b>
M20 x 1.50	12.0	13.0	21	50	<b>904801</b>	<b>904824</b>
M20 x 1.50	17.0	13.0	27	50	<b>904802</b>	<b>904825</b>
M25 x 1.50	17.0	13.0	27	50	<b>904803</b>	<b>904826</b>
M25 x 1.50	23.0	13.0	34	25	<b>904804</b>	<b>904827</b>
M32 x 1.50	23.0	15.0	34	25	<b>904861</b>	<b>904828</b>
M32 x 1.50	29.0	15.0	40	25	<b>904862</b>	<b>904829</b>
M40 x 1.50	29.0	15.0	40	25	<b>904863</b>	<b>904830</b>
M40 x 1.50	37.0	17.0	55	25	<b>904864</b>	<b>904831</b>
M50 x 1.50	37.0	17.0	60	25	<b>904865</b>	<b>904832</b>
M50 x 1.50	50.0	17.0	65	10	<b>904866</b>	<b>904833</b>
M63 x 1.50	50.0	17.0	70	10	<b>904867</b>	<b>904834</b>



## TECHNICAL DATA

Corrugated tubes conduit gland

Temperature range -40°C to +120°C  
Protection class IP 68

### ■ STRUCTURE

- Material: Polyamide (PA) 6

### ■ PROPERTIES

- halogen-free
- silicone-free
- cadmium-free
- resistant to: oil, petrol, weak acids, weak bases

### ■ APPLICATION

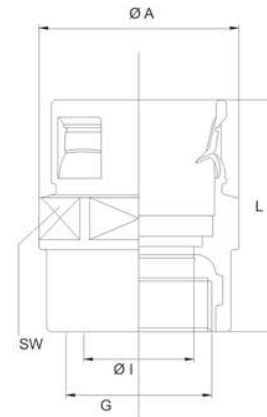
- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection.  
Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- UR-tested  
Disassembly without additional opener.  
Also available straight and angled 45°.

## metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M10 x 1.0	7.5	12.0	50	<b>904805</b>	<b>904835</b>
M12 x 1.5	10.0	10.0	50	<b>904806</b>	<b>904836</b>
M16 x 1.5	10.0	12.0	50	<b>904807</b>	<b>904837</b>
M16 x 1.5	12.0	12.0	50	<b>904808</b>	<b>904838</b>
M20 x 1.5	12.0	13.0	50	<b>904809</b>	<b>904839</b>
M20 x 1.5	17.0	13.0	50	<b>904810</b>	<b>904840</b>
M25 x 1.5	17.0	13.0	50	<b>904811</b>	<b>904841</b>
M25 x 1.5	23.0	13.0	25	<b>904812</b>	<b>904842</b>
M32 x 1.5	23.0	15.0	25	<b>904813</b>	<b>904843</b>
M32 x 1.5	29.0	15.0	10	<b>904814</b>	<b>904844</b>
M40 x 1.5	29.0	15.0	10	<b>904815</b>	<b>904845</b>
M40 x 1.5	37.0	15.0	10	<b>904816</b>	<b>904846</b>
M50 x 1.5	37.0	15.5	10	<b>904817</b>	<b>904847</b>
M50 x 1.5	50.0	15.0	5	<b>904818</b>	<b>904848</b>
M63 x 1.5	50.0	16.0	5	<b>904819</b>	<b>904849</b>



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- UR-tested  
Protection classification: IP 66 with outer seal  
Threaded connection: metric to EN 60423  
Each unit includes 1 safety opener

#### metric thread

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M10 x 1.0	7.5	8.5	14	50	<b>905858</b>	<b>905859</b>
M12 x 1.5	10	8.9	19	50	<b>94180</b>	<b>94190</b>
M16 x 1.5	10	9.3	19	50	<b>920183</b>	<b>920184</b>
M16 x 1.5	12	8.6	21	50	<b>94181</b>	<b>94191</b>
M20 x 1.5	16 / 17	13.0	27	50	<b>94182</b>	<b>94192</b>
M25 x 1.5	21 / 23	14.3	36	50	<b>94183</b>	<b>94193</b>
M32 x 1.5	29	14.2	40	25	<b>94184</b>	<b>94194</b>
M40 x 1.5	36 / 37	15.0	50	25	<b>94185</b>	<b>94195</b>
M50 x 1.5	48 / 50	15.5	65	10	<b>94186</b>	<b>94196</b>
M63 x 1.5	48 / 50	15.5	65	10	<b>920185</b>	<b>920186</b>

#### PG thread

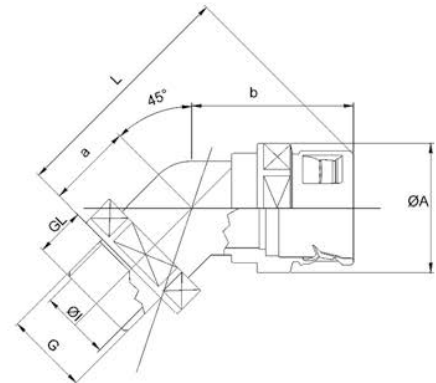
Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
PG 7	7.5	7.0	14	50	<b>90480</b>	<b>90490</b>

# HSSV-SP



Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey Part no.	black Part no.
PG 9	10	7.6	19	50	<b>90481</b>	<b>90491</b>
PG 11	12	8.5	21	50	<b>90482</b>	<b>90492</b>
PG 13.5	16 / 17	9.8	27	50	<b>90483</b>	<b>90493</b>
PG 16	16 / 17	9.9	27	50	<b>90484</b>	<b>90494</b>
PG 21	21 / 23	11.7	36	50	<b>90485</b>	<b>90495</b>
PG 29	29	11.7	40	25	<b>90486</b>	<b>90496</b>
PG 36	36 / 37	15.0	50	25	<b>90487</b>	<b>90497</b>
PG 48	48 / 50	15.0	65	10	<b>90488</b>	<b>90498</b>

# HSSV elbow 45° plastic



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes.

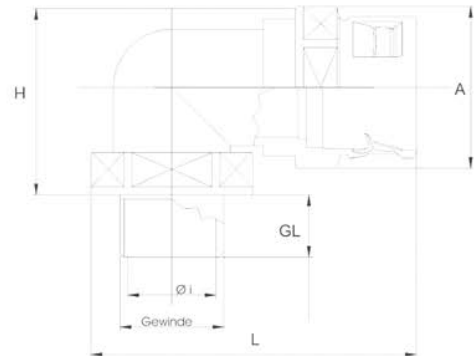
### ■ NOTES

- UR-tested
- Protection classification:  
IP 66 with outer seal
- Threaded connection:  
metric to EN 60423
- Each unit includes 1 safety opener. With PG thread on request.

### metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M25 x 1.50	21.00 / 23.00	15.5	50	<b>920196</b>	<b>920204</b>
M32 x 1.50	29.00	13.6	25	<b>920197</b>	<b>920205</b>
M40 x 1.50	36.00 / 37.00	15.8	25	<b>920198</b>	<b>920206</b>
M50 x 1.50	48.00 / 50.00	16.3	10	<b>920199</b>	<b>920207</b>
M63 x 1.50	48.00 / 50.00	15.4	10	<b>920200</b>	<b>920208</b>

# HSSV elbow 90° plastic



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- UR-tested
- Protection classification: IP 66 with outer seal
- Threaded connection: metric to EN 60423
- Each unit includes 1 safety opener.

#### metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M12 x 1.5	10	9.5	50	<b>94200</b>	<b>94210</b>
M16 x 1.5	10	9.0	50	<b>98983</b>	<b>920190</b>
M16 x 1.5	12	8.0	50	<b>94201</b>	<b>94211</b>
M20 x 1.5	16 / 17	10.5	50	<b>94202</b>	<b>94212</b>
M25 x 1.5	21 / 23	14.8	50	<b>94203</b>	<b>94213</b>
M32 x 1.5	29	13.8	25	<b>94204</b>	<b>94214</b>
M40 x 1.5	36 / 37	15.6	25	<b>94205</b>	<b>94215</b>
M50 x 1.5	48 / 50	16.0	10	<b>94206</b>	<b>94216</b>
M63 x 1.5	48 / 50	15.5	10	<b>920191</b>	<b>920192</b>

#### PG thread

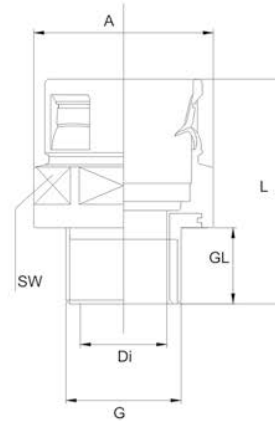
Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
PG 9	10	9.0	50	<b>98440</b>	<b>98363</b>
PG 11	12	7.7	50	<b>98441</b>	<b>97382</b>

# HSSV elbow 90° plastic



Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
PG 13.5	16 / 17	10.0	50	<b>98442</b>	<b>98435</b>
PG 16	16 / 17	10.0	50	<b>98443</b>	<b>97944</b>
PG 21	21 / 23	11.8	50	<b>98444</b>	<b>98436</b>
PG 29	29	11.5	25	<b>98445</b>	<b>98437</b>
PG 36	36 / 37	15.5	25	<b>98446</b>	<b>98438</b>
PG 48	48 / 50	16.0	10	<b>98447</b>	<b>98439</b>





## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands with metallic male thread for a reliable, quick connection.  
Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- Protection classification: IP 66 with outer seal
- Threaded connection: metric to EN 60423
- Each unit includes 1 safety opener

### metric thread

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M12 x 1.5	10	10.0	19	50	<b>920229</b>	<b>920238</b>
M16 x 1.5	10	10.5	19	50	<b>920230</b>	<b>920239</b>
M16 x 1.5	12	10.5	21	50	<b>920231</b>	<b>920240</b>
M20 x 1.5	16 / 17	12.0	27	50	<b>920232</b>	<b>920241</b>
M25 x 1.5	21 / 23	15.0	36	50	<b>920233</b>	<b>920242</b>
M32 x 1.5	29	15.0	40	25	<b>920234</b>	<b>920243</b>
M40 x 1.5	36 / 37	16.0	50	25	<b>920235</b>	<b>920244</b>
M50 x 1.5	48 / 50	16.0	65	10	<b>920236</b>	<b>920245</b>
M63 x 1.5	48 / 50	15.5	60	10	-	<b>920246</b>

# HSSV elbow 45° metal



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

## ■ PROPERTIES

- halogen-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands with metallic male thread for a reliable, quick connection.  
Suitable for parallel-coiled HELUcond protection tubes.

## ■ NOTES

- UR-tested  
Protection classification:  
IP 66 with outer seal  
Threaded connection: metric to EN 60423  
Each unit includes 1 safety opener

### metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M25 x 1.5	21 / 23	15.0	50	<b>920265</b>	<b>920269</b>
M32 x 1.5	29	15.0	25	<b>920266</b>	<b>920270</b>
M40 x 1.5	36 / 37	16.0	25	<b>920267</b>	<b>920271</b>
M50 x 1.5	48 / 50	16.0	10	<b>920268</b>	<b>920272</b>

# HSSV elbow 90° metal



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

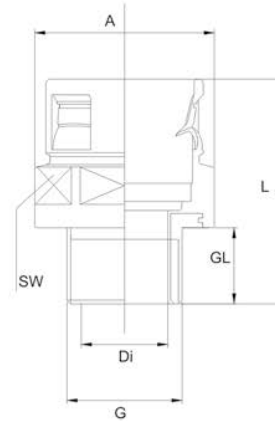
- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands with metallic male thread for a reliable, quick connection.  
Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- UR-tested  
Protection classification:  
IP 66 with outer seal  
Threaded connection: metric to EN 60423  
Each unit includes 1 safety opener.

#### metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M12 x 1.5	10	10.0	50	<b>920247</b>	<b>920256</b>
M16 x 1.5	10	10.5	50	<b>920248</b>	<b>920257</b>
M16 x 1.5	12	10.5	50	<b>920249</b>	<b>920258</b>
M20 x 1.5	17	12.0	50	<b>920250</b>	<b>920259</b>
M25 x 1.5	21 / 23	15.0	50	<b>920251</b>	<b>920260</b>
M32 x 1.5	29	15.0	25	<b>920252</b>	<b>920261</b>
M40 x 1.5	36 / 37	16.0	25	<b>920253</b>	<b>920262</b>
M50 x 1.5	48 / 50	16.0	10	<b>920254</b>	<b>920263</b>
M63 x 1.5	48 / 50	16.0	10	<b>920255</b>	<b>920264</b>



## TECHNICAL DATA

Corrugated tubes conduit gland

Temperature range -40°C to +110°C  
 Protection class IP 65

## STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

## PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes.

## NOTES

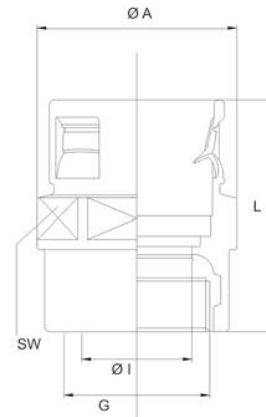
- Protection classification: IP 66 with outer seal
- Threaded connection: metric to EN 60423
- Each unit includes 1 safety opener

### metric thread – female

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M16 x 1.50	12.0	9.6	21	50	<b>920220</b>	<b>920225</b>
M20 x 1.50	17.0	13.0	27	50	<b>920221</b>	<b>920226</b>
M25 x 1.50	23.0	16.0	36	50	<b>920222</b>	<b>920227</b>
M32 x 1.50	29.0	12.0	40 / 34.5	25	<b>920223</b>	<b>920228</b>

### PG thread – female

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
PG 9	10.0	10.3	19	50	<b>94220</b>	<b>94230</b>
PG 11	12.0	11.6	21	50	<b>94221</b>	<b>94231</b>
PG 13.5	17.0	13.9	27	50	<b>94222</b>	<b>94232</b>
PG 16	17.0	15.9	27	50	<b>94223</b>	<b>94233</b>
PG 21	23.0	21.5	36	50	<b>94224</b>	<b>94234</b>
PG 29	29.0	28.8	40	25	<b>94225</b>	<b>94235</b>



## TECHNICAL DATA

### Corrugated tubes conduit gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands with metallic female thread for a reliable, quick connection.  
Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- Protection classification: IP 66 with outer seal
- Threaded connection: metric to EN 60423
- Each unit includes 1 safety opener

#### metric thread – female

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M12 x 1.5	10	8.0	19	50	<b>920273</b>	<b>920281</b>
M16 x 1.5	10	10.0	19	50	<b>920274</b>	<b>920282</b>
M16 x 1.5	12	10.0	21	50	<b>920275</b>	<b>920283</b>
M20 x 1.5	16 / 17	13.0	27	50	<b>920276</b>	<b>920284</b>
M25 x 1.5	21 / 23	13.5	36	50	<b>920277</b>	<b>920285</b>
M32 x 1.5	29	14.0	40	25	<b>920278</b>	<b>920286</b>
M40 x 1.5	36 / 37	15.0	50	25	<b>920279</b>	<b>920287</b>
M50 x 1.5	48 / 50	16.0	65	10	<b>920280</b>	<b>920288</b>

# HSSV-ZE



## TECHNICAL DATA

Combined quick- insert corrugated tubes cable gland

Temperature range -25°C to +100°C  
Protection class IP 65

## ■ STRUCTURE

- Material: Polyamide (PA) 6

## ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Combined quick-insert cable glands for a reliable, quick connection with strain relief.  
Suitable for parallel-coiled HELUcond protection tubes.

## ■ NOTES

- Threaded connection:  
metric to EN 60423  
Each unit includes 1 safety opener

## metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M16 x 1.50	10.0	7.5	50	<b>903459</b>	<b>903466</b>
M16 x 1.50	12.0	7.5	50	<b>903460</b>	<b>903467</b>
M20 x 1.50	17.0	8.5	50	<b>903461</b>	<b>903468</b>
M25 x 1.50	23.0	10.5	50	<b>903462</b>	<b>903469</b>
M32 x 1.50	29.0	10.5	25	<b>903463</b>	<b>903470</b>



## TECHNICAL DATA

### Corrugated tubes cable gland

Temperature range	-40°C to +110°C
Protection class	IP 65

### ■ STRUCTURE

- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Combined with brass cable gland.  
Combined quick-insert cable glands with single sealing insert for a reliable, quick connection.  
Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- Protection classification on cable with UNI-DICHT sealing insert:  
with colour-coded sealing insert: IP 68 - 10 bar in indicated clamping area  
with multiple sealing inserts to IP 65 and/or IP 68, when bore diameter in seal insert and cable diameter are identical  
Threaded connection:  
metric to EN 60423  
Each unit includes 1 safety opener  
Gland also available with PG thread on request.

#### metric thread

Size	Suitable for nominal size	Thread length mm	Clamping area from / up to mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M16 x 1.50	10.00	9.0	6.50 - 9.50	50	<b>920289</b>	<b>920294</b>
M20 x 1.50	16.00 / 17.00	9.0	9.00 - 13.00	50	<b>920290</b>	<b>920295</b>
M25 x 1.50	16.00 / 17.00	9.5	11.50 - 15.50	50	<b>920291</b>	<b>920296</b>
M32 x 1.50	21.00 / 23.00	11.0	17.00 - 20.50	25	<b>920292</b>	<b>920297</b>
M40 x 1.50	29.00	11.2	24.00 - 28.00	25	<b>920293</b>	<b>920298</b>

# HSSV IP68 straight



## TECHNICAL DATA

Quick-insert corrugated tubes conduit gland - straight

Temperature range -40°C to +110°C  
Protection class IP 68

## ■ STRUCTURE

- Material: Polyamide (PA) 6

## ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes.

## ■ NOTES

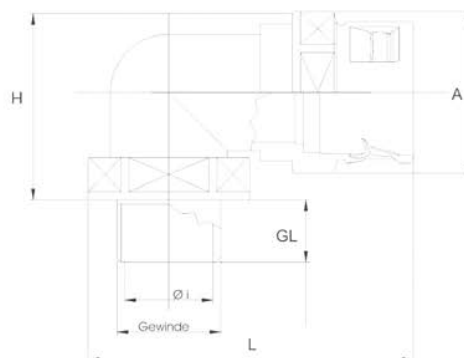
- Interior seal made of TPE.  
Threaded connection:  
metric to EN 60423  
Each unit includes 1 safety opener

### metric thread

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	grey	black
					Part no.	Part no.
M12 x 1.5	10.0	8.9	19	50	<b>920404</b>	<b>920413</b>
M16 x 1.5	10.0	9.3	19	50	<b>920405</b>	<b>920414</b>
M16 x 1.5	12.0	8.6	21	50	<b>920406</b>	<b>920415</b>
M20 x 1.5	16.0 / 17.0	13.0	27	50	<b>920407</b>	<b>920416</b>
M25 x 1.5	21.0 / 23.0	14.3	36	50	<b>920408</b>	<b>920417</b>
M32 x 1.5	29.0	14.2	40	25	<b>920409</b>	<b>920418</b>
M40 x 1.5	36.0 / 37.0	15.0	50	25	<b>920410</b>	<b>920419</b>
M50 x 1.5	48.0 / 50.0	15.5	65	10	<b>920411</b>	<b>920420</b>
M63 x 1.5	48.0 / 50.0	15.5	65	10	<b>920412</b>	<b>920421</b>



# HSSV IP68 elbow 90°



## TECHNICAL DATA

Quick-insert corrugated tubes conduit gland - elbow 90°

Temperature range -40°C to +110°C  
 Protection class IP 65

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection. Suitable for parallel-coiled HELUcond protection tubes.

### ■ NOTES

- Interior seal made of TPE.
- Threaded connection: metric to EN 60423
- Each unit includes 1 safety opener

## metric thread

Size	Suitable for nominal size	Thread length mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
M12 x 1.5	10.0	9.5	50	<b>920422</b>	<b>920431</b>
M16 x 1.5	10.0	9.0	50	<b>920423</b>	<b>920432</b>
M16 x 1.5	12.0	8.0	50	<b>920424</b>	<b>920433</b>
M20 x 1.5	17.0	10.5	50	<b>920425</b>	<b>920434</b>
M25 x 1.5	21.0 / 23.0	14.8	50	<b>920426</b>	<b>920435</b>
M32 x 1.5	29.0	13.8	25	<b>920427</b>	<b>920436</b>
M40 x 1.5	36.0 / 37.0	15.6	25	<b>920428</b>	<b>920437</b>
M50 x 1.5	48.0 / 50.0	16.0	10	<b>920429</b>	<b>920438</b>
M63 x 1.5	48.0 / 50.0	15.5	10	<b>920430</b>	<b>920439</b>



## TECHNICAL DATA

Opener

Temperature range -20°C to +100°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6

## ■ PROPERTIES

- halogen-free

## ■ APPLICATION

- To open HSSV conduit glands. Simply slip over the conduit - press against the gland - open detent.

Suitable for nominal size	Packaging unit (in pc.)	yellow Part no.
7.5	10	<b>99891</b>
10.0	10	<b>99892</b>
12.0	10	<b>99893</b>
17.0	10	<b>98744</b>
23.0	5	<b>98745</b>
29.0	5	<b>99894</b>
37.0	5	<b>99895</b>
50.0	5	<b>99896</b>

# HSSV-OS



## TECHNICAL DATA

Outer seal

Temperature range -40°C to +110°C

## ■ STRUCTURE

- Material: thermoplastic vulcanizates (TPV)

## ■ PROPERTIES

- resistant to: oil, solvents, chemicals

## ■ APPLICATION

- Outer seal for quick-insert glands. Suitable for HSSV glands.

Suitable for nominal size	Packaging unit (in pc.)	grey	black
		Part no.	Part no.
7.5	50	<b>920307</b>	<b>920315</b>
10.0	50	<b>920308</b>	<b>920316</b>
12.0	50	<b>920309</b>	<b>920317</b>
17.0	50	<b>920310</b>	<b>920318</b>
23.0	50	<b>920311</b>	<b>920319</b>
29.0	25	<b>920312</b>	<b>920320</b>
37.0	25	<b>920313</b>	<b>920321</b>
50.0	10	<b>920314</b>	<b>920322</b>



## TECHNICAL DATA

Corrugated tubes holder

Temperature range -40°C to +105°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- System holder for HELUcond protection tubes. Universal system holder with optional clips for extreme loads. Quick assembly through single-hole fastening.

### SH holder

Suitable for nominal size	Width mm	Height mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
7	20.0	18	100	<b>94663</b>	<b>99270</b>
10	20.0	23	100	<b>94664</b>	<b>99271</b>
12	22.0	26	50	<b>94665</b>	<b>99272</b>
14	28.0	33	50	<b>920323</b>	<b>920324</b>
17	28.0	33	50	<b>94666</b>	<b>99273</b>
23	35.0	40	50	<b>94667</b>	<b>99274</b>
29	43.0	45	30	<b>94668</b>	<b>99275</b>
36	54.0	53	20	<b>94669</b>	<b>99276</b>
48	68.0	66	20	<b>94670</b>	<b>99277</b>

### SHV holder with rotary protection

Suitable for nominal size	Width mm	Height mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
16 / 17	28.0	33	50	<b>920325</b>	<b>920330</b>
21 / 23	35.0	40	50	<b>920326</b>	<b>920331</b>

# SH, SHV



Suitable for nominal size	Width mm	Height mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
29	43.0	45	30	<b>920327</b>	<b>920332</b>
36 / 37	54.0	53	20	<b>920328</b>	<b>920333</b>
48 / 50	68.0	66	20	<b>920329</b>	<b>920334</b>



## TECHNICAL DATA

Corrugated tube system holder

Temperature range -40°C to +105°C

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 : V2 (V2)

### ■ PROPERTIES

- halogen-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Accessories for system holder SH/SHV

#### SD cap for holder

Suitable for tube ND	Packaging unit (in pc.)	grey	black
		Part no.	Part no.
7.5 / 10	100	<b>94671</b>	<b>99278</b>
12	50	<b>94672</b>	<b>99279</b>
14 / 16 / 17	50	<b>94673</b>	<b>99280</b>
21 / 23	50	<b>94674</b>	<b>99281</b>
29	30	<b>94675</b>	<b>99282</b>
36 / 37	20	<b>94676</b>	<b>99283</b>
48 / 50	20	<b>94677</b>	<b>99284</b>

#### VS bond bridge for holder

Suitable for tube ND	Packaging unit (in pc.)	grey	black
		Part no.	Part no.
	100	<b>94679</b>	<b>99286</b>

#### HT hut-rail clip for holder

Suitable for tube ND	Packaging unit (in pc.)	grey	black
		Part no.	Part no.
	50	<b>94678</b>	<b>99285</b>



## TECHNICAL DATA

Corrugated protection tube holder

Temperature range -30°C to +100°C

### ■ STRUCTURE

- Material: Polycarbonat (PC)
- with flange pipe holder
- Flammability acc. to UL 94

### ■ PROPERTIES

- halogen-free
- phosphor-free
- cadmium-free
- resistant to: alkalis, weak acids, fuels, alcohol, mineral oils

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Tube holder for HELUcond protection tube. Universal, high-strength tube holder with double struts. Fastening bores suitable for horizontal and vertical rail systems in control cabinet.

Suitable for tube outer Ø mm	Width mm	Height mm	Packaging unit (in pc.)	grey	black
				Part no.	Part no.
21.0	38.0	40	50	<b>91200</b>	<b>93497</b>
28.5	38.0	40	50	<b>91201</b>	<b>93498</b>
34.5	38.2	48	50	<b>91202</b>	<b>93499</b>
42.5	60.4	59	50	<b>91203</b>	<b>93507</b>
54.5	59.7	77	50	<b>91204</b>	<b>93508</b>



## TECHNICAL DATA

### PA Corrugated tubes

<b>Temperature range</b>	-40°C to +140°C short term up to +160°C
<b>Capacity/100mm</b>	approx. 1200, 800 N

### ■ STRUCTURE

- Material: modified Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
  - Robotics
  - Automation technology
  - Vehicle construction and shipbuilding
  - Railway technology
  - Installation technology
  - Control cabinet construction
  - Oversize corrugated tubes
- Cable protection tube for medium to heavy-duty applications.

### ■ NOTES

- Suitable connection glands:  
JUMBO gland  
Bending behaviour: very good

Suitable for nominal size	Inner Ø mm	Outer Ø mm, approx.	Bending radius mm	Packaging unit (in m)	grey	black
					Part no.	Part no.
70.0	66.5	79.2	200.0	10	<b>90408</b>	<b>91362</b>
95.0	91.0	106.0	265.0	10	<b>90409</b>	<b>91363</b>





## TECHNICAL DATA

### PA Corrugated tubes

<b>Temperature range</b>	-40°C to +120°C short term up to +150°C
<b>Capacity/100mm</b>	approx. 700, 800 N

## ■ STRUCTURE

- Material: modified Polyamide (PA) 12
- Flammability acc. to UL 94 (V0)

## ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Robotics
- Handling systems
- Vehicle construction
- Drag chains
- Oversize corrugated tubes  
Cable protection tube for heavy-duty applications

## ■ NOTES

- Suitable connection glands:  
JUMBO gland

Suitable for nominal size	Inner Ø mm	Outer Ø mm, approx.	Bending radius mm	Packaging unit (in m)	grey	black
					Part no.	Part no.
70.0	66.5	79.2	200.0	10	<b>920378</b>	<b>920380</b>
95.0	91.0	106.0	265.0	10	<b>920379</b>	<b>920381</b>



## TECHNICAL DATA

PUR-corrugated tube

**Temperature range** -40°C to +125°C  
short term up to +140°C

**Capacity/100mm** approx. 500, 800 N

## ■ STRUCTURE

- Material: modified Polyurethane (PUR)
- Flammability acc. to UL 94 (HB)

## ■ PROPERTIES

- halogen-free
- cadmium-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Robots
  - Handling systems
  - Vehicle construction
  - Drag chains
  - Oversize corrugated tubes
- Cable protection tube for maximum duty robot applications  
Lowest reset quality  
High abrasion resistance

## ■ NOTES

- Suitable connection glands:  
JUMBO gland

Suitable for nominal size	Inner Ø mm	Outer Ø mm, approx.	Bending radius mm	Packaging unit (in m)	black Part no.
70.0	66.5	79.2	160.0	10	<b>920382</b>
95.0	91.0	106.0	210.0	10	<b>920383</b>

# JUMBO-FP



## TECHNICAL DATA

**One-piece straight flange connection**

**Temperature range** -40°C to +120°C  
**Protection class** IP 54 / IP 69K

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free

- silicone-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Suitable for parallel-coiled JUMBO protection tubes.

Suitable for nominal size	Weight kg, approx.	Packaging unit (in pc.)	grey	black
			Part no.	Part no.
70.0	10.80	1	<b>90402</b>	<b>920368</b>
95.0	16.90	1	<b>90403</b>	<b>920369</b>

# JUMBO-WFP



## TECHNICAL DATA

**90° Elbow one piece flange connection**

**Temperature range** -40°C to +120°C  
**Protection class** IP 54 / IP 69K

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- silicone-free

- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids
- self-extinguishing
- flame-retardant

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Suitable for parallel-coiled HELUcond Jumbo protection tubes.

Suitable for nominal size	Weight kg, approx.	Packaging unit (in pc.)	grey	black
			Part no.	Part no.
70.0	17.10	1	<b>90404</b>	<b>920372</b>
95.0	37.00	1	<b>90405</b>	<b>920373</b>



## TECHNICAL DATA

### PA Corrugated tubes

**Temperature range** -40°C to +120°C  
short term up to +150°C

### ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94 (V2)

### ■ PROPERTIES

- halogen-free
- resistant to: fuels, mineral oils, greases
- Trouble-free retrofitting
- high mechanical strength

- simple installation of pre-fabricated lines

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- The dividable and reclosable cable protection tube for subsequent mechanical protection of the cables.  
Repair of existing systems.

### ■ NOTES

- Suitable connection glands: COV

trade size mm	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
10.0	8.8	13.5	50	<b>90061</b>
14.0	13.2	18.7	50	<b>90062</b>
20.0	20.2	25.7	50	<b>90063</b>
23.0	23.9	31.3	50	<b>90064</b>
37.0	32.5	43.2	25	<b>90065</b>
45.0	43.1	54.2	25	<b>90066</b>
70.0	67.0	79.8	10	<b>920179</b>



## TECHNICAL DATA

PP-corrugated tubes

**Temperature range** -40°C to +135°C  
short term up to +150°C

## ■ STRUCTURE

- Material: Polypropylene (PP)
- Flammability acc. to UL 94 (HB)

## ■ PROPERTIES

- halogen-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- The dividable and reclosable cable protection tube for subsequent mechanical protection of the cables.
- Trouble-free retrofitting
- High mechanical strength
- Simple installation of pre-fabricated lines
- Repair of existing systems

## ■ NOTES

- Suitable connection glands: COV

trade size mm	Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Bending radius mm	Packaging unit (in m)	black Part no.
10.0	8.4	13.4	1.75	70.0	50	<b>97496</b>
14.0	12.5	18.5	3.05	95.0	50	<b>97134</b>
20.0	19.2	25.3	4.10	130.0	50	<b>97135</b>
23.0	23.4	30.8	5.90	155.0	50	<b>97205</b>
37.0	31.0	41.4	4.75	205.0	25	<b>96732</b>
45.0	42.7	54.0	5.60	190.0	25	<b>90054</b>
70.0	67.5	79.8	3.55	375.0	10	<b>920180</b>



## TECHNICAL DATA

### Corrugated tubes conduit gland

<b>Temperature range</b>	-40°C to +120°C short term up to +140°C
<b>Protection class</b>	IP 43

### ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (HB)

### ■ PROPERTIES

- halogen-free

- resistant to: fuels, mineral oils, greases, weak bases, weak acids

### ■ APPLICATION

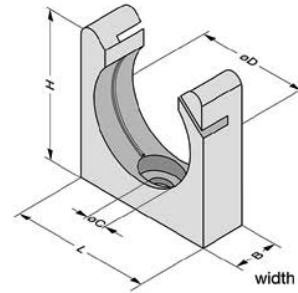
- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Tube gland for HELUcond CO protection tubes.  
Axial fold-up and reclosable connection gland with shaped locking rods. Split nut with safety lock to prevent accidental opening.

#### metric thread - dividable conduit gland

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	black Part no.
M16 x 1.5	10.0	34.0	19	100	<b>905031</b>
M20 x 1.5	14.0	41.0	27	100	<b>905032</b>
M25 x 1.5	20.0	43.0	30	50	<b>905033</b>
M32 x 1.5	23.0	50.5	36	50	<b>905034</b>
M40 x 1.5	37.0	59.0	46	25	<b>905035</b>
M50 x 1.5	45.0	67.5	55	25	<b>905036</b>

#### metric thread - dividable counternut

Size	Suitable for nominal size	Thread length mm	Spanner size mm	Packaging unit (in pc.)	black Part no.
M16 x 1.5	10.0	8.0	19	100	<b>905037</b>
M20 x 1.5	14.0	8.0	27	100	<b>905038</b>
M25 x 1.5	20.0	9.0	30	50	<b>905039</b>
M32 x 1.5	23.0	12.0	36	50	<b>905040</b>
M40 x 1.5	37.0	15.0	46	25	<b>905041</b>
M50 x 1.5	45.0	15.0	55	25	<b>905042</b>



## TECHNICAL DATA

Corrugated tubes holder

Temperature range -30°C to +105°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6
- Flammability acc. to UL 94

## ■ PROPERTIES

- halogen-free
- cadmium-free
- resistant to: fuels, mineral oils, greases, weak bases, weak acids

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Tube holder for dividible HELUcond CO protection tube. Quick fastening with integrated rib, which also fixes the protection tube in an axial direction

Suitable for nominal size	Width mm	Height mm	Packaging unit (in pc.)	black Part no.
10.0	18.5	21	100	<b>920375</b>
14.0	24.0	25.5	100	<b>920357</b>
20.0	35.0	36	100	<b>920358</b>
23.0	42.0	43.5	50	<b>920359</b>
37.0	55.0	56.5	20	<b>920360</b>
45.0	67.0	68	20	<b>920361</b>



# IA-KE



## TECHNICAL DATA

Insertion aid

## ■ APPLICATION

- Quick and simple insertion of lines into splitted conduits resp. cable chain openings

Part no.	Type	Cross-sec. max. mm <sup>2</sup>	Packaging unit (in pc.)
901006	KE	22.0	1

# PT-S



## TECHNICAL DATA

### Protection tube

Temperature range	-25°C to +90°C short term up to +100°C
Protection class	IP 68

## ■ STRUCTURE

- Material: Polyvinyl chloride (PVC)

## ■ PROPERTIES

- silicone-free

- cadmium-free
- largely resistant to: oil, acids
- extremely flexible, expandable and compressible

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- Cable protection tube type S with integrated spring steel wire.

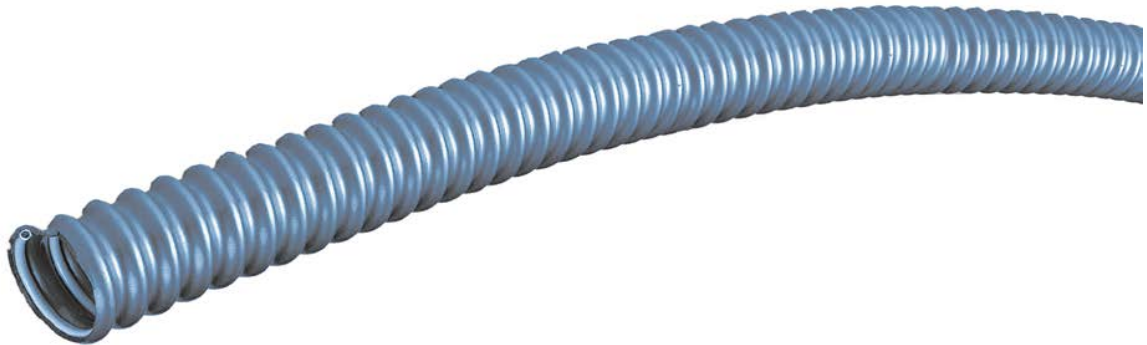
## ■ NOTES

- Suitable connection glands: USK, LK-I, MTG-US und MTG-LI

Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey Part no.
7.0	10.0	50	<b>91219</b>
10.0	14.0	50	<b>91220</b>
13.0	17.0	50	<b>91221</b>
15.0	19.0	50	<b>91222</b>
16.0	21.0	50	<b>91223</b>
22.0	27.0	50	<b>91224</b>
29.0	36.0	25	<b>91225</b>
38.0	45.0	25	<b>91226</b>
44.0	52.0	25	<b>91227</b>
48.0	56.0	25	<b>91228</b>

## small pack

Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey Part no.
7.0	10.0	10	<b>91270</b>
10.0	14.0	10	<b>91271</b>
13.0	17.0	10	<b>91272</b>
15.0	19.0	10	<b>91273</b>
16.0	21.0	10	<b>91274</b>
22.0	27.0	10	<b>91275</b>
29.0	36.0	10	<b>91276</b>



## TECHNICAL DATA

### Protection tube

<b>Temperature range</b>	-40°C to +100°C short term up to +120°C
<b>Protection class</b>	IP 68

### ■ STRUCTURE

- Material: Polyurethane (PUR)
- Outer sheath material: Polyurethane (PUR)
- integrated spring steel wire

### ■ PROPERTIES

- halogen-free

- silicone-free
- cadmium-free
- resistant to: oil, petrol, microbes, weather-resistant
- largely resistant to: acids, alkalis
- extremely flexible, expandable and compressible

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Suitable connection glands: USK, LK-I, MTG-US and MTG-LI

#### blue - small pack

Part no.	Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)
94870	7.0	10.0		10
94871	10.0	14.0		10
94872	13.0	17.0		10
94873	15.0	19.0		10
94874	16.0	21.0		10
94875	22.0	27.0		10
94876	29.0	36.0		10
94877	38.0	45.0		10
94879	48.0	56.0		10

#### blue

Part no.	Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)
90464	7.0	10.0	0.038	50
90465	10.0	14.0	0.085	50
90466	13.0	17.0	0.116	50
90467	15.0	19.0	0.119	50
90468	16.0	21.0	0.16	50
90469	22.0	27.0	0.26	50
90470	29.0	36.0	0.42	25
90471	38.0	45.0	0.50	25
90473	48.0	56.0	0.82	25



## TECHNICAL DATA

Spiral wound metallic tube acc. to DIN EN IEC 61386-23

**Temperature range** -50°C to +250°C  
short term up to +220°C

**Protection class** IP 40

## ■ STRUCTURE

- Material: Cold strip acc. to EN 10139 DC 03, Fe/ Zn 3, galvanized
- with double-folded profile (Agraff profile)

## ■ PROPERTIES

- high tensile and torsional strength.

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Suitable connection glands: MTG-US, MTG-LI

Part no.	Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)
97014	8.0	10.0	0.09	50
97015	12.0	14.0	0.155	50
97016	14.0	17.0	0.24	50
97017	16.0	19.0	0.29	50
97018	18.0	21.0	0.29	50

Part no.	Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)
97019	24.0	27.0	0.38	50
97020	31.0	36.0	0.64	25
97021	40.0	45.0	0.84	25
97022	51.0	56.0	1.10	25



## TECHNICAL DATA

Spiral wound metallic tube

Temperature range -50°C to +250°C  
short term up to +220°C

Protection class IP 40

### ■ STRUCTURE

- Material: Cold strip acc. to DIN 1624 St 2, Fe/ Zn 3, galvanized
- with latched profile

### ■ PROPERTIES

- high tensile and transverse pressure load rating
- high flexible

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Suitable connection glands: MTG-US, MTG-LI

Part no.	Inner Ø mm	Weight kg, approx.	Outer Ø mm, approx.	Packaging unit (in m)
97023	8.0	0.05	10.0	50
97024	11.0	0.12	14.0	50
97025	14.0	0.14	17.0	50
97026	16.0	0.15	19.0	50
97027	18.0	0.21	21.0	50

Part no.	Inner Ø mm	Weight kg, approx.	Outer Ø mm, approx.	Packaging unit (in m)
97028	23.0	0.26	27.0	50
97029	31.0	0.48	36.0	25
97030	40.0	0.62	45.0	25
97031	51.0	0.80	56.0	25

### small pack

Part no.	Inner Ø mm	Weight kg, approx.	Outer Ø mm, approx.	Packaging unit (in m)
94880	8.0	0.05	10.0	10
94881	11.0	0.12	14.0	10
94882	14.0	0.14	17.0	10
94883	16.0	0.15	19.0	10
94884	18.0	0.21	21.0	10

Part no.	Inner Ø mm	Weight kg, approx.	Outer Ø mm, approx.	Packaging unit (in m)
94885	23.0	0.26	27.0	10
94886	31.0	0.48	36.0	10
94887	40.0	0.62	45.0	10
94888	51.0	0.80	56.0	10



## TECHNICAL DATA

Spiral wound metallic tube acc. to DIN 49012, Design 1, tested acc. to DIN EN IEC 61386-23

**Temperature range** -25°C to +90°C  
short term up to +100°C

**Protection class** IP 68

## ■ STRUCTURE

- Material: Cold strip acc. to DIN 1624 St 2, Fe/ Zn 3, galvanized
- Outer sheath material: Polyvinylchlorid (PVC)
- with latched profile

## ■ PROPERTIES

- silicone-free
- cadmium-free
- watertight
- resistant to: weather-resistant, acids, oil, seawater
- high tensile and transverse pressure load rating

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Control cabinet construction
- Vehicle construction and shipbuilding

## ■ NOTES

- Suitable connection glands: MTG-US, MTG-LI

Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
7.0	10.0	0.08	50	<b>97032</b>	<b>97702</b>
10.0	14.0	0.13	50	<b>97033</b>	<b>97685</b>
13.0	17.0	0.17	50	<b>97034</b>	<b>97703</b>
15.0	19.0	0.19	50	<b>97035</b>	<b>97704</b>
17.0	21.0	0.24	50	<b>97036</b>	<b>97705</b>
22.0	27.0	0.36	50	<b>97037</b>	<b>97706</b>
29.0	36.0	0.60	25	<b>97038</b>	<b>97707</b>
38.0	45.0	0.74	25	<b>97039</b>	<b>97708</b>
49.0	56.0	0.90	25	<b>97040</b>	<b>97709</b>

### small pack

Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
7.0	10.0	0.08	10	<b>94890</b>	<b>94934</b>
10.0	14.0	0.13	10	<b>94891</b>	<b>94935</b>
13.0	17.0	0.17	10	<b>94892</b>	<b>94936</b>
15.0	19.0	0.19	10	<b>94893</b>	<b>94937</b>
17.0	21.0	0.24	10	<b>94894</b>	<b>94938</b>

Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
22.0	27.0	0.36	10	<b>94895</b>	<b>94939</b>
29.0	36.0	0.60	10	<b>94896</b>	<b>94940</b>
38.0	45.0	0.74	10	<b>94897</b>	<b>94941</b>
49.0	56.0	0.90	10	<b>94898</b>	<b>94942</b>



## TECHNICAL DATA

**Spiral wound metallic tube**

**Temperature range** -50°C to +250°C  
short term up to +220°C

**Protection class** IP 40

### ■ STRUCTURE

- Material: Cold strip acc. to DIN 1624 St 2, Fe/ Zn 3, galvanized
- with steel wire braiding
- with latched profile

### ■ PROPERTIES

- high tensile and transverse pressure load rating
- high flexible

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- Vehicle construction and shipbuilding

### ■ NOTES

- Suitable connection glands: MTG-US, MTG-LI

Part no.	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)
97584	7.0	10.0	50
97585	10.0	14.0	50
97586	13.0	17.0	50
97510	15.0	19.0	50
97377	17.0	21.0	50

Part no.	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)
97378	22.0	27.0	50
97379	29.0	36.0	25
96784	38.0	45.0	25
97587	49.0	56.0	25

### small pack

Part no.	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)
94920	7.0	10.0	10
94921	10.0	14.0	10
94922	13.0	17.0	10
94923	15.0	19.0	10
94924	17.0	21.0	10

Part no.	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)
94925	22.0	27.0	10
94926	29.0	36.0	10
94927	38.0	45.0	10
94928	49.0	56.0	10





## TECHNICAL DATA

Spiral wound stainless steel tube

Temperature range -100°C to +600°C  
Protection class IP 40

## ■ STRUCTURE

- Material: Stainless steel
- with double-folded profile (Agraff profile)

## ■ PROPERTIES

- high tensile and torsional strength

## ■ APPLICATION

- Robotics
- Steel and aluminium foundry industry
- Maschine and apparatus building
- Off-shore-industry
- Security
- Metal, glass and ceramics industry

## ■ NOTES

- Suitable connection glands: LT-E-UI

Part no.	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)
905804	9.5	12.5	30
905805	13.0	16.0	30
905806	17.0	21.0	30
905807	22.0	26.0	30

Part no.	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)
905808	26.0	30.0	30
905809	34.0	39.0	30
905810	40.3	44.4	15
905811	51.6	55.7	15



## TECHNICAL DATA

PP-tube connector

Temperature range -10°C to +110°C  
 Protection class IP 54

## ■ STRUCTURE

- Material: Polypropylene (PP)

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- Tube gland for type PT-S, S-PU and Airflex-K protection tubes. With high degree of protection.

### metric thread

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
M10 x 1.00	10.0	10.0	50	<b>97594</b>
M12 x 1.50	14.0	12.0	50	<b>97595</b>
M16 x 1.50	17.0	12.0	50	<b>97596</b>
M20 x 1.50	21.0	13.0	50	<b>97597</b>
M25 x 1.50	27.0	13.0	25	<b>97598</b>
M32 x 1.50	36.0	15.0	25	<b>97599</b>
M40 x 1.50	45.0	15.0	25	<b>97600</b>
M50 x 1.50	56.0	16.0	10	<b>97601</b>

### metric thread - small packages

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
M10 x 1.00	10.0	10.0	10	<b>93460</b>
M12 x 1.50	14.0	12.0	10	<b>93461</b>
M16 x 1.50	17.0	12.0	10	<b>93462</b>
M20 x 1.50	21.0	13.0	10	<b>93463</b>
M25 x 1.50	27.0	13.0	10	<b>93464</b>
M32 x 1.50	36.0	15.0	2	<b>93465</b>
M40 x 1.50	45.0	15.0	2	<b>93466</b>
M50 x 1.50	56.0	16.0	2	<b>93467</b>

## PG thread

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
PG 7	10.0	10.0	50	<b>90664</b>
PG 9	14.0	10.0	50	<b>90665</b>
PG 11	17.0	10.0	50	<b>90666</b>
PG 13.5	19.0	10.0	50	<b>90667</b>
PG 16	21.0	11.0	50	<b>90668</b>
PG 21	27.0	11.0	25	<b>90669</b>
PG 29	36.0	12.0	25	<b>90670</b>
PG 36	45.0	12.0	25	<b>90671</b>
PG 48	56.0	15.0	10	<b>90673</b>

## PG thread - small packages

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
PG 7	10.0	10.0	10	<b>93450</b>
PG 9	14.0	10.0	10	<b>93451</b>
PG 11	17.0	10.0	10	<b>93452</b>
PG 13.5	19.0	10.0	10	<b>93453</b>
PG 16	21.0	11.0	10	<b>93454</b>
PG 21	27.0	11.0	10	<b>93455</b>
PG 29	36.0	12.0	2	<b>93456</b>
PG 36	45.0	12.0	2	<b>93457</b>
PG 48	56.0	15.0	2	<b>93458</b>



## TECHNICAL DATA

PP-tube connector

Temperature range -10°C to +110°C  
Protection class IP 54

## ■ STRUCTURE

- Material: Polypropylene (PP)

## ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- Tube gland for protection tubes type PT-S, S-PU and Airflex-K.

### metric thread

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
M12 x 1.5	10.0	10.0	50	<b>97602</b>
M16 x 1.5	14.0	10.0	50	<b>97603</b>
M20 x 1.5	17.0	10.0	50	<b>97604</b>
M25 x 1.5	21.0	11.0	50	<b>97605</b>
M32 x 1.5	27.0	12.0	25	<b>97606</b>
M40 x 1.5	36.0	12.0	25	<b>97607</b>
M50 x 1.5	45.0	12.0	25	<b>97608</b>
M63 x 1.5	56.0	15.0	10	<b>97609</b>

### metric thread - small packages

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
M12 x 1.5	10.0	10.0	10	<b>93480</b>
M16 x 1.5	14.0	10.0	10	<b>93481</b>
M20 x 1.5	17.0	10.0	10	<b>93482</b>
M25 x 1.5	21.0	11.0	10	<b>93483</b>
M32 x 1.5	27.0	12.0	10	<b>93484</b>
M40 x 1.5	36.0	12.0	2	<b>93485</b>
M50 x 1.5	45.0	12.0	2	<b>93486</b>
M63 x 1.5	56.0	15.0	2	<b>93487</b>

# LK-I

## PG thread

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
PG 7	10.0	10.0	50	<b>90720</b>
PG 9	14.0	10.0	50	<b>90721</b>
PG 11	17.0	10.0	50	<b>90722</b>
PG 13.5	19.0	10.0	50	<b>90723</b>
PG 16	21.0	11.0	50	<b>90724</b>
PG 21	27.0	11.0	25	<b>90725</b>
PG 29	36.0	12.0	25	<b>90726</b>
PG 36	45.0	12.0	25	<b>90727</b>
PG 48	56.0	15.0	10	<b>90729</b>

## PG thread - small packages

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	grey Part no.
PG 7	10.0	10.0	10	<b>93470</b>
PG 9	14.0	10.0	10	<b>93471</b>
PG 11	17.0	10.0	10	<b>93472</b>
PG 13.5	19.0	10.0	10	<b>93473</b>
PG 16	21.0	11.0	10	<b>93474</b>
PG 21	27.0	11.0	10	<b>93475</b>
PG 29	36.0	12.0	2	<b>93476</b>
PG 36	45.0	12.0	2	<b>93477</b>
PG 48	56.0	15.0	2	<b>93478</b>

# MTG-US



## TECHNICAL DATA

### Metal-tube gland

Temperature range -40°C to +125°C

### ■ STRUCTURE

- Material: Brass nickel plated
- Grounding sleeve: Brass bare
- Sealing ring: plastic

### ■ APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- Tube gland for protection tubes type PT-S, S-PU, SWM-M, SPR-AS, SPR-PVC-AS, SPR-PU-AS, SPR-EDU-AS.

### ■ NOTES

- Protection classification:  
IP 65 - Typ: SPR-PVC-AS, SPR-PU-AS  
IP 54 - Typ: PT-S, S-PU  
IP 40 - Typ: SWM-M, SPR-AS, SPR-EDU-AS

### metric thread

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	PT-S, S-PU		SPR-AS	SPR-EDU-AS	SPR-PVC(PU)-AS	SWM-M
				Part no.	Part no.	Part no.	Part no.	Part no.	
M10 x 1.0	10.0	10.0	50	98331	98241	905989	98249	98233	
M12 x 1.5	14.0	10.0	50	98332	98242	905990	98250	98234	
M16 x 1.5	17.0	10.0	50	98333	98243	905991	98251	98235	
M20 x 1.5	21.0	10.0	50	98334	98244	905992	98252	98236	
M25 x 1.5	27.0	11.0	25	98335	98245	905993	98253	98237	
M32 x 1.5	36.0	14.0	25	98336	98246	905994	98254	98238	
M40 x 1.5	45.0	13.0	20	-	-	905995	-	-	
M50 x 1.5	56.0	15.5	20	98337	98247	-	98255	98239	
M63 x 1.5	56.0	14.0	10	98338	98248	905996	98256	98240	

### metric thread - small packages

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	PT-S, S-PU		SPR-AS	SPR-PVC(PU)-AS
				Part no.	Part no.	Part no.	Part no.
M10 x 1.0	10.0	10.0	10	93530	93570	93590	
M12 x 1.5	14.0	10.0	10	93531	93571	93591	
M16 x 1.5	17.0	10.0	10	93532	93572	93592	
M20 x 1.5	21.0	10.0	10	93533	93573	93593	
M25 x 1.5	27.0	11.0	10	93534	93574	93594	
M32 x 1.5	36.0	14.0	2	93535	93575	93595	
M40 x 1.5	45.0	13.0	2	93536	93576	93596	
M50 x 1.5	56.0	15.5	2	93537	93577	93597	

# MTG-US

## PG thread

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	PT-S, S-PU	SPR-AS	SPR-EDU-AS	SPR-PVC(PU)-AS	SWM-M
				Part no.	Part no.	Part no.	Part no.	Part no.
PG 7	10.0	7.0	50	98322	98215	905997	98224	98206
PG 9	14.0	7.0	50	98323	98216	905998	98225	98207
PG 11	17.0	7.0	50	98324	98217	905999	98226	98208
PG 13.5	19.0	7.0	50	98325	98218	906000	98227	98209
PG 16	21.0	7.0	50	98326	98219	906001	98228	98210
PG 21	27.0	10.0	25	98327	98220	906002	98229	98211
PG 29	36.0	10.0	25	98328	98221	906003	98230	98212
PG 36	45.0	10.0	20	98329	98222	906004	98231	98213
PG 48	56.0	10.0	10	98330	98223	906005	98232	98214

## PG thread - small packages

Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)	PT-S, S-PU	SPR-AS	SPR-PVC(PU)-AS
				Part no.	Part no.	Part no.
PG 7	10.0	7.0	10	93520	93560	93580
PG 9	14.0	7.0	10	93521	93561	93581
PG 11	17.0	7.0	10	93522	93562	93582
PG 13.5	19.0	7.0	10	93523	93563	93583
PG 16	21.0	7.0	10	93524	93564	93584
PG 21	27.0	10.0	10	93525	93565	93585
PG 29	36.0	10.0	2	93526	93566	93586
PG 36	45.0	10.0	2	93527	93567	93587
PG 48	56.0	10.0	2	93528	93568	93588

# MTG-LI



## TECHNICAL DATA

**Metal-tube gland**

**Temperature range** -40°C to +250°C  
**Protection class** IP 40

## ■ STRUCTURE

- Material: Brass nickel plated
- Grounding sleeve: Brass bare
- Retaining ring: spring steel

## ■ APPLICATION

- Tube gland for protection tubes type:

PT-S, S-PU  
 SWM-M  
 SPR-AS  
 SPR-EDU-AS  
 SPR-PVC-AS.

The rotating interior sockets with tube rotation lock is inserted into the gland and secured against tearing by the spring steel ring.

### metric thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
97619	M10 x 1.0	10.0	10.0	50
97620	M12 x 1.5	14.0	10.0	50
97621	M16 x 1.5	17.0	10.0	50
97622	M20 x 1.5	21.0	10.0	50

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
97623	M25 x 1.5	27.0	11.0	25
97624	M32 x 1.5	36.0	13.0	25
97625	M40 x 1.5	45.0	13.0	25
97626	M50 x 1.5	56.0	14.0	10

### metric thread - small packages

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
93610	M10 x 1.0	10.0	10.0	10
93611	M12 x 1.5	14.0	10.0	10
93612	M16 x 1.5	17.0	10.0	10
93613	M20 x 1.5	21.0	10.0	10

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
93614	M25 x 1.5	27.0	11.0	10
93615	M32 x 1.5	36.0	13.0	2
93616	M40 x 1.5	45.0	13.0	2
93617	M50 x 1.5	56.0	14.0	2

### PG thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
90730	PG 7	10.0	7.0	50
90731	PG 9	14.0	7.0	50
90732	PG 11	17.0	7.0	50
90733	PG 13.5	19.0	7.0	50
90734	PG 16	21.0	7.0	50

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
90735	PG 21	27.0	10.0	25
90736	PG 29	36.0	10.0	25
90737	PG 36	45.0	10.0	25
90738	PG 48	56.0	10.0	10



# MTG-LI

## PG thread - small packages

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
93600	PG 7	10.0	7.0	10
93601	PG 9	14.0	7.0	10
93602	PG 11	17.0	7.0	10
93603	PG 13.5	19.0	7.0	10
93604	PG 16	21.0	7.0	10

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Packaging unit (in pc.)
93605	PG 21	27.0	10.0	10
93606	PG 29	36.0	10.0	2
93607	PG 36	45.0	10.0	2
93608	PG 48	56.0	10.0	2

# LT-E-UI straight



## TECHNICAL DATA

Stainless steel- conduit gland

Temperature range -55°C to +260°C  
Protection class IP 40

## ■ STRUCTURE

- Material: Stainless steel
- Seal: Nitrile butadiene rubber (NBR)
- Grounding sleeve: Brass nickel plated
- Sealing ring: Brass nickel plated

- halogen-free

## ■ APPLICATION

- Robotics
- Steel and aluminium foundry industry
- Maschine and apparatus building
- Off-shore-industry
- Security
- Metal, glass and ceramics industry
- LIQUIDTIGHT gland for stainless steel protection tubes UI.  
The conical earthing sleeve offers maximum surface contact for optimum sealing and earthing.

## ■ PROPERTIES

### metric thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Inner Ø mm	Packaging unit (in pc.)
905812	M16 x 1.50	12.5	12.0	6.8	10
905813	M16 x 1.50	16.0	12.0	9.8	10
905814	M20 x 1.50	12.5	13.0	6.8	10
905815	M20 x 1.50	16.0	13.0	9.8	10
905816	M20 x 1.50	21.0	13.0	13.9	10
905817	M25 x 1.50	26.0	15.0	18.5	5
905818	M32 x 1.50	30.0	15.0	22.8	5
905819	M40 x 1.50	39.0	16.0	30.8	2

### PG thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Inner Ø mm	Packaging unit (in pc.)
905820	PG 11	12.5	12.0	6.8	10
905821	PG 11	16.0	12.0	9.8	10
905822	PG 16	21.0	13.0	13.9	10
905823	PG 21	26.0	15.0	18.5	5
905824	PG 29	30.0	15.0	22.8	5
905825	PG 36	39.0	16.0	30.8	2

# LT-E-UI straight

## NPT thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Inner Ø mm	Packaging unit (in pc.)
905826	NPT 1/2"	12.5	12.0	6.8	10
905827	NPT 1/2"	16.0	12.0	9.8	10
905828	NPT 1/2"	21.0	13.0	13.9	10
905829	NPT 3/4"	26.0	15.0	18.5	5
905830	NPT 1"	30.0	15.0	22.8	5
905831	NPT 1 1/4"	39.0	16.0	30.8	2



## TECHNICAL DATA

Stainless steel- conduit gland

Temperature range -55°C to +260°C

Protection class IP 40

## ■ STRUCTURE

- Material: Stainless steel
- Seal: Nitrile butadiene rubber (NBR)
- Grounding sleeve: Brass nickel plated
- Sealing ring: Brass nickel plated

- halogen-free

## ■ APPLICATION

- Robotics
- Steel and aluminium foundry industry
- Maschine and apparatus building
- Off-shore-industry
- Security
- Metal, glass and ceramics industry
- LIQUIDTIGHT conduit gland for stainless steel protection tubes UI. The conical earthing sleeve offers maximum surface contact for optimum sealing and earthing.

## ■ PROPERTIES

### metric thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Inner Ø mm	Packaging unit (in pc.)
905832	M16 x 1.5	12.5	12.0	6.8	10
905833	M16 x 1.5	16.0	12.0	9.8	10
905834	M20 x 1.5	12.5	13.0	6.8	10
905835	M20 x 1.5	16.0	13.0	9.8	10
905836	M20 x 1.5	21.0	13.0	13.9	10
905837	M25 x 1.5	26.0	15.0	18.5	5

### PG thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Inner Ø mm	Packaging unit (in pc.)
905838	PG 11	12.5	12.0	6.8	10
905839	PG 11	16.0	12.0	9.8	10
905840	PG 16	21.0	13.0	13.9	10
905841	PG 21	26.0	15.0	18.5	5
905842	PG 29	30.0	15.0	22.8	5

# LT-E-UI elbow 90°



## NPT thread

Part no.	Size	Suitable for tube outer Ø mm	Thread length mm	Inner Ø mm	Packaging unit (in pc.)
905847	NPT 1"	30.0	15.0	22.8	5
905843	NPT 1/2"	12.5	12.0	6.8	10
905844	NPT 1/2"	16.0	12.0	9.8	10
905845	NPT 1/2"	21.0	13.0	13.9	10
905846	NPT 3/4"	26.0	15.0	18.5	5



## TECHNICAL DATA

PVC-interior socket

Temperature range -10°C to +100°C

## ■ STRUCTURE

Part no.	Suitable for tube outer Ø mm	Packaging unit (in pc.)
96342	10.0	50
96449	14.0	50
96343	17.0	50
96450	19.0	50
96451	21.0	50

- Material: Polyvinyl chloride (PVC)

## ■ APPLICATION

- Interior sockets EEK made by PVC for plastic conduits type K, S and S-PU.

Part no.	Suitable for tube outer Ø mm	Packaging unit (in pc.)
96344	27.0	25
96447	36.0	25
96345	45.0	20
96347	56.0	10



## TECHNICAL DATA

Brass interior socket

Temperature range -40°C to +250°C

- Material: Brass nickel plated

## APPLICATION

- Interior sockets EEM made by brass for metal conduits type SWM-M, SPR-AS, SPR-PVC-AS, SPR-PU-AS und SPR-EDU-AS.

## STRUCTURE

Suitable for tube outer Ø mm	Weight kg, approx.	Packaging unit (in pc.)	SPR-AS	SPR-PVC-AS, SPR-PU-AS, SPR-EDU-AS	SWM-M
			Part no.	Part no.	Part no.
10.0	0.16	50	99510	97580	906006
14.0	0.30	50	99511	97680	906007
17.0	0.32	50	99512	97691	906008
19.0	0.42	50	99513	97692	906009
21.0	0.52	50	99514	97693	906010
27.0	1.12	25	99515	97681	906011
36.0	1.64	25	99516	97682	906012
45.0	2.45	20	99517	97694	906013
56.0	3.80	10	99518	97684	906014

# Anaconda Sealtite® EF



## TECHNICAL DATA

### Protection tube

<b>Temperature range</b>	-25°C to +70°C short term up to +90°C
<b>Protection class</b>	IP 67

- continuous cord seal
- extruded plastic sheath

## ■ APPLICATION

- Universal applications.  
Due to the complex construction method, the plastic sheath and internal tube flush together.

## ■ STRUCTURE

- Material: steel galvanized
- Outer sheath material: Polyvinylchlorid (PVC)
- reinforced, galvanised and spiral wound steel band
- with latched profile

## ■ NOTES

- Suitable connection glands:  
LT-straight, LT-elbow 45° and 90°  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
1/4	6.4	11.5	50	<b>91229</b>	<b>96939</b>
5/16	10.1	14.4	50	<b>91230</b>	<b>96248</b>
3/8	12.6	17.8	75	<b>91231</b>	<b>96249</b>
1/2	16.0	21.1	60	<b>91232</b>	<b>97153</b>
3/4	21.0	26.4	50	<b>91233</b>	<b>96718</b>
1	26.5	33.1	30	<b>91234</b>	<b>96250</b>
1 1/4	35.1	41.8	30	<b>91235</b>	<b>96251</b>
1 1/2	40.3	47.8	15	<b>91236</b>	<b>97175</b>
2	51.6	59.9	15	<b>91237</b>	<b>96252</b>

### small pack

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	grey	black
				Part no.	Part no.
5/16	10.1	14.4	10	<b>94915</b>	<b>94930</b>
3/8	12.6	17.8	10	<b>94916</b>	<b>94931</b>
1/2	16.0	21.1	10	<b>94917</b>	<b>94932</b>
3/4	21.0	26.4	10	<b>94918</b>	<b>94933</b>





## TECHNICAL DATA

### Protection tube

### Temperature range

-15°C to +100°C  
short term up to +120°C

### Protection class

IP 67

## ■ STRUCTURE

- Material: steel galvanized
- Outer sheath material: Polyvinylchlorid (PVC)
- reinforced, galvanised and spiral wound steel band
- with latched profile
- continuous cord seal
- extruded plastic sheath

## ■ PROPERTIES

- resistant to: oil, greases, alkalis, acids
- UV resistant

## ■ APPLICATION

- Due to the complex construction method, the plastic sheath and internal tube flush together.

## ■ NOTES

- Suitable connection glands:  
LT-straight, LT-elbow 45° and 90°  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
3/8	12.6	17.8	75	<b>91245</b>
1/2	16.0	21.1	60	<b>91246</b>
3/4	21.0	26.4	50	<b>91247</b>
1	26.5	33.1	30	<b>91248</b>
1 1/4	35.1	41.8	30	<b>91249</b>
1 1/2	40.3	47.8	15	<b>91250</b>
2	51.6	59.9	15	<b>91251</b>



## TECHNICAL DATA

### Protection tube

### Temperature range

-45°C to +105°C  
short term up to +120°C

### Protection class

IP 67

- continuous copper conductor
- extruded plastic sheath

## APPLICATION

- Good EMC properties.  
Due to the complex construction method, the plastic sheath and internal tube flush together.

## STRUCTURE

- Material: steel galvanized
- Outer sheath material: Polyvinylchlorid (PVC)
- reinforced, galvanised and spiral wound steel band
- with latched profile

## NOTES

- Suitable connection glands:  
LT-straight, LT-elbow 45° and 90°  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Weight kg, approx.	Packaging unit (in m)	black Part no.
3/8	12.6	17.8	0.40	60	<b>98149</b>
1/2	16.1	21.1	0.45	60	<b>98150</b>
3/4	21.1	26.4	0.65	45	<b>98151</b>
1	26.8	33.1	1.05	30	<b>98152</b>
1 1/4	35.4	41.8	1.20	15	<b>98153</b>
1 1/2	40.3	47.8	1.50	15	<b>98154</b>
2	51.6	59.9	2.30	15	<b>98155</b>



## TECHNICAL DATA

### Protection tube

<b>Temperature range</b>	-45°C to +105°C short term up to +120°C
<b>Protection class</b>	IP 67

## ■ STRUCTURE

- Material: steel galvanized
- Outer sheath material: Polyvinylchlorid (PVC)
- reinforced, galvanised and spiral wound steel band
- with latched profile

- continuous cord seal
- extruded plastic sheath

## ■ APPLICATION

- For extensive temperature ranges.  
Due to the complex construction method, the plastic sheath and internal tube flush together.

## ■ NOTES

- Suitable connection glands:  
LT-straight, LT-elbow 45° and 90°  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
3/8	12.6	17.8	75	<b>91238</b>
1/2	16.0	21.1	60	<b>91239</b>
3/4	21.0	26.4	50	<b>91240</b>
1	26.5	33.1	30	<b>91241</b>
1 1/4	35.1	41.8	30	<b>91242</b>
1 1/2	40.3	47.8	15	<b>91243</b>
2	51.6	59.9	15	<b>91244</b>



## TECHNICAL DATA

Protection tube

Temperature range

-55°C to +145°C  
short term up to +160°C

Protection class

IP 67

## ■ STRUCTURE

- Material: steel galvanized
- reinforced, galvanised and spiral wound steel band
- with latched profile
- continuous cord seal

- extruded plastic sheath

## ■ APPLICATION

- For extensive temperature ranges.  
Due to the complex construction method, the plastic sheath and internal tube flush together.

## ■ NOTES

- Suitable connection glands:  
LT-straight, LT-elbow 45° and 90°  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
3/8	12.6	17.8	30	<b>94735</b>
1/2	16.0	21.1	30	<b>96410</b>
3/4	21.0	26.4	30	<b>96954</b>
1	26.5	33.1	30	<b>97945</b>
1 1/4	35.1	41.8	15	<b>96247</b>
1 1/2	40.3	47.8	15	<b>97668</b>
2	51.6	59.9	15	<b>97811</b>



## TECHNICAL DATA

### Protection tube

### Temperature range

-25°C to +80°C  
short term up to +100°C

### Protection class

IP 67 / IP 66

## ■ STRUCTURE

- Outer sheath material: Polyolefin
- reinforced, galvanised and spiral wound steel band
- with latched profile
- continuous cord seal
- extruded plastic sheath

## ■ PROPERTIES

- lead-free
- low smoke development

## ■ APPLICATION

- Due to the complex construction method, the plastic sheath and internal tube flush together.

## ■ NOTES

- Suitable connection glands:  
LT-straight, LT-elbow 45° and 90°  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
5/16	10.1	14.4	30	<b>94988</b>
3/8	12.6	17.8	30	<b>94989</b>
1/2	16.0	21.1	30	<b>94990</b>
3/4	21.0	26.4	30	<b>94991</b>
1	26.5	33.1	30	<b>94992</b>
1 1/4	35.1	41.8	15	<b>94993</b>



## TECHNICAL DATA

**Protection tube**

**Temperature range**

-55°C to +105°C  
short term up to +125°C

**Protection class**

IP 67 / IP 66

## ■ STRUCTURE

- Material: steel galvanized
- Outer sheath material: Polyurethan (PUR)
- reinforced, galvanised and spiral wound steel band
- with latched profile
- continuous cord seal
- extruded plastic sheath

## ■ PROPERTIES

- resistant to: oil
- lead-free
- low smoke development
- low toxicity in case of fire
- flexible at low temperatures

## ■ APPLICATION

- Railway technology
- Tunnels
- Vehicle construction and shipbuilding
- public buildings
- Due to the complex construction method, the plastic sheath and internal tube flush together.

## ■ NOTES

- Suitable connection glands:  
CV Compact straight, CV Compact elbow 45° and 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	black Part no.
5/16	10.1	14.4	30	<b>94994</b>
3/8	12.6	17.8	30	<b>94995</b>
1/2	16.0	21.1	30	<b>94996</b>
3/4	21.0	26.4	30	<b>94997</b>
1	26.5	33.1	30	<b>94998</b>
1 1/4	35.1	41.8	30	<b>94999</b>



## TECHNICAL DATA

Plastic tube

**Temperature range** -20°C to +60°C  
short term up to +80°C

**Protection class** IP 67

## ■ STRUCTURE

- Material: Polyvinyl chloride (PVC)
- Outer sheath material: Special polyvinyl chloride (PVC)
- with woven nylon insert

## ■ PROPERTIES

- resistant to: oil, greases

## ■ APPLICATION

- Fully plastic.  
Extremely abrasion-resistant plastic tube for heavy-duty applications.

## ■ NOTES

- Suitable connection glands:  
LT-CNP and LT-CNP-E

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Packaging unit (in m)	orange Part no.
3/8	12.6	19.4	76	<b>91259</b>
1/2	16.1	23.4	60	<b>91260</b>
3/4	21.0	29.5	53	<b>91261</b>
1	26.5	36.3	30	<b>91262</b>
1 1/4	35.1	46.0	15	<b>91263</b>
1 1/2	40.7	52.4	15	<b>91264</b>
2	52.4	66.6	15	<b>91265</b>

# Anaconda Sealtite® NMFG-Clean



## TECHNICAL DATA

PVC corrugated tube

**Temperature range** -35°C to +60°C  
short term up to +80°C

**Protection class** IP 67

## ■ STRUCTURE

- Material: Special polyvinyl chloride (PVC) according to FDA CFR 21 and NSF 51 (USA standard)
- with integrated Hard PVC spiral

## ■ PROPERTIES

- resistant to: chemical cleaning supplies
- thick, soft, smooth and thermoplastic PVC tube

- liquid tight
- prevents to adhere harmful microorganisms
- easy and fast cleaning because of the smooth surface
- high flexible

## ■ APPLICATION

- Food and beverage industry
- Pharmaindustrie
- Biotechnologie
- chemical industry

## ■ NOTES

- Suitable connection glands:  
LT-FG-Clean (bis M50)  
LT-straight  
LT-elbow 45° und 90°  
LT-E-UI- elbow 90°

trade size inch	Inner Ø mm	Outer Ø mm, approx.	Bending radius mm	Bending radius dyna- mic mm	Packaging unit (in pc.)	blue Part no.
3/8	12.6	17.8	70.0	100.0	30	<b>908211</b>
1/2	16.0	21.1	100.0	135.0	30	<b>908212</b>
3/4	21.1	26.4	130.0	175.0	30	<b>908213</b>
1	26.8	33.1	180.0	220.0	30	<b>908214</b>
1 1/4	35.4	41.8	225.0	270.0	15	<b>908215</b>
1 1/2	40.3	47.8	255.0	320.0	15	<b>908216</b>
2	51.6	59.9	310.0	400.0	15	<b>908217</b>





## TECHNICAL DATA

**Straight-brass nickel- plated conduit gland**

**Temperature range** -45°C to +105°C  
**Protection class** IP 67

### ■ STRUCTURE

- Material: Brass nickel plated
- O-ring: Nitrile butadiene rubber (NBR)
- Grounding sleeve: steel
- Sealing ring: Polyamide (PA)

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

### ■ NOTES

- Suitable for metallic protection tubes:  
 Anaconda Sealrite®:  
 EF, HTDL, OR, HC, HCX, ZHLS, HFX

#### metric thread

Part no.	Size	Weight in kg/1000 pc.	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
908473	M16 x 1.5	3.9	3/8	12.6	24	10.0	10
908474	M20 x 1.5	4.0	3/8	12.6	24	10.0	10
908475	M20 x 1.5	4.4	1/2	16.1	27	10.0	10
908476	M25 x 1.5	6.6	3/4	21.1	33	10.0	5
908477	M32 x 1.5	11.7	1	26.8	42	12.0	5
908478	M40 x 1.5	16.0	1 1/4	35.4	50	13.0	2
908479	M50 x 1.5	25.3	1 1/2	40.3	58	14.0	2
908480	M63 x 1.5	38.6	2	51.6	72	16.0	2

# CV Compact elbow 90°



## TECHNICAL DATA

Elbow brass nickel-plated conduit gland

Temperature range -45°C to +105°C  
Protection class IP 67

## ■ STRUCTURE

- Material: Brass nickel plated
- Grounding sleeve: steel
- Sealing ring: Polyamide (PA)

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

## ■ NOTES

- Suitable for metallic protection tubes: Anaconda Sealtite®: EF, HTDL, OR, HC, HCX, ZHLS, HFX

## ■ APPLICATION

### metric thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
908481	M16 x 1.5	3/8	12.6	22	10.0	10
908482	M20 x 1.5	3/8	12.6	24	10.0	10
908483	M20 x 1.5	1/2	16.1	27	10.0	10
908484	M25 x 1.5	3/4	21.1	33	10.0	5
908485	M32 x 1.5	1	26.8	42	12.0	5
908486	M40 x 1.5	1 1/4	35.4	52	13.0	2
908487	M50 x 1.5	1 1/2	40.3	60	14.0	2
908488	M63 x 1.5	2	51.6	72	16.0	2



## TECHNICAL DATA

**Straight-brass nickel- plated conduit gland**

**Temperature range** -45°C to +105°C  
**Protection class** IP 67

### ■ STRUCTURE

- Material: Brass nickel plated
- Grounding sleeve: steel
- Sealing ring: Polyamide (PA6)

### ■ PROPERTIES

- halogen-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- LIQUIDTIGHT gland for plastic-coated metallic protection tubes and high temperature protection tubes HTP (An additional clamping ring is required).  
The conical earthing sleeve offers maximum surface contact for optimum sealing and earthing.

### ■ NOTES

- Suitable for metallic protection tubes: Anaconda Sealrite®: EF, HTDL, OR, HC, HCX, ZHLS, HFX

#### metric thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
94151	M16 x 1.5	3/8	17.8	26	12.0	10
94152	M20 x 1.5	1/2	21.1	29	13.0	10
94153	M25 x 1.5	3/4	26.4	35	15.0	5
94154	M32 x 1.5	1	33.1	45	15.0	5
94155	M40 x 1.5	1 1/4	41.8	54	16.0	2
94156	M50 x 1.5	1 1/2	47.8	63	18.0	2
920522	M63 x 1.5	2	59.9	77	20.0	2

#### PG thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
91006	PG 11	3/8	17.8	26	12.0	10
91007	PG 13.5	3/8	17.8	26	12.0	10
91008	PG 16	1/2	21.1	29	12.0	10
91009	PG 21	3/4	26.4	35	15.0	5
91010	PG 29	1	33.1	45	15.0	5
91011	PG 36	1 1/4	41.8	54	16.0	2
91012	PG 42	1 1/2	47.8	63	18.0	2
91013	PG 48	2	59.9	77	20.0	2

# LT straight



## NPT thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
905749	NPT 1/2"	3/8	17.8	26	12.0	10
905750	NPT 1/2"	1/2	21.1	29	13.0	10
905751	NPT 3/4"	3/4	26.4	35	15.0	5
905752	NPT 1"	1	33.1	45	15.0	5
905753	NPT 1 1/4"	1 1/4	49.0	54	16.0	2
905754	NPT 1 1/2"	1 1/2	61.0	63	18.0	2
905755	NPT 2"	2	66.0	77	20.0	2

# LT elbow 45°



## TECHNICAL DATA

Elbow brass nickel-plated conduit gland

Temperature range -45°C to +105°C  
Protection class IP 67

### ■ STRUCTURE

- Material: Brass nickel plated
- Grounding sleeve: steel
- Sealing ring: Polyamide (PA)

### ■ PROPERTIES

- halogen-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- LIQUIDTIGHT gland for plastic-coated metallic protection tubes and high temperature protection tubes HTP. (An additional clamping ring is required).  
The conical earthing sleeve offers maximum surface contact for optimum sealing and earthing.

### ■ NOTES

- Suitable for metallic protection tubes: EF, HTDL, OR, HC, HCX, ZHLS, HFX

#### metric thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
94160	M16 x 1.50	3/8	17.8	26	13.0	10
94161	M20 x 1.50	1/2	21.1	29	13.0	10
94162	M25 x 1.50	3/4	26.4	35	15.0	5
94163	M32 x 1.50	1	33.1	45	15.0	5
920526	M40 x 1.50	1 1/4	41.8	54	16.0	2
920527	M50 x 1.50	1 1/2	47.8	63	18.0	2
920528	M63 x 1.50	2	59.9	77	20.0	2

#### PG thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
91014	PG 11	3/8	17.8	26	12.0	10
91015	PG 13.5	3/8	17.8	26	12.0	10
91016	PG 16	1/2	21.1	29	13.0	10
91017	PG 21	3/4	26.4	35	15.0	5
91018	PG 29	1	33.1	45	15.0	5
91019	PG 36	1 1/4	41.8	54	16.0	2
91020	PG 42	1 1/2	47.8	63	16.0	2
91021	PG 48	2	59.9	77	18.0	2

# LT elbow 45°



## NPT thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
905756	NPT 1/2"	3/8	17.8	26	12.0	10
905757	NPT 1/2"	1/2	21.1	29	13.0	10
905758	NPT 3/4"	3/4	26.4	35	15.0	5
905759	NPT 1"	1	33.1	45	15.0	5
905760	NPT 1 1/4"	1 1/4	49.0	54	16.0	2
905761	NPT 1 1/2"	1 1/2	61.0	63	18.0	2
905762	NPT 2"	2	66.0	77	20.0	2



## TECHNICAL DATA

Elbow brass nickel-plated conduit gland

Temperature range -45°C to +105°C  
Protection class IP 67

### ■ STRUCTURE

- Material: Brass nickel plated
- Grounding sleeve: steel
- Sealing ring: Polyamide (PA)

### ■ PROPERTIES

- halogen-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- LIQUIDTIGHT gland for plastic-coated metallic protection tubes and high temperature protection tubes HTP. (An additional clamping ring is required).  
The conical earthing sleeve offers maximum surface contact for optimum sealing and earthing.

### ■ NOTES

- Suitable for metallic protection tubes: Anaconda Sealrite®: EF, HTDL, OR, HC, HX, ZHLS, HFX

#### metric thread

Part no.	Size	Weight kg, approx.	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
94170	M16 x 1.50	8.20	3/8	17.8	26	13.0	10
94171	M20 x 1.50	12.60	1/2	21.1	29	14.0	10
94172	M25 x 1.50	19.20	3/4	26.4	35	14.0	5
94173	M32 x 1.50	31.60	1	33.1	45	15.0	5
920523	M40 x 1.50	56.10	1 1/4	41.8	54	16.0	2
920524	M50 x 1.50	85.30	1 1/2	47.8	63	18.0	2
920525	M63 x 1.50	139.80	2	59.9	77	20.0	2

#### PG thread

Part no.	Size	Weight kg, approx.	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
91022	PG 11	8.90	3/8	17.8	26	12.0	10
91023	PG 13.5	8.90	3/8	17.8	26	12.0	10
91024	PG 16	15.30	1/2	21.1	29	13.0	10
91025	PG 21	21.60	3/4	26.4	35	15.0	5
91026	PG 29	35.30	1	33.1	45	15.0	5
91027	PG 36	62.50	1 1/4	41.8	54	16.0	2
91028	PG 42	88.10	1 1/2	47.8	63	18.0	2
91029	PG 48	141.90	2	59.9	77	20.0	2

# LT elbow 90°



## NPT thread

Part no.	Size	Weight kg, approx.	Suitable for tube ND	Suitable for tube outer Ø mm	Spanner size mm	Thread length mm	Packaging unit (in pc.)
905763	NPT 1/2"	13.30	3/8	17.8	26	12.0	10
905764	NPT 1/2"	14.60	1/2	21.1	29	13.0	10
905765	NPT 3/4"	22.00	3/4	26.4	35	15.0	5
905766	NPT 1"	31.70	1	33.1	45	15.0	5
905767	NPT 1 1/4"	62.50	1 1/4	49.0	54	16.0	2
905768	NPT 1 1/2"	89.10	1 1/2	36.8	63	18.0	2
905769	NPT 2"	141.90	2	66.0	77	20.0	2





## TECHNICAL DATA

**Straight-galvanized steel conduit gland**

**Temperature range** -45°C to +105°C  
**Protection class** IP 67

## ■ STRUCTURE

- Material: steel galvanized

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For Anaconda Sealite® CNP.  
LIQUIDTIGHT gland made of galvanized steel for plastic-coated metallic protection tubes CNP.

## ■ APPLICATION

## ■ NOTES

- The ferrule and insert are from PA 6

### NPT thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
904907	NPT 1/2"	3/8	19.4	15.0	26	25
904908	NPT 1/2"	1/2	23.4	15.0	29	25
904909	NPT 3/4"	3/4	29.5	15.0	35	25
904910	NPT 1"	1	36.3	18.0	42	5
904911	NPT 1 1/4"	1 1/4	46.0	18.0	56	5
904912	NPT 1 1/2"	1 1/2	52.4	18.0	64	1
904913	NPT 2"	2	66.6	18.0	77	1

# LT-CNP-E



## TECHNICAL DATA

Straight-stainless steel- conduit gland

Temperature range -45°C to +105°C  
Protection class IP 67

## ■ STRUCTURE

- Material: Stainless steel

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- For Anaconda Sealite® CNP.  
LIQUIDTIGHT gland made of stainless steel for plastic-coated metallic protection tubes CNP.

## ■ APPLICATION

## ■ NOTES

- The ferrule and insert are from PA6.

### metric thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Thread length mm	Spanner size mm	Packaging unit (in pc.)
905913	M16 x 1.50	3/8	19.4	13.0	30	10
905914	M20 x 1.50	1/2	23.4	13.0	36	10
905058	M25 x 1.50	3/4	29.5	15.0	41	5
905059	M32 x 1.50	1	36.3	15.0	50	5
905060	M40 x 1.50	1 1/4	46.0	16.0	60	2
905061	M50 x 1.50	1 1/2	52.4	19.0	66	1
905062	M63 x 1.50	1 1/2	52.4	19.0	81	1
905063	M63 x 1.50	2	66.6	19.0	81	1

# LT-FG-Clean



## TECHNICAL DATA

**Stainless steel- conduit gland**

**Temperature range** -45°C to +105°C  
**Protection class** IP 68 - 40 bar

### ■ STRUCTURE

- Material: Stainless steel
- Grounding sleeve: steel

### ■ PROPERTIES

- high corrosion resistance
- resistant to: chemical cleaning supplies

### ■ APPLICATION

- Food and beverage industry
- Pharmaindustrie
- chemical industry
- Highest requirements to cleanliness and cleaning.

### ■ NOTES

- Ferrule: brass, nickel plated
- Clamping ring and insert: PA 6
- Outer seal and sealing ring: TPE according to FDA 21 CFR and NSF 51 (USA-Norm)
- The smooth surface prevents to adhere harmful micro organisms
- Easy, fast and less expensive cleaning supplies
- No threads are exposed
- High tightness
- No enter from water and dirt from outside
- High mechanical load capacity
- Suitable protection tubes:  
 Anaconda Sealtite FG-Clean, also possible EF, HTDL, OR, HC, HCX, ZHLS, HFX

#### metric thread

Part no.	Size	Suitable for tube ND	Suitable for tube outer Ø mm	Inner Ø mm	Spanner size mm	Thread length mm	Height mm	Angle size mm	Packaging unit (in pc.)
906928	M16 x 1.50	3/8	17.8	10.4	27	12.0	48	31.0	10
906929	M20 x 1.50	1/2	21.1	13.8	30	13.0	50	34.0	10
906843	M25 x 1.50	3/4	26.4	18.5	36	15.0	57	41.0	5
906844	M32 x 1.50	1	33.1	23.8	46	15.0	68	53.0	5
906845	M40 x 1.50	1 1/4	41.8	31.8	54	16.0	75	62.0	2
906846	M50 x 1.50	1 1/2	47.8	36.8	63	18.0	81	70.0	2



### TECHNICAL DATA

Steel interior socket

Temperature range -55°C to +300°C  
Protection class IP 67

### ■ STRUCTURE

Part no.	Suitable for tube outer Ø mm	Weight kg, approx.	Packaging unit (in pc.)
96839	17.8	1.30	50
97480	21.1	1.30	25
96580	26.4	1.40	25
96803	33.1	1.80	25
96880	41.8	2.00	5

- Material: steel galvanized

### ■ APPLICATION

- For plastic-coated metal protection tubes type Anaconda.

### ■ NOTES

- Suitable to LT glands

Part no.	Suitable for tube outer Ø mm	Weight kg, approx.	Packaging unit (in pc.)
98364	47.8	2.40	5
905027	59.9	2.80	5
905028	72.6	6.40	5
905029	88.4	7.20	5
905030	113.8	7.60	1



## TECHNICAL DATA

Screening braided hose and interference braided hose

Temperature range -50°C to +250°C

### ■ STRUCTURE

- Material: copper tinned
- Axially compressible

### ■ APPLICATION

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in m)
97397	5.0	12.0	100
97399	8.0	17.0	50
97400	12.0	22.0	50

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for bundling
- for the mechanical protection of electrical cables and lines

### ■ NOTES

- Also available in 10m lengths.

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in m)
97402	16.0	27.0	50
97403	20.0	35.0	25



## TECHNICAL DATA

Screening braided hose and interference braided hose

Temperature range -50°C to +250°C

### ■ STRUCTURE

- Material: steel tinned

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for bundling
- for the mechanical protection of electrical cables and lines

### ■ NOTES

- Also available in 10m lengths.

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in m)
97197	5.0	12.0	100
97199	8.0	17.0	50
97200	12.0	22.0	50

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in m)
97202	16.0	27.0	50
96561	20.0	35.0	25



## TECHNICAL DATA

Polyester braided hose

Temperature range -50°C to +150°C  
short term up to +220°C

### ■ STRUCTURE

- Material: Polyester
- Axially compressible

### ■ PROPERTIES

- halogen-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for bundling
- for the mechanical protection of electrical cables and lines

Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in m)	grey	black
			Part no.	Part no.
1.0	5.0	100	<b>94900</b>	<b>98136</b>
2.0	7.0	100	<b>94901</b>	<b>98137</b>
3.0	9.0	100	<b>94902</b>	<b>98138</b>
4.0	11.0	100	<b>94903</b>	<b>98139</b>
5.0	12.0	100	<b>94904</b>	<b>98140</b>
7.0	15.0	100	<b>94905</b>	<b>98141</b>
8.0	17.0	50	<b>94906</b>	<b>98142</b>
10.0	20.0	50	<b>94907</b>	<b>98143</b>
14.0	26.0	25	<b>94908</b>	<b>98144</b>
18.0	34.0	25	<b>94909</b>	<b>98145</b>
20.0	40.0	25	<b>94910</b>	<b>98146</b>
30.0	50.0	25	<b>94911</b>	<b>98147</b>
40.0	66.0	25	<b>94912</b>	<b>98148</b>



## TECHNICAL DATA

### Protection tube

### Temperature range

Permanent load -55°C to +260°C  
 Short-time load +800°C (up to approx. 20 minutes)  
 Loading moment +1640°C (approx. 15-30 seconds)

## ■ STRUCTURE

- Material: Silicone sheath (contains iron oxide)
- Interior sheath of knitted glass-fibre braid

## ■ PROPERTIES

- halogen-free

## ■ APPLICATION

- This product is extremely heat resistant. HTP has a high insulation factor and, due to the iron oxide containing silicone sheath, is resistant to small quantities of liquid steel. HTP also protects against burn injuries from steam tubes, hot air or hot water lines.

Inner Ø mm	Packaging unit (in m)	red Part no.
6.0	15	<b>93630</b>
10.0	15	<b>93632</b>
13.0	15	<b>904924</b>
19.0	15	<b>93634</b>
22.0	15	<b>93635</b>
25.0	15	<b>93636</b>
32.0	15	<b>93637</b>
38.0	15	<b>93638</b>
44.0	15	<b>93639</b>
57.0	15	<b>93640</b>
64.0	15	<b>93641</b>
76.0	15	<b>93642</b>
89.0	15	<b>93643</b>
102.0	15	<b>93644</b>





## TECHNICAL DATA

### Wrapping tape

#### Temperature range

Permanent load -55°C to +260°C  
 Short-time load +800°C (up to approx. 20 minutes)  
 Loading moment +1640°C (approx. 15-30 seconds)

## ■ STRUCTURE

- Material: Silicone sheath (contains iron oxide)
- Interior sheath of knitted glass-fibre braid

## ■ PROPERTIES

- halogen-free

## ■ APPLICATION

- This product is extremely heat resistant. HTP has a high insulation factor and, due to the iron oxide containing silicone sheath, is resistant to small quantities of liquid steel. HTP also protects against burn injuries from steam tubes, hot air or hot water lines.

Width mm	Packaging unit (in m)	red Part no.
25.0	15	<b>94721</b>
51.0	15	<b>94722</b>
76.0	15	<b>94723</b>
102.0	15	<b>94724</b>
127.0	15	<b>94758</b>



## TECHNICAL DATA

Adhesive tape

Temperature range -55°C to +260°C

### ■ STRUCTURE

- Material: Silicone sheath (contains iron oxide)
- Interior sheath of knitted glass-fibre braid

### ■ PROPERTIES

- halogen-free
- flame-retardant
- High oil resistance

### ■ APPLICATION

- This product is extremely heat resistant. HTP has a high insulation factor and, due to the iron oxide containing silicone sheath, is resistant to small quantities of liquid steel. HTP also protects against burn injuries from steam tubes, hot air or hot water lines.

Width mm	Packaging unit (in m)	red Part no.
25.0	11	<b>93645</b>

# HTP-CR



## TECHNICAL DATA

Clamping ring

Temperature range -45°C to +105°C

## ■ STRUCTURE

- Material: Brass nickel plated

## ■ APPLICATION

- Clamping rings for braided sleeve HTP.  
To assemble the tube connectors LT to the high temperature protection tube HTP.  
The plastic clamp ring is replaced by the brass clamp ring.

## ■ NOTES

- In conjunction with the tube connectors LT: Protection classification IP 54

Part no.	Size	trade size mm	Packaging unit (in pc.)
905439	M16 x 1.5	13.0	10
905555	M20 x 1.5	16.0	10
905440	M25 x 1.5	22.0	5
905557	M32 x 1.5	25.0	5

Part no.	Size	trade size mm	Packaging unit (in pc.)
905558	M40 x 1.5	35.0	2
905559	M50 x 1.5	38.0	2
905441	M63 x 1.5	51.0	2

# PVC-IB



## TECHNICAL DATA

PVC insulating tube acc. to DIN 40621

Temperature range                    -20°C to +85°C  
short term up to +90°C

## ■ STRUCTURE

- Material: Polyvinyl chloride (PVC)

## ■ PROPERTIES

- silicone-free
- cadmium-free
- self-extinguishing
- weather-resistant
- lead-free

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for retrospective insulating
- bundling wires and lines

Inner Ø mm	Wall thickness mm	Packaging unit (in m)	black Part no.
1.0	0.3	200	<b>91310</b>
2.0	0.4	200	<b>91311</b>
3.0	0.4	200	<b>91312</b>
3.5	0.4	200	<b>905179</b>
4.0	0.5	200	<b>91313</b>
4.5	0.5	200	<b>905180</b>
5.0	0.6	200	<b>91314</b>
6.0	0.6	200	<b>91315</b>
7.0	0.7	100	<b>91316</b>
8.0	0.7	100	<b>91317</b>
9.0	0.7	100	<b>91318</b>
10.0	0.7	100	<b>91319</b>
12.0	0.8	100	<b>91320</b>
14.0	1.0	100	<b>97228</b>
16.0	1.0	100	<b>96795</b>
18.0	1.0	50	<b>97281</b>
20.0	1.2	25	<b>97162</b>
22.1	1.2	25	<b>97282</b>
26.0	1.0	25	<b>97283</b>



## TECHNICAL DATA

PVC insulating tube acc. to DIN 40621

Temperature range -20°C to +105°C

## ■ STRUCTURE

- Material: Polyvinyl chloride (PVC)

## ■ PROPERTIES

- silicone-free
- cadmium-free
- self-extinguishing
- weather-resistant

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for insulating
- bundling wires and lines

Inner Ø mm	Wall thickness mm	Packaging unit (in m)	green-yellow	grey	white	blue	yellow	red	transparent	green	orange	violet	brown
			Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.0	0.4	50	-	92108	92100	92101	92102	92103	92104	92105	92106	92107	92109
1.0	0.4	500	92280	-	-	-	-	-	-	-	-	-	-
1.3	0.4	250	92281	-	-	-	-	-	-	-	-	-	-
1.6	0.4	50	-	92118	92110	92111	92112	92113	92114	92115	92116	92117	92119
2.1	0.4	50	92282	92128	92120	92121	92122	92123	92124	92125	92126	92127	92129
2.6	0.4	50	-	92138	92130	92131	92132	92133	92134	92135	92136	92137	92139
3.1	0.4	50	-	92148	92140	92141	92142	92143	92144	92145	92146	92147	92149
3.6	0.4	50	-	92158	92150	92151	92152	92153	92154	92155	92156	92157	92159
4.1	0.5	50	92286	92168	92160	92161	92162	92163	92164	92165	92166	92167	92169
4.6	0.5	25	-	92178	92170	92171	92172	92173	92174	92175	92176	92177	92179
5.1	0.6	25	-	92188	92180	92181	92182	92183	92184	92185	92186	92187	92189
6.1	0.55	25	92289	92198	92190	92191	92192	92193	92194	92195	92196	92197	92199
7.1	0.7	25	-	92208	92200	92201	92202	92203	92204	92205	92206	92207	92209
8.1	0.7	25	92291	92218	92210	92211	92212	92213	92214	92215	92216	92217	92219
10.0	0.7	25	-	92228	92220	92221	92222	92223	92224	92225	92226	92227	92229
10.1	0.7	25	92292	-	-	-	-	-	-	-	-	-	-
14.1	0.8	25	92293	92238	92230	92231	92232	92233	92234	92235	92236	92237	92239
16.1	0.8	25	92294	92248	92240	92241	92242	92243	92244	92245	92246	92247	92249
20.1	1.2	25	-	92258	92250	92251	92252	92253	92254	92255	92256	92257	92259
25.1	1.0	25	-	92268	92260	92261	92262	92263	92264	92265	92266	92267	92269
36.0	1.0	25	-	92278	92270	92271	92272	92273	92274	92275	92276	92277	92279



## TECHNICAL DATA

Silicone insulating tube acc. to DIN 40628

Temperature range -60°C to +200°C

### ■ STRUCTURE

- Material: Silicone

### ■ PROPERTIES

- softener free
- heavy metal free
- physiologically and toxicologically harmless
- with good chemical resistance

- weather-resistant
- ozone-resistant
- UV resistant

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for insulating
- bundling wires and lines

Inner Ø mm	Wall thickness mm	Packaging unit (in m)	natural Part no.
1.0	0.4	100	<b>94741</b>
2.0	0.4	100	<b>94742</b>
3.0	0.4	100	<b>97203</b>
4.0	0.5	100	<b>97426</b>
5.0	0.6	100	<b>97427</b>
6.0	0.6	100	<b>97757</b>
8.0	0.7	100	<b>94743</b>
10.0	0.7	50	<b>94744</b>
12.0	0.8	50	<b>94745</b>
14.0	0.8	50	<b>94746</b>
16.0	0.8	50	<b>94747</b>



## TECHNICAL DATA

PVC shrink tube 2:1

Temperature range -20°C to +90°C

## ■ STRUCTURE

- Material: Polyvinyl chloride (PVC) V0 acc. to UL 94

## ■ PROPERTIES

- silicone-free

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

## ■ NOTES

- Attention: Do not store tubes at over 18°C! Otherwise properties are changed!  
Length shrinkage approx. 20-30%  
The colours orange, yellow, white, blue, green, brown, red on request.

Inner Ø before shrinkage mm	Inner Ø after shrinkage mm	Wall thickness mm	Packaging unit (in m)	black Part no.
2.5	1.2	0.45	100	<b>91300</b>
4	2	0.5	100	<b>91301</b>
6	3	0.5	100	<b>91302</b>
7	4	0.5	100	<b>91303</b>
11	6	0.6	100	<b>91304</b>
14	8	0.6	100	<b>91305</b>
17	10	0.8	100	<b>91306</b>
20	13	0.8	100	<b>91307</b>
25	16	1.0	50	<b>91308</b>
31	20	1.0	50	<b>91309</b>

# HSB-Boxes



## TECHNICAL DATA

Polyolefin shrink tube 2:1

Temperature range -55°C to +135°C

## ■ STRUCTURE

- Material: Polyolefin

## ■ PROPERTIES

- silicone-free

- cadmium-free
- lead-free

## ■ APPLICATION

- for repairing insulation
- for sealing electrical components

## ■ NOTES

- Form of shipment: HSB box  
Other colours on request.  
Halogen-free (transparent only)

Type	Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in pc.)	black	transparent
					Part no.	Part no.
HSB 46	1.2	0.4	0.6	1	<b>91321</b>	-
HSB 46-C	1.2	0.4	0.6	1	-	<b>98519</b>
HSB 63	1.6	0.4	0.8	1	<b>91322</b>	-
HSB 63-C	1.6	0.4	0.8	1	-	<b>97085</b>
HSB 93	2.4	0.5	1.2	1	<b>91323</b>	-
HSB 93-C	2.4	0.5	1.2	1	-	<b>96277</b>
HSB 125	3.2	0.5	1.6	1	<b>91324</b>	-
HSB 125-C	3.2	0.5	1.6	1	-	<b>97485</b>
HSB 187	4.7	0.5	2.4	1	<b>91325</b>	-
HSB 187-C	4.7	0.5	2.4	1	-	<b>96687</b>
HSB 250	6.4	0.6	3.2	1	<b>91326</b>	-
HSB 250-C	6.4	0.6	3.2	1	-	<b>96830</b>
HSB 375	9.5	0.6	4.7	1	<b>91327</b>	-
HSB 375-C	9.5	0.6	4.7	1	-	<b>96761</b>
HSB 500	12.7	0.7	6.4	1	<b>91328</b>	-
HSB 500-C	12.7	0.7	6.4	1	-	<b>96752</b>
HSB 750	19.1	0.7	9.5	1	<b>91329</b>	-
HSB 750-C	19.1	0.7	9.5	1	-	<b>96751</b>
HSB 1000	25.4	0.8	12.7	1	<b>91330</b>	-
HSB 1000-C	25.4	0.8	12.7	1	-	<b>97107</b>





## TECHNICAL DATA

Polyolefin shrink tube 2:1

Temperature range -55°C to +135°C

## ■ STRUCTURE

- Material: Polyolefin

## ■ PROPERTIES

- silicone-free
- cadmium-free
- lead-free

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

## ■ NOTES

- Form of shipment:  
CMP box (1.2m sections) (25 sections = 30.5m; 10 sections = 12.2m)  
CMP rolls

### Box

Type	Inner Ø before shrinkage mm	Wandstärke nach Schrumpfung in mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
CMP 46-0-A	1.2	0.4	0.6	30.5	<b>91290</b>
CMP 63-0-A	1.6	0.4	0.8	30.5	<b>91291</b>
CMP 125-0-A	3.2	0.5	1.6	30.5	<b>91293</b>
CMP 187-0-A	4.8	0.5	2.4	30.5	<b>91294</b>
CMP 93-0-A	2.4	0.5	1.2	30.5	<b>91292</b>
CMP 250-0-A	6.4	0.6	3.2	30.5	<b>91295</b>
CMP 375-0-A	9.5	0.6	4.8	30.5	<b>91296</b>
CMP 500-0-A	12.7	0.6	6.4	30.5	<b>91297</b>
CMP 750-0-A	19.0	0.8	9.5	12.2	<b>91298</b>
CMP 1000-0-A	25.4	0.9	12.7	12.2	<b>91299</b>

# CMP

## Coil

Type	Inner Ø before shrinkage mm	Wandstärke nach Schrumpfung in mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
CMP 46-0-BG	1.2	0.4	0.6	300	<b>91331</b>
CMP 63-0-BG	1.6	0.4	0.8	300	<b>91332</b>
CMP 125-0-BG	3.2	0.5	1.6	300	<b>91334</b>
CMP 187-0-BG	4.8	0.5	2.4	300	<b>91335</b>
CMP 93-0-BG	2.4	0.5	1.2	300	<b>91333</b>
CMP 250-0-BG	6.4	0.6	3.2	300	<b>91336</b>
CMP 375-0-BG	9.5	0.6	4.8	150	<b>91337</b>
CMP 500-0-BG	12.7	0.6	6.4	100	<b>91338</b>
CMP 750-0-BG	19.1	0.8	9.5	50	<b>91339</b>
CMP 1000-0-BG	25.4	0.9	12.7	50	<b>91340</b>



**TECHNICAL DATA**  
 Polyolefin shrink tube 2:1  
 Temperature range -55°C to +135°C

**STRUCTURE**  
 • Material: Polyolefin

**PROPERTIES**  
 • self-extinguishing

• flame-retardant

**APPLICATION**

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	green-yellow	grey	black	white	blue	yellow	red	transparent	green	orange	brown
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.2	0.4	0.6	20	-	-	91777	92310	92311	92312	92313	92314	92319	92317	92316
1.6	0.4	0.8	20	-	-	91778	92320	92321	92322	92323	92324	92329	92327	92326
2.4	0.5	1.2	20	92335	92338	91779	92330	92331	92332	92333	92334	92339	92337	92336
3.2	0.51	1.6	20	92345	92348	91780	92340	92341	92342	92343	92344	92349	92347	92346
4.8	0.51	2.4	20	92355	92358	91781	92350	92351	92352	92353	92354	92359	92357	92356
6.4	0.64	3.2	10	92365	92368	91782	92360	92361	92362	92363	92364	92369	92367	92366
9.5	0.64	4.8	10	92375	92378	91783	92370	92371	92372	92373	92374	92379	92377	92376
12.7	0.64	6.4	10	92385	92388	91784	92380	92381	92382	92383	92384	92389	92387	92386
19	0.76	9.5	10	92395	92398	91785	92390	92391	92392	92393	92394	92399	92397	92396
25.4	0.89	12.7	10	92405	92408	91786	92400	92401	92402	92403	92404	92409	92407	92406



## TECHNICAL DATA

Polyolefin shrink tube 2:1

Temperature range -55°C to +135°C

## ■ STRUCTURE

- Material: Polyolefin

## ■ PROPERTIES

- self-extinguishing

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	green-yellow	grey	black	white	blue	yellow	red	transparent	green	orange	brown
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
1.2	0.4	0.6	150	-	92418	91788	92410	92411	92412	92413	92414	92419	92417	92416
1.6	0.4	0.8	150	-	92428	91789	92420	92421	92422	92423	92424	92429	92427	92426
2.4	0.5	1.2	150	92435	92438	91790	92430	92431	92432	92433	92434	92439	92437	92436
3.2	0.51	1.6	150	92445	92448	91791	92440	92441	92442	92443	92444	92449	92447	92446
4.8	0.51	2.4	75	92455	92458	91792	92450	92451	92452	92453	92454	92459	92457	92456
6.4	0.64	3.2	75	92465	92468	91793	92460	92461	92462	92463	92464	92469	92467	92466
9.5	0.64	4.8	75	92475	92478	91794	92470	92471	92472	92473	92474	92479	92477	92476
12.7	0.6	6.4	50	-	-	91795	-	-	-	-	-	-	-	-
12.7	0.64	6.4	100	92485	92488	-	92480	92481	92482	92483	92484	92489	92487	92486
16.0	0.6	8.0	50	-	-	90058	-	-	-	-	-	-	-	-
19.0	0.76	9.5	30	92495	92498	91796	92490	92491	92492	92493	92494	92499	92497	92496
25.4	0.89	12.7	30	92505	92508	91797	92500	92501	92502	92503	92504	92509	92507	92506
32.0	0.9	16.0	30	-	-	904771	-	-	-	-	-	-	-	-
38.1	1.0	19.0	30	92515	92518	91798	92510	92511	92512	92513	92514	92519	92517	92516
50.8	1.1	25.4	30	-	-	91799	-	-	-	-	-	-	-	-
50.8	1.14	25.4	30	92425	-	-	-	-	-	-	-	-	-	-
76.2	1.3	38.1	15	-	-	96828	-	-	-	-	-	-	-	-
101.0	1.4	50.8	15	-	-	96929	-	-	-	-	-	-	-	-

# SPRO - 3:1



## TECHNICAL DATA

Polyolefin shrink tube 3:1

Temperature range -55°C to +135°C

## ■ STRUCTURE

- Material: Polyolefin

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

## ■ APPLICATION

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	green-yellow	black	blue	yellow	red	green
				Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
6.4	0.65	2.0	75	<b>903093</b>	<b>903035</b>	<b>903031</b>	<b>903032</b>	<b>903033</b>	<b>903039</b>
9.5	0.75	3.0	75	<b>903094</b>	<b>903045</b>	<b>903041</b>	<b>903042</b>	<b>903043</b>	<b>903049</b>
12.7	0.75	4.0	50	<b>903095</b>	<b>903055</b>	<b>903051</b>	<b>903052</b>	<b>903053</b>	<b>903059</b>
19.0	0.85	6.0	30	<b>903096</b>	<b>903065</b>	<b>903061</b>	<b>903062</b>	<b>903063</b>	<b>903069</b>
25.4	1.0	8.0	30	<b>903097</b>	<b>903075</b>	<b>903071</b>	<b>903072</b>	<b>903073</b>	<b>903079</b>
39.0	1.15	13.0	30	<b>903098</b>	<b>903085</b>	<b>903081</b>	<b>903082</b>	<b>903083</b>	<b>903089</b>



## TECHNICAL DATA

Polyoelfin shrink tube 2:1

Temperature range -55°C to +135°C

## PROPERTIES

- halogen-free
- silicone-free
- cadmium-free
- self-extinguishing

- lead-free

## APPLICATION

- Machine and plant construction
- Automation technology
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
1.6	0.4	0.8	150	<b>99551</b>
2.4	0.5	1.2	150	<b>99552</b>
3.2	0.5	1.6	150	<b>99553</b>
4.8	0.5	2.4	75	<b>99554</b>
6.4	0.6	3.2	75	<b>99555</b>
9.5	0.6	4.8	75	<b>99556</b>
12.7	0.6	6.4	50	<b>99557</b>
16	0.6	8	50	<b>99558</b>
19	0.7	9.5	30	<b>99559</b>
25.4	0.8	12.7	30	<b>99560</b>
31.8	0.8	15.9	30	<b>99561</b>
38	1.0	19	30	<b>99562</b>
51	1.1	25.4	30	<b>99563</b>

# P-SK



## TECHNICAL DATA

Polyolefin shrink tube 3:1

Temperature range -55°C to +110°C

### ■ STRUCTURE

- Material: Polyolefin
- with interior adhesive

### ■ PROPERTIES

- thin walled
- self-extinguishing

- flexible
- lead-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
3	1.0	1	5	<b>98258</b>
6	1.2	2	3.5	<b>98259</b>
9	1.4	3	3	<b>98260</b>
12	1.7	4	2.5	<b>98261</b>
19	2.1	6	2	<b>98262</b>
24	2.4	8	1.5	<b>98263</b>

# SK-M

3:1 with inside adhesive



## TECHNICAL DATA

Polyolefin shrink tube 3:1

Temperature range -55°C to +110°C

### ■ STRUCTURE

- Material: Polyolefin
- with interior adhesive

### ■ PROPERTIES

- halogen-free
- medium walled

- very good chemical resistance

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components
- good protection against impact and abrasion

## rods

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
10.2	2.0	3.8	1.22	<b>99788</b>
19.1	2.0	5.6	1.22	<b>99789</b>
27.9	2.0	10.2	1.22	<b>99790</b>
33	2.0	10.2	1.22	<b>99791</b>
38.1	2.0	12.7	1.22	<b>99792</b>
43.2	2.0	12.7	1.22	<b>99793</b>
52.1	2.0	19	1.22	<b>99794</b>
69.9	2.0	25	1.22	<b>99795</b>
88.9	2.4	30	1.22	<b>99796</b>
119.4	2.7	40	1.22	<b>99797</b>
152	2.8	48	1.22	<b>99798</b>
170.2	2.8	58	1.22	<b>99799</b>
228.6	3.0	77	1.22	<b>99678</b>



# SK-D



## TECHNICAL DATA

Polyolefin shrink tube 3:1

Temperature range -55°C to +110°C

### ■ STRUCTURE

- Material: Polyolefin
- with interior adhesive

### ■ PROPERTIES

- halogen-free
- thick walled
- very good chemical resistance

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- for repairing insulation
- for sealing electrical components
- for the protection of cable sleeves and terminations for low-voltage applications (600V)
- good protection against impact and abrasion

### ■ NOTES

- Approval: UR-listed up to size 68.1 mm

## rods

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
8.9	1.8	3	1.22	<b>905344</b>
13	2.4	4.1	1.22	<b>905335</b>
19.1	2.4	6.1	1.22	<b>905336</b>
27.9	3.0	8.9	1.22	<b>905337</b>
38.1	4.1	11.9	1.22	<b>905338</b>
50.8	4.1	16	1.22	<b>905339</b>
68.1	4.1	22.1	1.22	<b>905340</b>
89.9	4.1	30	1.22	<b>905731</b>
119.9	4.3	39.9	1.22	<b>905732</b>



## TECHNICAL DATA

FPM shrink tube 2:1

Temperature range -55°C to +220°C

### ■ STRUCTURE

- Material: Fluoro rubber (FPM)

### ■ PROPERTIES

- weather-resistant
- flame-retardant

- chemical resistant

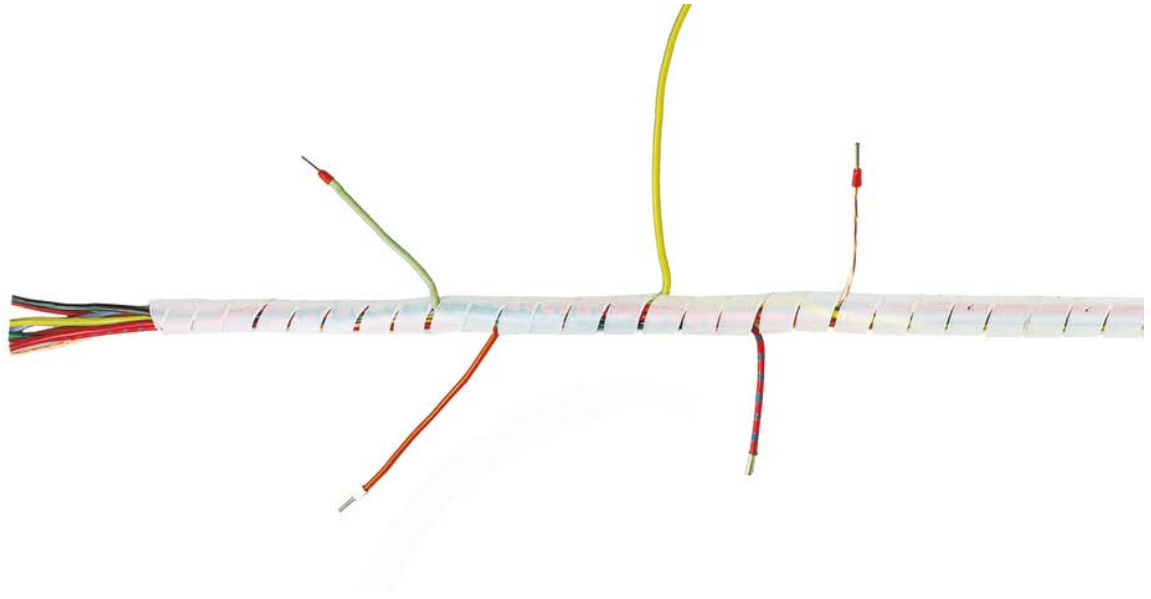
### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Installation technology
- Control cabinet construction
- Protection against aggressive media

### ■ NOTES

- MIL-I-23053

Inner Ø before shrinkage mm	Wall thickness mm	Inner Ø after shrinkage mm	Packaging unit (in m)	black Part no.
3.2	0.8	1.6	50	<b>96796</b>
4.8	0.9	2.4	50	<b>97385</b>
6.4	0.9	3.2	50	<b>97774</b>
9.5	1.0	4.8	50	<b>91165</b>
12.7	1.2	6.4	30	<b>91166</b>
19	1.4	9.5	30	<b>93690</b>
25.4	1.8	12.7	30	<b>93691</b>
38	2.4	19	15	<b>93692</b>
50.8	2.8	25.4	15	<b>93693</b>



## TECHNICAL DATA

Plastic Spiral Wraps

Temperature range -50°C to +85°C

### ■ STRUCTURE

- Material: Polyethylene (PE)

### ■ PROPERTIES

- halogen-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Protects wiring harnesses, wires and lines. Bundles and binds single wires and provides mechanical protection for loosely installed or moving cables and lines.

### ■ NOTES

- Other materials or colours on request.

Part no.	Size	Colour	Bundle Ø mm	Packaging unit (in m)
91000	6	transparent	5 - 20	25
91001	6	black	5 - 20	25
96659	6	yellow	5 - 20	25
96891	6	orange	5 - 20	25
91002	12	transparent	10 - 40	25

Part no.	Size	Colour	Bundle Ø mm	Packaging unit (in m)
91003	12	black	10 - 40	25
96658	12	yellow	10 - 40	25
97042	12	orange	10 - 40	25
96300	22	transparent	25 - 100	25
96299	22	black	25 - 100	25



## TECHNICAL DATA

Steel lug lock cable tie

Temperature range -60°C to +85°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- silicone-free

## ■ APPLICATION

- Cable tie with steel lug lock made of corrosion-resistant, non-magnetic steel. This technology enables the cable tie to offer excellent binding properties even under the most rigorous conditions such as heat, cold, humidity etc. and makes it insensitive to vibrations and external influences.

## ■ NOTES

- Brown, red, orange, yellow, green, purple or grey available on request.

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	transparent Part no.
TYB 23M	92.0	2.4	16	80	1000	<b>91051</b>
TY 232M	203.0	2.4	50	80	1000	<b>91055</b>
TY 234M	356.0	2.4	102	80	1000	<b>91058</b>
TYB 24M	140.0	3.6	29	180	1000	<b>91061</b>
TY 242M	204.0	3.6	50	180	1000	<b>91064</b>
TY 26M	284.0	3.6	76	130	1000	<b>91067</b>
TY 244M	368.0	3.6	103	130	1000	<b>91070</b>
TYB 25M	186.0	4.8	45	220	1000	<b>91073</b>
TY 253M	295.0	4.8	78	220	1000	<b>91076</b>
TY 28M	361.0	4.8	102	220	1000	<b>91079</b>
TY 272M	223.0	6.9	50	540	500	<b>91082</b>
TY 27M	340.0	6.9	90	540	500	<b>91085</b>
TY 29M	771.0	6.9	229	540	500	<b>91088</b>

### small pack

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	transparent Part no.
TY 5-23M	92.0	2.4	16	80	100	<b>91050</b>
TY 5-232M	203.0	2.4	50	80	100	<b>91054</b>

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	transparent Part no.
TY 5-234M	356.0	2.4	102	80	100	<b>91057</b>
TY 5-24M	140.0	3.6	29	180	100	<b>91060</b>
TY 5-242M	204.0	3.6	50	180	100	<b>91063</b>
TY 5-26M	284.0	3.6	76	130	100	<b>91066</b>
TY 5-244M	368.0	3.6	103	130	100	<b>91069</b>
TY 5-25M	186.0	4.8	45	220	100	<b>91072</b>
TY 5-253M	295.0	4.8	78	220	100	<b>91075</b>
TY 5-28M	361.0	4.8	102	220	100	<b>91078</b>
TY 5-272M	223.0	6.9	50	540	50	<b>91081</b>
TY 5-27M	340.0	6.9	90	540	50	<b>91084</b>
TY 5-29M	771.0	6.9	229	540	50	<b>91087</b>



## TECHNICAL DATA

Steel lug lock cable tie

Temperature range -60°C to +105°C

### ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (V2)

### ■ PROPERTIES

- halogen-free

- silicone-free

### ■ APPLICATION

- UV-stabilised cable tie with steel lug lock made of corrosion-resistant, non-magnetic steel. This technology enables the cable tie to offer excellent binding properties even under the most rigorous conditions such as heat, cold, humidity etc. and makes it insensitive to vibrations and external influences.

### ■ NOTES

- Other colours and materials available on request.

Part no.	Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
91052	TYB 23MX	92.0	2.4	16	80	1000
91056	TY 232MX	203.0	2.4	50	80	1000
91059	TY 234MX	356.0	2.4	102	80	1000
91062	TYB 24MX	140.0	3.6	29	180	1000
91065	TY 242MX	204.0	3.6	50	180	1000
91068	TY 26MX	284.0	3.6	76	130	1000
91071	TY 244MX	368.0	3.6	103	130	1000

Part no.	Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
91074	TYB 25MX	186.0	4.8	45	220	1000
91077	TY 253MX	295.0	4.8	78	220	1000
91080	TY 28MX	361.0	4.8	102	220	1000
91083	TY 272MX	223.0	6.9	50	540	500
91086	TY 27MX	340.0	6.9	90	540	500
91089	TY 29MX	771.0	6.9	229	540	500

### small pack

Part no.	Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
97310	TY 5-23MX	92.0	2.4	16	80	100
97311	TY 5-232MX	203.0	2.4	50	80	100
97312	TY 5-234MX	356.0	2.4	102	80	100
97313	TYB 5-24MX	140.0	3.6	29	180	100
97314	TY 5-242MX	204.0	3.6	50	180	100
97436	TY 5-26MX	284.0	3.6	76	130	100
97437	TY 5-244MX	368.0	3.6	103	130	100

Part no.	Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
93694	TY 5-25MX	186.0	4.8	45	220	100
93695	TY 5-253MX	295.0	4.8	78	220	100
93696	TY 5-28MX	361.0	4.8	102	220	100
93697	TY 5-272MX	223.0	6.9	50	540	50
93698	TY 5-27MX	340.0	6.9	90	540	50
93699	TY 5-29MX	771.0	6.9	229	540	50



## TECHNICAL DATA

Steel lug lock cable tie

Temperature range -60°C to +105°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6, heat-stabilised
- Flammability acc. to UL 94 (V2)

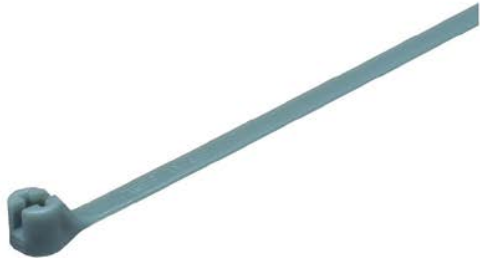
## ■ PROPERTIES

- halogen-free
- silicone-free

## ■ APPLICATION

- Cable tie with steel lug lock made of corrosion-resistant, non-magnetic steel. This technology enables the cable tie to offer excellent binding properties even under the most rigorous conditions such as heat, cold, humidity etc. and makes it insensitive to vibrations and external influences.

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	transparent Part no.
TYH 23M	92.0	2.4	16	80	1000	<b>97280</b>
TYH 232M	203.0	2.4	50	80	1000	<b>96481</b>
TYH 24M	140.0	3.6	29	130	1000	<b>96577</b>
TYH 242M	208.0	3.6	50	130	1000	<b>98520</b>
TYH 26M	284.0	3.6	76	130	1000	<b>97249</b>
TYH 25M	186.0	4.8	45	220	1000	<b>97213</b>
TYH 253M	290.0	4.8	78	220	1000	<b>98521</b>
TYH 28M	360.0	4.8	102	220	1000	<b>96291</b>
TYH 29M	771.0	6.9	229	530	500	<b>97250</b>
TYH 27M	340.0	7.0	90	540	500	<b>97154</b>
TYH 272M	222.0	7.6	50	540	500	<b>98522</b>



### TECHNICAL DATA

Steel lug lock cable tie

Temperature range -60°C to +150°C

### ■ STRUCTURE

- Material: Ethylene tetrafluoroethylene (ETFE)
- Flammability acc. to UL 94 (V0)

### ■ PROPERTIES

- halogen-free
- silicone-free

### ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Cable tie with steel lug lock made of corrosion-resistant, non-magnetic steel. This technology enables the tie to offer excellent binding properties even under the most rigorous conditions such as heat, cold, humidity etc. and makes it insensitive to vibrations and external influences.

Part no.	Type	Colour	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
96909	TYZ 23M	aquamarine blue	92.0	2.4	16	80	1000
96290	TYZ 25M	aquamarine blue	186.0	4.8	45	220	1000
96724	TYZ 28M	aquamarine blue	360.0	4.8	102	220	500
94800	TYZ 27M	aquamarine blue	340.0	7.0	90	540	100





## TECHNICAL DATA

Steel lug lock cable tie

Temperature range -60°C to +85°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- with steel lug lock made of corrosion-resistant, non-magnetic steel
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- silicone-free

## ■ APPLICATION

- This technology enables the cable tie to offer excellent binding properties even under the most rigorous conditions such as heat, cold, humidity etc. and makes it insensitive to vibrations and external influences.

### with assembly hole

Part no.	Type	Colour	Length mm	Width mm	Bundle Ø mm	Capacity N	Hole Ø mm	Packaging unit (in pc.)
91093	TY 33M	transparent	102.0	2.3	16	80	3	1000
91094	TY 34M	transparent	151.0	3.5	29	180	4.4	1000
91095	TY 635M	transparent	198.0	4.7	45	220	4	1000
91096	TY 35M	transparent	199.0	4.7	45	220	5.1	1000
91098	TY 37M	transparent	256.0	7.7	90	540	6.7	500

### with plug-in clip

Part no.	Type	Colour	Length mm	Width mm	Bundle Ø mm	Capacity N	Hole Ø mm	Packaging unit (in pc.)
91103	TY 38M	transparent	200.0	4.7	44	220		1000

# TY-RAP® with label



## TECHNICAL DATA

Steel lug lock cable tie

Temperature range -60°C to +85°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- with steel lug lock made of corrosion-resistant, non-magnetic steel
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- silicone-free

## ■ APPLICATION

- The cable tie enables to offer excellent binding properties even under the most rigorous conditions such as heat, cold, humidity etc. and makes it insensitive to vibrations and external influences.

## ■ NOTES

- TY-RAP® (special types)

### Marking area below the latch

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Field W x H mm	Packaging unit (in pc.)	transparent Part no.
TY 51M	92.0	2.4	16	80	25.40 x 7.90	500	<b>91108</b>
TY 512M	210.0	2.4	51	80	25.40 x 7.90	1000	<b>91109</b>
TY 46M	184.0	4.8	45	220	13.10 x 27.00	1000	<b>91111</b>
TY 48M	360.0	4.8	102	220	13.10 x 57.20	1000	<b>91110</b>
TY 46MD	184.0	4.8	45	220	29.70 x 27.00	500	<b>91112</b>
TY 46MT	184.0	4.8	45	220	46.00 x 27.00	500	<b>91113</b>
TY 46MF	184.0	4.8	45	220	63.10 x 27.00	250	<b>91114</b>

### Marking area above the latch

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Field W x H mm	Packaging unit (in pc.)	transparent Part no.
TY 53M	102.0	2.4	16	80	20.60 x 9.30	500	<b>91106</b>
TY 532M	212.0	2.4	51	80	20.60 x 9.30	1000	<b>91107</b>



## TECHNICAL DATA

Cable ties with plastic lug

Temperature range -40°C to +85°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- silicone-free

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- for directionality and mounting

## ■ NOTES

- black: good UV-resistance

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	black	transparent
						Part no.	Part no.
T 2-20	100.0	2.5	24	110	100	<b>90140</b>	<b>90150</b>
T 2-50	200.0	2.5	55	110	100	<b>90141</b>	<b>90151</b>
T 3-35	140.0	3.5	36	200	100	<b>90142</b>	<b>90152</b>
T 3-50	200.0	3.5	55	200	100	<b>90143</b>	<b>90153</b>
T 3-75	280.0	3.5	80	200	100	<b>90144</b>	<b>90154</b>
T 5-100	360.0	4.5	101	280	100	<b>90148</b>	<b>90158</b>
T 5-75	280.0	4.5	76	280	100	<b>90146</b>	<b>90156</b>
T 5-85	200.0	4.5	51	280	100	<b>90147</b>	<b>90157</b>
T 8-100	360.0	7.5	101	650	100	<b>90149</b>	<b>90159</b>
T 9-165	610.0	9.0	177	800	100	<b>96492</b>	<b>96491</b>
T 9-230	762.0	9.0	227	800	100	<b>97223</b>	<b>97219</b>

# T-SK/SKU



## TECHNICAL DATA

Steel lug lock cable tie

Temperature range -40°C to +85°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- silicone-free
- self-extinguishing
- high requirements to flexibility and resistance, also at low temperatures and dry climate
- high tension due to extra wide steel lugs
- corrosion resistant and non-magnetic V4A stainless steel

## ■ APPLICATION

- for directionality and mounting

## T-SK

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	transparent Part no.
T-SK 2-24	100.0	2.5	24	135	1000	<b>907016</b>
T-SK 2-55	200.0	2.5	55	135	1000	<b>907017</b>
T-SK 3-36	140.0	3.5	36	200	1000	<b>907018</b>
T-SK 3-55	200.0	3.5	55	200	1000	<b>907019</b>
T-SK 3-80	280.0	3.5	80	200	1000	<b>907020</b>
T-SK 4-101	360.0	4.5	103	350	1000	<b>907023</b>
T-SK 4-51	186.0	4.5	49	350	1000	<b>907021</b>
T-SK 4-76	290.0	4.5	80	350	1000	<b>907022</b>
T-SK 7-95	340.0	7.0	90	600	500	<b>907037</b>

## T-SKU

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	black Part no.
T-SKU 2-24	100.0	2.5	24	135	1000	<b>907024</b>
T-SKU 2-55	200.0	2.5	55	135	1000	<b>907025</b>
T-SKU 3-36	140.0	3.5	36	200	1000	<b>907026</b>
T-SKU 3-55	200.0	3.5	55	200	1000	<b>907027</b>
T-SKU 3-80	280.0	3.5	80	200	1000	<b>907028</b>
T-SKU 4-101	360.0	4.5	103	350	1000	<b>907031</b>
T-SKU 4-51	186.0	4.5	49	350	1000	<b>907029</b>

# T-SK/SKU

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	black Part no.
T-SKU 4-76	290.0	4.5	80	350	1000	<b>907030</b>
T-SKU 7-95	340.0	7.0	90	600	500	<b>907038</b>



## TECHNICAL DATA

Cable ties with plastic lug

Temperature range -40°C to +85°C  
short term up to +105°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (V2)

## ■ PROPERTIES

- halogen-free
- weather-resistant

## ■ APPLICATION

- for directionality and mounting
- Outdoor area

Type	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	black Part no.
T-WS 25/100 BK	100.0	2.5	22	80	100	<b>905525</b>
T-WS 25/140 BK	145.0	2.5	35	80	100	<b>905527</b>
T-WS 25/205 BK	205.0	2.5	50	80	100	<b>905526</b>
T-WS 28/330 BK	330.0	2.8	95	110	100	<b>905528</b>
T-WS 35/150 BK	150.0	3.5	35	135	100	<b>905529</b>
T-WS 35/190 BK	198.0	3.5	50	135	100	<b>905530</b>
T-WS 35/290 BK	290.0	3.5	80	135	100	<b>905531</b>
T-WS 40/175 BK	175.0	4.0	40	180	100	<b>905532</b>
T-WS 46/245 BK	245.0	4.6	65	225	100	<b>905536</b>
T-WS 46/200 BK	210.0	4.7	55	355	100	<b>905533</b>
T-WS 47/300 BK	305.0	4.7	85	355	100	<b>905537</b>
T-WS 46/390 BK	390.0	4.7	110	355	100	<b>906682</b>
T-WS 76/225 BK	225.0	7.6	55	535	100	<b>905542</b>
T-WS 76/300 BK	300.0	7.6	80	535	100	<b>905539</b>
T-WS 76/365 BK	365.0	7.6	100	670	100	<b>905543</b>
T-WS 76/380 BK	387.0	7.6	100	535	100	<b>906683</b>
T-WS 76/460 BK	460.0	7.6	125	535	100	<b>905541</b>
T-WS 76/760 BK	760.0	7.6	225	535	100	<b>906684</b>
T-WS 89/530 BK	530.0	8.9	150	780	100	<b>906686</b>
T-WS 88/820 BK	820.0	8.9	245	780	100	<b>906685</b>
T-WS 132/535 BK	535.0	13.2	150	1115	100	<b>905546</b>



## TECHNICAL DATA

Detachable cable ties

Temperature range -40°C to +80°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 (V2)

Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)	black Part no.
120.0	7.6	26	220	100	<b>97633</b>
200.0	7.6	50	220	100	<b>97634</b>
300.0	7.6	80	220	100	<b>97635</b>
370.0	7.6	102	220	100	<b>97636</b>

# CTSS-E



## TECHNICAL DATA

Stainless steel cable ties

Temperature range -80°C to +538°C

## ■ STRUCTURE

- Material: Stainless steel 1.4401 / AISI 316
- with ball lock

Part no.	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
90900	150.0	4.6	35	778	100
90901	200.0	4.6	50	778	100
90902	290.0	4.6	75	778	100
90903	360.0	4.6	100	778	100

## ■ PROPERTIES

- resistant to: aggressive chemicals
- corrosion resistant
- radiation resistant
- anti-magnetic
- temperature-resistant

## ■ APPLICATION

- For use in extreme conditions, such as high temperatures, aggressive environment, high tensile load.

Part no.	Length mm	Width mm	Bundle Ø mm	Capacity N	Packaging unit (in pc.)
90904	200.0	7.9	50	1559	100
90905	290.0	7.9	75	1559	100
90906	360.0	7.9	100	1559	100
90907	520.0	7.9	150	1559	25





## TECHNICAL DATA

Velcro Cable Ties

### ■ STRUCTURE

- Material: see table

### ■ PROPERTIES

- halogen-free

### ■ APPLICATION

- Particularly suited for sensitive cables and lines that are to be bundled or fastened without kinking or pinching. Velcro binders exert only low pressure on the lines and lie evenly and flush. Suitable for up to 10,000 actuations in reusable bundling applications.

### ■ NOTES

- KLL - pre-punchend on rolls  
KLÖ - packed small in polybags

#### KLL - PA Hook & Loop

Part no.	Material	Colour	Length mm	Width mm	Bundle Ø mm	Packaging unit (in pc.)
93730	Polyamide sleeve	black	150.0	20.0	45	1000
93731	Polyamide sleeve	black	200.0	20.0	60	750
93732	Polyamide sleeve	black	330.0	20.0	100	450

#### KLÖ - PP/PA Velours with hook

Part no.	Material	Colour	Length mm	Width mm	Bundle Ø mm	Packaging unit (in pc.)
93735	PE mushroom head tape	rot / schwarz	195.0	25.0	55	10
93736	PE mushroom head tape	rot / schwarz	240.0	25.0	70	10
93737	PE mushroom head tape	rot / schwarz	360.0	25.0	110	10

# CTM-BS



## TECHNICAL DATA

### Cable Tie Mounts

**Temperature range** -40°C to +85°C  
Short-time load +150°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6

## ■ PROPERTIES

- halogen-free
- self-extinguishing
- flame retardant

## ■ APPLICATION

- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- BS mounting base self-adhesive and screwable for installing cables, lines, tubes and pipes. Simple handling by the combination with cable ties.

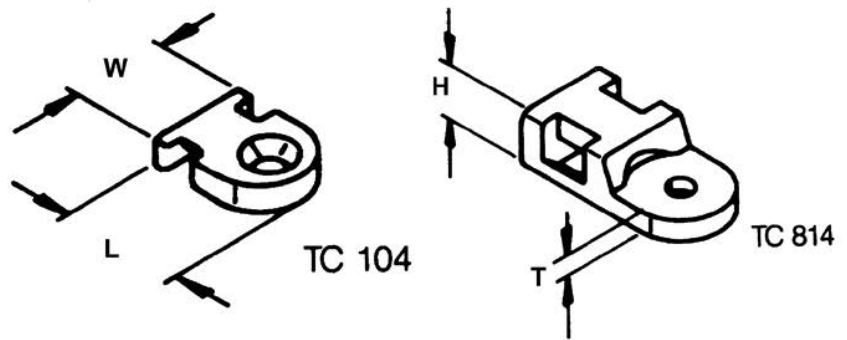
## ■ NOTES

- Foamed self-adhesive foil adheres to smooth and grease-free surfaces and smooths out slightly uneven surfaces.

### transparent

Part no.	Size	Type	Tie width max mm	Ø Drill hole mm	Packaging unit (in pc.)
91090	19.00 x 19.00	BS 1	3.6	4.0	100
91091	28.00 x 28.00	BS 2	5.0	5.0	100
91092	26.50 x 26.50	BS 3	4.8	4.0	100

# CTM-TC



## TECHNICAL DATA

### Cable Tie Mounts

**Temperature range** -40°C to +85°C  
short term up to +105°C

### ■ STRUCTURE

- Material: Polyamide (PA) 6.6

### ■ APPLICATION

- Small base for band fastening with countersunk screws, cylinder bolts or rivet assembly.

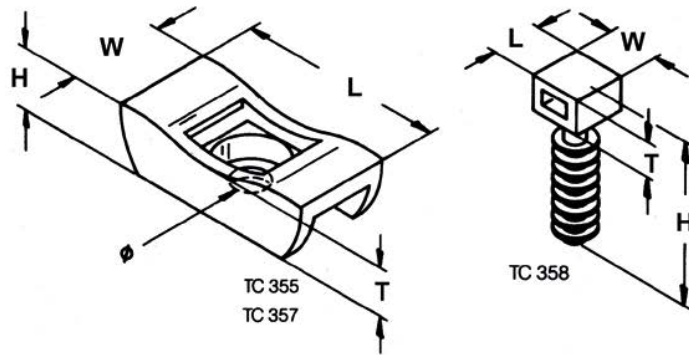
### ■ NOTES

- Legend:  
H - Height  
W - Width  
L - Length  
T - Thickness

## transparent

Part no.	Fixing	Type	Height mm	Width mm	Length mm	Boring mm	Tie width max mm	Packaging unit (in pc.)
91039	screw and rivet	TC 102	3.2	12.7	19.1	4.4	4.8	100
91040	screw and rivet	TC 104	2.4	7.9	10.3	3.4	2.4	100
91042	screw and rivet	TC 112	4.8	9.5	19.1	4.4	4.8	100
91043	screw and rivet	TC 812	5	9.8	19.3	5.1	4.8	100
93006	screw and rivet	TC 814	5	9.8	19.3	3.3	4.8	100

# TC-MB



## TECHNICAL DATA

Mounting base

Temperature range -40°C to +85°C  
short term up to +105°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6
- Flammability acc. to UL 94 : V2

## ■ PROPERTIES

- silicone-free
- halogen-free

## ■ APPLICATION

- Mounting base for robust fastening of lines, pipes and tubes - outdoor applications included.

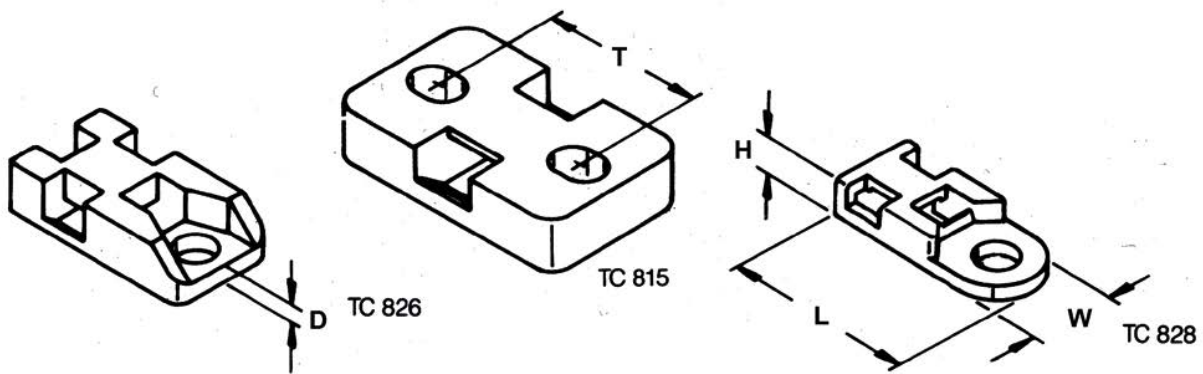
## ■ NOTES

- Legend:  
Dimensions  
H - Height  
W - Width  
L - Length  
T - Thickness

black

Part no.	Fixing	Type	Height mm	Width mm	Length mm	Thickness mm	Boring mm	Tie width max mm
91046	screw and rivet	TC 5355	15.9	19.1	44.5	11.1	4.6	12.7
91047	screw and rivet	TC 5357	15.9	19.1	44.5	11.1	6.7	12.7
91048	plug-in dowel	TC 5358	31.8	9.9	9.9	7.1	6.4	4.8

# TC-SB



## TECHNICAL DATA

Screw base

Temperature range -40°C to +85°C  
short term up to +105°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6

## ■ APPLICATION

- Mounting base for bolting or riveting. Cable binder can be inserted from 4 sides.

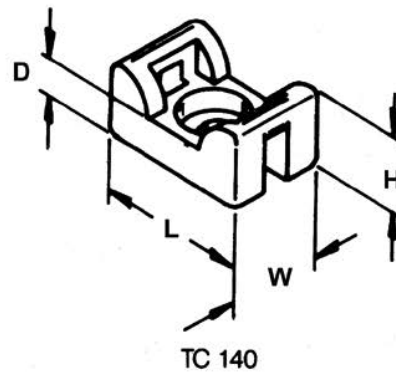
## ■ NOTES

- Legend:  
Dimensions  
H - Height  
W - Width  
L - Length  
T - Thickness

transparent

Part no.	Fixing	Type	Height mm	Width mm	Length mm	Thickness mm	Boring mm	Tie width max mm	Packaging unit (in pc.)
93007	screw and rivet	TC 815	6.6	19.6	32.0	19.9	5.3	7.6	500
93044	screw and rivet	TC 826	5.7	12.7	23.8		4.4	4.8	1000
93045	screw and rivet	TC 828	3.8	10.2	22.5		4.3	4.8	1000

# TC-WS



## TECHNICAL DATA

### Cable Tie Mounts

Temperature range -40°C to +85°C  
short term up to +105°C

### ■ STRUCTURE

- Material: Polyamide (PA) 6.6

### ■ APPLICATION

- Mounting base with support saddle.

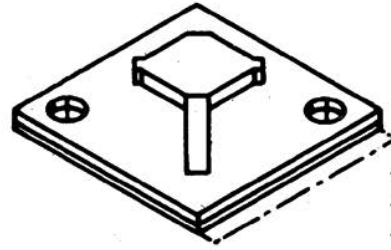
### ■ NOTES

- Legend:  
Dimensions  
H - Height  
W - Width  
L - Length  
D - Distance drill hole to cable tie

## transparent

Part no.	Fixing	Type	Height mm	Width mm	Length mm	Distance drill hole to cable tie	Stud hole (M)	Tie width max mm	Packaging unit (in pc.)
93005	screw and rivet	TC 140	6.7	8.7	14.3	3.6	3	2.4	500
93003	screw and rivet	TC 141	8.3	11.1	17.1	4.0	3.8	4.8	500
93004	screw and rivet	TC 142	10.7	14.3	23.4	5.2	5.2	7.6	500

# TC-AB



TC 347 A  
TC 347 X  
TC 344 A

## TECHNICAL DATA

Adhesive base

Temperature range -40°C to +65°C

## ■ STRUCTURE

- Material: Polyamide (PA) 6.6

## ■ APPLICATION

- Adhesive base with foamed adhesive foil for smoothing out slightly uneven surfaces. Adheres to smooth, grease-free surfaces.

## ■ NOTES

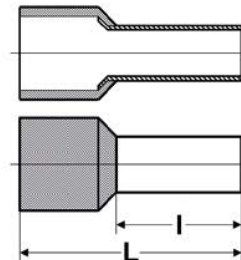
- Part no. 91036 is black and UV-resistant, as well self-adhesive and screwable.

### transparent

Part no.	Fixing	Type	Height mm	Width mm	Length mm	Tie width max mm	Packaging unit (in pc.)
93000	screw and rivet	TC 344 A	4.9	19.0	19.0	3.6	1000
93001	self-adhesive	TC 347 A	8.5	28.6	28.6	7.6	1000

### black

Part no.	Fixing	Type	Height mm	Width mm	Length mm	Tie width max mm	Packaging unit (in pc.)
91036	screw and rivet	TC 347 X	7.8	28.6	28.6	7.6	1000



## TECHNICAL DATA

### Core end sleeves

#### Temperature range

up to +105°C  
short term up to +120°C

### ■ STRUCTURE

- Material: copper
- Surface: tinned
- Insulation: Polypropylene (PP)

### ■ APPLICATION

- Insulated core end sleeves prevent stripped wires from fanning. The hopper-shaped plastic collar enables them to be pushed easily onto the wires.

### ■ NOTES

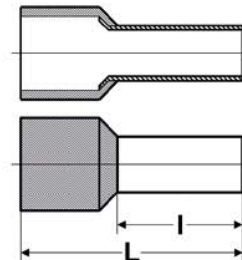
- Assignment to cable cross section according to DIN 46228: up to 50mm<sup>2</sup> to nominal size and DIN color code
- Legend:  
Dimensions  
L - Length  
l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup> , approx.	Design	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91850	0.14	normal	brown	Telemechanique	10.0	6	500
91851	0.14	long	brown	Telemechanique	12.0	8	500
91853	0.25	normal	light blue	Z+F	10.0	6	500
91852	0.25	normal	violet	Telemechanique	10.0	6	500
91855	0.25	long	light blue	Z+F	12.0	8	500
91854	0.25	long	violet	Telemechanique	12.0	8	500
91856	0.34	normal	pink	Telemechanique	10.0	6	500
91857	0.34	normal	turquoise	Z+F	10.0	6	500
91858	0.34	long	pink	Telemechanique	12.0	8	500
91859	0.34	long	turquoise	Z+F	12.0	8	500
91861	0.5	short	orange	Z+F	12.0	6	500
91860	0.5	short	white	DIN	12.0	6	500
91383	0.5	normal	orange	Z+F	14.0	8	500
91350	0.5	normal	white	DIN	14.0	8	500
91863	0.5	semi long	orange	Z+F	16.0	10	500
91862	0.5	semi long	white	DIN	16.0	10	500
91864	0.75	short	light blue	Telemechanique	12.0	6	500
94023	0.75	short	grey	DIN	12.0	6	500
91865	0.75	short	white	Z+F	12.0	6	500
91351	0.75	normal	light blue	Telemechanique	14.0	8	500
93030	0.75	normal	grey	DIN	14.0	8	500
91384	0.75	normal	white	Z+F	14.0	8	500
91866	0.75	semi long	light blue	Telemechanique	16.0	10	500
91868	0.75	semi long	grey	DIN	16.0	10	500
91867	0.75	semi long	white	Z+F	16.0	10	500
91869	0.75	long	light blue	Telemechanique	18.0	12	500
91871	0.75	long	grey	DIN	18.0	12	500
91870	0.75	long	white	Z+F	18.0	12	500



Part no.	Cross-sec. mm <sup>2</sup> , approx.	Design	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91873	1	short	yellow	Z+F	12.0	6	500
91872	1	short	red	DIN	12.0	6	500
91385	1	normal	yellow	Z+F	14.0	8	500
91352	1	normal	red	DIN	14.0	8	500
91875	1	semi long	yellow	Z+F	16.0	10	500
91874	1	semi long	red	DIN	16.0	10	500
91877	1	long	yellow	Z+F	18.0	12	500
91876	1	long	red	DIN	18.0	12	500
91386	1.5	normal	red	Z+F	14.0	8	500
91353	1.5	normal	black	DIN	14.0	8	500
91879	1.5	semi long	red	Z+F	16.0	10	500
91878	1.5	semi long	black	DIN	16.0	10	500
91881	1.5	long	red	Z+F	24.0	18	500
91880	1.5	long	black	DIN	24.0	18	500
91387	2.5	normal	blue	DIN	14.0	8	500
91354	2.5	normal	grey	Telemecanique	14.0	8	500
91883	2.5	semi long	blue	DIN	18.0	12	500
91882	2.5	semi long	grey	Telemecanique	18.0	12	500
91885	2.5	long	blue	DIN	24.0	18	500
91884	2.5	long	grey	Telemecanique	24.0	18	500
91388	4	normal	grey	DIN	17.0	10	500
91355	4	normal	orange	Telemecanique	17.0	10	500
91887	4	semi long	grey	DIN	20.0	12	500
91886	4	semi long	orange	Telemecanique	20.0	12	500
91889	4	long	grey	DIN	26.0	18	100
91888	4	long	orange	Telemecanique	26.0	18	100
93031	6	normal	yellow	DIN	20.0	12	100
91356	6	normal	green	Telemecanique	20.0	12	100
91389	6	normal	black	Z+F	20.0	12	100
91892	6	long	yellow	DIN	26.0	18	100
91890	6	long	green	Telemecanique	26.0	18	100
91891	6	long	black	Z+F	26.0	18	100
91357	10	normal	brown	Telemecanique	22.0	12	100
91390	10	normal	ivory	Z+F	22.0	12	100
93032	10	normal	red	DIN	22.0	12	100
91893	10	long	brown	Telemecanique	28.0	18	100
91894	10	long	ivory	Z+F	28.0	18	100
94024	10	long	red	DIN	28.0	18	100
91897	16	normal	blue	DIN	24.0	12	100
91895	16	normal	ivory	Telemecanique	24.0	12	100
91896	16	normal	green	Z+F	24.0	12	100
91900	16	long	blue	DIN	28.0	18	100
91898	16	long	ivory	Telemecanique	28.0	18	100
91899	16	long	green	Z+F	28.0	18	100
91359	25	normal	black	Telemecanique	20.0	16	50
91392	25	normal	brown	Z+F	30.0	16	50
93034	25	normal	yellow	DIN	30.0	16	50
91902	25	long	brown	Z+F	36.0	22	50
91903	25	long	yellow	DIN	36.0	22	50
91901	25	long	black	Telemecanique	36.0	22	50
91394	35	normal	beige	Z+F	30.0	16	50
91393	35	normal	red	DIN	30.0	16	50
91905	35	long	beige	Z+F	39.0	25	50
91904	35	long	red	DIN	39.0	25	50
91395	50	normal	blue	DIN	36.0	20	50
91396	50	normal	olive	Z+F	36.0	20	50
91906	50	long	blue	DIN	40.0	25	50
91907	50	long	olive	Z+F	40.0	25	50
91908	70	normal	yellow	DIN	37.0	21	25
91397	70	long	yellow	DIN	43.0	27	25
91909	95	normal	red	DIN	44.0	25	25
91910	120	normal	blue	DIN	48.0	27	25
91911	150	normal	yellow	DIN	58.0	32	25

# ADI-B



## TECHNICAL DATA

### Core end sleeves

**Temperature range** up to +105°C  
short term up to +120°C

### ■ STRUCTURE

- Material: copper
- Surface: tinned
- Insulation: Polypropylene (PP)

### ■ APPLICATION

- Tape products for processing with Stripax-Plus (strip products) or automatic crimpers (coil products).
- Insulated core end sleeves prevent stripped wires from fanning.
- The hopper-shaped plastic collar enables them to be pushed easily onto the wires.

### ■ NOTES

- Delivery formats:  
Strips: 1 item = 10 strips x 50 pcs.  
Coils: Endless on cardboard coil
- Legend:  
Dimensions  
L - Length  
l - Length to centre of hole

#### Strip

Part no.	Size	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91912	0.5	white	DIN	14.0	8	500
91913	0.5	orange	Z+F	14.0	8	500
91914	0.75	grey	DIN	14.0	8	500
91915	0.75	white	Z+F	14.0	8	500
91916	0.75	light blue	Telemecanique	14.0	8	500
91917	1	red	DIN	14.0	8	500

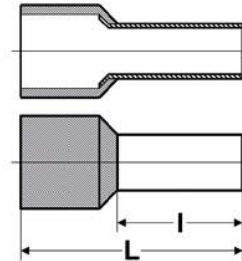
Part no.	Size	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91918	1	yellow	Z+F	14.0	8	500
91919	1.5	black	DIN	14.0	8	500
91920	1.5	red	Z+F	14.0	8	500
91921	2.5	blue	DIN	14.0	8	500
91922	2.5	grey	Telemecanique	14.0	8	500

#### Coils

Part no.	Size	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
93036	0.5	white	DIN	14.0	8	10000
93037	0.5	orange	Z+F	14.0	8	10000
93040	0.75	grey	DIN	14.0	8	10000
93039	0.75	white	Z+F	14.0	8	10000
93038	0.75	light blue	Telemecanique	14.0	8	10000
93041	1	red	DIN	14.0	8	7500

Part no.	Size	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
93042	1	yellow	Z+F	14.0	8	7500
93043	1.5	black	DIN	14.0	8	7500
93046	1.5	red	Z+F	14.0	8	7500
93048	2.5	blue	DIN	14.0	8	5000
93047	2.5	grey	Telemecanique	14.0	8	5000

# ADI-K



## TECHNICAL DATA

### Core end sleeves

Temperature range up to +105°C

### ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- Insulation: Polypropylene (PP)

### ■ APPLICATION

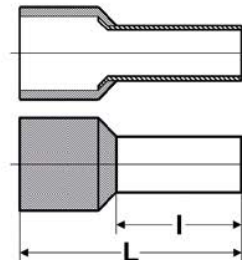
- The core end sleeve is suitable for short circuit-proof lines. It prevents stripped wires from fanning. The hopper-shaped plastic collar enables them to be pushed easily onto the wires.

### ■ NOTES

- Legend:  
Dimensions  
L - Length  
l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Design	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91589	1.5	normal	black	DIN	17.5	8	100
91590	1.5	long	black	DIN	19.5	10	100
91591	2.5	normal	blue	DIN	17.5	8	100
91592	2.5	long	blue	DIN	21.5	12	100
97479	4	normal	grey	DIN	19.5	10	100
91593	6	normal	yellow	DIN	23.0	12	100
91595	10	normal	red	DIN	24.0	12	100
91598	16	normal	blue	DIN	25.5	12	100

# ESD-ADI



## TECHNICAL DATA

### Assortment box

#### ■ STRUCTURE

- Material: copper
- Surface: tinned
- Insulation: Polypropylene (PP)
- Assortment box: Polyvinyl chloride (PVC)

#### ■ APPLICATION

- Practical pocket sized assortment box. Refillable, split into 4 or 5 compartments, with cross-section lettering. Refilling with ADI core end sleeves.

#### ■ NOTES

- Empty cans:  
ESD 3: 5-part with lettering 0.5 mm<sup>2</sup> / 0.75 mm<sup>2</sup> / 1.0 mm<sup>2</sup> / 1.5 mm<sup>2</sup> / 2.5 mm<sup>2</sup>  
ESD 4: 4-part with lettering 4.0 mm<sup>2</sup> / 6.0 mm<sup>2</sup> / 10.0 mm<sup>2</sup> / 16.0 mm<sup>2</sup>  
All sizes in regular length.
- Legend:  
Dimensions  
L - Length  
l - Length to centre of hole

### 50 x 0.5 / 100 x 0.75 / 100 x 1 / 100 x 1.5 / 50 x 2.5

Part no.	Type	Colour code	Packaging unit (in pc.)
96753	ESD 1	Telemecanique	1
96604	ESD 11	Z+F	1

Part no.	Type	Colour code	Packaging unit (in pc.)
96688	ESD 111	DIN	1

### 50 x 4 / 20 x 6 / 20 x 10 / 10 x 16

Part no.	Type	Colour code	Packaging unit (in pc.)
96764	ESD 2	Telemecanique	1
96749	ESD 22	Z+F	1

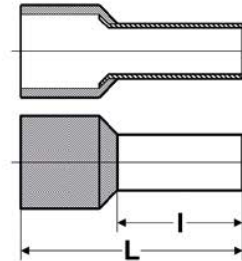
Part no.	Type	Colour code	Packaging unit (in pc.)
96736	ESD 222	DIN	1

### Empty cans

Part no.	Type	Colour code	Packaging unit (in pc.)
96671	ESD 3		1

Part no.	Type	Colour code	Packaging unit (in pc.)
96727	ESD 4		1

# DUO



## TECHNICAL DATA

### Core end sleeves

**Temperature range** up to +105°C  
short term up to +120°C

### ■ STRUCTURE

- Material: copper
- Surface: tinned
- Insulation: Polypropylene (PP)

### ■ APPLICATION

- Insulated DUO core end sleeves for insertion of 2 conductors prevent stripped wires from fanning. The hopper-shaped plastic collar enables them to be pushed easily onto the wires.

### ■ NOTES

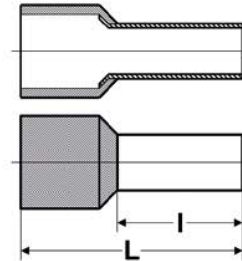
- Legend:  
Dimensions  
L - Length  
l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup> , approx.	Design	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91623	0.5	normal	orange	Z+F	15.0	8	500
91622	0.5	normal	white	DIN	15.0	8	500
91671	0.75	long	light blue	Telemecanique	17.0	10	500
91652	0.75	long	grey	DIN	17.0	10	500
91651	0.75	long	white	Z+F	17.0	10	500
91661	0.75	normal	light blue	DIN	15.0	8	500
90125	0.75	normal	grey	DIN	15.0	8	500
91624	0.75	normal	white	Z+F	15.0	8	500
91654	1	long	yellow	Z+F	17.0	10	500
91653	1	long	red	DIN	17.0	10	500
91625	1	normal	yellow	Z+F	15.0	8	500
90126	1	normal	red	DIN	15.0	8	500
91672	1.5	long	red	Z+F	20.0	12	500
91655	1.5	long	black	DIN	20.0	12	500
91662	1.5	normal	red	Z+F	16.0	8	500
90127	1.5	normal	black	DIN	16.0	8	500
91656	2.5	long	blue	DIN	21.5	13	250
91673	2.5	long	grey	Telemecanique	21.5	13	250
90128	2.5	normal	blue	DIN	18.5	10	250
91663	2.5	normal	grey	Telemecanique	18.5	10	250
91626	4	normal	grey	DIN	23.0	12	100
91664	4	normal	orange	Telemecanique	23.0	12	100
91627	6	normal	yellow	DIN	26.0	14	100
91665	6	normal	green	Telemecanique	26.0	14	100
91666	6	normal	black	Z+F	26.0	14	100
91667	10	normal	brown	Telemecanique	26.0	14	100
91668	10	normal	ivory	Z+F	26.0	14	100
91628	10	normal	red	DIN	26.0	14	100
91629	16	normal	blue	DIN	30.0	14	50

# DUO

Part no.	Cross-sec. mm <sup>2</sup> , approx.	Design	Colour	Colour code	Length mm	Sleeve length mm	Packaging unit (in pc.)
91669	16	normal	ivory	Telemecanique	30.0	14	50
91670	16	normal	green	Z+F	30.0	14	50

# ESD-DUO



## TECHNICAL DATA

### Assortment box

#### ■ STRUCTURE

- Material: copper
- Surface: tinned
- Insulation: Polypropylene (PP)
- Assortment box: Polyvinyl chloride (PVC)

#### ■ APPLICATION

- Practical pocket sized assortment box. Refillable, split into 4 or 5 compartments, with cross-section lettering. Refilling with DUO core end sleeves.

#### ■ NOTES

- Empty cans:  
ESD 7: 4-part with lettering 2x0.75 mm<sup>2</sup> / 2x1.0 mm<sup>2</sup> / 2x1.5 mm<sup>2</sup> / 2x2.5 mm<sup>2</sup>  
ESD 8: 4-part with lettering 2x4.0 mm<sup>2</sup> / 2x6.0 mm<sup>2</sup> / 2x1.0 mm<sup>2</sup> / 2x16.0 mm<sup>2</sup>  
All sizes in regular length.
- Legend:  
Dimensions  
L - Length  
l - Length to centre of hole

### 50 x 0.75 / 50 x 1 / 50 x 1.5 / 50 x 2.5

Part no.	Type	Colour code	Packaging unit (in pc.)
96617	ESD 5	DIN	1

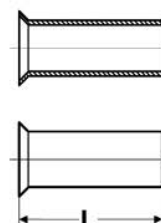
### 20 x 4 / 10 x 6 / 10 x 10 / 5 x 16

Part no.	Type	Colour code	Packaging unit (in pc.)
96648	ESD 6	DIN	1

### Empty cans

Part no.	Type	Colour code	Packaging unit (in pc.)
96629	ESD 7		1

Part no.	Type	Colour code	Packaging unit (in pc.)
96652	ESD 8		1



## TECHNICAL DATA

### Core end sleeves

#### ■ STRUCTURE

- Material: copper

#### ■ APPLICATION

- Non-insulated core end sleeves prevent stripped wires from fanning. The hopper-shaped socket enables them to be pushed easily onto the wires.

#### ■ NOTES

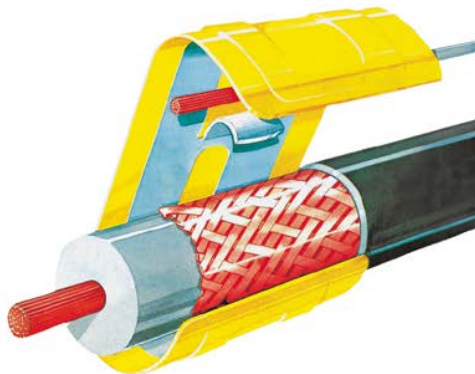
- Assignment to cable cross section according to DIN 46228: up to 50mm<sup>2</sup> to nominal size
- Legend:  
Dimensions  
L - Length

Part no.	Cross-sec. mm <sup>2</sup>	Length mm	Packaging unit (in pc.)
91368	0.5	6.0	1000
91370	0.5	10.0	1000
91371	0.75	6.0	1000
91372	0.75	8.0	1000
91373	1	6.0	1000
91374	1	10.0	1000
91375	1.5	7.0	1000
91376	1.5	10.0	1000
93096	2.5	7.0	1000
93097	2.5	10.0	1000
93099	4	9.0	1000
94000	4	12.0	1000
94001	6	10.0	250
94002	6	12.0	250
94003	6	15.0	250
94004	10	12.0	250
94005	10	15.0	250
94006	10	18.0	250

Part no.	Cross-sec. mm <sup>2</sup>	Length mm	Packaging unit (in pc.)
94007	16	12.0	250
94008	16	15.0	250
94009	16	18.0	250
94010	25	12.0	250
94011	25	15.0	250
94012	25	18.0	250
94013	25	25.0	250
94014	25	32.0	250
94015	35	18.0	100
94016	35	25.0	100
94018	35	32.0	50
94019	50	18.0	100
94020	50	22.0	100
94021	70	25.0	100
94022	70	32.0	100
91030	95	25.0	50
91031	95	32.0	50
96841	120	32.0	50



# Shield Kon RSK



## TECHNICAL DATA

### Shield Connectors

**Temperature range** -40°C to +125°C

### ■ STRUCTURE

- Material: copper tinned
- Insulation: Polyester film

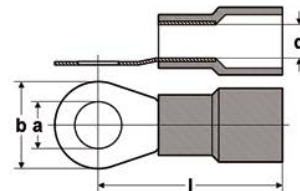
### ■ APPLICATION

- Shield connectors are crimped like a cable lug. The special crimping technique using ERG tools enables the connector to roll around the sheath. Inside the connector is a clevis-type connector for the connector strip and a support for the sheathed cable. ERG 740 processing tool.

### ■ NOTES

- Please note:  
Select the tool insert according to the Shield Ø to be used.

Part no.	Type	Colour	Tool inserts	Packaging unit (in pc.)
91280	RSK 101	red	D-101 A (1.27 - 1.79) D-101 B (1.80 - 2.28)	100
91281	RSK 201	blue	D-201 C (2.29 - 2.55) D-201 D (2.56 - 3.00) D-201 E (3.01 - 3.34) D-201 F (3.35 - 3.65)	100
91282	RSK 301	yellow	D-301 G (3.66 - 4.13) D-301 H (4.14 - 4.71) D-301 J (4.72 - 5.12)	100
91283	RSK 401	green	D-401 K (5.13 - 5.86) D-401 L (5.87 - 6.36) D-401 M (6.37 - 7.00) D-401 N (7.01 - 7.62)	100



## TECHNICAL DATA

### Crimp cable lug

<b>Flange shape</b>	Ring shape
<b>Temperature range</b>	-60°C to +105°C

### ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- Insulation: Polyamide (PA)
- partially insulated
- without Inspection hole

### ■ PROPERTIES

- halogen-free
- widened shaft; allows easy and safe insertion of conductor

### ■ APPLICATION

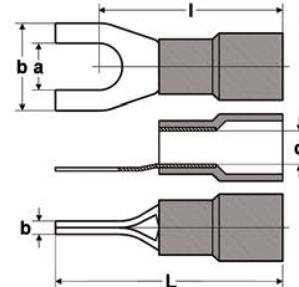
- PA insulated solderless terminals for cross sections of 0.1 to 16.0mm<sup>2</sup>.  
Simple cable inlet through Easy-Entry (expanded sleeve).  
Insulated with high dielectric strength.

### ■ NOTES

- Legend:  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
l - Length to centre of hole

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Ø Stud hole (a) in mm	Packaging unit (in pc.)
91475	HZ 3	yellow	0.10 - 0.50	3.2	100
91476	HZ 4	yellow	0.10 - 0.50	4.3	100
91477	HZ 5	yellow	0.10 - 0.50	5.3	100
91478	HA 3	red	0.50 - 1.50	3.2	100
91479	HA 3.5	red	0.50 - 1.50	3.7	100
91480	HA 4	red	0.50 - 1.50	4.3	100
91481	HA 5	red	0.50 - 1.50	5.3	100
91849	HA 5S	yellow	0.50 - 1.50	5.7	100
91482	HA 6	red	0.50 - 1.50	6.5	100
96776	HA 8	red	0.50 - 1.50	8.4	100
91483	HB 3	blue	1.50 - 2.50	3.2	100
91484	HB 4	blue	1.50 - 2.50	4.3	100
91485	HB 5	blue	1.50 - 2.50	5.3	100
94944	HB 5S	blue	1.50 - 2.50	5.7	100
91486	HB 6	blue	1.50 - 2.50	6.5	100
91487	HB 8	blue	1.50 - 2.50	8.4	100

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Ø Stud hole (a) in mm	Packaging unit (in pc.)
97696	HB 10	blue	1.50 - 2.50	10.5	100
91488	HC 4	yellow	4.00 - 6.00	4.3	100
91489	HC 5	red	4.00 - 6.00	5.3	100
91490	HC 6	yellow	4.00 - 6.00	6.5	100
91491	HC 8	yellow	4.00 - 6.00	8.4	100
91492	HC 10	yellow	4.00 - 6.00	10.5	100
96607	HD 5	red	10.00	5.3	50
90055	HD 6	red	10.00	6.5	50
96400	HD 8	red	10.00	8.4	50
96616	HD 10	red	10.00	10.5	50
96620	HE 5	blue	16.00	5.3	50
96401	HE 6	blue	16.00	6.5	50
96402	HE 8	blue	16.00	8.4	50
90056	HE 10	blue	16.00	10.5	50
90057	HE 12	blue	16.00	13.0	50



## TECHNICAL DATA

### Crimp cable lug

<b>Flange shape</b>	Fork shape
<b>Temperature range</b>	-60°C to +105°C

### ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- Insulation: Polyamide (PA)
- partially insulated

### ■ PROPERTIES

- halogen-free
- widened shaft; allows easy and safe insertion of conductor

### ■ APPLICATION

- PA insulated solderless terminals for cross sections of 0.25 to 6.0mm<sup>2</sup>.  
Simple cable inlet through Easy-Entry (expanded sleeve).  
Insulated with high dielectric strength.

### ■ NOTES

- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptacle  
L - Length

#### Pin shape

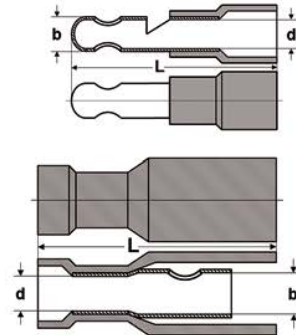
Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	ø Stud hole (a) in mm	Packaging unit (in pc.)
91418	HZP	yellow	0.10 - 0.50		100
91419	HAP	red	0.50 - 1.50		100
91420	HBP	blue	1.50 - 2.50		100
91421	HCP	yellow	4.00 - 6.00		100
96575	HDP	red	10.00		100
96576	HEP	blue	16.00		100

#### Fork shape

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	ø Stud hole (a) in mm	Packaging unit (in pc.)
91403	HA 35F	red	0.50 - 1.50	3.7	100
91404	HA 4F	red	0.50 - 1.50	4.3	100
91405	HA 5F	red	0.50 - 1.50	5.3	100
91406	HA 6F	red	0.50 - 1.50	6.5	100
91408	HB 3F	blue	1.50 - 2.50	3.2	100
91409	HB 35F	blue	1.50 - 2.50	3.7	100
91410	HB 4F	blue	1.50 - 2.50	4.3	100
91411	HB 5F	blue	1.50 - 2.50	5.3	100
91412	HB 6F	blue	1.50 - 2.50	6.5	100



Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Ø Stud hole (a) in mm	Packaging unit (in pc.)
91415	HC 4F	yellow	4.00 - 6.00	4.3	100
91416	HC 5F	yellow	4.00 - 6.00	5.3	100
91417	HC 6F	yellow	4.00 - 6.00	6.5	100



## TECHNICAL DATA

**Crimp cable lug**

**Flange shape**

Round pin plugs

**Temperature range**

-60°C to +105°C

## ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- Insulation: Polyamide (PA)
- partially insulated

## ■ PROPERTIES

- halogen-free
- widened shaft; allows easy and safe insertion of conductor

## ■ NOTES

- Legend:  
Dimensions  
b - Width of flange  
d - Inner diameter of wire receptable  
L - Length

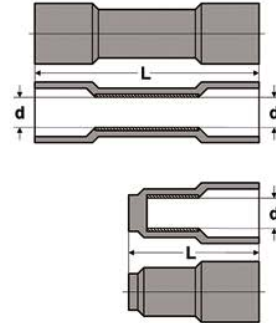
### Round pin plugs

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Design	Packaging unit (in pc.)
91422	HABM	red	0.50 - 1.00	Plugs	100
91423	HAB	red	0.50 - 1.00	Sleeve	100
91424	HB 5BM	blue	1.50 - 2.50	Plugs	100

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Design	Packaging unit (in pc.)
91425	HB 5B	blue	1.50 - 2.50	Sleeve	100
96594	HC 5BM	yellow	4.00 - 6.00	Plugs	100
96595	HC 5B	yellow	4.00 - 6.00	Sleeve	100

# ST-C

insulated



## TECHNICAL DATA

Insulated solderless terminals

Temperature range -60°C to +125°C

### ■ STRUCTURE

- Sleeve: copper
- Surface: tinned

- Insulation: Polyamide (PA)
- partially insulated

### ■ PROPERTIES

- Insulated with high dielectric strength

### ■ APPLICATION

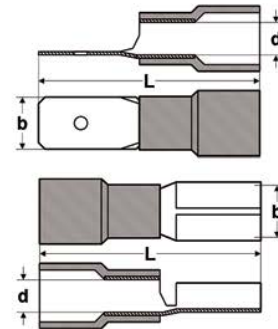
- Simple cable inlet through Easy-Entry (expanded sleeve)

#### Butt Connectors

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Design	Packaging unit (in pc.)
91426	HAA 15	red	0.50 - 1.50	Butt Connectors	100
91427	HBB 25	blue	1.50 - 2.50	Butt Connectors	100
91429	HCC 6	yellow	2.50 - 6.00	Butt Connectors	100

#### Terminal connector

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Design	Packaging unit (in pc.)
91398	HAI	transparent	0.50 - 1.50	Terminal connector	100
91428	HBJ	transparent	1.50 - 2.50	Terminal connector	100
91430	HCI	transparent	2.50 - 6.00	Terminal connector	100



## TECHNICAL DATA

Crimp cable lug

Flange shape Push-on receptacle  
Temperature range -25°C to +105°C

## ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- Insulation: Polyamide (PA)
- partially insulated

## ■ PROPERTIES

- halogen-free

## ■ NOTES

- Legend:  
Dimensions  
b - Width of flange  
d - Inner diameter of wire receptacle  
L - Length

### Push-on receptacle

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Flat plug size in mm	Design	Packaging unit (in pc.)
91431	RA 28	red	0.50 - 1.00	2.80 x 0.80	Sleeve	100
91432	RA 29	red	0.50 - 1.00	2.80 x 0.50	Sleeve	100
91434	RA 48	red	0.50 - 1.00	4.80 x 0.80	Sleeve	100
91433	RA 49	red	0.50 - 1.00	4.80 x 0.50	Sleeve	100
91435	RA 63	red	0.50 - 1.00	6.30 x 0.80	Sleeve	100
96428	RB 28	blue	1.50 - 2.50	2.80 x 0.80	Sleeve	100
96415	RB 29	blue	1.50 - 2.50	2.80 x 0.50	Sleeve	100
91438	RB 48	blue	1.50 - 2.50	4.80 x 0.80	Sleeve	100
91439	RB 49	blue	1.50 - 2.50	4.80 x 0.50	Sleeve	100
91440	RB 63	blue	1.50 - 2.50	6.30 x 0.80	Sleeve	100
91443	RC 63	yellow	4.00 - 6.00	6.30 x 0.80	Sleeve	100
91445	RC 95	yellow	4.00 - 6.00	9.50 x 1.20	Sleeve	100

### Flat-pin plug

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Flat plug size in mm	Design	Packaging unit (in pc.)
98701	RA 28 M	red	0.50 - 1.00	2.80 x 0.80	Plugs	100
98700	RA 29 M	red	0.50 - 1.00	2.80 x 0.50	Plugs	100
98584	RA 48 M	red	0.50 - 1.00	4.80 x 0.80	Plugs	100
98577	RA 49 M	red	0.50 - 1.00	4.80 x 0.50	Plugs	100
91437	RA 63 M	red	0.50 - 1.00	6.30 x 0.80	Plugs	100
98599	RB 48 M	blue	1.50 - 2.50	4.80 x 0.80	Plugs	100
91442	RB 63 M	blue	1.50 - 2.50	6.30 x 0.80	Plugs	100

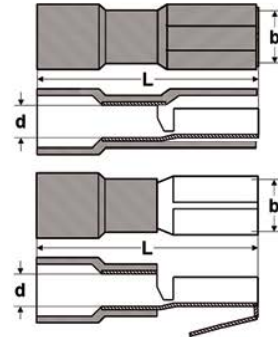
# ST-PR / FP



Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Flat plug size in mm	Design	Packaging unit (in pc.)
98598	RB49 M	blue	1.50 - 2.50	4.80 x 0.50	Plugs	100
91444	RC 63 M	yellow	4.00 - 6.00	6.30 x 0.80	Plugs	100



# RA / RC



## TECHNICAL DATA

Crimp cable lug

Temperature range -60°C to +105°C

## ■ STRUCTURE

- Material: copper, galvanic tin plated

## ■ PROPERTIES

- widened shaft; allows easy and safe insertion of conductor

## ■ NOTES

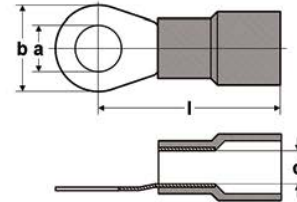
- Legend:  
Dimensions  
b - Width of flange  
d - Inner diameter of wire receptacle  
L - Length

### Push-on receptacle, all-insulated

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Flat plug size in mm	Design	Packaging unit (in pc.)
96574	RA 28 V0	red	0.50 - 1.00	2.80 x 0.80	Sleeve	100
96328	RA 29 V0	red	0.50 - 1.50	2.80 x 0.50	Sleeve	100
96329	RA 48 V0	red	0.50 - 1.50	4.80 x 0.80	Sleeve	100
96330	RA 49 V0	red	0.50 - 1.50	4.80 x 0.50	Sleeve	100
96334	RA 63 V0	red	0.50 - 1.50	6.30 x 0.80	Sleeve	100
96331	RB 48 V0	blue	1.50 - 2.50	4.80 x 0.80	Sleeve	100
96332	RB 49 V0	blue	1.50 - 2.50	4.80 x 0.50	Sleeve	100
96335	RB 63 V0	blue	1.50 - 2.50	6.30 x 0.80	Sleeve	100
96333	RC 63 V0	yellow	4.00 - 6.00	6.30 x 0.80	Sleeve	100

### flat distributor

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Flat plug size in mm	Design	Packaging unit (in pc.)
91436	RA 63 T	red	0.50 - 1.50	6.30 x 0.80	Distributor	100
91441	RB 63 T	blue	1.50 - 2.50	6.30 x 0.80	Distributor	100
94929	RC 63 T	yellow	4.00 - 6.00	6.30 x 0.80	Distributor	100



## TECHNICAL DATA

Crimp cable lug acc. to DIN EN 45545-2

Flange shape	Ring shape
Temperature range	-20°C to +115°C short term up to +130°C

## ■ STRUCTURE

- Material: Brass
- Surface: galvanic tin plated
- Insulation: Polycarbonat (PC)
- partially insulated
- Flammability acc. to UL 94 (V0)

## ■ APPLICATION

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Packaging unit (in pc.)
93740	BHA 3	red	0.25 - 1.50	2000
93741	BHA 35	red	0.25 - 1.50	2000
93742	BHA 4	red	0.25 - 1.50	2000
93743	BHA 5	red	0.25 - 1.50	2000
93744	BHA 6	red	0.25 - 1.50	2000
93745	BHB 3	blue	1.50 - 2.50	1750
93746	BHB 4	blue	1.50 - 2.50	1750

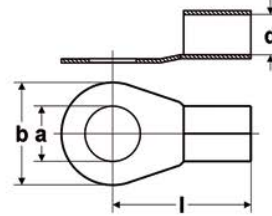
- Polycarbonate-insulated connection material on tape has been developed as a cost-effective solution for medium and large pre-fabricated cables.

## ■ NOTES

- Roll diameter: 450mm  
Inner diameter of inclusion: 27mm  
Blade terminal / blade receptacle / pin-type cable lug on tape on request.
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptacle  
l - Length to centre of hole

Part no.	Type	Colour	Cross-sec. mm <sup>2</sup> , approx.	Packaging unit (in pc.)
93747	BHB 5	blue	1.50 - 2.50	1750
93748	BHB 6	blue	1.50 - 2.50	1750
93749	BHB 8	blue	1.50 - 2.50	1750
93750	BHC 4	yellow	4.00 - 6.00	1250
93751	BHC 5	yellow	4.00 - 6.00	1250
93752	BHC 6	yellow	4.00 - 6.00	1250
93753	BHC 8	yellow	4.00 - 6.00	1250

# B-ET



## TECHNICAL DATA

Crimp cable lug acc. to DIN 46234

Flange shape Ring shape  
Temperature range up to +120°C

## ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ APPLICATION

- Non-insulated solderless terminals in eye type design.

## ■ NOTES

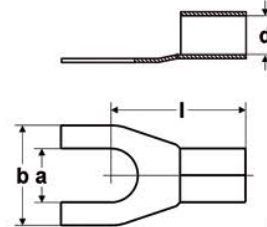
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
l - Length to centre of hole

Part no.	Type	Cross-sec. mm <sup>2</sup>	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Thickness mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
91514	B 1-3	0.50 - 1.50	3.2	6.0	1.6	11.0	1	0.7	100
91515	B 1-4	0.50 - 1.50	4.3	8.0	1.6	12.0	1	0.8	100
91516	B 1-5	0.50 - 1.50	5.3	10.0	1.6	13.0	1	0.8	100
91517	B 2.5-3	1.50 - 2.50	3.2	6.0	2.3	11.0	1	0.6	100
91518	B 2.5-4	1.50 - 2.50	4.3	8.0	2.3	12.0	1	0.8	100
91519	B 2.5-5	1.50 - 2.50	5.3	10.0	2.3	14.0	1	0.9	100
91520	B 2.5-6	1.50 - 2.50	6.5	11.0	2.3	16.0	1	1.1	100
91521	B 6-4	4.00 - 6.00	4.3	8.0	3.6	14.0	1	1.4	100
91522	B 6-5	4.00 - 6.00	5.3	10.0	3.6	15.0	1	1.5	100
91523	B 6-6	4.00 - 6.00	6.5	11.0	3.6	16.0	1	1.6	100
91524	B 6-8	4.00 - 6.00	8.4	14.0	3.6	19.0	1	2.1	100
91525	B 10-5	10.00	5.3	10.0	4.5	16.0	1.1	2.3	100
91526	B 10-6	10.00	6.5	11.0	4.5	17.0	1.1	2.4	100
91527	B 10-8	10.00	8.4	14.0	4.5	20.0	1.1	2.9	100
91528	B 16-5	16.00	5.3	11.0	5.8	20.0	1.2	3.9	100
91529	B 16-6	16.00	6.5	11.0	5.8	20.0	1.2	3.8	100
91530	B 16-8	16.00	8.4	14.0	5.8	22.0	1.2	4.2	100
91531	B 16-10	16.00	10.5	18.0	5.8	24.0	1.2	4.9	100
91532	B 25-6	25.00	6.5	12.0	7.5	25.0	1.5	7.1	50
91533	B 25-8	25.00	8.4	16.0	7.5	25.0	1.5	7.6	50
91534	B 25-10	25.00	10.5	18.0	7.5	26.0	1.5	7.4	50
91535	B 35-8	35.00	8.4	16.0	9.0	26.0	1.6	9.7	50
91536	B 35-10	35.00	10.5	18.0	9.0	27.0	1.6	9.9	50
91537	B 35-12	35.00	13.0	22.0	9.0	31.0	1.6	11.0	50
91538	B 50-8	50.00	8.4	18.0	11.0	34.0	1.8	7.9	50
91539	B 50-10	50.00	10.5	18.0	11.0	34.0	1.8	16.7	50
91540	B 50-12	50.00	13.0	22.0	11.0	36.0	1.8	17.7	50
91541	B 70-10	70.00	10.5	22.0	13.0	38.0	2	25.2	25

# B-ET

Part no.	Type	Cross-sec. mm <sup>2</sup>	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Thickness mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
91542	B 70-12	70.00	13.0	22.0	13.0	38.0	2	21.8	25
91543	B 70-16	70.00	17.0	28.0	13.0	42.0	2	25.6	25
91544	B 95-10	95.00	10.5	24.0	15.0	42.0	2.5	40.0	25
91545	B 95-12	95.00	13.0	24.0	15.0	42.0	2.5	35.7	25
91546	B 95-16	95.00	17.0	28.0	15.0	44.0	2.5	40.0	25
97765	B 120-10	120.00	10.5	24.0	17.0	44.0	3	56.0	25
97766	B 120-12	120.00	13.0	24.0	17.0	44.0	3	54.0	25

# B-FT



## TECHNICAL DATA

Crimp cable lug acc. to DIN 46230

Flange shape Fork shape  
Temperature range up to +120°C

### ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

### ■ APPLICATION

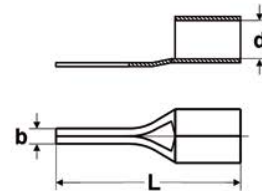
- Non-insulated solderless terminals in fork design.

### ■ NOTES

- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptacle  
l - Length to centre of hole

Part no.	Type	Cross-sec. mm <sup>2</sup>	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire recep- table (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
91547	B 1-4F	0.50 - 1.50	4.3	7.0	1.6	12.0	0.7	100
91548	B 1-5F	0.50 - 1.50	5.3	9.6	1.6	13.0	0.9	100
91550	B 2.5-4F	1.50 - 2.50	4.3	7.0	2.3	12.0	0.8	100
91551	B 2.5-5F	1.50 - 2.50	5.3	9.6	2.3	13.0	0.9	100
91552	B 2.5-6F	1.50 - 2.50	6.5	12.0	2.3	13.0	1.1	100
91553	B 6-4F	4.00 - 6.00	4.3	8.5	3.6	14.0	1.4	100
91554	B 6-5F	4.00 - 6.00	5.3	9.0	3.6	14.0	1.6	100
91555	B 6-6F	4.00 - 6.00	6.5	12.5	3.6	18.0	1.7	100

# B-PF



## TECHNICAL DATA

**Crimp cable lug**

**Flange shape**

Pin shape

**Temperature range**

up to +120°C

## ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ APPLICATION

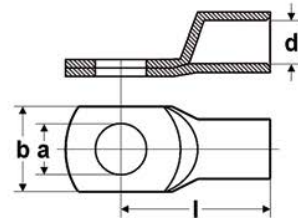
- Non-insulated squeeze snap-on connection in pin design.

## ■ NOTES

- Standardised to DIN 46230 up to 16mm<sup>2</sup>.
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
L - Length

Part no.	Type	Cross-sec. mm <sup>2</sup>	∅ Stud hole (a) in mm	Flange width (b) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
91556	B 0.5P	0.50 - 1.50	10.0	1.9	17.0	0.6	100
91557	B 2.5P	1.50 - 2.50	10.0	1.9	17.0	0.7	100
91558	B 6P	4.00 - 6.00	11.0	2.7	20.0	1.6	100
91559	B 10P	10.00	11.0	4.3	24.5	2.7	100
91560	B 16P	16.00	15.0	5.8	29.5	3.9	100
91378	B 25P	25.00	15.0	6.8	33.5	6.3	1
91379	B 35P	35.00	20.0	8.0	40.5	11.7	1
91380	B 50P	50.00	20.0	9.5	45.0	17.9	1
91381	B 70P	70.00	23.0	11.0	55.0	28.2	1
91377	B 95P	95.00	23.0	12.5	55.0	43.0	1

# HELU-S-RK-CU



## TECHNICAL DATA

Tubular cable lug

Flange shape Ring shape  
 Connecting angle 180° (horizontal)  
 Temperature range up to +120°C

## ■ STRUCTURE

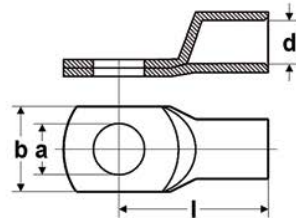
- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated

- uninsulated
- without Inspection hole

## ■ NOTES

- Recommended pressing method: WM pressing
- Legend:
  - a - Diameter of stud hole
  - b - Width of flange
  - d - Inner diameter of wire receptable
  - l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	ø Stud hole (a) in mm	Flange width (b) in mm	ø Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907303	0.75	3	3.2	6.5	1.4	12.5	0.7	100
907304	0.75	4	4.3	8.5	1.4	14.0	0.8	100
907305	0.75	5	5.3	10.0	1.4	15.0	1.0	100
907306	1.5	3	3.2	6.5	1.9	14.0	1.2	100
907307	1.5	4	4.3	8.5	1.9	15.0	1.4	100
907309	1.5	6	6.4	11.0	1.9	18.0	1.7	100
907311	2.5	5	5.3	10.0	2.4	16.0	1.8	100
907312	2.5	6	6.4	11.0	2.4	18.0	1.9	100
907313	2.5	8	8.4	13.0	2.4	20.0	2.2	100
907314	4	4	4.3	8.5	3.0	17.0	2.2	100
907315	4	5	5.3	10.0	3.0	18.0	2.4	100
907316	4	6	6.3	11.0	3.0	20.0	2.6	100
907317	4	8	8.4	14.0	3.0	22.0	3.0	100
907403	500	12	13.0	55.5	31.0	113.0	493.8	5
907406	630	16	17.0	60.0	34.0	115.0	513.5	5
907407	630	20	21.0	60.0	34.0	115.0	506.0	5



## TECHNICAL DATA

Tubular cable lug

Flange shape Ring shape  
 Connecting angle 180° (horizontal)  
 Temperature range up to +120°C

### ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

### ■ TESTS

- certifications and approvals:  
 UL File Number E504132

### ■ NOTES

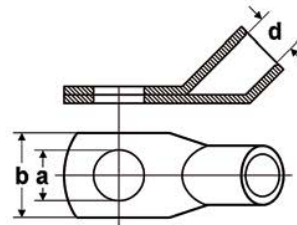
- Recommended pressing method: WM pressing
- Legend:
  - a - Diameter of stud hole
  - b - Width of flange
  - d - Inner diameter of wire receptable
  - l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	ø Stud hole (a) in mm	Flange width (b) in mm	ø Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907318	6	4	4.3	10.0	3.5	19.0	4.6	100
907319	6	5	5.3	10.0	3.5	20.0	4.7	100
907320	6	6	6.4	11.0	3.5	21.5	5.4	100
907321	6	8	8.4	15.0	3.5	24.0	5.9	100
907322	6	10	10.5	18.0	3.5	26.0	6.4	100
907323	6	12	13.0	19.0	3.5	27.5	6.4	100
907324	10	4	4.3	12.0	4.5	20.0	4.3	100
907325	10	5	5.3	12.0	4.5	21.0	4.8	100
907326	10	6	6.4	12.0	4.5	22.5	5.1	100
907327	10	8	8.4	15.0	4.5	25.0	5.8	100
907328	10	10	10.5	18.0	4.4	27.0	6.3	100
907329	10	12	13.0	20.0	4.5	28.5	6.3	100
907330	16	4	4.3	12.0	5.5	24.0	8.2	100
907331	16	5	5.3	12.0	5.5	25.0	8.9	100
907332	16	6	6.4	12.0	5.5	26.5	9.6	100
907333	16	8	8.4	15.0	5.5	29.0	10.3	100
907334	16	10	10.5	18.0	5.5	31.0	11.0	100
907335	16	12	13.0	19.0	5.5	32.0	10.8	100
907336	25	5	5.3	15.0	7.0	33.5	13.5	100
907337	25	6	6.4	15.0	7.0	31.5	13.1	100
907338	25	8	8.4	16.0	7.0	33.0	12.9	100
907339	25	10	10.5	18.0	7.0	34.5	14.6	100
907340	25	12	13.0	20.0	7.0	36.0	15.5	100
907341	25	14	15.0	22.0	7.0	39.0	16.6	100
907342	25	16	17.0	24.0	7.0	42.0	17.3	100
907343	35	6	6.4	17.0	8.5	33.0	20.7	100
907344	35	8	8.4	17.0	8.5	34.0	21.8	100





Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907345	35	10	10.5	20.0	8.5	36.5	21.9	100
907346	35	12	13.0	22.0	8.5	37.5	23.3	100
907347	35	14	15.0	23.0	8.5	40.0	24.4	100
907348	35	16	17.0	28.0	8.5	44.0	26.0	100
907349	50	6	6.4	20.0	10.0	37.0	30.1	100
907350	50	8	8.4	20.0	10.0	39.0	30.4	100
907351	50	10	10.5	20.0	10.0	40.5	31.3	100
907352	50	12	13.0	23.0	10.0	42.0	31.3	100
907353	50	14	15.0	23.0	10.0	44.0	35.1	100
907354	50	16	17.0	27.0	10.0	46.0	35.5	100
907355	50	20	21.0	30.5	10.0	52.5	38.9	100
907356	70	6	6.4	24.0	12.0	40.5	41.1	25
907357	70	8	8.4	24.0	12.0	42.5	44.6	25
907358	70	10	10.5	24.0	12.0	43.5	46.4	25
907359	70	12	13.0	24.0	12.0	45.0	47.3	25
907360	70	14	15.0	25.0	12.0	46.0	49.1	25
907361	70	16	17.0	28.0	12.0	48.5	49.6	25
907362	70	20	21.0	29.0	12.0	52.0	52.9	25
907363	95	6	6.4	26.0	13.5	43.0	49.5	25
907364	95	8	8.4	26.0	13.5	46.0	53.6	25
907365	95	10	10.5	26.0	13.5	47.0	55.1	25
907366	95	12	13.0	26.0	13.5	48.0	55.1	25
907367	95	14	15.0	26.0	13.5	51.5	58.9	25
907368	95	16	17.0	28.0	13.5	51.0	58.5	25
907369	95	20	21.0	30.0	13.5	55.0	61.3	25
907370	120	8	8.4	29.0	15.0	49.5	68.8	25
907371	120	10	10.5	29.0	15.0	52.0	79.9	25
907372	120	12	13.0	29.0	15.0	51.5	78.4	25
907373	120	14	15.0	30.0	15.0	53.0	78.6	25
907374	120	16	17.0	30.0	15.0	55.0	80.7	25
907375	120	20	21.0	35.0	15.0	60.0	89.0	25
907376	150	8	8.4	31.0	16.8	55.5	78.9	25
907377	150	10	10.5	31.0	16.8	56.5	83.7	25
907378	150	12	13.0	31.0	16.8	56.0	80.7	25
907379	150	14	15.0	31.0	16.8	57.0	83.0	25
907380	150	16	17.0	31.0	16.8	58.0	83.6	25
907381	150	20	21.0	35.0	16.8	63.0	87.5	25
907382	185	8	8.4	35.0	19.0	58.0	103.7	25
907383	185	10	10.5	35.0	19.0	59.0	106.1	25
907384	185	12	13.0	35.0	19.0	58.5	106.0	25
907385	185	14	15.0	35.0	19.0	61.0	107.2	25
907386	185	16	17.0	35.0	19.0	63.0	108.6	25
907387	185	20	21.0	35.0	19.0	66.0	113.3	25
907388	240	8	8.4	38.0	21.0	67.0	124.0	25
907389	240	10	10.5	38.0	21.0	67.0	129.7	25
907390	240	12	13.0	38.0	21.0	67.0	130.2	25
907391	240	14	15.0	38.0	21.0	69.0	133.6	25
907392	240	16	17.0	38.0	21.0	69.5	135.6	25
907393	240	20	21.0	38.0	21.0	71.0	138.0	25
907394	300	10	10.5	44.0	24.0	79.5	204.5	20
907395	300	12	13.0	44.0	24.0	82.0	211.8	20
907396	300	14	15.0	44.0	24.0	84.0	221.9	20
907397	300	16	17.0	44.0	24.0	85.0	219.4	20
907398	300	20	21.0	44.0	24.0	85.0	224.0	20
907399	400	10	10.5	49.0	27.5	92.0	279.0	15
907400	400	12	13.0	49.0	27.5	92.0	278.5	15
907401	400	16	17.0	49.0	27.5	92.0	276.5	15
907402	400	20	21.0	49.0	27.5	92.0	266.1	15
907404	500	16	17.0	55.5	31.0	113.0	493.8	5
907405	500	20	21.0	55.5	31.0	113.0	485.6	5



## TECHNICAL DATA

Angled tubular cable lug

Flange shape	Ring shape
Connecting angle	45°
Temperature range	up to +120°C

## ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ TESTS

- certifications and approvals:  
UL File Number E504132

## ■ NOTES

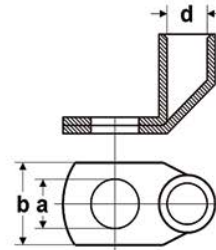
- Recommended pressing method: WM pressing
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable

Part no.	Cross-sec. mm <sup>2</sup> , approx.	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907597	10	5	5.3	12.0	4.5	5.5	100
907598	10	6	6.4	12.0	4.5	5.8	100
907599	10	8	8.4	15.0	4.5	6.5	100
907600	10	10	10.5	18.0	4.5	6.6	100
907601	16	5	5.3	12.0	5.5	9.5	100
907467	16	6	6.4	12.0	5.5	10.2	100
907468	16	8	8.4	15.0	5.5	11.7	100
907469	16	10	10.5	18.0	5.5	11.7	100
907470	25	6	6.4	15.0	7.0	13.9	100
907471	25	8	8.4	16.0	7.0	15.1	100
907472	25	10	10.5	18.0	7.0	16.6	100
907473	25	12	13.0	20.0	7.0	17.0	100
907474	35	6	6.4	17.0	8.5	21.7	50
907475	35	8	8.4	17.0	8.5	24.6	50
907476	35	10	10.5	20.0	8.5	23.4	50
907477	35	12	13.0	22.0	8.5	24.0	50
907478	50	6	6.4	20.0	10.0	29.4	50
907479	50	8	8.4	20.0	10.0	33.4	50
907480	50	10	10.5	20.0	10.0	36.5	50
907481	50	12	13.0	23.0	10.0	38.6	50
907482	70	8	8.4	24.0	12.0	49.0	25
907483	70	10	10.5	24.0	12.0	53.9	25
907484	70	12	13.0	24.0	12.0	53.4	25
907485	95	8	8.4	26.0	13.5	61.8	25
907486	95	10	10.5	26.0	13.5	62.0	25
907487	95	12	13.0	26.0	13.5	62.0	25
907488	95	16	17.0	28.0	13.5	68.0	25
907489	120	8	8.4	29.0	15.0	78.0	25

# HELU-S-RK-45-CU-UL



Part no.	Cross-sec. mm <sup>2</sup> , approx.	Stud hole (M)	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptable (d) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907490	120	10	10.5	29.0	15.0	89.0	25
907491	120	12	13.0	29.0	15.0	89.1	25
907492	120	16	17.0	30.0	15.0	93.1	25
907493	150	8	8.4	31.0	16.8	113.1	25
907494	150	10	10.5	31.0	16.8	98.0	25
907495	150	12	13.0	31.0	16.8	109.1	25
907496	150	16	17.0	31.0	16.8	101.2	25
907497	150	20	21.0	35.0	16.8	101.2	25
907498	185	10	10.5	35.0	19.0	123.5	20
907499	185	12	13.0	35.0	19.0	122.4	20
907500	185	16	17.0	35.0	19.0	128.4	20
907501	185	20	21.0	35.0	19.0	139.9	20
907502	240	12	13.0	38.0	21.0	154.6	15
907503	240	16	17.0	38.0	21.0	165.1	15
907504	240	20	21.0	38.0	21.0	170.4	15
907505	300	12	13.0	43.0	24.0	257.0	15
907506	300	16	17.0	43.0	24.0	256.8	15
907507	300	20	21.0	43.0	24.0	241.0	15



## TECHNICAL DATA

### Angled tubular cable lug

Flange shape	Ring shape
Connecting angle	90°
Temperature range	up to +120°C

## ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ TESTS

- certifications and approvals:  
UL File Number E504132

## ■ NOTES

- Recommended pressing method: WM pressing
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable

Part no.	Cross-sec. mm <sup>2</sup> , approx.	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907508	6	5	5.3	11.0	3.5	5.6	100
907509	6	6	6.4	11.0	3.5	6.2	100
907510	6	8	8.4	15.0	3.5	6.4	100
907511	6	10	10.5	18.0	3.5	6.8	100
907512	6	12	13.0	20.0	3.5	6.6	100
907513	10	5	5.3	12.0	4.5	5.4	100
907514	10	6	6.4	12.0	4.5	5.9	100
907515	10	8	8.4	15.0	4.5	6.8	100
907516	10	10	10.5	18.0	4.5	7.0	100
907517	10	12	13.0	20.0	4.5	7.0	100
907518	16	5	5.3	12.0	5.5	10.9	100
907519	16	6	6.4	12.0	5.5	11.5	100
907520	16	8	8.4	15.0	5.5	12.0	100
907521	16	10	10.5	18.0	5.5	12.3	100
907522	16	12	13.0	20.0	5.5	12.3	100
907523	25	6	6.4	15.0	7.0	13.5	100
907524	25	8	8.4	16.0	7.0	13.7	100
907525	25	10	10.5	18.0	7.0	15.7	100
907526	25	12	13.0	20.0	7.0	15.1	100
907527	35	6	6.4	17.0	8.5	21.3	100
907528	35	8	8.4	17.0	8.5	23.1	100
907529	35	10	10.5	20.0	8.5	23.6	100
907530	35	12	13.0	22.0	8.5	24.8	100
907531	35	16	17.0	28.0	8.5	24.8	100
907532	50	6	6.4	20.0	10.0	30.0	100
907533	50	8	8.4	20.0	10.0	32.2	100
907534	50	10	10.5	20.0	10.0	33.2	100
907535	50	12	13.0	23.0	10.0	32.8	100

# HELU-S-RK-90-CU-UL

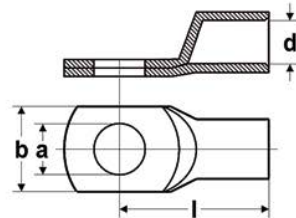


Part no.	Cross-sec. mm <sup>2</sup> , approx.	Stud hole (M)	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptacle (d) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907536	50	16	17.0	27.0	10.0	36.3	100
907537	50	20	21.0	30.0	10.0	38.9	100
907538	70	6	6.4	24.0	12.0	44.7	25
907539	70	8	8.4	24.0	12.0	48.6	25
907540	70	10	10.5	24.0	12.0	50.6	25
907541	70	12	13.0	24.0	12.0	49.4	25
907542	70	16	17.0	28.0	12.0	51.1	25
907543	70	20	21.0	29.0	12.0	52.6	25
907544	95	8	8.4	26.0	13.5	53.3	25
907545	95	10	10.5	26.0	13.5	56.4	25
907546	95	12	13.0	26.0	13.5	56.6	25
907547	95	16	17.0	28.0	13.5	64.0	25
907548	120	8	8.4	29.0	15.0	76.3	25
907549	120	10	10.5	29.0	15.0	80.7	25
907550	120	12	13.0	29.0	15.0	79.9	25
907551	120	16	17.0	30.0	15.0	84.6	25
907552	150	8	8.4	31.0	16.8	85.8	25
907553	150	10	10.5	31.0	16.8	83.2	25
907554	150	12	13.0	31.0	16.8	85.1	25
907555	150	16	17.0	31.0	16.8	86.8	25
907556	150	20	21.0	35.0	16.8	109.2	25
907557	185	10	10.5	35.0	19.0	119.0	25
907558	185	12	13.0	35.0	19.0	120.4	25
907559	185	16	17.0	35.0	19.0	124.8	25
907560	185	20	21.0	35.0	19.0	127.0	25
907561	240	10	10.5	38.0	21.0	133.2	25
907562	240	12	13.0	38.0	21.0	134.0	25
907563	240	16	17.0	38.0	21.0	137.6	25
907564	240	20	21.0	38.0	21.0	142.3	25
907565	300	12	13.0	43.0	24.0	200.4	20
907566	300	16	17.0	43.0	24.0	218.7	20
907567	300	20	21.0	43.0	24.0	218.1	20

# HELU-S-RK-S-CU-UL



narrow flange



## TECHNICAL DATA

Tubular cable lug

Flange shape Ring shape  
Connecting angle 180° (horizontal)

## ■ STRUCTURE

- Material: copper
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ PROPERTIES

- narrow flange

## ■ TESTS

- certifications and approvals:  
UL File Number E504132

## ■ APPLICATION

- For switchgear with reduced space availability

## ■ NOTES

- Recommended pressing method: WM pressing
- Legend:  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
90910	35	6	6.5	15.0	8.5	32.0	17.8	25
90911	50	6	6.5	15.0	10.0	37.0	29.5	25
90912	50	8	8.5	17.0	10.0	37.0	28.2	25
90913	50	10	10.5	19.0	10.0	39.0	30.8	25
90914	70	6	6.5	17.0	12.0	43.0	42.2	25
90915	70	8	8.5	17.0	12.0	43.0	41.0	25
90916	70	10	10.5	19.0	12.0	44.0	44.5	25
90917	70	12	13.0	19.0	12.0	46.0	42.2	25
90918	95	6	6.5	19.0	13.5	48.0	54.9	25
90919	95	8	8.5	19.0	13.5	48.0	54.6	25
90920	95	10	10.5	19.0	13.5	48.0	51.3	25
90921	95	12	13.0	19.0	13.5	49.0	51.5	25
90922	120	6	6.5	19.0	15.0	51.0	61.6	10
90923	120	8	8.5	19.0	15.0	51.0	59.4	10
90924	120	10	10.5	19.0	15.0	51.0	58.1	10
90925	120	12	13.0	19.0	15.0	51.0	59.2	10
90926	150	6	6.5	19.0	16.5	56.0	68.5	10
90927	150	8	8.5	19.0	16.5	56.0	68.0	10
90928	150	10	10.5	19.0	16.5	56.0	67.5	10
90929	150	12	13.0	19.0	16.5	57.0	71.5	10
90930	185	10	10.5	24.5	19.0	65.0	105.9	10
90931	185	12	13.0	31.0	19.0	65.0	110.9	10
90932	185	16	17.0	31.0	19.0	65.0	97.6	10
90933	240	10	10.5	31.0	21.0	72.0	127.0	5

# HELU-S-RK-S-CU-UL

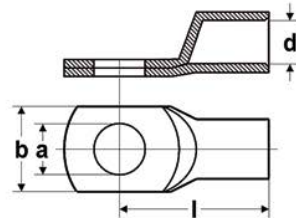


## narrow flange

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
90934	240	12	13.0	31.0	21.0	72.0	137.2	5
90935	240	16	17.0	31.0	21.0	72.0	132.8	5

# HELU-S-RK-F-CU

for finely stranded conductors



## TECHNICAL DATA

Tubular cable lug

Flange shape Ring shape  
 Connecting angle 180° (horizontal)  
 Temperature range up to +120°C

## ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ PROPERTIES

- for finely stranded conductors
- widened shaft; allows easy and safe insertion of conductor

## ■ NOTES

- Recommended pressing method: WM pressing
- Legend:
  - a - Diameter of stud hole
  - b - Width of flange
  - d - Inner diameter of wire receptable
  - l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	ø Stud hole (a) in mm	Flange width (b) in mm	ø Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907409	10	5	5.3	12.0	5.0	23.0	7.0	100
907410	10	6	6.4	12.0	5.0	25.0	7.6	100
907411	10	8	8.4	15.0	5.0	28.0	8.9	100
907412	10	10	10.5	18.0	5.0	31.0	9.8	100
907413	10	12	13.0	20.0	5.0	32.0	10.0	100
907414	16	5	5.3	14.0	6.0	25.5	9.4	100
907415	16	6	6.4	14.0	6.0	27.0	10.0	100
907416	16	8	8.4	15.0	6.0	29.5	11.2	100
907417	16	10	10.5	18.0	6.0	32.0	11.2	100
907418	16	12	13.0	20.0	6.0	33.0	11.8	100
907419	25	6	6.4	16.0	7.7	32.0	14.7	100
907420	25	8	8.4	16.0	7.7	34.0	14.3	100
907421	25	10	10.5	18.0	7.7	35.0	15.3	100
907422	25	12	13.0	20.0	7.7	36.0	16.1	100
907423	25	16	17.0	26.0	7.7	40.5	19.1	100
907424	35	6	6.4	18.0	9.2	36.0	20.7	100
907425	35	8	8.4	18.0	9.2	36.0	20.7	100
907426	35	10	10.5	18.0	9.2	38.0	21.4	100
907427	35	12	13.0	23.0	9.2	40.0	22.2	100
907428	35	16	17.0	26.0	9.2	45.0	24.2	100
907429	50	6	6.4	22.0	11.2	42.0	32.5	100
907430	50	8	8.4	22.0	11.2	42.0	32.2	100
907431	50	10	10.5	22.0	11.2	43.0	33.3	100
907432	50	12	13.0	23.0	11.2	44.0	33.9	100
907433	50	14	15.0	25.0	11.2	45.5	36.0	100
907434	50	16	17.0	28.0	11.2	48.5	36.5	100
907435	70	6	6.4	25.0	13.5	46.0	44.3	50

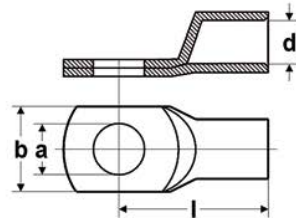


# HELU-S-RK-F-CU

for finely stranded conductors

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907436	70	8	8.4	25.0	13.5	45.5	48.0	50
907437	70	10	10.5	25.0	13.5	47.0	48.4	50
907438	70	12	13.0	26.0	13.5	47.0	48.4	50
907439	70	16	17.0	28.0	13.5	50.0	50.5	50
907440	70	20	21.0	31.0	13.5	54.5	55.2	50
907441	95	6	6.4	29.0	15.5	50.5	65.0	50
907442	95	8	8.4	29.0	15.5	50.5	66.2	50
907443	95	10	10.5	29.0	15.5	53.0	71.5	50
907444	95	12	13.0	29.0	15.5	52.5	71.1	50
907445	95	16	17.0	29.0	15.5	55.0	71.9	50
907446	95	20	21.0	35.0	15.5	60.0	76.1	50
907447	120	10	10.5	31.0	16.8	56.5	80.7	50
907448	120	12	13.0	31.0	16.8	56.0	80.7	50
907449	120	16	17.0	31.0	16.8	58.0	83.6	50
907450	120	20	21.0	35.0	16.8	63.0	87.5	50
907451	150	10	10.5	35.0	19.0	59.0	104.0	25
907452	150	12	13.0	35.0	19.0	58.5	106.2	25
907453	150	16	17.0	35.0	19.0	63.0	111.9	25
907454	150	20	21.0	35.0	19.0	66.0	116.1	25
907455	185	10	10.5	38.0	21.0	67.0	130.3	25
907456	185	13	13.0	38.0	21.0	67.0	121.5	25
907457	185	16	17.0	38.0	21.0	69.5	128.8	25
907458	185	20	21.0	38.0	21.0	71.0	139.5	25
907459	240	12	13.0	44.0	24.0	82.0	214.0	20
907460	240	16	17.0	44.0	24.0	85.0	219.4	20
907461	240	20	21.0	44.0	24.0	85.0	222.0	20

# HELU-S-PK-CU



## TECHNICAL DATA

Compression cable lug

Flange shape Ring shape  
Connecting angle 180° (horizontal)

## ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

## ■ APPLICATION

- Non-insulated tubular cable lugs in eye type design for conductor arrangement RM.  
Tube dimensions to DIN 46235.

## ■ NOTES

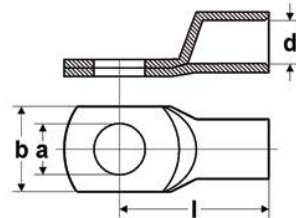
- Recommended pressing method: Hexagonal pressing
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907679	6	8	8.4	13.0	3.7	26.0	3.5	100
907682	10	8	8.4	13.0	4.4	28.0	3.8	100
907683	10	10	10.5	15.0	4.4	29.0	4.0	100
907684	16	5	5.3	13.0	5.5	36.0	12.2	100
907688	16	12	13.0	19.0	5.5	40.0	13.5	100
907693	25	16	17.0	22.0	7.0	45.0	19.9	100
907694	35	6	6.4	17.5	8.2	42.5	31.6	100
907698	35	16	17.0	28.0	8.2	47.0	31.4	100
907699	35	20	21.0	30.0	8.2	53.0	37.3	50
907700	50	6	6.4	20.0	9.8	52.0	46.7	100
907704	50	14	15.0	26.0	9.8	53.5	49.4	100
907706	50	20	21.0	30.0	9.8	61.5	55.6	100
907710	70	14	15.0	24.0	11.3	55.5	60.0	50
907712	70	20	21.0	31.0	11.3	61.0	69.9	50
907713	95	8	8.4	28.0	13.5	65.0	94.4	50
907714	95	14	15.0	28.0	13.5	65.5	94.3	50
907717	120	8	8.4	31.0	15.5	70.0	113.5	50
907718	120	14	15.0	31.0	15.5	70.0	114.1	50
907721	150	8	8.4	34.0	17.0	79.0	164.0	25
907723	150	14	15.0	34.0	17.0	78.0	164.9	25
907725	185	8	8.4	37.0	19.0	83.0	185.0	25
907727	185	14	15.0	37.0	19.0	82.0	189.0	25
907729	240	10	10.5	42.0	21.5	92.0	271.0	20
907730	240	14	15.0	42.5	21.5	92.0	267.3	20
907732	300	10	10.5	48.5	24.5	104.0	348.0	10
907733	300	12	13.0	48.5	24.5	104.0	345.0	10
907734	300	14	15.0	48.5	24.5	104.0	353.6	10

# HELU-S-PK-CU

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907735	400	10	10.5	55.0	27.5	117.0	734.2	5
907736	400	12	13.0	55.0	27.5	117.0	723.8	5
907737	400	14	15.0	55.0	27.5	117.0	728.4	5
907738	500	12	13.0	60.0	31.0	130.0	869.2	5
907739	500	14	15.0	60.0	31.0	130.0	875.0	5
907740	500	16	17.0	60.0	31.0	130.0	889.0	5
907741	625	12	13.0	63.0	34.5	135.0	842.7	5
907742	625	14	15.0	63.0	34.5	135.0	838.9	5
907743	625	16	17.0	63.0	34.5	135.0	820.5	5
907745	800	14	15.0	75.0	40.0	165.0	1486.0	2
907746	800	16	17.0	75.0	40.0	165.0	1486.0	2
907748	1000	16	17.0	83.0	44.0	167.0	1937.0	2

# HELU-S-PK-CU-DIN



## TECHNICAL DATA

Compression cable lug

Flange shape Ring shape  
Connecting angle 180° (horizontal)

### ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated
- uninsulated
- without Inspection hole

### ■ APPLICATION

- For conductor arrangement RM, to DIN 46235.

### ■ NOTES

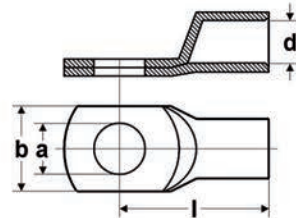
- Code type indicates the required hexagonal clamping insert.
- Recommended pressing method: Hexagonal pressing
- Legend:
  - a - Diameter of stud hole
  - b - Width of flange
  - d - Inner diameter of wire receptable
  - l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
907677	6	5	5.3	8.5	3.7	24.0	5	3.4	100
907678	6	6	6.4	9.0	3.7	24.0	5	3.4	100
907680	10	5	5.3	10.0	4.4	27.0	6	3.8	100
907681	10	6	6.4	10.0	4.4	27.0	6	3.8	100
907685	16	6	6.4	13.0	5.5	36.0	8	12.7	100
907686	16	8	8.4	13.0	5.5	37.0	8	13.0	100
907687	16	10	10.5	16.5	5.5	38.0	8	13.2	100
907689	25	6	6.4	14.0	7.0	39.0	10	16.9	100
907690	25	8	8.4	17.0	7.0	39.0	10	17.3	100
907691	25	10	10.5	17.0	7.0	40.5	10	17.7	100
907692	25	12	13.0	18.0	7.0	40.5	10	17.2	100
907695	35	8	8.4	18.0	8.2	42.0	12	31.9	100
907696	35	10	10.5	20.0	8.2	42.5	12	31.7	100
907697	35	12	13.0	21.0	8.2	44.0	12	31.1	100
907701	50	8	8.4	20.0	9.8	52.0	14	50.0	100
907702	50	10	10.5	22.0	9.8	52.0	14	49.4	100
907703	50	12	13.0	23.0	9.8	52.0	14	48.9	100
907705	50	16	17.0	28.0	9.8	55.5	14	50.4	100
907707	70	8	8.4	24.0	11.3	56.0	16	67.1	50
907708	70	10	10.5	24.0	11.3	56.0	16	65.9	50
907709	70	12	13.0	24.0	11.3	56.5	16	65.7	50
907711	70	16	17.0	29.0	11.3	57.0	16	69.2	50
906524	95	10	10.5	28.0	13.5	65.5	18	96.1	50
906525	95	12	13.0	28.0	13.5	65.5	18	96.3	50
907715	95	16	17.0	30.0	13.5	65.5	18	97.2	50
907716	95	20	21.0	33.0	13.5	71.0	18	98.6	50
906526	120	10	10.5	31.0	15.5	70.0	20	115.9	50
906527	120	12	13.0	31.0	15.5	70.5	20	116.0	50

# HELU-S-PK-CU-DIN

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
907719	120	16	17.0	31.5	15.5	70.0	20	113.6	50
907720	120	20	21.0	36.0	15.5	72.0	20	116.6	50
907722	150	10	10.5	34.0	17.0	79.0	22	164.6	25
906528	150	12	13.0	34.0	17.0	78.5	22	165.3	25
906529	150	16	17.0	34.0	17.0	78.0	22	165.2	25
907724	150	20	21.0	38.0	17.0	78.0	22	163.4	25
907726	185	10	10.5	37.0	19.0	83.0	25	185.0	25
906530	185	12	13.0	37.0	19.0	82.5	25	189.6	25
906531	185	16	17.0	37.0	19.0	82.0	25	194.1	25
907728	185	20	21.0	40.0	19.0	83.0	25	190.1	25
906532	240	12	13.0	42.5	21.5	92.0	28	275.0	20
906533	240	16	17.0	42.5	21.5	92.0	28	274.5	20
907731	240	20	21.0	45.0	21.5	92.0	28	276.7	20
906534	300	16	17.0	48.5	24.5	100.0	32	341.6	10
906535	300	20	21.0	48.5	24.5	100.0	32	343.7	10
906536	400	16	17.0	55.0	27.5	117.0	38	717.5	5
906537	400	20	21.0	55.0	27.5	117.0	38	706.4	5
906538	500	20	21.0	60.0	31.0	130.0	42	876.6	5
907744	625	620	21.0	63.0	34.5	135.0	44	820.5	5
907747	800	20	21.0	75.0	40.0	165.0	52	1501.7	2
907749	1000	20	21.0	83.0	44.0	167.0	58	1929.1	2

# HELU-S-PK-AL-DIN



## TECHNICAL DATA

### Compression cable lug

Flange shape	Ring shape
Connecting angle	180° (horizontal)

### ■ STRUCTURE

- Material: Aluminium 99,5
- Surface: bare
- uninsulated
- without Inspection hole

### ■ APPLICATION

- Uninsulated, straight tubular cable lug in eye type design made of aluminium. High quality version for reliable crimping. Designed for conductor type RM acc. to DIN 48201 and circularly reshaped conductors. Tube dimensions acc. to DIN 46329

### ■ NOTES

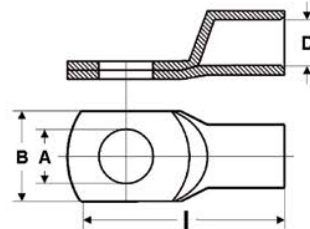
- Code type indicates the required hexagonal crimping insert. Sleeves are prefilled with contact grease and sealed with plastic plug
- Recommended pressing method: Hexagonal pressing
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
l - Length to centre of hole

Part no.	Type	Cross-sec. mm <sup>2</sup>	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptable (d) in mm	Length (l) in mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
907865	HELU-S-PK-AL-DIN 16-8	16.00 - 25.00	8.4	16.0	5.6	52.0	12	9.6	50
907866	HELU-S-PK-AL-DIN 16-10	16.00 - 25.00	10.5	18.0	5.6	52.0	12	9.7	50
907867	HELU-S-PK-AL-DIN 25-8	25.00 - 35.00	8.4	16.0	6.8	60.0	12	14.8	50
907868	HELU-S-PK-AL-DIN 25-10	25.00 - 35.00	10.5	18.0	6.8	60.0	12	16.4	50
907869	HELU-S-PK-AL-DIN 35-8	35.00 - 50.00	8.4	20.0	8.0	67.0	14	24.5	50
907870	HELU-S-PK-AL-DIN 35-10	35.00 - 50.00	10.5	20.0	8.0	67.0	14	24.5	50
907871	HELU-S-PK-AL-DIN 35-12	35.00 - 50.00	13.0	20.0	8.0	67.0	14	23.5	50
907872	HELU-S-PK-AL-DIN 50-8	50.00 - 70.00	8.4	23.0	10.0	74.0	16	32.9	25
907873	HELU-S-PK-AL-DIN 50-10	50.00 - 70.00	10.5	23.0	10.0	74.0	16	28.8	25
907874	HELU-S-PK-AL-DIN 50-12	50.00 - 70.00	13.0	23.0	10.0	74.0	16	33.8	25
907875	HELU-S-PK-AL-DIN 70-10	70.00 - 95.00	10.5	28.0	11.5	84.0	18	47.7	25
907876	HELU-S-PK-AL-DIN 70-12	70.00 - 95.00	13.0	28.0	11.5	87.0	18	47.3	25
907877	HELU-S-PK-AL-DIN 95-10	95.00 - 120.00	10.5	32.0	13.2	90.0	22	70.1	10
907878	HELU-S-PK-AL-DIN 95-12	95.00 - 120.00	13.0	32.0	13.2	90.0	22	78.2	10
907879	HELU-S-PK-AL-DIN 95-16	95.00 - 120.00	17.0	32.0	13.2	90.0	22	76.2	10
907880	HELU-S-PK-AL-DIN 120-10	120.00 - 150.00	10.5	32.0	14.7	98.0	22	83.8	10
907881	HELU-S-PK-AL-DIN 120-12	120.00 - 150.00	13.0	32.0	14.7	98.0	22	87.9	10
907882	HELU-S-PK-AL-DIN 120-16	120.00 - 150.00	17.0	32.0	14.7	98.0	22	86.4	10
906459	HELU-S-PK-AL-DIN 150-10	150.00 - 185.00	10.5	35.0	16.3	104.0	25	99.8	10
906436	HELU-S-PK-AL-DIN 150-12	150.00 - 185.00	13.0	35.0	16.3	104.0	25	102.3	10
906461	HELU-S-PK-AL-DIN 150-16	150.00 - 185.00	13.0	35.0	16.3	104.0	25	100.8	10
906462	HELU-S-PK-AL-DIN 150-20	150.00 - 185.00	21.0	35.0	16.3	104.0	25	100.2	10
907883	HELU-S-PK-AL-DIN 185-10	185.00 - 240.00	10.5	40.0	18.5	109.0	28	134.6	10

# HELU-S-PK-AL-DIN

Part no.	Type	Cross-sec. mm <sup>2</sup>	Ø Stud hole (a) in mm	Flange width (b) in mm	Ø Wire receptable (d) in mm	Length (l) in mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
906463	HELU-S-PK-AL-DIN 185-12	185.00 - 240.00	13.0	40.0	18.5	109.0	28	133.9	10
906464	HELU-S-PK-AL-DIN 185-16	185.00 - 240.00	17.0	40.0	18.5	109.0	28	137.5	10
906465	HELU-S-PK-AL-DIN 185-20	185.00 - 240.00	21.0	40.0	18.5	109.0	28	137.5	10
907884	HELU-S-PK-AL-DIN 240-10	240.00 - 300.00	10.5	45.0	21.0	119.0	32	182.8	10
906466	HELU-S-PK-AL-DIN 240-12	240.00 - 300.00	13.0	45.0	21.0	119.0	32	179.4	10
906467	HELU-S-PK-AL-DIN 240-16	240.00 - 300.00	17.0	45.0	21.0	119.0	32	176.2	10
906468	HELU-S-PK-AL-DIN 240-20	240.00 - 300.00	21.0	45.0	21.0	119.0	32	177.4	10
906469	HELU-S-PK-AL-DIN 300-12	300.00	13.0	50.0	23.3	125.0	34	205.4	5
906470	HELU-S-PK-AL-DIN 300-16	300.00	17.0	50.0	23.3	125.0	34	201.4	5
906471	HELU-S-PK-AL-DIN 300-20	300.00	21.0	50.0	23.3	125.0	34	194.3	5
906472	HELU-S-PK-AL-DIN 400-12	400.00	13.0	55.0	26.0	120.0	38.5	283.0	5
906473	HELU-S-PK-AL-DIN 400-16	400.00	17.0	55.0	26.0	120.0	38.5	273.3	5
906474	HELU-S-PK-AL-DIN 400-20	400.00	21.0	55.0	26.0	120.0	38.5	240.0	5
906475	HELU-S-PK-AL-DIN 500-12	500.00	13.0	63.0	29.0	140.0	44	380.0	5
906476	HELU-S-PK-AL-DIN 500-16	500.00	17.0	63.0	29.0	140.0	44	378.0	5
906477	HELU-S-PK-AL-DIN 500-20	500.00	21.0	63.0	29.0	140.0	44	373.5	5

# HELU-S-PK-AL/CU



## TECHNICAL DATA

Compression cable lug

Flange shape Ring shape  
Connecting angle 180° (horizontal)

### ■ STRUCTURE

- Material: Aluminium 99,5; Cu acc. to DIN EN 13601
- Surface: bare
- uninsulated
- without Inspection hole

### ■ APPLICATION

- Non-insulated, straight compression lug in eye type design made of aluminium. High quality version for reliable crimping. Designed for conductor type RM and circular reshaped conductors.

### ■ NOTES

- Code type indicates the required hexagonal crimping insert. Al-sleeves are prefilled with contact grease and sealed with plastic plugs
- Recommended pressing method: Hexagonal pressing
- Legend:  
Dimensions  
a - Diameter of stud hole  
b - Width of flange  
d - Inner diameter of wire receptable  
l - Length to centre of hole

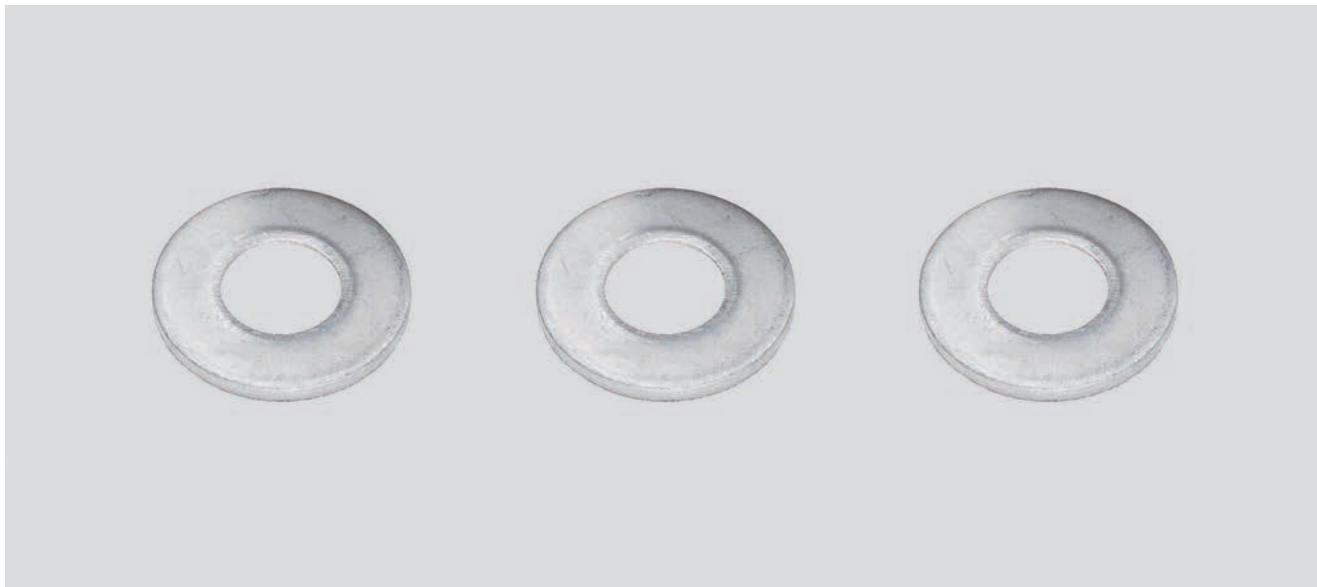
Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
907568	10.00	8	8.4	20.0	5.0	50.0	10	26.5	25
907569	16.00 - 25.00	8	8.4	20.0	5.6	60.0	12	35.4	25
907570	16.00 - 25.00	10	10.5	20.0	5.6	60.0	12	34.2	25
907571	25.00 - 35.00	8	8.4	20.0	6.8	65.0	12	35.7	25
907572	25.00 - 35.00	10	10.5	20.0	6.8	65.0	12	34.4	25
907573	25.00 - 35.00	12	13.0	26.0	6.8	67.0	12	44.5	25
907574	35.00 - 50.00	8	8.4	20.0	8.0	75.0	14	45.5	25
907575	35.00 - 50.00	10	10.5	20.0	8.0	75.0	14	44.2	25
907576	35.00 - 50.00	12	13.0	26.0	8.0	75.0	14	51.5	25
907577	50.00 - 70.00	8	8.4	20.0	9.8	75.0	16	48.7	25
907578	50.00 - 70.00	10	10.5	20.0	9.8	75.0	16	47.2	25
907579	50.00 - 70.00	12	13.0	26.0	9.8	75.0	16	59.5	25
907580	70.00 - 95.00	8	8.4	26.0	11.2	85.0	18	61.9	10
907581	70.00 - 95.00	10	10.5	26.0	11.2	85.0	18	73.7	10
907582	70.00 - 95.00	12	13.0	26.0	11.2	85.0	18	71.2	10
907583	70.00 - 95.00	16	17.0	30.0	11.2	88.0	18	81.0	10
907584	95.00 - 120.00	8	8.4	26.0	13.2	86.0	22	102.9	10
907585	95.00 - 120.00	10	10.5	26.0	13.2	86.0	22	105.9	10
907586	95.00 - 120.00	12	13.0	26.0	13.2	86.0	22	103.4	10
907587	95.00 - 120.00	16	17.0	30.0	13.2	88.0	22	109.9	10
907588	120.00 - 150.00	8	8.4	26.0	14.7	88.0	22	106.8	10
907589	120.00 - 150.00	10	10.5	26.0	14.7	88.0	22	106.8	10
907590	120.00 - 150.00	12	13.0	26.0	14.7	88.0	22	104.5	10
907591	120.00 - 150.00	16	17.0	30.0	14.7	90.0	22	114.5	10
907592	150.00 - 185.00	8	8.4	30.0	16.3	100.0	25	138.8	5
906478	150.00 - 185.00	10	10.5	30.0	16.3	100.0	25	138.0	5



# HELU-S-PK-AL/CU

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
906172	150.00 - 185.00	12	13.0	30.0	16.3	100.0	25	135.7	5
906173	150.00 - 185.00	16	17.0	30.0	16.3	100.0	25	128.8	5
907593	185.00 - 240.00	8	8.4	30.0	18.3	102.0	28	183.7	5
906479	185.00 - 240.00	10	10.5	30.0	18.3	102.0	28	176.1	5
906480	185.00 - 240.00	12	13.0	30.0	18.3	102.0	28	182.1	5
906481	185.00 - 240.00	16	17.0	36.0	18.3	105.0	28	196.8	5
906482	185.00 - 240.00	20	21.0	36.0	18.3	105.0	28	189.7	5
906483	240.00 - 300.00	10	10.5	30.0	21.0	112.0	32	204.1	5
906185	240.00 - 300.00	12	13.0	30.0	21.0	112.0	32	204.1	5
906484	240.00 - 300.00	16	17.0	36.0	21.0	115.0	32	225.8	5
906485	240.00 - 300.00	20	21.0	36.0	21.0	115.0	32	218.5	5
906486	300.00	10	10.5	30.0	23.3	115.0	34	218.4	5
906487	300.00	12	13.0	30.0	23.3	120.5	34	283.3	5
906488	300.00	16	17.0	36.0	23.3	116.0	34	232.2	5
906489	300.00	20	21.0	36.0	23.3	116.0	34	225.0	5
906490	400.00	10	10.5	36.0	26.0	125.0	38	328.7	5
906212	400.00	12	13.0	36.0	26.0	125.0	38	332.8	5
906174	400.00	16	17.0	36.0	26.0	125.0	38	352.6	5
906175	400.00	20	21.0	36.0	26.0	125.0	38	341.5	5
906491	500.00	10	10.5	44.0	29.0	140.0	44	437.1	1
906492	500.00	12	13.0	44.0	29.0	143.0	44	586.2	1
906493	500.00	16	17.0	44.0	29.0	143.0	44	579.8	1
906494	500.00	20	21.0	44.0	29.0	140.0	44	420.8	1
907594	625.00	12	13.0	50.0	35.0	177.0	52	630.1	1
907595	625.00	16	17.0	50.0	35.0	177.0	52	770.0	1
907596	625.00	20	21.0	50.0	35.0	177.0	52	763.0	1

# KAC-U AL/CU-bi-metallic washer

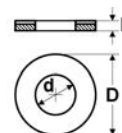


## Washer KAC-U

Bi-metallic washer for the processing of aluminium-copper materials.  
Only for use in dry areas.

## Material

E-Al, one side copper plated



## Dimensions

D Outer diameter  
d Inner diameter  
h Height

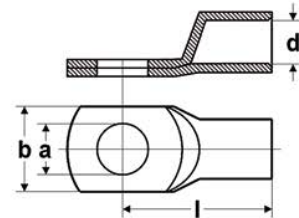
Part no.	Size	Inner Ø mm	Outer Ø mm	Thickness mm	Unit	Net EUR/100 items at a purchase of		
						up to 100	101 - 500	501 - 1000
906049	M8 x 1,5	8,5	18,0	1,0	10	o. r.	o. r.	o. r.
906050	M10 x 1,5	11,0	22,0	2,0	10	o. r.	o. r.	o. r.
906051	M12 x 1,5	13,0	28,0	2,0	10	o. r.	o. r.	o. r.
906052	M14 x 1,5	15,0	28,0	2,0	10	o. r.	o. r.	o. r.
906053	M16 x 1,5	17,0	35,0	2,0	10	o. r.	o. r.	o. r.

Dimensions and specifications may be changed without prior notice.

o. r. = on request

# HELU-S-RK-N

for high temperature applications



## TECHNICAL DATA

Tubular cable lug

Flange shape Ring shape  
 Connecting angle 180° (horizontal)  
 Temperature range up to +500°C

## ■ STRUCTURE

- Material: Nickel
- uninsulated
- without Inspection hole

## ■ PROPERTIES

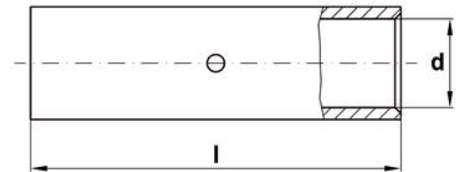
- for high temperature applications

## ■ NOTES

- Legend:  
 Dimensions  
 a - Diameter of stud hole  
 b - Width of flange  
 d - Inner diameter of wire receptable  
 l - Length to centre of hole

Part no.	Cross-sec. mm <sup>2</sup>	Stud hole (M)	∅ Stud hole (a) in mm	Flange width (b) in mm	∅ Wire receptable (d) in mm	Length (l) in mm	Wall thickness mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
98267	0.50 - 1.00	4	4.3	7.0	1.6	13.5	0.8	0.8	100
98268	0.50 - 1.00	5	5.3	7.5	1.6	14.5	0.8	0.8	100
97805	1.50 - 2.50	4	4.3	7.0	2.3	14.0	0.8	1.1	100
97806	1.50 - 2.50	5	5.3	8.5	2.3	15.5	0.8	1.2	100
97807	1.50 - 2.50	6	6.4	9.5	2.3	17.0	0.8	1.3	100
98269	4.00 - 6.00	4	4.3	9.5	3.6	18.0	1	2.6	100
97808	4.00 - 6.00	5	5.3	10.0	3.6	18.5	1	2.75	100
97809	4.00 - 6.00	6	6.4	10.5	3.6	19.5	1	2.9	100
98270	10.00	5	5.3	10.8	4.5	20.5	1	3.8	100
98271	10.00	6	6.4	11.5	4.5	22.5	1	4.2	100
98272	16.00	5	5.5	12.8	5.5	22.5	1	4.4	100
98273	16.00	6	6.4	13.6	5.5	24.5	1	4.8	100
98274	16.00	8	8.5	15.7	5.5	26.5	1	5.4	100
98275	25.00	6	6.4	14.0	7.0	30.0	1.5	12.0	50
98276	25.00	8	8.4	16.0	7.0	32.0	1.5	13.2	50
98277	35.00	6	6.4	17.0	8.5	32.0	1.75	18.5	50
98278	35.00	8	8.4	17.0	8.5	34.0	1.75	20.0	50
98279	50.00	8	8.4	20.0	10.0	37.0	2	29.0	50
98280	50.00	10	10.5	20.0	10.0	39.0	2	31.0	50
98281	70.00	10	10.5	23.0	12.0	44.0	2.25	46.0	25
98282	70.00	12	13.0	23.0	12.0	46.0	2.25	46.6	25
98283	95.00	10	10.5	26.0	13.5	48.0	2.25	55.5	25
98284	95.00	12	13.0	26.0	13.5	49.0	2.25	56.0	25

# HELU-S-SV-CU



## TECHNICAL DATA

Copper tubular butt connectors

### ■ STRUCTURE

- Material: copper acc. to DIN EN 13600
- Surface: galvanic tin plated

### ■ APPLICATION

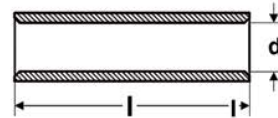
- Clamping Surface: tin plated connection sleeves for unstrained clamping.  
Type: With wirestop

### ■ NOTES

- Legend:  
Dimensions  
d - Inner diameter of wire receptable  
L - Length

Part no.	Type	cross-section from / to mm <sup>2</sup>	Inner Ø mm	Length mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907811	HELU-S-SV-CU 0.5-0.75	0.50 - 0.75	1.4	15.0	0.8	100
907812	HELU-S-SV-CU 1-1.5	1.00 - 1.50	1.9	15.0	1.2	100
907813	HELU-S-SV-CU 2.5	2.50	2.4	16.0	1.5	100
907814	HELU-S-SV-CU 4	4.00	3.0	19.0	2.1	100
907815	HELU-S-SV-CU 6	6.00	3.7	19.0	2.2	100
907816	HELU-S-SV-CU 10	10.00	4.3	30.0	5.5	50
907817	HELU-S-SV-CU 16	16.00	5.4	35.0	8.1	50
907818	HELU-S-SV-CU 25	25.00	6.9	40.0	11.6	50
907819	HELU-S-SV-CU 35	35.00	8.3	45.0	19.1	50
907820	HELU-S-SV-CU 50	50.00	9.6	50.0	27.0	50
907821	HELU-S-SV-CU 70	70.00	11.5	55.0	39.0	50
907822	HELU-S-SV-CU 95	95.00	13.5	60.0	50.0	50
907823	HELU-S-SV-CU 120	120.00	15.5	65.0	71.9	25
907824	HELU-S-SV-CU 150	150.00	16.8	70.0	87.3	25
907825	HELU-S-SV-CU 185	185.00	19.0	75.0	116.3	25
907826	HELU-S-SV-CU 240	240.00	21.0	85.0	142.2	25
907827	HELU-S-SV-CU 300	300.00	24.0	100.0	231.4	10
907828	HELU-S-SV-CU 400	400.00	27.5	100.0	262.7	10
907829	HELU-S-SV-CU 500	500.00	31.0	140.0	473.0	5
907830	HELU-S-SV-CU 630	630.00	34.0	160.0	617.5	5

# HELU-S-PV-CU-DIN



## TECHNICAL DATA

Copper compression joint acc. to EN 13600 E-Cu joint

### ■ STRUCTURE

- Material: copper
- Surface: tinned

### ■ APPLICATION

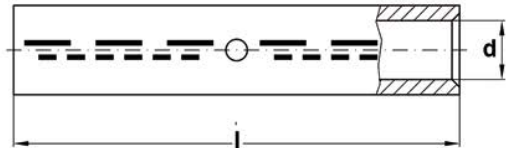
- Clamping connection sleeves for unstrained clamping of conductors built to DIN 46267.

### ■ NOTES

- Code type indicates the required hexagonal clamping insert
- Legend:  
Dimensions  
d - Inner diameter  
L - Length

Part no.	Type	Cross-sec. mm <sup>2</sup> , approx.	Inner Ø mm	Length mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
93263	HELU-S-PV-CU-DIN 6	6	3.8	30.0	5.5	3.4	50
93264	HELU-S-PV-CU-DIN 10	10	4.5	30.0	6	3.4	50
93265	HELU-S-PV-CU-DIN 16	16	5.5	50.0	8.5	14.9	50
93266	HELU-S-PV-CU-DIN 25	25	7.0	50.0	10	18.0	50
93267	HELU-S-PV-CU-DIN 35	35	8.2	50.0	12.5	31.5	50
93268	HELU-S-PV-CU-DIN 50	50	10.0	56.0	14.5	43.7	50
93269	HELU-S-PV-CU-DIN 70	70	11.5	56.0	16.5	55.4	25
93270	HELU-S-PV-CU-DIN 95	95	13.5	70.0	19	88.4	25
93271	HELU-S-PV-CU-DIN 120	120	15.5	70.0	21	99.2	25
93272	HELU-S-PV-CU-DIN 150	150	17.0	80.0	23.5	148.6	10
93273	HELU-S-PV-CU-DIN 185	185	19.0	85.0	25.5	173.5	10
93274	HELU-S-PV-CU-DIN 240	240	21.5	90.0	29	240.3	10
93275	HELU-S-PV-CU-DIN 300	300	24.5	100.0	32	298.6	10

# HELU-S-PV-AL-DIN



## TECHNICAL DATA

Aluminium press connector

Temperature range up to +120°C

### ■ STRUCTURE

- Material: Aluminium 99,5
- Surface: bare

### ■ APPLICATION

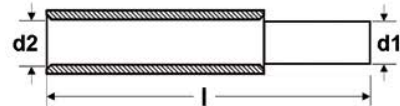
- Press connector for strain-relieved connections of conductors designed acc. to DIN 46267 part 2.

### ■ NOTES

- Code type indicates the required hexagonal crimping insert. Part No. 907835 is not standardized. Sleeves are prefilled with contact grease and sealed with plastic plug.
- Legend:  
Dimensions  
d - Inner diameter of wire receptable  
L - Length

Part no.	cross-section from / to mm <sup>2</sup>	Inner Ø mm	Length mm	Code type	Weight in kg/1000 pc.	Packaging unit (in pc.)
907835	16.00 - 25.00	5.6	55.0	12	13.4	50
906511	25.00 - 35.00	6.8	70.0	12	15.4	50
906512	35.00 - 50.00	8.0	85.0	14	28.5	50
906513	50.00 - 70.00	10.0	85.0	16	34.0	25
906514	70.00 - 95.00	11.5	105.0	18.5	55.9	25
906515	95.00 - 120.00	13.2	105.0	22	82.1	10
906516	120.00 - 150.00	14.7	105.0	23	86.4	10
906406	150.00 - 185.00	16.3	125.0	25	111.3	10
906517	185.00 - 240.00	18.5	125.0	28.5	143.5	10
906518	240.00 - 300.00	21.0	145.0	32	191.7	10
906519	300.00	23.3	145.0	34	227.1	10
906520	400.00	26.0	210.0	38.5	359.0	5
906521	500.00	29.0	210.0	44	488.0	5

# HELU-S-PV-AL/CU



## TECHNICAL DATA

Aluminium-Copper press connector

Temperature range up to +120°C

### ■ STRUCTURE

- Material: Aluminium 99,5 Cu acc. to DIN EN 13601
- Surface: bare

### ■ APPLICATION

- Press connector for aluminium conductors, strain relieved

### ■ NOTES

- Al-sleeves are prefilled with contact grease and sealed with plastic plug.
- Legend:  
Dimensions  
d1 - Inner diameter of wire receptable, copper side  
d2 - Inner diameter of wire receptable, aluminium side  
L - Length

Part no.	cross-sec. Al RM/SM - SE mm <sup>2</sup>	cross-sec. Cu SE mm <sup>2</sup>	Code type AL / Cu	Inner-Ø Cu	Inner-Ø Al	Length mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
907836	16 - 25	6	12.00 / 5.0	3.7	5.6	48.0	9.2	25
907837	16 - 25	10	12.00 / 6.0	4.4	5.6	48.0	9.4	25
907838	16 - 25	16	12.00 / 8.0	5.5	5.6	58.0	15.8	25
907839	25 - 35	10	12.00 / 6.0	4.4	6.8	53.0	9.9	25
907840	25 - 35	16	12.00 / 8.0	5.5	6.8	63.0	16.1	25
907841	25 - 35	25	12.00 / 10.0	7.0	6.8	63.0	19.2	25
907842	35 - 50	16	14.00 / 8.0	5.5	8.0	77.0	21.2	25
907843	35 - 50	25	14.00 / 10.0	7.0	8.0	77.0	24.1	25
907844	35 - 50	35	14.00 / 12.0	8.2	8.0	77.0	29.9	25
907845	50 - 70	25	16.00 / 10.0	7.0	9.8	77.0	26.6	25
907846	50 - 70	35	16.00 / 12.0	8.2	9.8	77.0	33.4	25
907847	50 - 70	50	16.00 / 14.0	10.0	9.8	82.0	43.5	25
907848	70 - 95	25	18.00 / 10.0	7.0	11.2	84.0	36.2	10
907849	70 - 95	35	18.00 / 12.0	8.2	11.2	84.0	42.2	10
907850	70 - 95	50	18.00 / 14.0	10.0	11.2	89.0	53.3	10
907851	70 - 95	70	18.00 / 16.0	11.5	11.2	91.0	64.0	10
907852	95 - 120	35	22.00 / 12.0	8.2	13.2	84.0	57.4	10
907853	95 - 120	50	22.00 / 14.0	10.0	13.2	89.0	69.1	10
907854	95 - 120	70	22.00 / 26.0	11.5	13.2	91.0	78.9	10
907855	95 - 120	95	22.00 / 18.0	13.5	13.2	98.0	98.8	10
907856	120 - 150	50	22.00 / 14.0	10.0	14.7	92.0	66.5	10
907857	120 - 150	70	22.00 / 16.0	11.5	14.7	94.0	76.1	10
907858	120 - 150	95	22.00 / 18.0	13.5	14.7	103.0	97.7	10
907859	120 - 150	120	22.00 / 20.0	15.5	14.7	103.0	108.3	10
906460	150 - 185	70	25.00 / 16.0	11.5	16.3	106.0	95.9	5
906495	150 - 185	95	25.00 / 18.0	13.5	16.3	113.0	116.6	5
906209	150 - 185	120	25.00 / 20.0	15.5	16.3	113.0	125.9	5
906496	150 - 185	150	25.00 / 22.0	17.0	16.3	118.0	155.0	5
906497	185 - 240	95	28.00 / 18.0	13.5	18.3	113.0	130.0	5
906498	185 - 240	120	28.00 / 20.0	15.5	18.3	113.0	140.1	5

# HELU-S-PV-AL/CU

Part no.	cross-sec. Al RM/SM - SE mm <sup>2</sup>	cross-sec. Cu SE mm <sup>2</sup>	Code type AL / Cu	Inner-Ø Cu	Inner-Ø Al	Length mm	Weight in kg/1000 pc.	Packaging unit (in pc.)
906499	185 - 240	150	28.00 / 22.0	17.0	18.3	118.0	169.3	5
906500	185 - 240	185	28.00 / 25.0	19.0	18.3	121.0	185.3	5
906501	240 - 300	120	32.00 / 20.0	15.5	21.0	124.0	173.6	5
906502	240 - 300	150	32.00 / 22.0	17.0	21.0	129.0	200.8	5
906503	240 - 300	185	32.00 / 25.0	19.0	21.0	132.0	218.4	5
906504	240 - 300	240	32.00 / 28.0	21.5	21.0	132.0	280.0	5
906505	300	150	34.00 / 22.0	17.0	23.3	129.0	205.1	5
906506	300	185	34.00 / 25.0	19.0	23.3	134.0	225.8	5
906507	300	240	34.00 / 28.0	21.5	23.3	137.0	290.0	5
906508	300	300	34.00 / 32.0	24.5	23.3	147.0	349.0	5
906509	400	185	38.00 / 25.0	19.0	26.0	135.0	267.0	1
906210	400	240	38.00 / 28.0	21.5	26.0	138.0	329.0	1
906510	400	300	38.00 / 32.0	24.5	26.0	148.0	386.0	1
907860	500	240	44.00 / 28.0	21.5	29.0	155.0	402.0	1
907861	500	300	44.00 / 32.0	24.5	29.0	165.0	464.1	1
907862	500	400	44.00 / 38.0	27.5	29.0	185.0	643.6	1



# TROMBOI 500

shaftless



## TECHNICAL DATA

Cable Drum Unwinders

- For drums with different diameters and weights.  
solid construction  
loading ramp  
sturdy welded steel construction  
specially suitable for one-way drums  
ball bearing axles

## ■ APPLICATION

Part no.	Type	Weight kg/km, approx.	Load capacity kg	Reel-Ø min - max mm	Reel width mm	Packaging unit (in pc.)
904760	TROMBOI 500	8.0	140	150 - 700	520	1
904761	TROMBOI 500 castor (1 set = 4 items)					1

# TROMBOI 800 / TROMBOI 1400

shaftless



## TECHNICAL DATA

Cable Drum Unwinders

- For drums for different diameters and weights.  
Compact design  
Loading ramp  
Sturdy welded steel construction  
Specially suitable for one-way drums  
Ball bearing axles

## ■ APPLICATION

Part no.	Type	Weight kg/km, approx.	Load capacity kg	Reel-Ø min - max mm	Reel width mm	Packaging unit (in pc.)
904762	TROMBOI 800	21.0	500	400 - 1000	580	1
904763	TROMBOI 1400	27.0	1500	500 - 1800		1

# TROMBOI 7-10 / TROMBOI 9-14



## TECHNICAL DATA

### Cable Drum Unwinders

#### ■ STRUCTURE

- with axis

#### ■ APPLICATION

- For drum handling at construction sites, when installing cables, at stock or shipping.  
Solid welded construction  
The sturdy axle holders have to be inserted and locked in a height suitable for the workable drum dimension.  
The drum axle has to be pushed through the drum.  
After having been rolled into the axle holder the drum has to be lifted by means of the manual hydraulic pump.

#### ■ NOTES

- Additional axis on request

Part no.	Type	Weight kg/km, approx.	Load capacity kg	Reel-Ø min - max mm	Packaging unit (in pc.)
904764	TROMBOI 7-10	32.0	1000	710 - 1000	1
904765	TROMBOI 9-14	51.0	1700	900 - 1400	1

# TROMBOI 2003



## TECHNICAL DATA

Drum unwinder with setting ring

### ■ STRUCTURE

- with axis

### ■ APPLICATION

- Particularly suitable for heavy drums  
Suitable for cable drums with damaged drum flange  
Only low pull-off forces are required  
Simple lifting of the drum via manual hydraulics  
Lowering of the drum via the ventilation screw  
Robust welded steel construction  
For drum handling at construction sites, when installing cables, at stock or shipping.  
Solid welded construction  
The sturdy axle holders have to be inserted and locked in a height suitable for the workable drum dimension.  
The drum axle has to be pushed through the drum.  
After having been rolled into the axle holder the drum has to be lifted by means of the manual hydraulic pump.

### ■ NOTES

- Additional axis on request

Part no.	Type	Colour	Weight kg/km, approx.	Load capacity kg	Reel-Ø min - max mm	Packaging unit (in pc.)
904766	TROMBOI 2003	grey (RAL 7005)	132.0	4000	900 - 2000	1

# TROMCAR 1000 / TROMCAR 1250



## TECHNICAL DATA

Movable drum decoiler

### ■ STRUCTURE

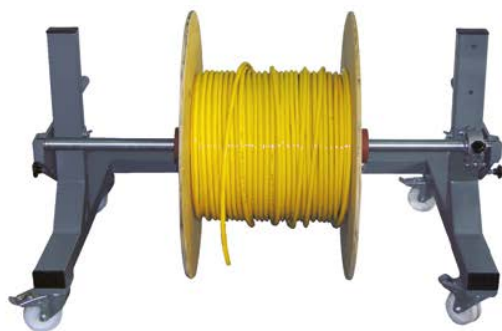
- with axis

### ■ APPLICATION

- Application: stock, construction site, installation department etc.  
Moving cable drums with robust lift-up tool. The drums are lifted and loaded by leverage.  
Lift-up clamp as handle.  
Extra sized wheels.  
TROMCAR 1000 with 2 wheels and 2 footholds.  
TROMCAR 1250 with 2 wheels and 1 castor.  
RAL 7005

Part no.	Type	Weight kg/km, approx.	Load capacity kg	Reel-Ø min - max mm	Reel width mm	Packaging unit (in pc.)
904767	TROMCAR 1000	50.0	1000	500 - 1000	710	1
904768	TROMCAR 1250	52.0	700	500 - 1250	1000	1

# TROMTRAK 1250



## TECHNICAL DATA

Movable drum decoiler

## ■ STRUCTURE

- with axis

## ■ APPLICATION

- For handling of cable drums.  
Two-fold embedded axis.  
Smooth operation by adjustable brake.  
Build-on lockable castors.

Part no.	Type	Colour	Weight kg/km, approx.	Load capacity kg	Reel-Ø min - max mm	Reel width mm	Packaging unit (in pc.)
904769	TROMTRAK 1250	grey (RAL 7005)	58.0	1000	600 - 1250	890	1

# MESSBOI



## TECHNICAL DATA

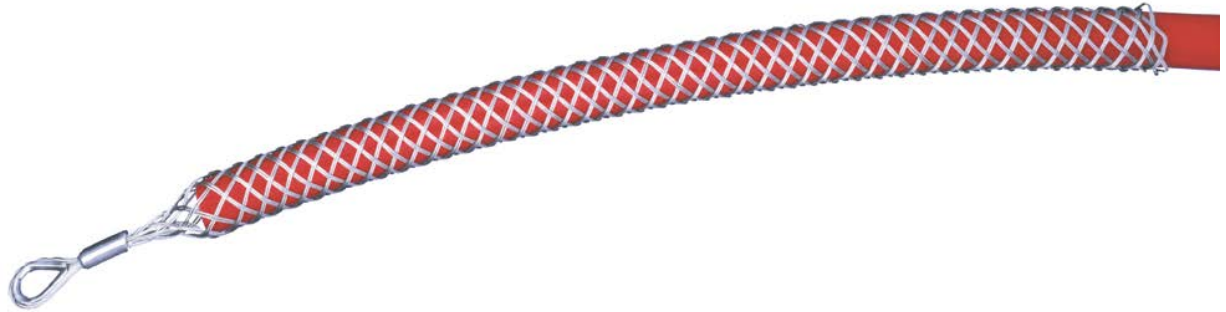
Longimetry devices

## ■ APPLICATION

- To avoid material loss.  
simple design  
easy to operate  
calibration optional  
counter 9999,99m, with rest button  
repeat accuracy +/-2%  
MESSBOI M10 stationary.  
MESSBOI M25 stationary and portable.

Part no.	Type	Weight kg/km, approx.	Cable Ø from / to mm	Packaging unit (in pc.)
97924	M10	0.5	1.0 - 15.0	1
905770	M25	1.4	2.0 - 25.0	1

# CGS-T



## TECHNICAL DATA

Cable taping grips

### ■ STRUCTURE

- Material: steel galvanized

### ■ APPLICATION

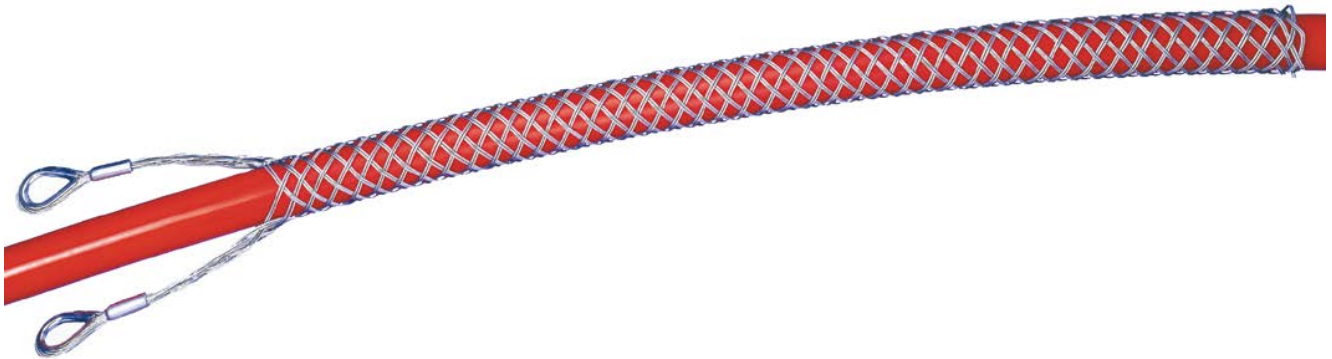
- This cable grip is used wherever cables with high tensile forces are routed.  
With thimble and press clamp.  
Self-tightening under tension load.  
Back-woven.

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in pc.)
905891	6.0	10.0	1
905892	10.0	15.0	1
905893	15.0	20.0	1
905375	20.0	25.0	1
905376	25.0	30.0	1
905371	30.0	40.0	1

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in pc.)
905894	40.0	50.0	1
905163	50.0	60.0	1
905895	60.0	70.0	1
905896	70.0	90.0	1
905897	90.0	110.0	1



# CGS-F



## TECHNICAL DATA

### Cable fleeting grips

#### ■ STRUCTURE

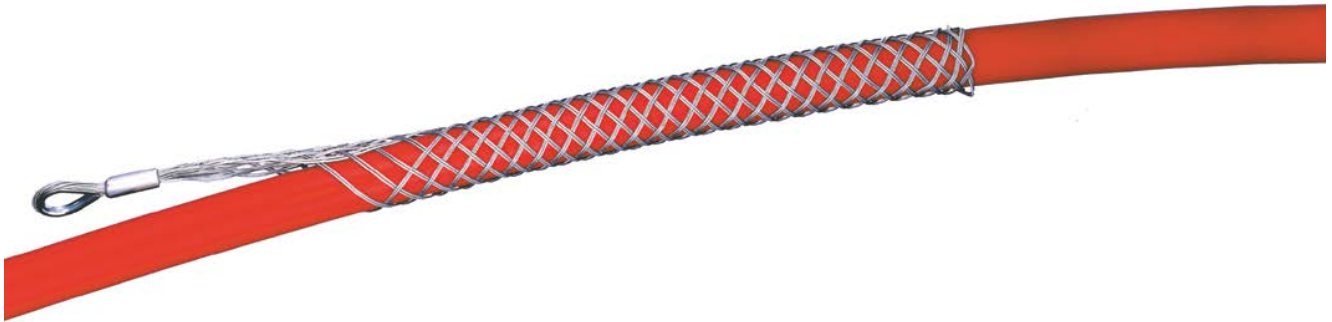
- Material: steel galvanized

#### ■ APPLICATION

- This cable grip is used as a cable installation grip e.g., wherever cables are suspended vertically. Previously drawn cables can be re-drawn. With thimble and press clamp. Self-tightening under tension load. Back-woven.

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in pc.)
905898	6.0	10.0	1
905899	10.0	15.0	1
905900	15.0	20.0	1
905901	20.0	25.0	1
905902	25.0	30.0	1
905903	30.0	40.0	1

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in pc.)
905904	40.0	50.0	1
905905	50.0	60.0	1
905906	60.0	70.0	1
905907	70.0	90.0	1
905908	90.0	110.0	1



## TECHNICAL DATA

Cable installation grips

### ■ STRUCTURE

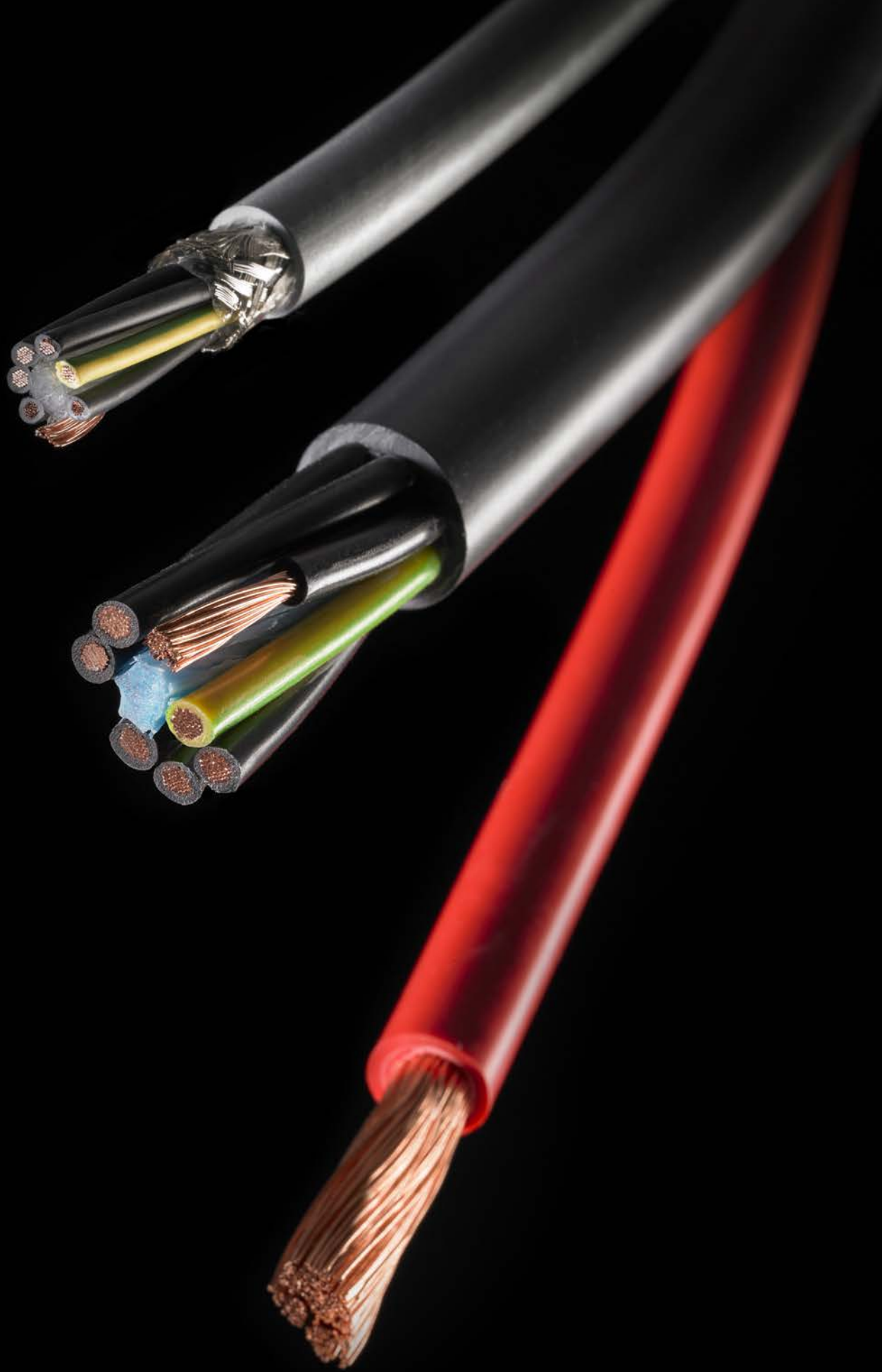
- Material: Stainless steel 1.4401 / AISI 316

### ■ APPLICATION

- Employed as a cable installation grip. For anti-slip installation of vertically attached cables.  
With thimble and press clamp.  
Self-tightening under tension load.  
Back-woven.

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in pc.)
905909	8.0	10.0	1
905601	10.0	15.0	1
905602	15.0	20.0	1
905603	20.0	25.0	1
905604	25.0	30.0	1
905597	30.0	40.0	1

Part no.	Inner-Ø min. mm	Inner-Ø max. mm	Packaging unit (in pc.)
905605	40.0	50.0	1
905606	50.0	60.0	1
905607	60.0	70.0	1
905918	70.0	90.0	1
905919	90.0	110.0	1











# Imballi

Imballi

118



**IMBALLI**



Drum



Spool



Coil



Barrel



Coil in cardboard













**( Channeling  
POWER )** 