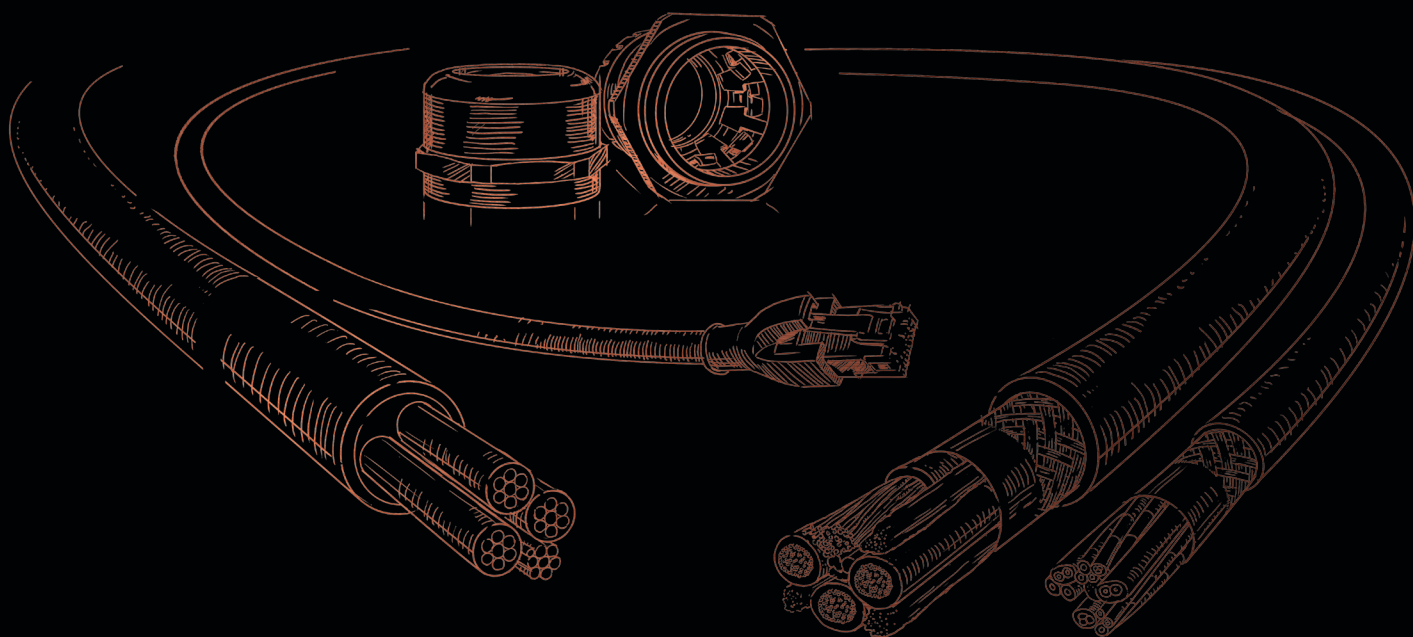


DATA SHEET COLLECTIONS

CABLES, WIRES & ACCESSORIES

Ed. 1.0 // NORD AMERICA



**(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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Unipolari di cablaggio

Cordine di cablaggio

6

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

| | |
|---------------------------|--|
| Temperature range | flexible -5°C to +80°C fixed -30°C to +80°C |
| Nominal voltage | UL (AWM) AC 300 V |
| Test voltage (spark test) | 26 - 20 AWG: 4000 V 18 - 16 AWG: 5000 V |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only

| AWG-No. | Cross-sec. mm ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | black Part no. | green-yellow Part no. | blue Part no. | brown Part no. | red Part no. | white Part no. | grey Part no. | violet 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | yellow Part no. | orange Part no. | green Part no. | pink Part no. | beige Part no. | transparent 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

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +105°C fixed -30°C to +105°C CSA (AWM) to +90°C |
| Nominal voltage | UL (AWM) AC 300 V |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only

| AWG-No. | Cross-sec. mm ² , 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 ² , 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)

| | |
|----------------------------------|--|
| Temperature range | flexible -5°C to +105°C fixed -40°C to +105°C |
| Nominal voltage | UL (AWM) AC 600 V UL (MTW) AC 600 V CSA (TEW) AC 600 V |
| Test voltage (spark test) | see table |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only

| AWG-No. | Cross-sec. mm ² , 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Spark test, kV | violet | yellow | orange | green | dark blue | pink | beige |
|---------|--------------------------------------|---------------------|------------------|-----------------------|----------------|----------|----------|----------|----------|-----------|----------|----------|
| | | | | | | Part no. | Part no. | Part no. | Part no. | Part no. | Part no. | 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Spark test, kV | transparent | blue-white | white-blue |
|---------|--------------------------------------|---------------------|------------------|-----------------------|----------------|-------------|------------|------------|
| | | | | | | Part no. | Part no. | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -40°C to +200°C fixed -40°C to +180°C UL (AWM) -40°C to +200°C |
| Nominal voltage | AC U ₀ /U 600/1000 V UL (AWM) AC 600 V |
| Test voltage | 3000 V |
| Minimum bending radius | 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 (mm²) 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 | 11023670 | 11023616 | 11023688 | 11023634 | 11023652 |
| 1 | 18 | 2.7 - 3.1 | 9.6 | 16.2 | 11023671 | 11023617 | 11023689 | 11023635 | 11023653 |
| 1.5 | 16 | 3.1 - 3.5 | 14.4 | 21.6 | 11023672 | 11023618 | 11023690 | 11023636 | 11023654 |
| 2.5 | 14 | 3.5 - 3.9 | 24.0 | 32.6 | 11023673 | 11023619 | 11023691 | 11023637 | 11023655 |
| 4 | 12 | 4.0 - 4.4 | 38.4 | 49.7 | 11023674 | 11023620 | 11023692 | 11023638 | 11023656 |
| 6 | 10 | 5.5 - 5.9 | 57.6 | 79.4 | 11023675 | 11023621 | 11023693 | 11023639 | 11023657 |
| 10 | 8 | 7.1 - 7.7 | 96.0 | 133.0 | 11023676 | 11023622 | 11023694 | 11023640 | 11023658 |
| 16 | 6 | 8.8 - 9.4 | 153.6 | 207.2 | 11023677 | 11023623 | 11023695 | 11023641 | 11023659 |
| 25 | 4 | 10.3 - 11.1 | 240.0 | 308.8 | 11023678 | 11023624 | 11023696 | 11023642 | 11023660 |
| 35 | 2 | 11.5 - 12.3 | 336.0 | 413.2 | 11023679 | 11023625 | 11023697 | 11023643 | 11023661 |
| 50 | 1 | 14.4 - 15.2 | 480.0 | 616.1 | 11023680 | 11023626 | 11023698 | 11023644 | 11023662 |
| 70 | 2/0 | 16.2 - 17.0 | 672.0 | 826.9 | 11023681 | 11023627 | 11023699 | 11023645 | 11023663 |
| 95 | 3/0 | 18.3 - 19.3 | 912.0 | 1116.6 | 11023682 | 11023628 | 11023700 | 11023646 | 11023664 |
| 120 | 4/0 | 20.6 - 21.8 | 1152.0 | 1402.1 | 11023683 | 11023629 | 11023701 | 11023647 | 11023665 |
| 150 | 300 kcmil | 22.8 - 24.0 | 1440.0 | 1740.6 | 11023684 | 11023630 | 11023702 | 11023648 | 11023666 |
| 185 | 350 kcmil | 25.0 - 26.2 | 1776.0 | 2132.7 | 11023685 | 11023631 | 11023703 | 11023649 | 11023667 |
| 240 | 500 kcmil | 27.7 - 28.9 | 2304.0 | 2699.2 | 11023686 | 11023632 | 11023704 | 11023650 | 11023668 |

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

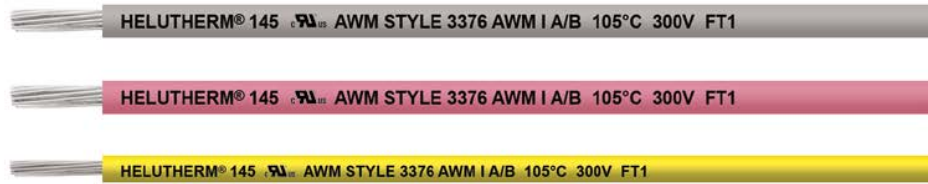
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

| 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 | 47021 | 11008351 | 47022 | 47023 | 47024 | 47025 | 47026 | 47027 |
| 22 | 3 x 0.4 | 2.4 | 3.6 | 9.2 | 47028 | 11008352 | 47029 | 47030 | 47031 | 47032 | 47033 | 47034 |
| 20 | 5 x 0.4 | 2.6 | 6.0 | 12.3 | 47035 | 11008353 | 47036 | 47037 | 47038 | 47039 | 47040 | 47041 |
| 18 | 7 x 0.4 | 2.9 | 8.6 | 15.5 | 47042 | 11008354 | 47043 | 47044 | 47045 | 47046 | 47047 | 47048 |
| 16 | 11 x 0.4 | 3.3 | 13.3 | 21.0 | 47049 | 11008355 | 47050 | 47051 | 47052 | 47053 | 47054 | 47055 |
| 14 | 17 x 0.4 | 3.6 | 20.5 | 29.7 | 47056 | 11008356 | 47057 | 47058 | 47059 | 47060 | 47061 | 47062 |
| 12 | 27 x 0.4 | 4.1 | 32.6 | 43.2 | 47063 | 11008357 | 47064 | 47065 | 47066 | 47067 | 47068 | 47069 |

| 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 | 47076 |
| 22 | 3 x 0.4 | 2.4 | 3.6 | 9.2 | 47071 |
| 20 | 5 x 0.4 | 2.6 | 6.0 | 12.3 | 47072 |
| 18 | 7 x 0.4 | 2.9 | 8.6 | 15.5 | 47073 |
| 16 | 11 x 0.4 | 3.3 | 13.3 | 21.0 | 47074 |
| 14 | 17 x 0.4 | 3.6 | 20.5 | 29.7 | 47075 |
| 12 | 27 x 0.4 | 4.1 | 32.6 | 43.2 | 47070 |

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

| | |
|-------------------------------|--|
| Temperature range | 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 |
| Nominal voltage | UL (AWM) AC 300 V |
| Test voltage | 2000 V |
| Minimum bending radius | 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

| | |
|-------------------------------|--|
| Temperature range | 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 |
| Nominal voltage | UL (AWM) AC 600 V |
| Test voltage | 3000 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: 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 mm²: 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

| Cross-sec. mm ² | 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 ² | 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 | 59480 | 59481 | 59482 | 59483 | 59484 |
| 0.5 | 20 | 2.6 | 4.8 | 11.0 | 59494 | 59495 | 59496 | 59497 | 59498 |
| 0.75 | 19 | 2.8 | 7.2 | 14.0 | 59508 | 59509 | 59510 | 59511 | 59512 |
| 1 | 18 | 2.9 | 9.6 | 17.0 | 59522 | 59523 | 59524 | 59525 | 59526 |
| 1.5 | 16 | 3.1 | 14.4 | 22.0 | 59536 | 59537 | 59538 | 59539 | 59540 |
| 2.5 | 14 | 3.6 | 24.0 | 33.0 | 59550 | 59551 | 59552 | 59553 | 59554 |
| 4 | 12 | 4.3 | 38.4 | 53.0 | 59564 | 59565 | 59566 | 59567 | 59568 |
| 6 | 10 | 5.0 | 57.6 | 78.0 | 59578 | 59579 | 59580 | 59581 | 59582 |
| 10 | 8 | 6.4 | 96.0 | 136.0 | 59592 | 59593 | 59594 | 59595 | 59596 |
| 16 | 6 | 7.5 | 154.0 | 203.0 | 59606 | 59607 | 59608 | 59609 | 59610 |
| 25 | 4 | 9.6 | 240.0 | 300.0 | 59620 | 59621 | 59622 | 59623 | 59624 |
| 35 | 2 | 10.8 | 336.0 | 405.0 | 59634 | 59635 | 59636 | 59637 | 59638 |
| 50 | 1 | 12.6 | 480.0 | 580.0 | 59648 | 59649 | 59650 | 59651 | 59652 |

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

| | |
|----------------------------------|--|
| Temperature range | 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 |
| Nominal voltage | AC U ₀ /U 300/500 V UL (AWM) AC 1000 V UL (AWM) DC 1250 V UL (MTW) AC 600 V CSA (TEW) AC 600 V |
| Test voltage | 2000 V |
| Test voltage (spark test) | 0.5 mm ² : 5000 V 0.75 - 1 mm ² : 6000 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
- 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 ² | 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 ² | 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 ² | 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 ² | 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 ² | 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 | 11019331 | 11019332 | 11019323 | 11019318 | 11019316 | 11019326 | 11019319 |
| 0.75 | 20 | 2.65 | 7.2 | 11019366 | 11019367 | 11019358 | 11019353 | 11019351 | 11019361 | 11019354 |
| 1 | 18 | 2.8 | 9.6 | 11019401 | 11019402 | 11019393 | 11019388 | 11019386 | 11019396 | 11019389 |

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

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

FIVENORM H05V2-K Barrel

| Cross-sec. mm ² | 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 | 65402 | 65403 | 65404 | 65405 | 65406 | 65407 | 65408 | 65409 | 65413 |
| 0.75 | 20 | 2.65 | 7.2 | 65415 | 65416 | 65417 | 65418 | 65419 | 65420 | 65421 | 65422 | 65426 |
| 1 | 18 | 2.8 | 9.6 | 65428 | 65429 | 65430 | 65431 | 65432 | 65433 | 65434 | 65435 | 65439 |

| Cross-sec. mm ² | 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 | 65411 | 65412 | 65414 | 65410 | 65479 | 65485 | 65481 | 65488 | 65486 |
| 0.75 | 20 | 2.65 | 7.2 | 65424 | 65425 | 65427 | 65423 | 65490 | 65496 | 65492 | 65502 | 65497 |
| 1 | 18 | 2.8 | 9.6 | 65437 | 65438 | 65440 | 65436 | 65504 | 65510 | 65506 | 65514 | 65511 |

| Cross-sec. mm ² | 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 | 65484 | 65487 | 65482 | 65480 | 65483 |
| 0.75 | 20 | 2.65 | 7.2 | 65495 | 65498 | 65493 | 65491 | 65494 |
| 1 | 18 | 2.8 | 9.6 | 65509 | 65512 | 65507 | 65505 | 65508 |

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 mm²: CSA-Std. C22.2 No. 127 - TEW

| | |
|----------------------------------|--|
| Temperature range | 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 |
| Nominal voltage | AC U ₀ /U 450/750 V UL (AWM) AC 1000 V UL (AWM) DC 1250 V UL (MTW) AC 600 V CSA (TEW) AC 600 V |
| Test voltage | 2500 V |
| Test voltage (spark test) | 6000 V |
| Minimum bending radius | 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 export, 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 (mm²) 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 ² | 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 | 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 ² | 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 ² | 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 | 64199 | 64196 |
| 16 | 6 | 8.1 | 154.0 | 64215 | 64212 |
| 25 | 4 | 9.8 | 240.0 | 64231 | 64228 |
| 35 | 2 | 10.9 | 336.0 | 64247 | 64244 |

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

| Cross-sec. mm ² | 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 | 64251 | 64252 | 64253 | 64254 | 64255 | 64256 | 64257 | 64258 | 64264 |
| 70 | 2/0 | 15.6 | 672.0 | 64267 | 64268 | 64269 | 64270 | 64271 | 64272 | 64273 | 64274 | 64280 |
| 95 | 3/0 | 17.1 | 912.0 | 64283 | 64284 | 64285 | 64286 | 64287 | 64288 | 64289 | 64290 | 64296 |
| 120 | 4/0 | 19.0 | 1152.0 | 64299 | 64300 | 64301 | 64302 | 64303 | 64304 | 64305 | 64306 | 64312 |
| 150 | 250 kcmil | 22.5 | 1440.0 | 64315 | 64316 | 64317 | 64318 | 64319 | 64320 | 64321 | 64322 | 64328 |

| Cross-sec. mm ² | 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 | 64263 | 64260 |
| 70 | 2/0 | 15.6 | 672.0 | 64279 | 64276 |
| 95 | 3/0 | 17.1 | 912.0 | 64295 | 64292 |
| 120 | 4/0 | 19.0 | 1152.0 | 64311 | 64308 |
| 150 | 250 kcmil | 22.5 | 1440.0 | 64327 | 64324 |

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

| Cross-sec. mm ² | 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 | 64131 | 64133 | 64134 | 69857 | 63417 | 63335 | 63419 | 65389 | 69856 |
| 2.5 | 14 | 3.6 | 24.0 | 64147 | 64149 | 64150 | 69866 | 63422 | 63336 | 63424 | 65390 | 69865 |
| 4 | 12 | 4.1 | 38.0 | 64163 | 64165 | 64166 | 69875 | 63427 | 63337 | 63429 | 65391 | 69874 |
| 6 | 10 | 4.8 | 58.0 | 64179 | 64181 | 64182 | 69884 | 63432 | 63338 | 63434 | 65392 | 69883 |
| 10 | 8 | 6.6 | 96.0 | 64195 | 64197 | 64198 | 69893 | 63437 | 63339 | 63439 | 65393 | 69892 |
| 16 | 6 | 8.1 | 154.0 | 64211 | 64213 | 64214 | 69902 | 63442 | 63340 | 63444 | 65394 | 69901 |
| 25 | 4 | 9.8 | 240.0 | 64227 | 64229 | 64230 | - | 63447 | 63342 | 63449 | 65395 | - |
| 35 | 2 | 10.9 | 336.0 | 64243 | 64245 | 64246 | - | 63452 | 63343 | 63454 | 65396 | - |

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 ² | 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 | 69861 | 63355 | 69862 | 63485 | 69628 | 69855 | 69858 | 69859 | 69860 | |
| 2.5 | 14 | 3.6 | 24.0 | 69870 | 63356 | 69871 | 63486 | 69629 | 69864 | 69867 | 69868 | 69869 | |
| 4 | 12 | 4.1 | 38.0 | 69879 | 63357 | 69880 | 63487 | 69630 | 69873 | 69876 | 69877 | 69878 | |
| 6 | 10 | 4.8 | 58.0 | 69888 | 63358 | 69889 | 63488 | 69655 | 69882 | 69885 | 69886 | 69887 | |
| 10 | 8 | 6.6 | 96.0 | 69897 | 63359 | 69898 | 63489 | 69656 | 69891 | 69894 | 69895 | 69896 | |
| 16 | 6 | 8.1 | 154.0 | 69906 | 63360 | 69907 | 63490 | 69657 | 69900 | 69903 | 69904 | 69905 | |
| 25 | 4 | 9.8 | 240.0 | - | 63362 | - | 63491 | - | - | - | - | - | |
| 35 | 2 | 10.9 | 336.0 | - | 63363 | - | 63492 | - | - | - | - | - | |

| Cross-sec. mm ² | 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 | 63375 | 63420 | 63418 | 69854 | 63421 |
| 2.5 | 14 | 3.6 | 24.0 | 63376 | 63425 | 63423 | 69863 | 63426 |
| 4 | 12 | 4.1 | 38.0 | 63377 | 63430 | 63428 | 69872 | 63431 |
| 6 | 10 | 4.8 | 58.0 | 63378 | 63435 | 63433 | 69881 | 63436 |
| 10 | 8 | 6.6 | 96.0 | 63379 | 63440 | 63438 | 69890 | 63441 |
| 16 | 6 | 8.1 | 154.0 | 63380 | 63445 | 63443 | 69899 | 63446 |
| 25 | 4 | 9.8 | 240.0 | 63382 | 63450 | 63448 | - | 63451 |
| 35 | 2 | 10.9 | 336.0 | 63383 | 63455 | 63453 | - | 63456 |

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

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

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

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 ² | 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 | 11019405 | 11019406 | 11019407 | 11019408 | 11019409 | 11019410 | 11019411 | 11019412 | 11019417 |
| 2.5 | 14 | 3.6 | 24.0 | 11019440 | 11019441 | 11019442 | 11019443 | 11019444 | 11019445 | 11019446 | 11019447 | 11019452 |
| 4 | 12 | 4.1 | 38.0 | 11019475 | 11019476 | 11019477 | 11019478 | 11019479 | 11019480 | 11019481 | 11019482 | 11019487 |
| 6 | 10 | 4.8 | 58.0 | 11019510 | 11019511 | 11019512 | 11019513 | 11019514 | 11019515 | 11019516 | 11019517 | 11019522 |

| Cross-sec. mm ² | 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 | 11019416 | 11019414 | 11019418 |
| 2.5 | 14 | 3.6 | 24.0 | 11019451 | 11019449 | 11019453 |
| 4 | 12 | 4.1 | 38.0 | 11019486 | 11019484 | 11019488 |
| 6 | 10 | 4.8 | 58.0 | 11019521 | 11019519 | 11019523 |

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 ² | 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 | 11019413 | 11019415 | 11019419 | 11019434 | 11019420 | 11019426 | 11019422 | 11019429 | 11019433 |
| 2.5 | 14 | 3.6 | 24.0 | 11019448 | 11019450 | 11019454 | 11019469 | 11019455 | 11019461 | 11019457 | 11019464 | 11019468 |
| 4 | 12 | 4.1 | 38.0 | 11019483 | 11019485 | 11019489 | 11019504 | 11019490 | 11019496 | 11019492 | 11019499 | 11019503 |
| 6 | 10 | 4.8 | 58.0 | 11019518 | 11019520 | 11019524 | 11019539 | 11019525 | 11019531 | 11019527 | 11019534 | 11019538 |

| Cross-sec. mm ² | 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 | 11019438 | 11019427 | 11019439 | 11019425 | 11019430 | 11019432 | 11019435 | 11019436 | 11019437 |
| 2.5 | 14 | 3.6 | 24.0 | 11019473 | 11019462 | 11019474 | 11019460 | 11019465 | 11019467 | 11019470 | 11019471 | 11019472 |
| 4 | 12 | 4.1 | 38.0 | 11019508 | 11019497 | 11019509 | 11019495 | 11019500 | 11019502 | 11019505 | 11019506 | 11019507 |
| 6 | 10 | 4.8 | 58.0 | 11019543 | 11019532 | 11019544 | 11019530 | 11019535 | 11019537 | 11019540 | 11019541 | 11019542 |

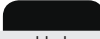

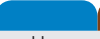


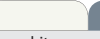



| Cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | white-dark blue | white-orange | white-blue | white-yellow | white-red |
|----------------------------|--------------|---------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|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


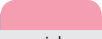
FIVENORM H07V2-K / 07V2-K / H07V-K / 07V-K












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 ² | 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 | 65441 | 65442 | 65443 | 65444 | 65445 | 65446 | 65447 | 65448 | 65450 |
| 2.5 | 14 | 3.6 | 24.0 | 65454 | 65455 | 65456 | 65457 | 65458 | 65459 | 65460 | 65461 | 65463 |
| 4 | 12 | 4.1 | 38.0 | 65467 | 65468 | 65469 | 65470 | 65471 | 65472 | 65473 | 65474 | 65476 |
| 6 | 10 | 4.8 | 58.0 | 65550 | 65551 | 65552 | 65553 | 65554 | 65555 | 65556 | 65557 | 65562 |

| Cross-sec. mm ² | 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 | 65453 | 65449 |
| 2.5 | 14 | 3.6 | 24.0 | 65466 | 65462 |
| 4 | 12 | 4.1 | 38.0 | 65549 | 65475 |
| 6 | 10 | 4.8 | 58.0 | 65561 | 65559 |

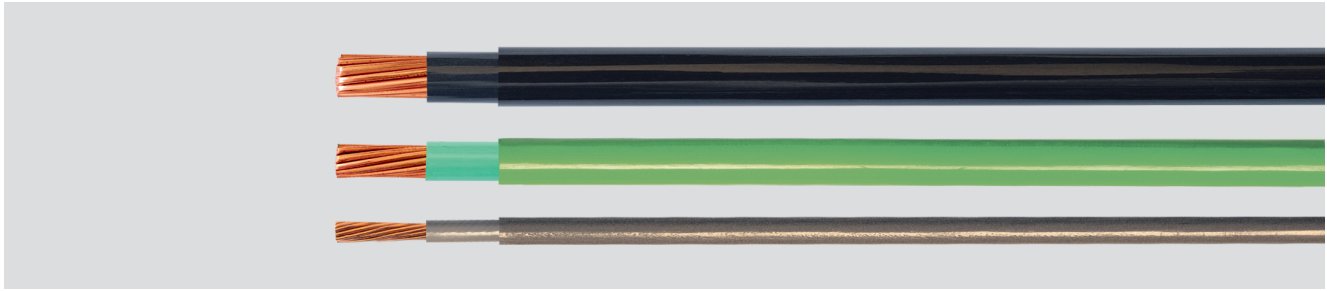
FIVENORM 07V2-K in alignment with DIN VDE 0285-525-2-31 / DIN EN 50525-2-31. Barrel

| Cross-sec. mm ² | 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 | 65452 | 65451 | 65516 | 65522 | 65518 | 65525 | 65523 | 65521 | 65524 |
| 2.5 | 14 | 3.6 | 24.0 | 65465 | 65464 | 65527 | 65533 | 65529 | 65536 | 65534 | 65532 | 65535 |
| 4 | 12 | 4.1 | 38.0 | 65478 | 65477 | 65538 | 65544 | 65540 | 65547 | 65545 | 65543 | 65546 |
| 6 | 10 | 4.8 | 58.0 | 65558 | 65560 | - | - | - | - | - | - | - |

| Cross-sec. mm ² | 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 | 65519 | 65517 | 65520 |
| 2.5 | 14 | 3.6 | 24.0 | 65530 | 65528 | 65531 |
| 4 | 12 | 4.1 | 38.0 | 65541 | 65539 | 65542 |

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 mm².
- 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

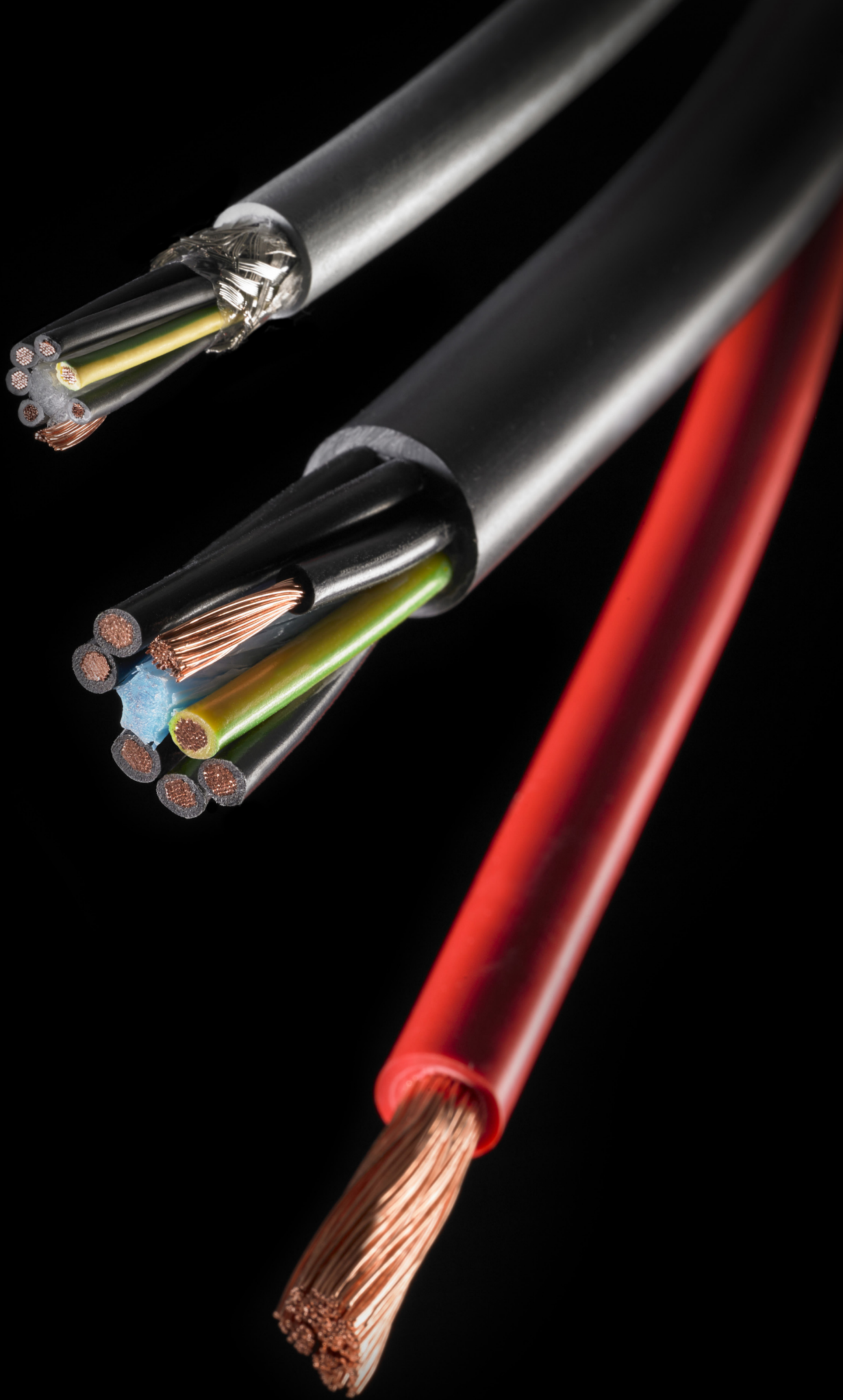
For the installation of machine tools and the relative control.

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 ² | 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)







Unipolari di installazione

| | |
|------------------------------|----|
| PVC Applicazioni generiche | 28 |
| Posa mobile | 30 |
| Media tensione | 34 |
| Applicazioni solare | 39 |

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

| | |
|---|--|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Permissible operating temperature of the conductor | +90°C |
| Nominal voltage | VDE AC U ₀ /U 600/1000 V UL (AWM) AC 600 V |
| Test voltage | 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: 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

Single 600-J, Core identification: green-yellow

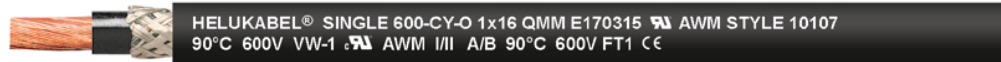
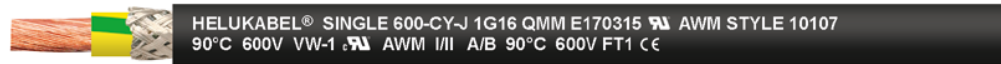
| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|
| 10881 | 1 G 6 | 10 | 7.8 | 58.0 | 118.0 |
| 10883 | 1 G 10 | 8 | 9.0 | 96.0 | 180.0 |
| 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 ² | 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

| | |
|---|--|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Permissible operating temperature of the conductor | +90°C |
| Nominal voltage | VDE AC U ₀ /U 600/1000 V UL (AWM) AC 600 V |
| Test voltage | 4000 V |
| Breakdown voltage | 8000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| 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: 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 (mm²) 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 ² | 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 ² | 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 |

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

| | |
|---|--|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Permissible operating temperature of the conductor | +90°C |
| Nominal voltage | VDE AC U ₀ /U 600/1000 V UL (AWM) AC 600 V |
| Test voltage | 4000 V |
| Breakdown voltage | 8000 V |
| Minimum bending radius | 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 (mm²) 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 ² | 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 ² | 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

| | |
|---|--|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Permissible operating temperature of the conductor | +90°C |
| Nominal voltage | VDE AC U ₀ /U 600/1000 V UL (AWM) AC 600 V |
| Test voltage | 4000 V |
| Breakdown voltage | 8000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| Minimum bending radius | 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 (mm²) 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 ² | 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 ² | 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 |

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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 600/1000 V UL (AWM) AC 1000 V 3000 V |
| Test voltage | 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: 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 (mm²) 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 ² | 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 ² | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 600/1000 V UL (AWM) AC 1000 V |
| Test voltage | 3000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| Minimum bending radius | 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 (mm²) 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

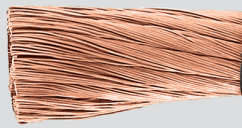
| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|
| 11007726 | 1 G 2.5 | 14 | 6.2 | 39.0 | 65.0 |
| 11007728 | 1 G 4 | 12 | 6.9 | 58.0 | 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 ² | 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 |

HELWIND® WK DLO, WK DLO-Torsion

2 kV, FT4, VW-1, RHH/RHW-2, UL44



(UL) TYPE 2kV FT-4 VW-1, for CT use -40°C TYPE DLO 2kV-TORSION 90°C MSHA

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 HELWIND® 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

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 |

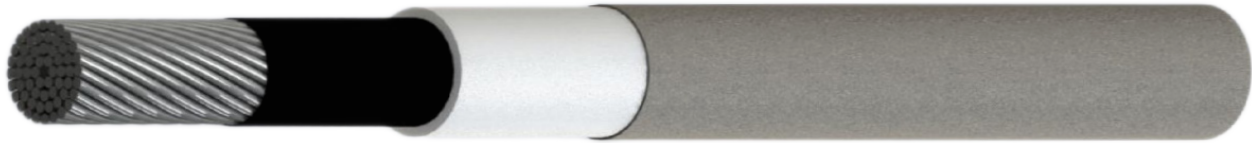
| Part no. | Cross-section AWG / kcmil | Outer Ø app. mm | Weight app. kg / km | Outer Ø app. inch | Weight app. lb / kft |
|----------|------------------------------|-----------------------|---------------------------|-------------------------|----------------------------|
| 708754 | 250 kcmil | 20,8 | 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.

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

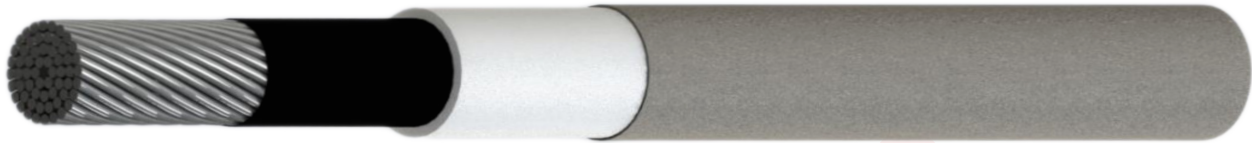
- Solid conductor versions not for flexible applications.

| Part no. | Cross-sec. mm ² | 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

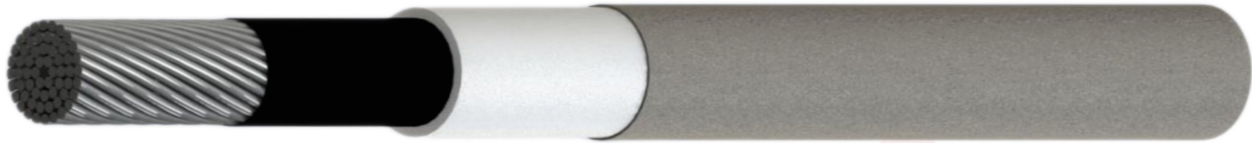
- Solid conductor versions not for flexible applications.

| 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

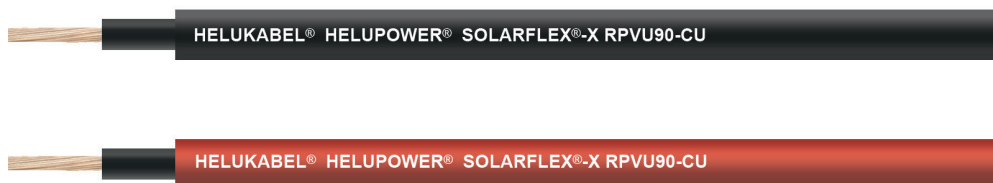
- the conductor is metrically (mm²) constructed, AWG numbers are approximated, and are for reference only.

| Part no. | Cross-sec. mm ² | 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

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 | 18089427 | 18089426 |
| 1 x 10 | 6.70 - 7.10 | 47.2 | 88 | 18089429 | 18089428 |
| 1 x 8 | 8.10 - 8.50 | 77.2 | 131 | 18089431 | 18089430 |

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)

| | |
|---|---|
| Temperature range | fixed -40°C to +90°C |
| Permissible operating temperature of the conductor | +120°C |
| Nominal voltage | AC U ₀ /U 1000/1000 V DC U ₀ /U 1500/1500 V UL (PV) DC 2000 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, 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 ² | 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 |

HELUPOWER® SOLARFLEX®-X RPVU90-AL

2000 V DC



HELUKABEL® HELUPOWER® SOLARFLEX®-X RPVU90-AL

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

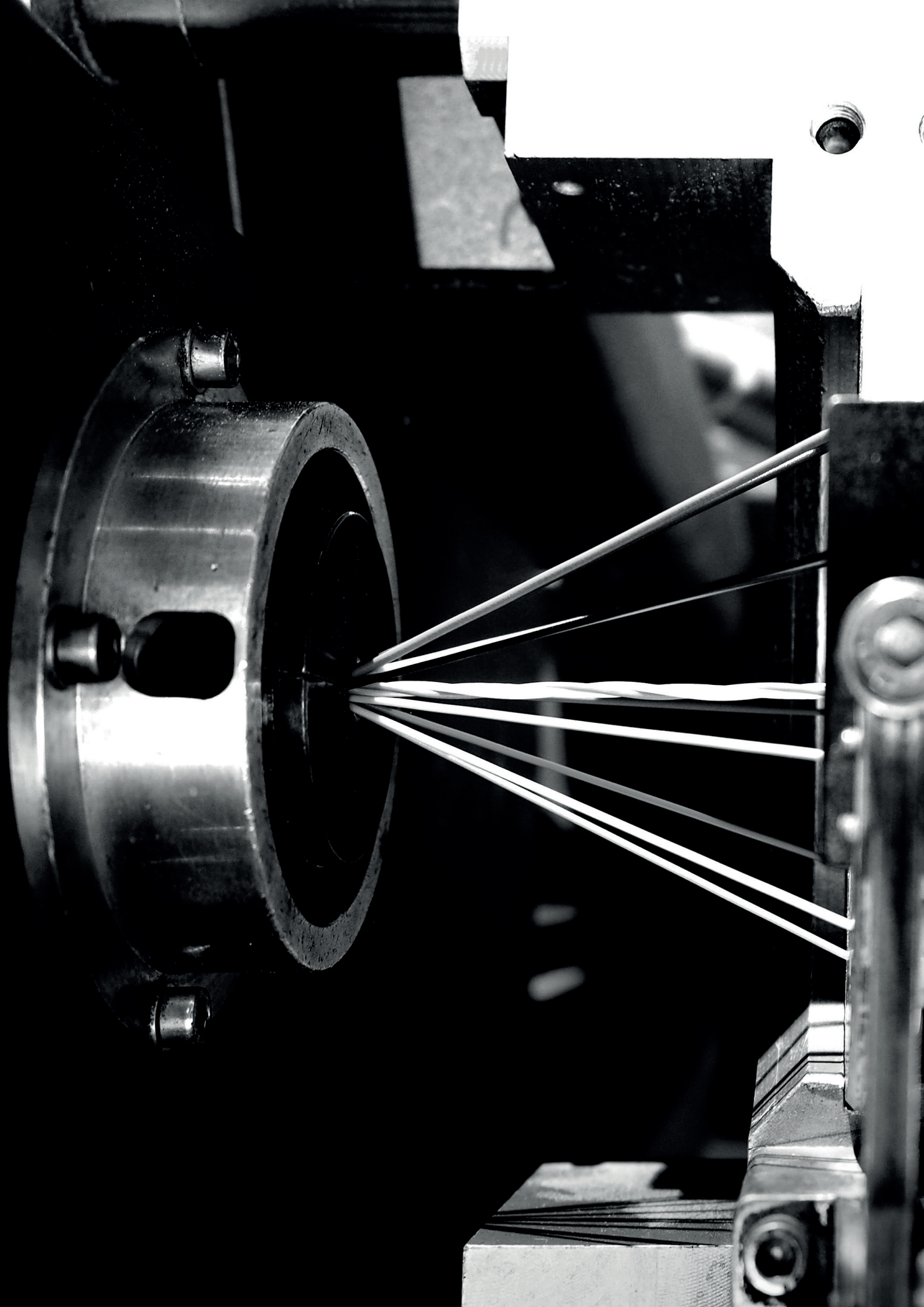
TESTS

- 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 |





Multipolari posa fissa

| | |
|-----------------------------------|----|
| PVC | 44 |
| PUR | 67 |
| TPE | 70 |
| Privi di alogeni | 71 |
| Armonizzati | 75 |
| Gomma | 76 |
| Alta temperatura | 78 |
| Encoder Resolver Servo motori | 82 |
| E-mobility | 94 |

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 ² | 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 ² | 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

| | |
|-------------------------------|---|
| 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 |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| Minimum bending radius | 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 ² | 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 ² | 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 |

JZ-603

Multi approval control cable, oil resistant, meter marking



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 U₀/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 80x10⁶ 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 mm².
- 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 ² | 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 ² | 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 U₀/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 10x cable Ø
fixed installation 5x cable Ø
- **Radiation resistance**
up to 80x10⁶ cJ/kg (up to 80 Mrad)
- **Coupling resistance**
max. 250 Ohm/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 mm².
- 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 ² | 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 |
| 83720 | 3 G 0,5 | 20 | 8,3 | 45,0 | 105,0 |
| 83721 | 4 G 0,5 | 20 | 8,9 | 54,0 | 123,0 |
| 83722 | 5 G 0,5 | 20 | 9,7 | 66,0 | 147,0 |
| 83723 | 7 G 0,5 | 20 | 11,2 | 79,0 | 195,0 |
| 83724 | 12 G 0,5 | 20 | 13,6 | 137,0 | 276,0 |
| 83725 | 18 G 0,5 | 20 | 15,4 | 156,0 | 418,0 |
| 83726 | 25 G 0,5 | 20 | 18,6 | 250,0 | 504,0 |
| 83727 | 34 G 0,5 | 20 | 20,8 | 316,0 | 632,0 |
| 83728 | 41 G 0,5 | 20 | 22,6 | 348,0 | 750,0 |
| 83729 | 50 G 0,5 | 20 | 24,8 | 407,0 | 968,0 |
| 83730 | 61 G 0,5 | 20 | 26,0 | 520,0 | 1068,0 |
| 83710 | 2 x 0,75 | 19 | 8,3 | 46,0 | 101,0 |
| 83731 | 3 G 0,75 | 19 | 8,6 | 57,0 | 127,0 |
| 83732 | 4 G 0,75 | 19 | 9,4 | 63,0 | 155,0 |
| 83733 | 5 G 0,75 | 19 | 10,1 | 76,0 | 180,0 |
| 83734 | 7 G 0,75 | 19 | 11,9 | 100,0 | 225,0 |
| 83735 | 12 G 0,75 | 19 | 14,2 | 175,0 | 326,0 |
| 83736 | 18 G 0,75 | 19 | 16,6 | 240,0 | 457,0 |
| 83737 | 25 G 0,75 | 19 | 20,0 | 306,0 | 635,0 |
| 83738 | 34 G 0,75 | 19 | 22,4 | 346,0 | 805,0 |
| 83739 | 41 G 0,75 | 19 | 24,0 | 403,0 | 908,0 |
| 83740 | 50 G 0,75 | 19 | 26,2 | 470,0 | 1155,0 |
| 83741 | 61 G 0,75 | 19 | 30,0 | 550,0 | 1400,0 |

| Part no. | No. cores x cross-sec. mm ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|--|---------|-----------------|------------------|---------------------|
| 83711 | 2 x 1 | 18 | 8,6 | 54,0 | 113,0 |
| 83742 | 3 G 1 | 18 | 9,2 | 64,0 | 144,0 |
| 83743 | 4 G 1 | 18 | 9,8 | 76,0 | 178,0 |
| 83744 | 5 G 1 | 18 | 10,7 | 89,0 | 205,0 |
| 83745 | 7 G 1 | 18 | 12,5 | 114,0 | 263,0 |
| 83746 | 12 G 1 | 18 | 15,1 | 186,0 | 424,0 |
| 83747 | 18 G 1 | 18 | 17,3 | 284,0 | 560,0 |
| 83748 | 25 G 1 | 18 | 21,1 | 387,0 | 760,0 |
| 83749 | 34 G 1 | 18 | 23,5 | 500,0 | 945,0 |
| 83750 | 41 G 1 | 18 | 25,5 | 578,0 | 1151,0 |
| 83751 | 50 G 1 | 18 | 27,6 | 681,0 | 1300,0 |
| 83752 | 61 G 1 | 18 | 32,4 | 710,0 | 1500,0 |
| 83712 | 2 x 1,5 | 16 | 9,6 | 64,0 | 144,0 |
| 83753 | 3 G 1,5 | 16 | 10,1 | 82,0 | 160,0 |
| 83754 | 4 G 1,5 | 16 | 11,0 | 99,0 | 210,0 |
| 83755 | 5 G 1,5 | 16 | 12,3 | 123,0 | 240,0 |
| 83756 | 7 G 1,5 | 16 | 14,2 | 148,0 | 305,0 |
| 83757 | 12 G 1,5 | 16 | 17,1 | 274,0 | 482,0 |
| 83758 | 18 G 1,5 | 16 | 20,0 | 386,0 | 611,0 |
| 83759 | 25 G 1,5 | 16 | 24,0 | 531,0 | 950,0 |
| 83760 | 34 G 1,5 | 16 | 27,1 | 671,0 | 1200,0 |
| 83761 | 41 G 1,5 | 16 | 29,7 | 840,0 | 1400,0 |
| 83762 | 50 G 1,5 | 16 | 31,8 | 997,0 | 1665,0 |
| 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 ² | 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 ² | 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)

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 80x10⁶ 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



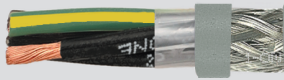
| Part no. | Cross-section mm² | No. cores x AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|-------------------|---------------------|-----------------|------------------|---------------------|
| 63116 | 1,31 | 10 x 16 | 12,4 | 125,8 | 259,0 |
| 63117 | 1,31 | 12 x 16 | 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



HELUKABEL TRAYCONTROL 500-C P/N 62855 12AWG (3,31mm²) 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
- **Coupling resistance**
max. 250 Ohm/km
- **Minimum bending radius**
flexing 6x cable Ø
- **Insulation resistance**
min. 20 MOhm x km
- **Radiation resistance**
up to 80x10⁶ 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.

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

| Part no. | Cross-section mm ² | 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 mm ² | 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 mm² | 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 mm² | 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



HELUKABEL JZ-600 4G0,5 QMM/20AWG c9Us AWM STYLE 21179 80°C VW-1 CSA LL113926 AWM I/II A/B 80°C FT1 CE



HELUKABEL JZ-600 4G0,5 QMM/20AWG c9Us AWM STYLE 21179 80°C VW-1 CSA LL113926 AWM I/II A/B 80°C FT1 CE

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 U₀/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 80x10⁶ 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 mm².
- 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 ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|------------------------------|--|---------|--------------------|------------------------|---------------------------|
| 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 ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|------------------------------|--|---------|--------------------|------------------------|---------------------------|
| 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 ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|--------------|--|---------|-----------------|------------------|---------------------|
| black | | | | | |
| 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 ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|-------------|--|---------|-----------------|------------------|---------------------|
| grey | | | | | |
| 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 |

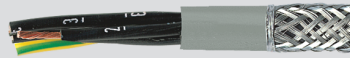
Dimensions and specifications may be changed without prior notice. (RN01)

JZ-600-Y-CY UL/CSA

EMC-preferred type, number coded, 1000 V, Cu-screened, flexible, meter marking



HELUKABEL JZ-600-Y-CY 4G0,5 QMM/20AWG cULus AWN STYLE 21179 80°C VW-1 CSA LL113926 AWM III A/B 80° FT 1 C E



HELUKABEL JZ-600-Y-CY 4G0,5 QMM/20AWG cULus AWN STYLE 21179 80°C VW-1 CSA LL113926 AWM III A/B 80° FT 1 C E

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 U₀/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 80x10⁶ 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 mm².
- 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 ² | 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 ² | 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. Sheath colour | No. cores x cross-sec. mm ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km | Part no. Sheath colour | No. cores x cross-sec. mm ² | AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|------------------------------|--|---------|--------------------|------------------------|---------------------------|------------------------------|--|---------|--------------------|------------------------|---------------------------|
| black | | | | | | grey | | | | | |
| 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



HELUKABEL® JZ-604 4G1 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 CE

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

| | |
|-------------------------------|---|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | UL (AWM) AC 600 V UL (TC) AC 600 V UL (WTTC) AC 1000 V UL (MTW) 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. 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 ² | 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 ² | 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



HELUKABEL® JZ-604 FCY 4G1 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 III A/B 90°C 600V CE

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

| | |
|-------------------------------|---|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | UL (AWM) AC 600 V UL (TC) AC 600 V UL (WTTC) AC 1000 V UL (MTW) AC 600 V |
| Test voltage core/core | 3000 V |
| Breakdown voltage | 6000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| 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: 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

| Part no. | No. cores x cross-sec. mm ² | 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 |

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 (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 ² | 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 / WTTTC 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 (WTTTC), UL-Std. 758 (AWM) Style 2587, CSA-Std. C22.2 No. 210 - AWM I/II A/B

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | UL (AWM) AC 600 V UL (TC) AC 600 V UL (WTTTC) AC 1000 V UL (MTW) AC 600 V |
| Test voltage core/core | 3000 V |
| Breakdown voltage | 6000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| 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: 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 ² | 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.

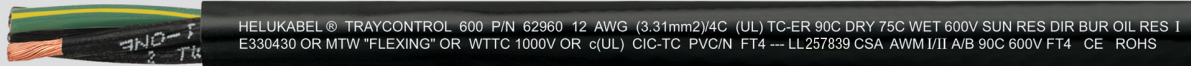
NOTES

- the conductor is metrically (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 80x10⁶ 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 ² | 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 ² | 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



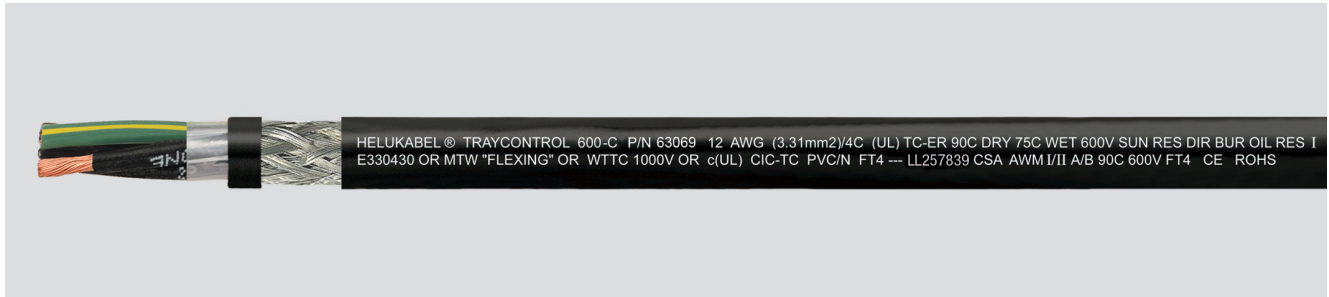
| Part no. | Cross-section mm² | No. cores x AWG-No. | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|-------------------|---------------------|-----------------|------------------|---------------------|
| 62953 | 2,08 | 12 x 14 | 16,4 | 240,0 | 434,0 |
| 62954 | 2,08 | 16 x 14 | 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 80x10⁶ 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 ² | 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 ² | 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)

JZ-602-PUR

80°C, 600 V, two approval control cable, meter marking



HELUKABEL JZ-602-PUR AWM 14 AWG/2,5 QMM 4C E170315 CSA AWM I/II A/B 80°C 600V FT 1 CE

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 100x10⁶ 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 mm².
- 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 ² | 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 ² | 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 ² | 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 ² | 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



HELUKABEL JZ-602-C-PUR AWM 16 AWG/1,5 QMM 4C E170315 CSA AWM I/II A/B 80°C 600V FT 1 CE

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 100x10⁶ 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 mm².
- 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.

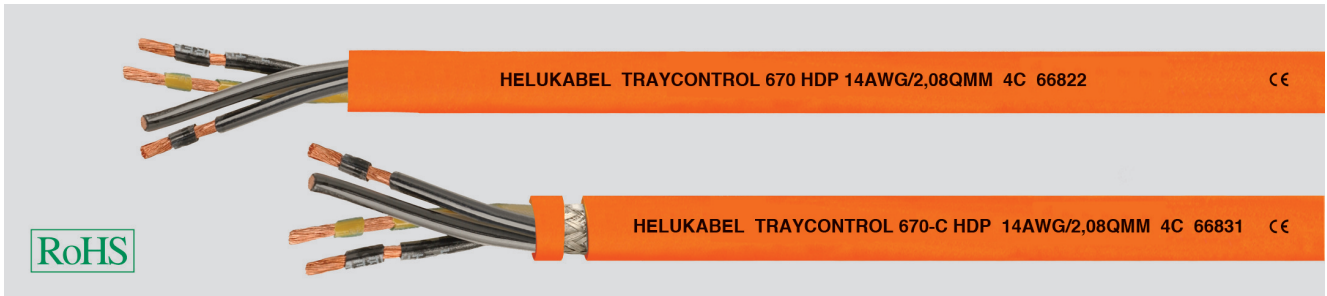
CE = Product conforms with Low-Voltage Directive 2014/35/EU.

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 |

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)

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 ₀ /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 ² | 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | AC U ₀ /U 300/500 V UL (AWM) AC 600 V |
| Test voltage core/core | 3000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/ km |
| 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
- 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

| Part no. | No. cores x cross-sec. mm ² | 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 |

- 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 |

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

| | |
|----------------------------------|--|
| Temperature range | 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 |
| Nominal voltage | AC U ₀ /U 300/500 V UL/CSA AC 300 V |
| Test voltage | 2500 V |
| Test voltage (spark test) | 6000 V |
| Breakdown voltage | 5000 V |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only

| No. cores x AWG-No. | Cross-sec. mm ² , 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 | 28066 | 31105 | 28034 | 28050 |
| 3 G 17 | 1.04 | 7.9 | 30.0 | 98.0 | 28067 | 31115 | 28035 | 28051 |
| 4 G 17 | 1.04 | 8.8 | 40.0 | 123.0 | 28068 | 31125 | 28036 | 28052 |
| 5 G 17 | 1.04 | 9.6 | 50.0 | 146.0 | 28069 | 31135 | 28037 | 28053 |
| 2 x 15 | 1.65 | 8.1 | 31.7 | 106.0 | 28070 | 31145 | 28038 | 28054 |
| 3 G 15 | 1.65 | 8.7 | 47.5 | 128.0 | 28071 | 31155 | 28039 | 28055 |
| 4 G 15 | 1.65 | 9.8 | 63.4 | 164.0 | 28072 | 31165 | 28040 | 28056 |
| 5 G 15 | 1.65 | 10.8 | 79.2 | 201.0 | 28073 | 31175 | 28041 | 28057 |
| 2 x 13 | 2.63 | 9.5 | 50.5 | 150.0 | 28074 | 31185 | 28042 | 28058 |
| 3 G 13 | 2.63 | 10.2 | 75.7 | 184.0 | 28075 | 31195 | 28043 | 28059 |
| 4 G 13 | 2.63 | 11.2 | 101.0 | 229.0 | 28076 | 31205 | 28044 | 28060 |
| 5 G 13 | 2.63 | 12.5 | 126.2 | 281.0 | 28077 | 31215 | 28045 | 28061 |
| 2 x 11 | 4.17 | 10.8 | 80.1 | 204.0 | 28078 | 31225 | 28046 | 28062 |
| 3 G 11 | 4.17 | 11.6 | 120.1 | 254.0 | 28079 | 31235 | 28047 | 28063 |
| 4 G 11 | 4.17 | 12.8 | 160.1 | 315.0 | 28080 | 31245 | 28048 | 28064 |
| 5 G 11 | 4.17 | 14.4 | 200.2 | 393.0 | 28081 | 31255 | 28049 | 28065 |



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



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

| | |
|-------------------------------|---|
| Temperature range | VDE -60°C to +180°C UL (AWM) -50°C to +150°C |
| Nominal voltage | VDE AC U ₀ /U 300/500 V UL (AWM) AC 600 V |
| Test voltage core/core | 2000 V |
| Breakdown voltage | 5000 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 - 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 SiO₂ 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 ρ_{90} 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 ₀ /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 SiO₂ 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 (mm²) 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 ² | 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 ² | 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 ₀ /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 SiO₂ 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

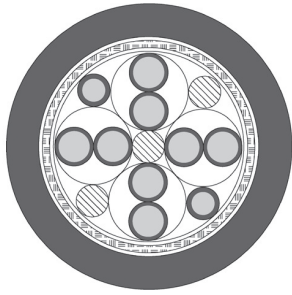
- the conductor is metrically (mm²) constructed, AWG numbers are approximated, and are for reference only
- for fixed installation, always install in open, ventilated pipe or duct systems; otherwise, a combination of high temperatures above 90°C and the absence of air would affect the mechanical properties of silicone

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 |

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

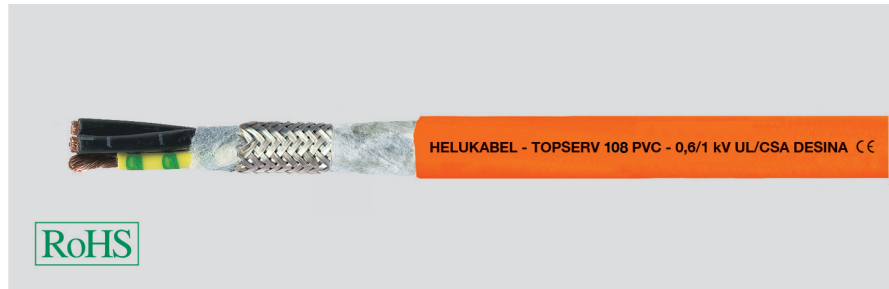
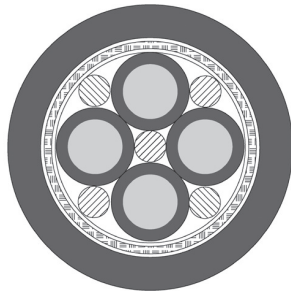
To optimize the EMC features we recommend a large round contact of the copper braiding on both ends.

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)

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 U₀/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 mm² of halogen-free PP from 10 mm² 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 6mm² (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. mm ² | 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. mm ² | 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. mm ² | 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 |

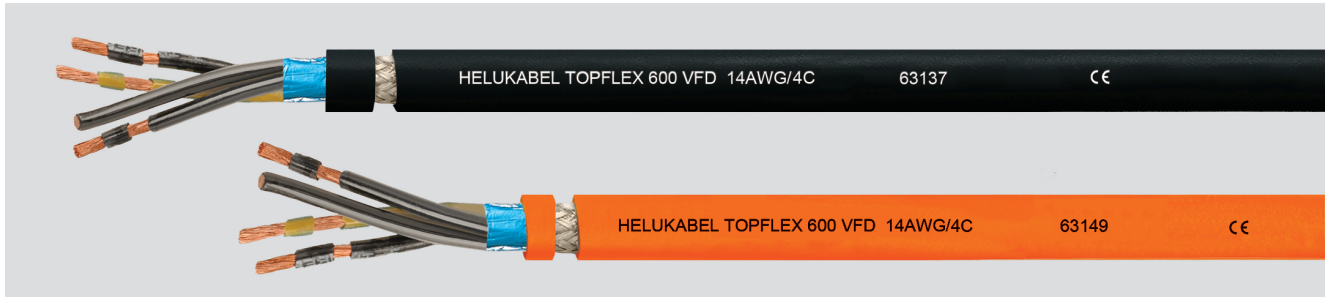
TOPSERV® 119 PVC, acc.to Bosch Rexroth

| Part no. | No.cores x cross-sec. mm ² | 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 ² | 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 ² | 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 ² | 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 |

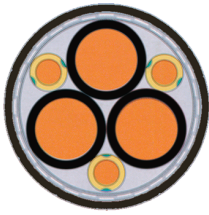
Sheath colour: orange

| Part no. | No. cores x AWG-No. | Cross-section mm ² | 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 (107,2mm²) /3C + 6 AWG (13,3 mm²) /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 C€

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.

C€ = 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 ² | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 1000 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 |

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 ² | 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

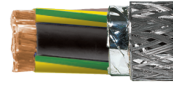
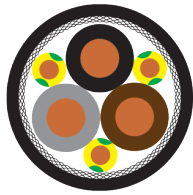
- the conductor is metrically (mm²) constructed, AWG numbers are approximated, and are for reference only

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 I/II 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

| | |
|-------------------------------|---|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 1000 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: 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

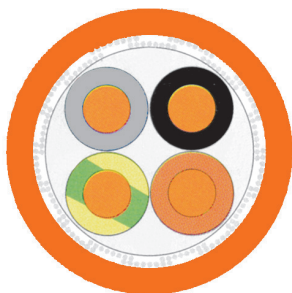
- the conductor is metrically (mm²) constructed, AWG numbers are approximated, and are for reference only

| Part no. | No. cores x cross-sec. mm ² | 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 U₀/U 600/1000 V
UL 1000 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**
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 80x10⁶ 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 mm².

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

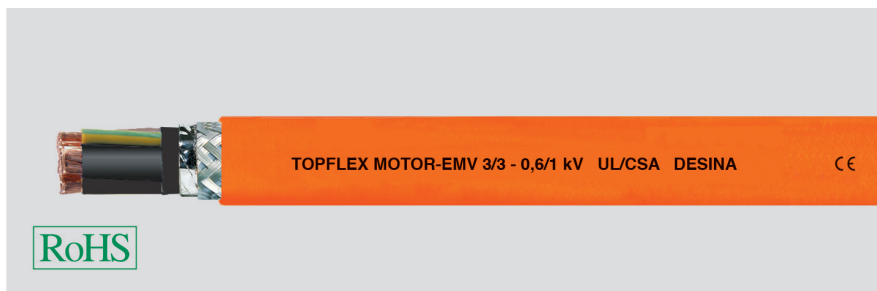
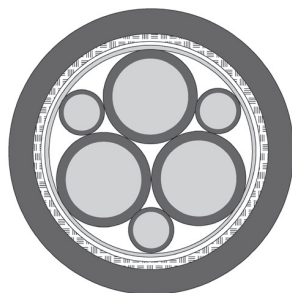
The screen must be connected at both ends and ensure large-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011.

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

| Part no. | No. cores x cross-sec. mm ² | Outer Ø app. mm | Cu factor per km | Weight app. kg / km | AWG-No. | Part no. | No. cores x cross-sec. mm ² | 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 U₀/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 80x10⁶ 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 mm².

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 ² | 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 ² | 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 |

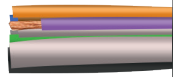
TOPSERV® Hybrid PUR, high flexible for drag chain

| Part no. | No. cores x cross-sec. mm ² | 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.

HELUPOWER® CHARGE-1000-AC-UL

flexible, flame retardant



HELUPOWER® CHARGE 1000 AC UL CE

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 | EVJE U 300 V AC EVE U 1000 V AC |
| Test voltage | 2000 V AC |
| 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 direct current as HELUPOWER® CHARGE-1000-DC-UL

outer sheath: black

| Part no. | No. cores x cross-sec. mm ² | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|---|-----------------|------------------|---------------------|
| 17001265 | 3 x AWG 14 (2.08 mm ²) + 1 x AWG 20 (0.52 mm ²) | 10.5 | 72.0 | 130 |
| 17001266 | 3 x AWG 14 (2.08 mm ²) + 1 x AWG 18 (0.82 mm ²) | 10.7 | 75.0 | 140 |
| 17001267 | 3 x AWG 14 (2.08 mm ²) + 2 x AWG 18 (0.82 mm ²) | 11.8 | 84.0 | 175 |
| 17001268 | 3 x AWG 12 (3.31 mm ²) + 1 x AWG 18 (0.82 mm ²) | 15.2 | 111.0 | 310 |
| 17001269 | 3 x AWG 10 (5.26 mm ²) + 1 x AWG 20 (0.52 mm ²) | 15.7 | 171.0 | 375 |
| 17001270 | 3 x AWG 10 (5.26 mm ²) + 1 x AWG 18 (0.82 mm ²) | 16.0 | 174.0 | 380 |
| 17001271 | 3 x AWG 10 (5.26 mm ²) + 2 x AWG 20 (0.52 mm ²) | 16.0 | 177.0 | 385 |
| 17001272 | 5 x AWG 10 (5.26 mm ²) + 1 x AWG 20 (0.52 mm ²) | 19.8 | 281.0 | 590 |

outer sheath: red

| Part no. | No. cores x cross-sec. mm ² | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|---|-----------------|------------------|---------------------|
| 17001273 | 3 x AWG 14 (2.08 mm ²) + 1 x AWG 20 (0.52 mm ²) | 10.5 | 72.0 | 130 |
| 17001274 | 3 x AWG 14 (2.08 mm ²) + 1 x AWG 18 (0.82 mm ²) | 10.7 | 75.0 | 140 |
| 17001275 | 3 x AWG 14 (2.08 mm ²) + 2 x AWG 18 (0.82 mm ²) | 11.8 | 84.0 | 175 |
| 17001276 | 3 x AWG 12 (3.31 mm ²) + 1 x AWG 18 (0.82 mm ²) | 15.2 | 111.0 | 310 |
| 17001277 | 3 x AWG 10 (5.26 mm ²) + 1 x AWG 20 (0.52 mm ²) | 15.7 | 171.0 | 375 |
| 17001278 | 3 x AWG 10 (5.26 mm ²) + 1 x AWG 18 (0.82 mm ²) | 16.0 | 174.0 | 380 |
| 17001279 | 3 x AWG 10 (5.26 mm ²) + 2 x AWG 20 (0.52 mm ²) | 16.0 | 177.0 | 385 |
| 17001280 | 5 x AWG 10 (5.26 mm ²) + 1 x AWG 20 (0.52 mm ²) | 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

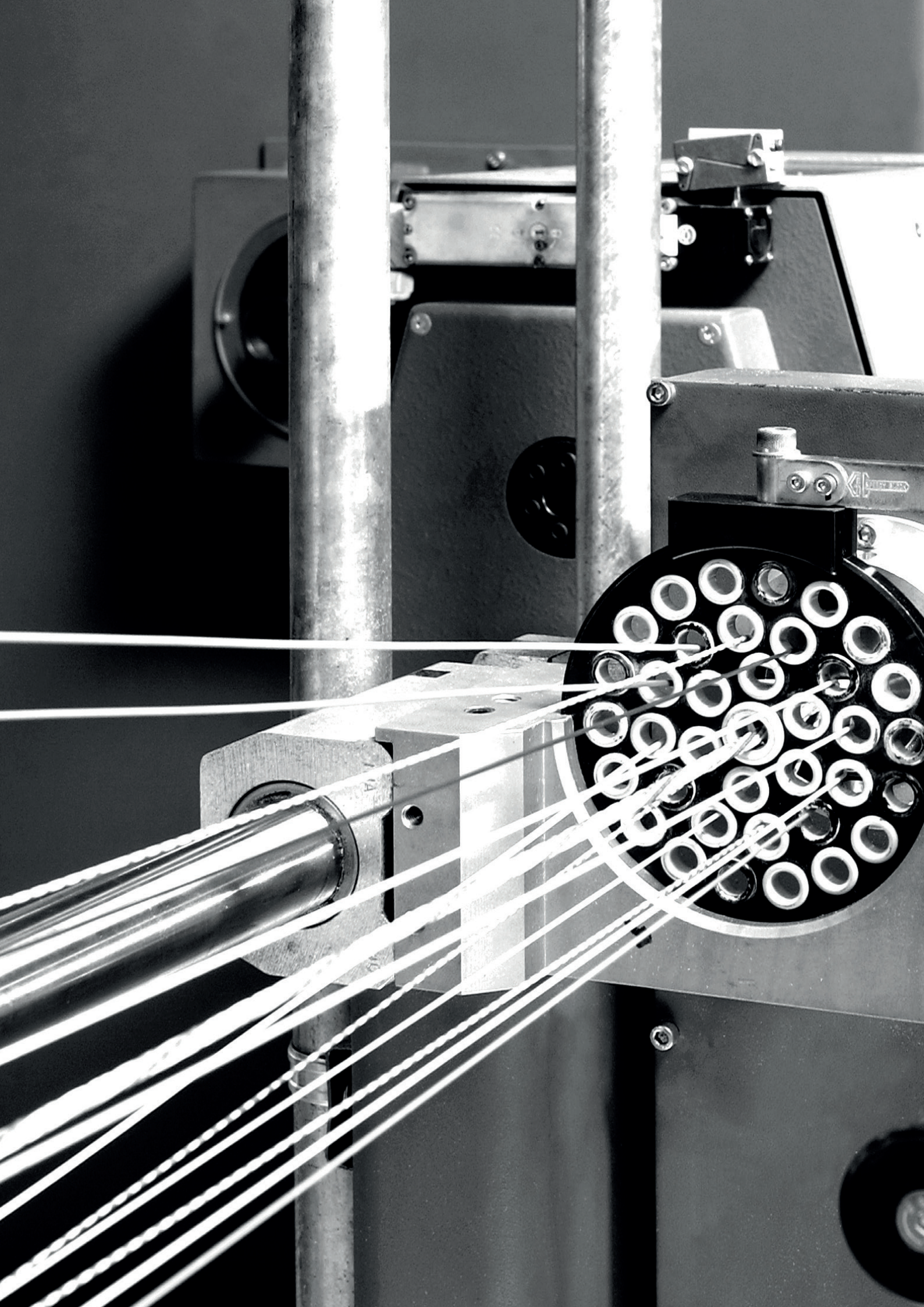
- other constructions or outer sheath colours available on request
- can also be delivered for alternating current as HELUPOWER® CHARGE-1000-AC-UL

outer sheath: black

| Part no. | No. cores x cross-sec. mm ² | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|--|-----------------|------------------|---------------------|
| 17001533 | 3 x AWG 6 (13.3 mm ²) + 3 x 2 x AWG 18 (0.82 mm ²) | 18.6 | 479.0 | 990 |
| 17001534 | 2 x AWG 2 (33.6 mm ²) + 1 x AWG 4 (21.2 mm ²) + 3 x 2 x AWG 18 (0.82 mm ²) | 25.1 | 950.0 | 1570 |
| 17001535 | 2 x AWG 1 (42.4 mm ²) + 1 x AWG 3 (26.7 mm ²) + 1 x 6 x AWG 18 (0.82 mm ²) | 28.2 | 1234.0 | 2040 |
| 17001536 | 2 x AWG 2/0 (67.4 mm ²) + 1 x AWG 3 (26.7 mm ²) + 1 x 6 x AWG 18 (0.82 mm ²) | 39.2 | 1674.0 | 2700 |

outer sheath: red

| Part no. | No. cores x cross-sec. mm ² | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|--|-----------------|------------------|---------------------|
| 17001537 | 3 x AWG 6 (13.3 mm ²) + 3 x 2 x AWG 18 (0.82 mm ²) | 18.6 | 479.0 | 990 |
| 17001538 | 2 x AWG 2 (33.6 mm ²) + 1 x AWG 4 (21.2 mm ²) + 3 x 2 x AWG 18 (0.82 mm ²) | 25.1 | 950.0 | 1570 |
| 17001539 | 2 x AWG 1 (42.4 mm ²) + 1 x AWG 3 (26.7 mm ²) + 1 x 6 x AWG 18 (0.82 mm ²) | 28.2 | 1234.0 | 2040 |
| 17001540 | 2 x AWG 2/0 (67.4 mm ²) + 1 x AWG 3 (26.7 mm ²) + 1 x 6 x AWG 18 (0.82 mm ²) | 39.2 | 1674.0 | 2700 |



A black and white photograph of industrial machinery, likely a lathe or similar machine tool, with various metal components, bolts, and a control panel visible in the background. The image is slightly out of focus, emphasizing the text overlay.

Multipolari posa fissa trasmissione dati

| | |
|--|-----|
| Multipolari posa fissa trasmissione dati | 98 |
| Termocoppie | 140 |
| Lan cable | 142 |
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| Devicenet | 195 |

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 (mm²) 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 | 83170 | 3 x 22 | 0.34 | 4.3 | 9.8 | 30.0 |
| 83138 | 3 x 26 | 0.14 | 3.7 | 4.0 | 15.0 | 83171 | 4 x 22 | 0.34 | 4.6 | 13.0 | 45.0 |
| 83139 | 4 x 26 | 0.14 | 4.0 | 5.4 | 18.0 | 83172 | 6 x 22 | 0.34 | 5.4 | 19.6 | 60.0 |
| 83140 | 6 x 26 | 0.14 | 4.6 | 8.1 | 25.0 | 83173 | 10 x 22 | 0.34 | 6.6 | 32.5 | 80.0 |
| 83141 | 10 x 26 | 0.14 | 5.5 | 13.4 | 38.0 | 83174 | 12 x 22 | 0.34 | 6.8 | 39.1 | 105.0 |
| 83142 | 12 x 26 | 0.14 | 5.7 | 16.2 | 46.0 | 83175 | 16 x 22 | 0.34 | 7.7 | 52.0 | 130.0 |
| 83143 | 16 x 26 | 0.14 | 6.2 | 21.5 | 56.0 | 83176 | 18 x 22 | 0.34 | 8.1 | 59.0 | 140.0 |
| 83144 | 18 x 26 | 0.14 | 6.5 | 24.4 | 62.0 | 83177 | 24 x 22 | 0.34 | 9.6 | 79.0 | 190.0 |
| 83145 | 24 x 26 | 0.14 | 7.7 | 32.4 | 82.0 | 83178 | 27 x 22 | 0.34 | 9.8 | 88.0 | 207.0 |
| 83146 | 27 x 26 | 0.14 | 7.9 | 36.3 | 97.0 | 83179 | 30 x 22 | 0.34 | 10.1 | 97.8 | 225.0 |
| 83147 | 30 x 26 | 0.14 | 8.1 | 40.4 | 110.0 | 83185 | 2 x 20 | 0.56 | 4.5 | 10.8 | 30.0 |
| 83153 | 2 x 24 | 0.23 | 3.8 | 4.6 | 16.0 | 83186 | 3 x 20 | 0.56 | 4.7 | 16.1 | 33.0 |
| 83154 | 3 x 24 | 0.23 | 4.0 | 7.1 | 19.0 | 83187 | 4 x 20 | 0.56 | 5.1 | 21.5 | 41.0 |
| 83155 | 4 x 24 | 0.23 | 4.3 | 9.4 | 23.0 | 83188 | 6 x 20 | 0.56 | 6.0 | 32.3 | 65.0 |
| 83156 | 6 x 24 | 0.23 | 4.9 | 14.2 | 32.0 | 83189 | 10 x 20 | 0.56 | 7.6 | 53.8 | 102.0 |
| 83157 | 10 x 24 | 0.23 | 6.0 | 23.8 | 55.0 | 83190 | 12 x 20 | 0.56 | 7.9 | 64.5 | 120.0 |
| 83158 | 12 x 24 | 0.23 | 6.2 | 28.5 | 60.0 | 83191 | 16 x 20 | 0.56 | 8.7 | 86.0 | 152.0 |
| 83159 | 16 x 24 | 0.23 | 6.8 | 38.1 | 75.0 | 83192 | 18 x 20 | 0.56 | 9.3 | 96.8 | 168.0 |
| 83160 | 18 x 24 | 0.23 | 7.1 | 43.1 | 82.0 | 83193 | 24 x 20 | 0.56 | 11.0 | 129.0 | 224.0 |
| 83161 | 24 x 24 | 0.23 | 8.4 | 59.7 | 116.0 | 83194 | 27 x 20 | 0.56 | 11.2 | 145.1 | 260.0 |
| 83162 | 27 x 24 | 0.23 | 8.6 | 64.7 | 140.0 | 83195 | 30 x 20 | 0.56 | 11.6 | 161.3 | 300.0 |
| 83163 | 30 x 24 | 0.23 | 9.1 | 71.9 | 150.0 | 83201 | 2 x 18 | 0.82 | 5.6 | 15.2 | 50.0 |
| 83169 | 2 x 22 | 0.34 | 4.1 | 6.5 | 25.0 | 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 (mm²) 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 (mm²) 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 ² | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² | 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 ² | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² | 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 ² | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² | 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 (mm²) 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 ² , approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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 mm² 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 80x10⁶ 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 ² 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 ² 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



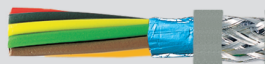
| Part no. | Cross-section mm ² x AWG-No. | No.cores | Outer Ø app. mm | Cu factor per km | Weight app. kg / km |
|----------|---|----------|-----------------|------------------|---------------------|
| 62685 | 0,963 | 2 x 18 | 7,4 | 18,5 | 61,0 |
| 62686 | 0,963 | 3 x 18 | 7,7 | 28,0 | 64,0 |
| 62687 | 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 mm ² x AWG-No. | No.cores | 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



HELUKABEL TRAYCONTROL 300-C 24AWG/0,241 mm² 6C/62737

CE

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 80x10⁶ 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 ² 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 ² 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 mm² 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 80x10⁶ 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 ² | No.pairs x Outer Ø No.cores x AWG-no. | Outer Ø app. mm | 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 ² | No.pairs x Outer Ø No.cores x AWG-no. | Outer Ø app. mm | 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 ² | 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 ² | 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 80x10⁶ 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 ² | 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 ² | 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 ² | 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 ² | 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 |

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 ² | 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 IEC 60332-3-22 / IEC 60754-2 / 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/LSOH OS 300

Instrumentation cable, XLPE/OS/LSOH



HELUDATA® PLTC UL13 XLPE/LSOH 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: 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)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
- Individuadeal 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 60332-3-22 / IEC 60332-3-22 (Cat. A)
- 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.

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.

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



HELUKABEL HELUDATA UL 2919 PE

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



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. |
|----------|---------------------|----------------------|------------------|-----------------------|
|----------|---------------------|----------------------|------------------|-----------------------|

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

| 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 |

- 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. |
|----------|---------------------|----------------------|------------------|-----------------------|
| 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

| | |
|--------------------------------|---|
| Temperature range | fixed -20°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 18 AWG: approx. 79 pF/m 20 AWG: approx. 90 pF/m |
| Mutual capacitance core/screen | at 800 Hz 18 AWG: approx. 158 pF/m 20 AWG: approx. 160 pF/m |
| Characteristic impedance | 100 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: 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.

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_{ac} 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.

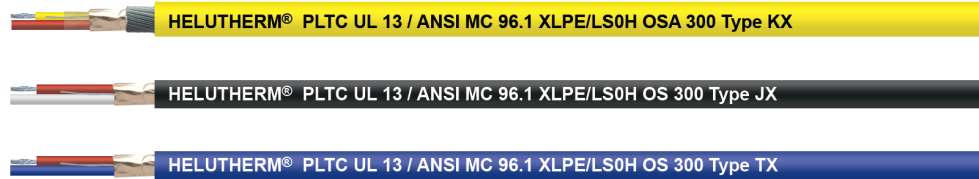
CE = Product complies to the Low-Voltage Directive 2014/35/EU.

| 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_{ac} 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.

LAN Cable

Category 6

HELUKAT® 300 
U/UTP UL

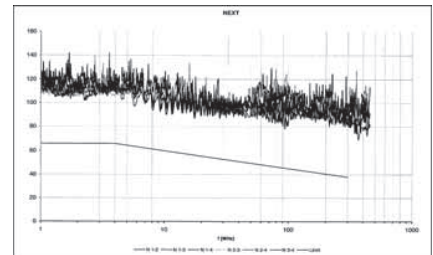


Cable structure

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

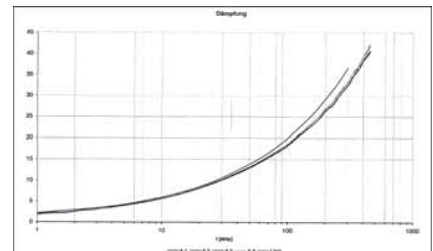
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz
100 Ohm ± 20 Ohm at 101 to 300 MHz
Loop resistance: 190 Ohm/km max.
Mutual capacitance: 50 nF/km nom.
Rel. propagation velocity: 67 %

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)

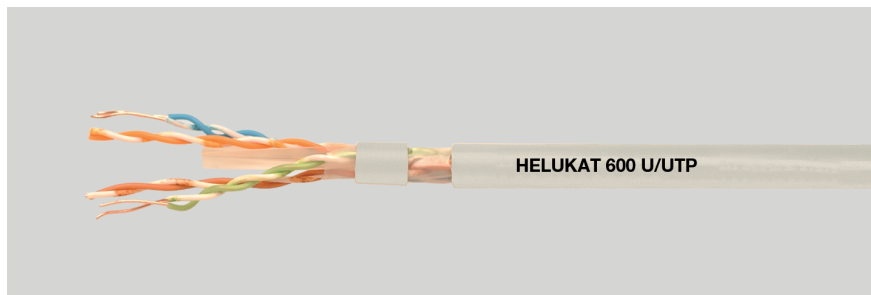
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 6a

HELUKAT® 600

U/UTP FRNC

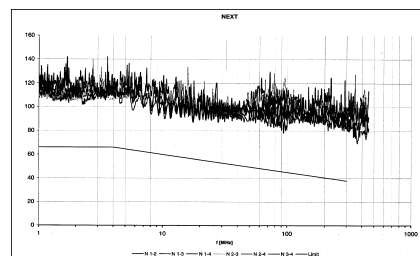


Cable structure

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

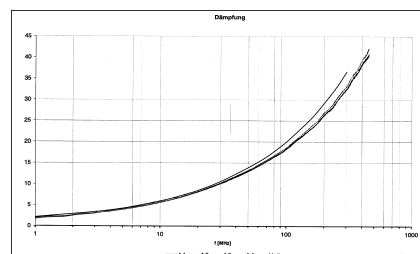
Characteristic impedance: 100 Ohm ± 15 Ohm at 1 to 100 MHz
 100 Ohm ± 20 Ohm at 101 to 600 MHz
 150 Ohm/km max.
 Loop resistance: 50 nF/km nom.
 Mutual capacitance: 67 %
 Rel. propagation velocity:

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)

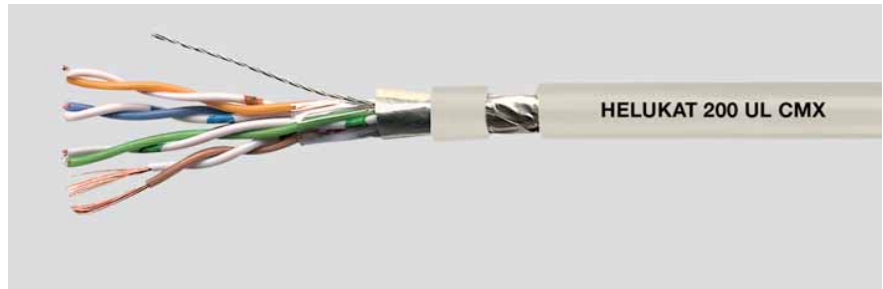
Dimensions and specifications may be changed without prior notice.

LAN Cable

Category 5e

HELUKAT® 200

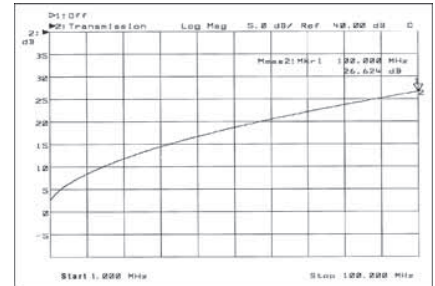
F/UTP Flex, UL



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

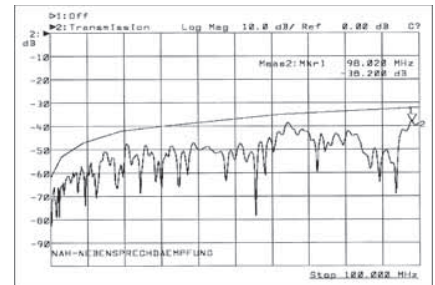
| Frequency (MHz) | 10 | 16 | 62,5 | 100 | 200 |
|----------------------|------|------|------|------|------|
| Attenuation (db/10m) | 0,9 | 1,2 | 2,4 | 3,1 | 3,9 |
| Next (db) | 62,0 | 60,0 | 50,0 | 48,0 | 45,0 |
| ACR (db) | 61,1 | 58,8 | 47,6 | 44,9 | 41,1 |

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)

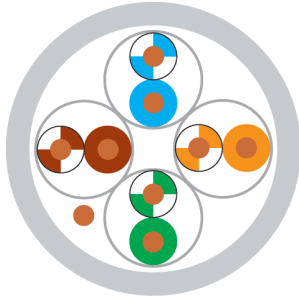
Dimensions and specifications may be changed without prior notice.

LAN Cable

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:

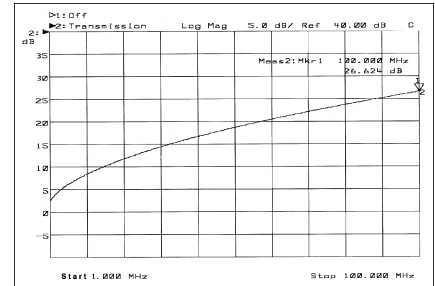
U/FTP 4x2xAWG 26/7 PVC, UL

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

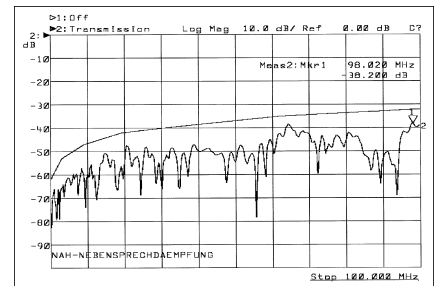
| Frequency (MHz) | 10 | 16 | 62,5 | 100 | 200 | 300 |
|----------------------|------|------|------|------|------|------|
| Attenuation (db/10m) | 0,9 | 1,1 | 2,2 | 2,7 | 3,9 | 4,7 |
| Next (db) | 90,0 | 88,0 | 83,0 | 80,0 | 76,0 | 73,0 |
| ACR (db) | 89,1 | 86,9 | 80,8 | 77,3 | 72,1 | 68,3 |

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.

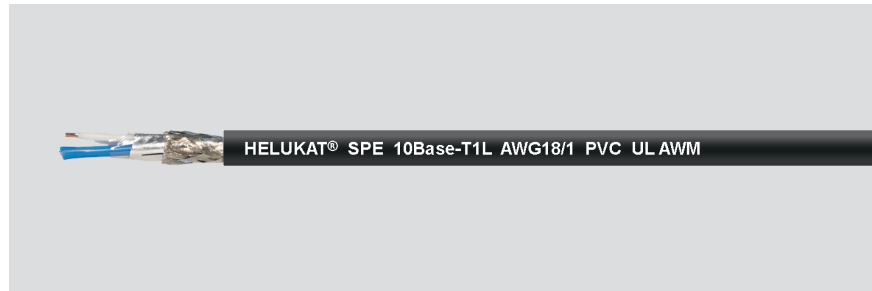
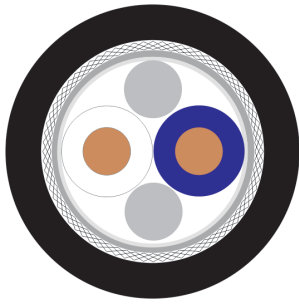
802174, U/FTP 4x2xAWG 26/7 PVC

Dimensions and specifications may be changed without prior notice.

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.

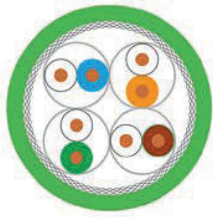
Part no.

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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 74.5 Ohm/km |
| Loop resistance at 20°C | max. 149.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 43 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.74 MJ/m |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

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

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



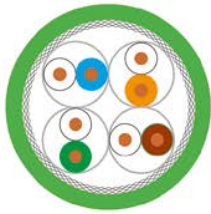
CC-Link IE Field certified, extended performance up to 1200 MHz

| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1500 V |
| Conductor resistance at 20°C | max. 74.5 Ohm/km |
| Loop resistance at 20°C | max. 149.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 43 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.74 MJ/m |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

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

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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -5°C to +50°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1500 V |
| Conductor resistance at 20°C | max. 74.5 Ohm/km |
| Loop resistance at 20°C | max. 149.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 43 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1200 MHz, 100 Ohm ± 25 Ohm |
| Caloric load | approx. 0.76 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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.7A S/FTP PUR ROBUSTFLEX

performance up to 1000 MHz



TECHNICAL DATA

Industrial Ethernet cable / Cat. 7A acc. to ISO/IEC 11801, DIN EN 50173, IEC 61156-6, DIN EN 50288-4-2, UL-Std. 758 (AWM) Style 21238

| | |
|-------------------------------------|---|
| Temperature range | flexible -25°C to +60°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 145.0 Ohm/km |
| Loop resistance at 20°C | max. 290.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 44 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 1000 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.45 MJ/m |
| Minimum bending radius | flexible 8x Outer-Ø fixed installation 6x 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: 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.7A 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 (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

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

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 ² , 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 |

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

| | |
|-------------------------------------|---|
| Temperature range | flexible -20°C to +60°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 140.0 Ohm/km |
| Loop resistance at 20°C | max. 280.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 75% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.45 MJ/m |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only
- UL Voltage Rating: 30 V

■ TYPICAL VALUES

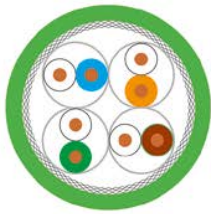
| Frequency (MHz) | 10 | 16 | 62.5 | 100 | 200 | 600 |
|-----------------------|------|------|------|------|------|------|
| Attenuation (dB/100m) | 8.4 | 10.4 | 20.5 | 26.2 | 38.0 | 67.8 |
| PS-NEXT (dB) | 95.0 | 95.0 | 90.0 | 90.0 | 85.0 | 73.0 |
| PS-ACR (dB/100m) | 86.6 | 84.6 | 69.5 | 63.8 | 47.0 | 5.2 |

| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation 0°C to +70°C UL (CM) to +75°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 59.0 Ohm/km |
| Loop resistance at 20°C | max. 118.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.95 MJ/m |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only

CABLE STRUCTURE

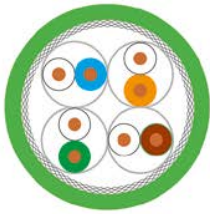
- Copper conductor bare, conductor diameter: 0.64 mm, AWG sizes
- Core insulation: Foam PE
- Core identification: colour coded, pairs:
No. 1: white-blue / blue
No. 2: white-orange / orange
No. 3: white-green / green
No. 4: white-brown / brown
- Cores stranded in pairs with optimal lay lengths

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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation 0°C to +50°C UL (CMX) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 59.1 Ohm/km |
| Loop resistance at 20°C | max. 118.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 45 pF/m |
| Rel. Velocity of Propagation | approx. 78% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.63 MJ/m |
| Minimum bending radius | 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 (mm²) are approximated and are for reference only
- UL Voltage Rating: 600 V

TYPICAL VALUES

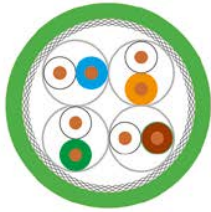
| Frequency (MHz) | 10 | 16 | 62.5 | 100 | 250 | 500 |
|-----------------------|------|------|------|------|------|------|
| Attenuation (dB/100m) | 5.9 | 7.5 | 15.0 | 19.1 | 31.1 | 45.3 |
| NEXT (dB) | 60.3 | 57.2 | 48.4 | 45.3 | 39.3 | 34.8 |
| ACR (dB/100m) | 54.4 | 49.7 | 33.4 | 26.2 | 8.2 | 10.5 |

| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -30°C to +80°C during installation 0°C to +50°C UL (CMG) to +75°C UL (AWM) to +60°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 59.0 Ohm/km |
| Loop resistance at 20°C | max. 118.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 45 pF/m |
| Rel. Velocity of Propagation | approx. 78% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.63 MJ/m |
| Minimum bending radius | 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 (mm²) 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

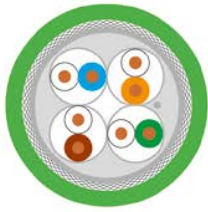
| Frequency (MHz) | 10 | 16 | 62.5 | 100 | 250 | 500 |
|-----------------------|------|------|------|------|------|------|
| Attenuation (dB/100m) | 5.9 | 7.5 | 15.0 | 19.1 | 31.1 | 45.3 |
| NEXT (dB) | 60.3 | 57.2 | 48.4 | 45.3 | 39.3 | 34.8 |
| ACR (dB/100m) | 54.4 | 49.7 | 33.4 | 26.2 | 8.2 | 10.5 |

| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -5°C to +70°C UL (CMG) to +75°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 56.5 Ohm/km |
| Loop resistance at 20°C | max. 112.9 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 76% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.63 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -5°C to +70°C UL (CMG) to +75°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1500 V |
| Conductor resistance at 20°C | max. 95.0 Ohm/km |
| Loop resistance at 20°C | max. 190.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 72 pF/m |
| Rel. Velocity of Propagation | approx. 62% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.69 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -5°C to +70°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1500 V |
| Conductor resistance at 20°C | max. 95.0 Ohm/km |
| Loop resistance at 20°C | max. 190.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 72 pF/m |
| Rel. Velocity of Propagation | approx. 62% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.69 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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® 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -20°C to +50°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1000 V |
| Conductor resistance at 20°C | max. 140.0 Ohm/km |
| Loop resistance at 20°C | max. 280.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 47 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 200 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.64 MJ/m |
| Minimum bending radius | flexible 8x Outer-Ø fixed installation 4x 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
- Screening element: pairs
- Cores stranded in pairs with optimal lay lengths
- Foil 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: 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 (mm²) 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 ² , 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



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

| | |
|-------------------------------------|--|
| Temperature range | flexible -20°C to +60°C fixed installation -40°C to +105°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 60.0 Ohm/km |
| Loop resistance at 20°C | max. 120.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 57 pF/m |
| Rel. Velocity of Propagation | approx. 69% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.89 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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 Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

| | |
|-------------------------------------|---|
| Temperature range | fixed installation -40°C to +80°C during installation -20°C to +60°C UL (CMG) to +75°C UL (AWM) to +60°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 57.5 Ohm/km |
| Loop resistance at 20°C | max. 115.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 48 pF/m |
| Rel. Velocity of Propagation | approx. 62% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.91 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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 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

| | |
|-------------------------------------|--|
| Temperature range | fixed installation -25°C to +75°C during installation -25°C to +75°C UL (CM) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 57.5 Ohm/km |
| Loop resistance at 20°C | max. 115.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 48 pF/m |
| Rel. Velocity of Propagation | approx. 62% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.34 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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 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 Guideline, UL-Std. 444 (CMG), CSA-Std. C22.2 No. 214 - CMG, UL-Std. 13 (PLTC), UL-Std. 758 (AWM) Style 21694

| | |
|-------------------------------------|--|
| Temperature range | flexible -20°C to +60°C fixed installation -40°C to +80°C UL (CMG) to +75°C UL (AWM) to +60°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 57.5 Ohm/km |
| Loop resistance at 20°C | max. 115.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 48 pF/m |
| Rel. Velocity of Propagation | approx. 65% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.96 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -25°C to +75°C fixed installation -40°C to +75°C UL (CM) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 60.0 Ohm/km |
| Loop resistance at 20°C | max. 120.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 52 pF/m |
| Rel. Velocity of Propagation | approx. 65% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.32 MJ/m |
| Minimum bending radius | 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 (mm²) 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 |

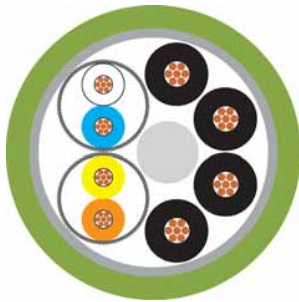
| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , approx. | Conductor Ø mm, approx. | Core Ø mm, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|---------------------|--------------------------------------|-------------------------|--------------------|---------------------|------------------|-----------------------|
| 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[®]

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[®] 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)

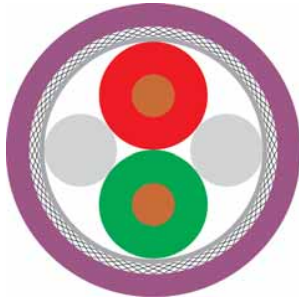
Dimensions and specifications may be changed without prior notice.

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

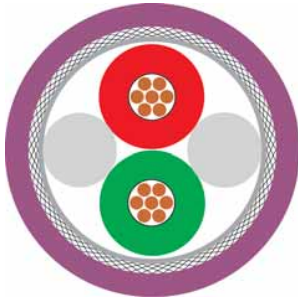
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus L2 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

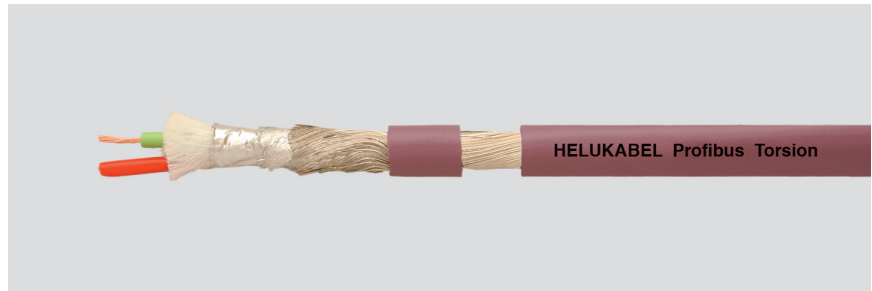
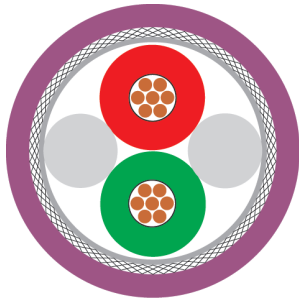
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus 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

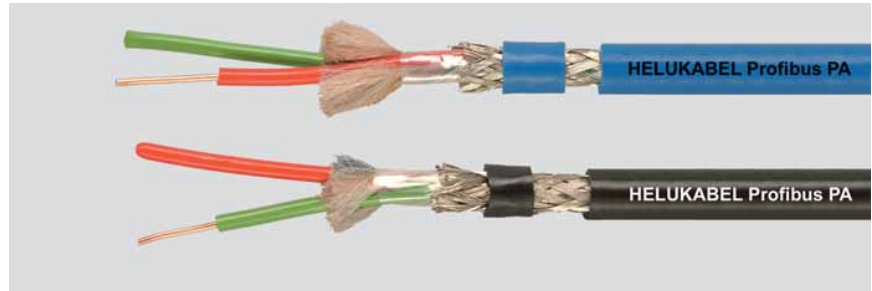
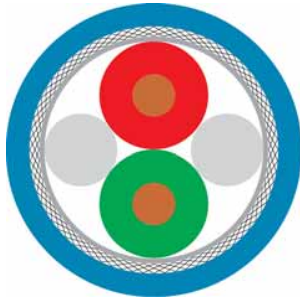
Dimensions and specifications may be changed without prior notice.

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

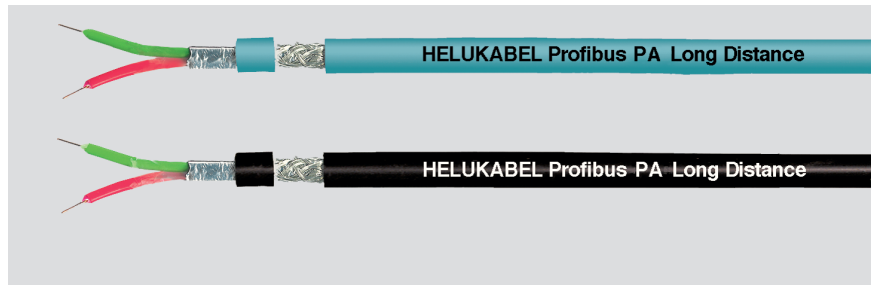
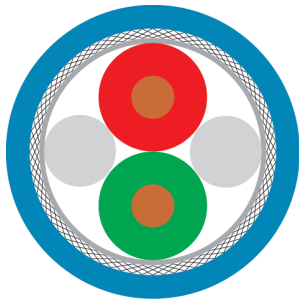
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus PA 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

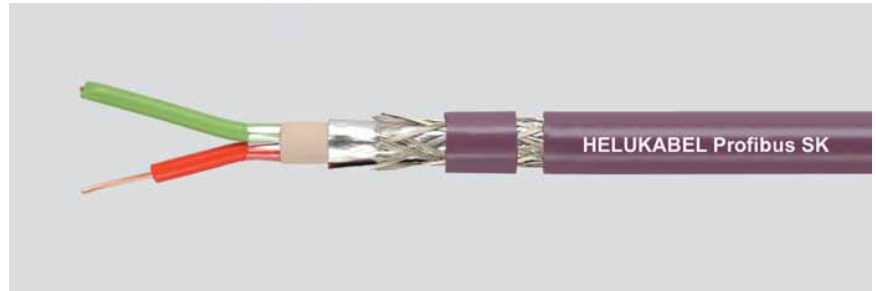
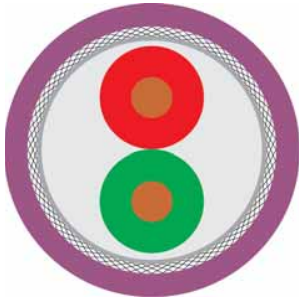
Dimensions and specifications may be changed without prior notice.

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

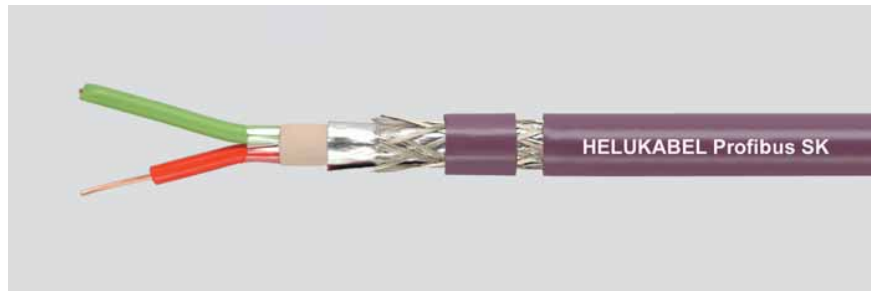
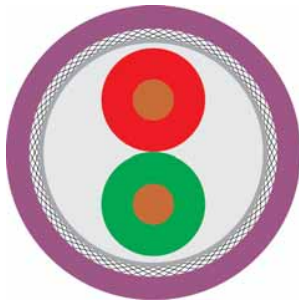
Dimensions and specifications may be changed without prior notice.

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

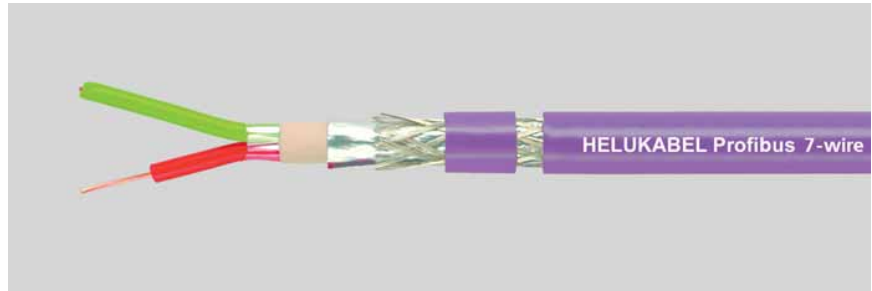
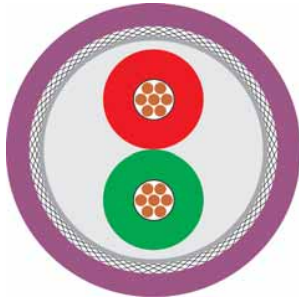
Dimensions and specifications may be changed without prior notice.

BUS Cables

Profibus SK 7-wire



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

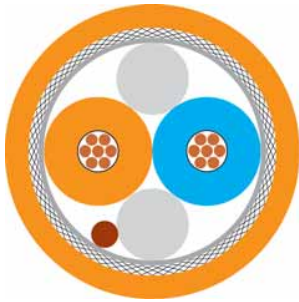
Dimensions and specifications may be changed without prior notice.

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

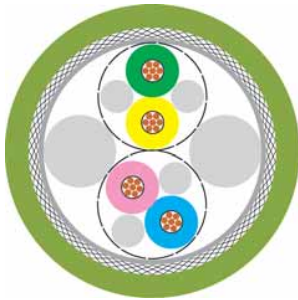
Dimensions and specifications may be changed without prior notice.

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 ² (Foam-Skin PO/rd/gn) |
| DeviceNet™: | 2 x 2 x AWG 22 mm ² (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 ² (PO/rd, bl, bu, bn) |
| Protective earth core: | 1,0 mm ² (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 ² (Foam-Skin PO/rd/gn) |
| DeviceNet™: | 4 x 2 x 0,34 mm ² (Foam-Skin PE/ye, or, wh, bu-ye, or, wh, bu) |
| Power cores 1: | 2 x 1,0 mm ² (PO/rd, bl) |
| Power cores 2: | 2 x 1,5 mm ² (PO/bu, bn) |
| Protective earth core: | 1,5 mm ² (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.

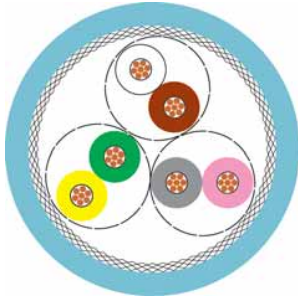
804115, Multibus II, 15 cores

BUS Cables

I-BUS fixed installed



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 mm²

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 mm² + 3x1.0 mm²

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

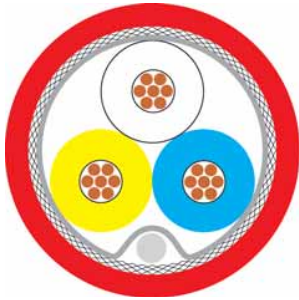
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BUS Cables

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 mm²

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: 110 Ohm ± 15 Ohm
Conductor resistance, max.: 37,8 Ohm/km
Insulation resistance, min.: 10 GOhm x km
Loop resistance: 75,6 Ohm/km max.
Mutual capacitance: 60 nF/km nom.
Test voltage: 2 kV
Attenuation: 1 MHz < 16,0 dB/100m
5 MHz < 35,0 dB/100m

Technical data

Weight: app. 77 kg/km
bending radius, repeated: 120 mm
Operating temperature range min.: -40°C
Operating temperature range max.: +75°C
Caloric load, approx. value: 1,10 MJ/m
Copper weight: 40,00 kg/km

Norms

Applicable standards: CC-Link Specification 1.10
Flame-retardant acc. IEC 60332-2-1
UL Style: CM 75°C or PLTC
CSA standard: 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

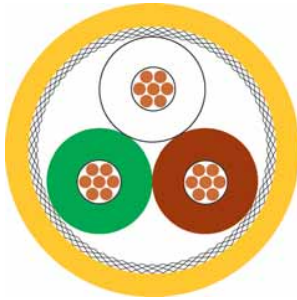
Dimensions and specifications may be changed without prior notice.

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 mm² (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 mm² (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

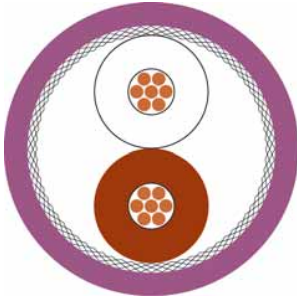
Dimensions and specifications may be changed without prior notice.

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 mm² (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 mm² (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

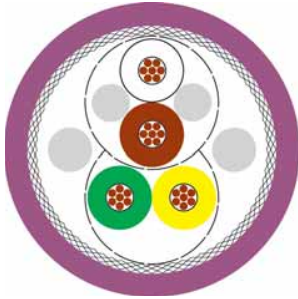
Dimensions and specifications may be changed without prior notice.

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 mm² (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

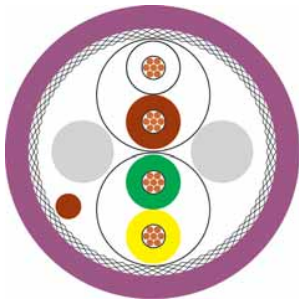
Dimensions and specifications may be changed without prior notice.

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 mm² (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

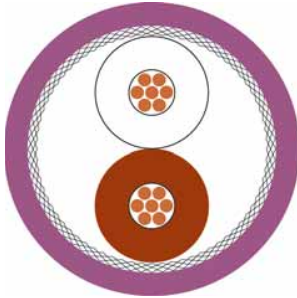
Dimensions and specifications may be changed without prior notice.

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 mm² (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 mm² (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

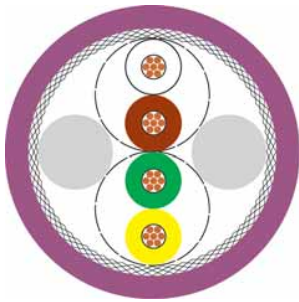
Dimensions and specifications may be changed without prior notice.

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 mm² (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

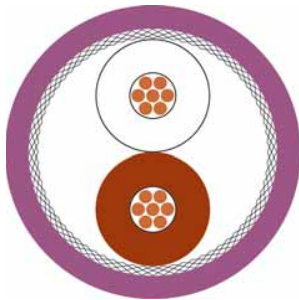
Dimensions and specifications may be changed without prior notice.

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 mm² (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 mm² (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

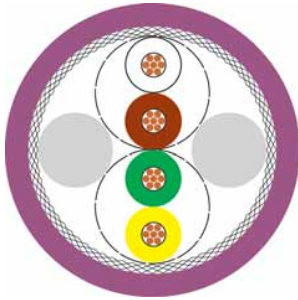
Dimensions and specifications may be changed without prior notice.

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 mm² (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

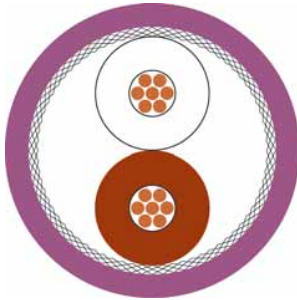
Dimensions and specifications may be changed without prior notice.

BUS Cables

CAN Bus 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 mm² (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 mm² (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

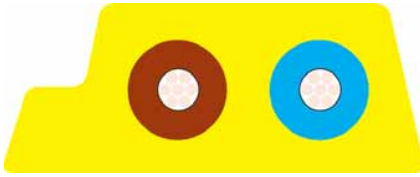
Dimensions and specifications may be changed without prior notice.

BUS Cables

A-BUS 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 mm²

Copper, tinned
PO
bu, bn
-
-
-
PUR
Yellow similar to RAL 1023

Actuator Sensor Interface 2x1.5 mm²

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 mm²

Copper, tinned
TPE
bu, bn
-
-
-
TPE
Yellow

Mobile use 2x1.5 mm²

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

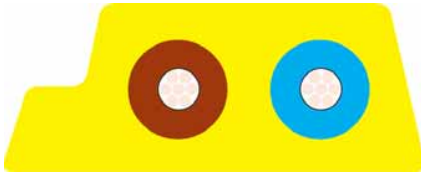
Dimensions and specifications may be changed without prior notice.

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 mm²

Copper, tinned
TPE
bu, bn
-
-
TPE
Yellow

Actuator Sensor Interface 2x1.5 mm²

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

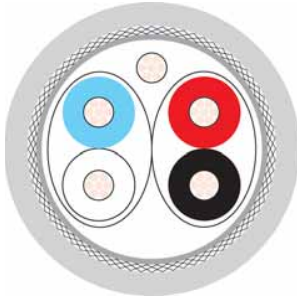
Dimensions and specifications may be changed without prior notice.

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

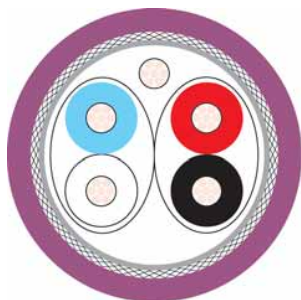
Dimensions and specifications may be changed without prior notice.

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.





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9012

21

500.07

PM

PM

PM

PM



Multipolari movimentazione

| | |
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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

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 300/500 V UL (AWM) AC 1000 V |
| Test voltage core/core | 4000 V |
| Breakdown voltage | 8000 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 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 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

| | |
|-------------------------------|---|
| Temperature range | flexible -5°C to +80°C fixed -30°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 300/500 V UL (AWM) AC 600 V |
| Test voltage core/core | 3000 V |
| Minimum bending radius | 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -5°C to +80°C fixed -30°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 300/500 V UL (AWM) AC 600 V |
| Test voltage core/core | 3000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| Minimum bending radius | 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 1000 V |
| Test voltage core/core | 3000 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: 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 1000 V |
| Test voltage core/core | 3000 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 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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



HELUKABEL MULTIFLEX 600 P/N 63136 14AWG 4C (UL) TC-ER 90°C DRY 75°C WET 600 V SUN RES DIR BUR OIL RES I/II E330430 OR MTW "HIGH FLEXIBLE" OR WTTC 1000 V OR c(UL)CIC TC FT4 LL257839 CSA AWM I/II 90°C 600 V FT4 CE ROHS

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 80x10⁶ 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 ² | 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 ² | 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. (RN10)

MULTIFLEX 600-C

highly flexible, oil resistant, screened, EMC-preferred type,
open installation TC-ER, PLTC-ER, NFPA 79



HELUKABEL MULTIFLEX 600-C P/N 62584 12AWG 4C (UL) TC-ER 90°C DRY 75°C WET 600 V SUN RES DIR BUR OIL RES I/II E330430 OR MTW "HIGH FLEXIBLE" OR WTTC 1000 V OR c(UL)CIC TC FT4 LL257839 CSA AWM I/II 90°C 600 V FT4 CE ROHS

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 80x10⁶ 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, 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-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 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. 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 ² | 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 ² | 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 |

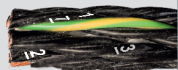
Dimensions and specifications may be changed without prior notice. (RN01)

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./sec²
- **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 ² | 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 ² | 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



HELUKABEL® MULTIFLEX 1000-C-PVC UL/CSA Style 2570 CE

HELUKABEL® MULTIFLEX 1000-C-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./sec²
- **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:**
Miscela 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:**
Miscela 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 ² | 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 ² | 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.

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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 300/500 V UL (AWM) AC 600 V |
| Test voltage core/core | 3000 V |
| Minimum bending radius | 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | VDE AC U ₀ /U 300/500 V UL (AWM) AC 600 V |
| Test voltage core/core | 3000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| Minimum bending radius | 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 |



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

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 600 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: 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|--|
| Temperature range | flexible -5°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 600 V |
| Test voltage core/core | 4000 V |
| Breakdown voltage | 8000 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 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 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 mm² 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|---|---|
| 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 |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/ km |
| 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: 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 mm² 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 (mm²) 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 ² | 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 ² | 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

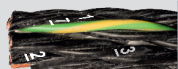
| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. | Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|----------|--|--------------|---------------------|------------------|-----------------------|
| 21646 | 12 G 0.75 | 19 | 13.9 | 140.0 | 308.0 | 21673 | 25 G 1.5 | 16 | 24.1 | 584.0 | 927.0 |
| 21647 | 18 G 0.75 | 19 | 15.9 | 220.0 | 420.0 | 21674 | 30 G 1.5 | 16 | 24.4 | 607.0 | 1025.0 |
| 21648 | 20 G 0.75 | 19 | 16.8 | 249.0 | 450.0 | 21675 | 36 G 1.5 | 16 | 26.6 | 702.0 | 1210.0 |
| 21649 | 25 G 0.75 | 19 | 19.6 | 313.0 | 579.0 | 21676 | 42 G 1.5 | 16 | 28.7 | 829.0 | 1441.0 |
| 21650 | 30 G 0.75 | 19 | 19.8 | 470.0 | 630.0 | 21677 | 50 G 1.5 | 16 | 31.3 | 1025.0 | 1709.0 |
| 21651 | 36 G 0.75 | 19 | 21.5 | 500.0 | 745.0 | 21678 | 61 G 1.5 | 16 | 34.3 | 1190.0 | 2025.0 |
| 21652 | 2 x 1 | 18 | 8.8 | 50.0 | 120.0 | 21679 | 2 x 2.5 | 14 | 10.5 | 104.0 | 198.0 |
| 21653 | 3 G 1 | 18 | 9.2 | 60.0 | 135.0 | 21680 | 3 G 2.5 | 14 | 11.1 | 140.0 | 284.0 |
| 21654 | 4 G 1 | 18 | 9.8 | 73.0 | 173.0 | 21681 | 4 G 2.5 | 14 | 12.0 | 164.0 | 378.0 |
| 21655 | 5 G 1 | 18 | 10.5 | 81.0 | 187.0 | 21682 | 5 G 2.5 | 14 | 12.9 | 190.0 | 423.0 |
| 21656 | 7 G 1 | 18 | 12.1 | 114.0 | 240.0 | 21683 | 7 G 2.5 | 14 | 15.6 | 236.0 | 486.0 |
| 21657 | 12 G 1 | 18 | 14.7 | 186.0 | 360.0 | 21684 | 12 G 2.5 | 14 | 18.6 | 390.0 | 756.0 |
| 21658 | 18 G 1 | 18 | 17.1 | 254.0 | 498.0 | 21685 | 18 G 2.5 | 14 | 22.3 | 607.0 | 1127.0 |
| 21659 | 20 G 1 | 18 | 18.0 | 322.0 | 568.0 | 21686 | 20 G 2.5 | 14 | 23.7 | 661.0 | 1210.0 |
| 21660 | 25 G 1 | 18 | 20.9 | 377.0 | 670.0 | 21687 | 25 G 2.5 | 14 | 27.4 | 796.0 | 1530.0 |
| 21661 | 30 G 1 | 18 | 21.2 | 429.0 | 774.0 | 21688 | 4 G 4 | 12 | 13.9 | 222.0 | 448.0 |
| 21662 | 36 G 1 | 18 | 22.8 | 516.0 | 895.0 | 21689 | 5 G 4 | 12 | 15.2 | 328.0 | 533.0 |
| 21663 | 41 G 1 | 18 | 24.6 | 610.0 | 1032.0 | 21690 | 7 G 4 | 12 | 18.1 | 360.0 | 678.0 |
| 21664 | 50 G 1 | 18 | 27.1 | 690.0 | 1160.0 | 21691 | 4 G 6 | 10 | 15.6 | 305.0 | 636.0 |
| 21665 | 65 G 1 | 18 | 30.7 | 852.0 | 1660.0 | 21692 | 5 G 6 | 10 | 17.3 | 441.0 | 772.0 |
| 21666 | 2 x 1.5 | 16 | 9.7 | 64.0 | 145.0 | 21693 | 7 G 6 | 10 | 20.9 | 505.0 | 1028.0 |
| 21667 | 3 G 1.5 | 16 | 10.1 | 84.0 | 168.0 | 21694 | 4 G 10 | 8 | 20.0 | 485.0 | 1052.0 |
| 21668 | 4 G 1.5 | 16 | 11.0 | 99.0 | 217.0 | 21695 | 5 G 10 | 8 | 22.3 | 610.0 | 1096.0 |
| 21669 | 5 G 1.5 | 16 | 11.8 | 129.0 | 235.0 | 21696 | 7 G 10 | 8 | 27.1 | 820.0 | 1530.0 |
| 21670 | 7 G 1.5 | 16 | 14.0 | 148.0 | 325.0 | 21697 | 4 G 16 | 6 | 23.1 | 840.0 | 1386.0 |
| 21671 | 12 G 1.5 | 16 | 16.6 | 279.0 | 481.0 | 21698 | 5 G 16 | 6 | 25.9 | 1050.0 | 1759.0 |
| 21672 | 18 G 1.5 | 16 | 19.7 | 393.0 | 675.0 | 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./sec²
- **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 ² | 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 ² | 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./sec²
- **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 ² | 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 |

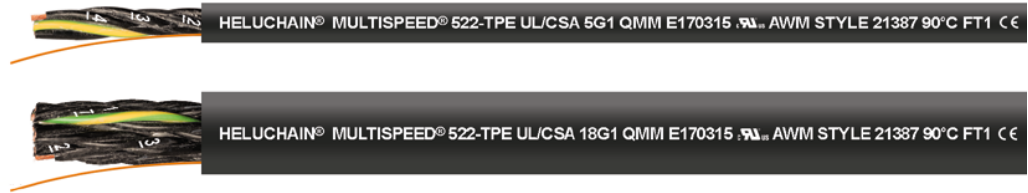
| Codice | Numero di fili x Sezione nominale mm ² | N. AWG | Ø esterno ca. mm | Cu factor per km | Peso ca. kg / km |
|----------|---|--------|------------------------|------------------------|------------------------|
| 18000756 | 7 G 1 | 18 | 10,2 | 110,0 | 187,0 |
| 18000757 | 12 G 1 | 18 | 12,0 | 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.

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

| | |
|-------------------------------|---|
| Temperature range | flexible -40°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | AC U ₀ /U 600/1000 V UL (AWM) AC 1000 V 3000 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: 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 (mm²) 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 ² | 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 ² | 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

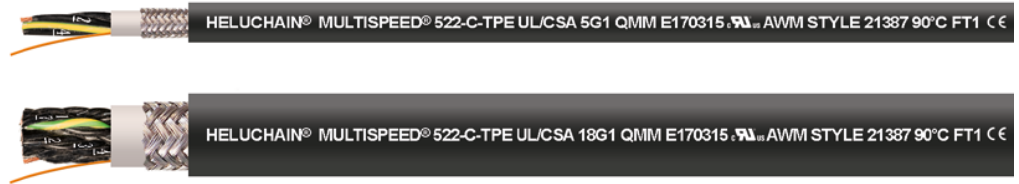


| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|
| 11001856 | 20 G 1 | 18 | 15.2 | 192.0 | 339.0 |
| 11001857 | 25 G 1 | 18 | 17.0 | 240.0 | 419.0 |
| 11001858 | 36 G 1 | 18 | 21.4 | 345.6 | 625.0 |
| 11001859 | 42 G 1 | 18 | 23.5 | 403.2 | 742.0 |
| 11001860 | 2 x 1.5 | 16 | 6.9 | 28.8 | 67.0 |
| 11001861 | 3 G 1.5 | 16 | 7.3 | 43.2 | 82.0 |
| 11001862 | 4 G 1.5 | 16 | 7.9 | 57.6 | 101.0 |
| 11001863 | 5 G 1.5 | 16 | 8.6 | 72.0 | 122.0 |
| 11001864 | 7 G 1.5 | 16 | 11.7 | 100.8 | 191.0 |
| 11001865 | 12 G 1.5 | 16 | 13.7 | 172.8 | 291.0 |
| 11001866 | 16 G 1.5 | 16 | 15.6 | 230.4 | 386.0 |
| 11001867 | 18 G 1.5 | 16 | 17.0 | 259.2 | 422.0 |
| 11001868 | 20 G 1.5 | 16 | 17.6 | 288.0 | 472.0 |
| 11001869 | 25 G 1.5 | 16 | 19.7 | 360.0 | 589.0 |
| 11001870 | 36 G 1.5 | 16 | 24.7 | 518.4 | 878.0 |
| 11001871 | 42 G 1.5 | 16 | 27.1 | 604.8 | 1025.0 |
| 11001872 | 2 x 2.5 | 14 | 7.9 | 48.0 | 96.0 |
| 11001873 | 3 G 2.5 | 14 | 8.4 | 72.0 | 119.0 |
| 11001874 | 4 G 2.5 | 14 | 9.1 | 96.0 | 148.0 |
| 11001875 | 5 G 2.5 | 14 | 10.0 | 120.0 | 180.0 |
| 11001876 | 7 G 2.5 | 14 | 13.8 | 168.0 | 297.0 |

| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|
| 11001877 | 12 G 2.5 | 14 | 16.7 | 288.0 | 442.0 |
| 11001878 | 16 G 2.5 | 14 | 18.9 | 384.0 | 584.0 |
| 11001879 | 18 G 2.5 | 14 | 20.6 | 432.0 | 655.0 |
| 11001880 | 20 G 2.5 | 14 | 21.2 | 480.0 | 726.0 |
| 11001881 | 25 G 2.5 | 14 | 23.8 | 600.0 | 901.0 |
| 11001882 | 3 G 4 | 12 | 9.7 | 115.2 | 174.0 |
| 11001883 | 4 G 4 | 12 | 10.6 | 153.6 | 219.0 |
| 11001884 | 5 G 4 | 12 | 11.6 | 192.0 | 266.0 |
| 11001885 | 3 G 6 | 10 | 11.0 | 172.8 | 240.0 |
| 11001886 | 4 G 6 | 10 | 12.1 | 230.4 | 306.0 |
| 11001887 | 5 G 6 | 10 | 13.3 | 288.0 | 375.0 |
| 11001888 | 4 G 10 | 8 | 16.7 | 384.0 | 538.0 |
| 11001889 | 5 G 10 | 8 | 18.6 | 480.0 | 666.0 |
| 11001890 | 4 G 16 | 6 | 19.8 | 614.4 | 811.0 |
| 11001891 | 5 G 16 | 6 | 22.1 | 768.0 | 1008.0 |
| 11001892 | 4 G 25 | 4 | 25.1 | 960.0 | 1277.0 |
| 11001893 | 5 G 25 | 4 | 28.2 | 1200.0 | 1596.0 |
| 11001894 | 4 G 35 | 2 | 28.5 | 1344.0 | 1792.0 |
| 11001895 | 5 G 35 | 2 | 31.9 | 1680.0 | 2184.0 |
| 11001896 | 4 G 50 | 1 | 33.3 | 1920.0 | 2532.0 |
| 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

| | |
|---------------------------------|---|
| Temperature range | flexible -40°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | AC U ₀ /U 600/1000 V UL (AWM) AC 1000 V |
| Test voltage core/core | 3000 V |
| Test voltage core/screen | 3000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| 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: 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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® 310-PVC 90 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 (mm²) 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 ² | 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 ² | 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

| | |
|---------------------------------|--|
| 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 |
| Test voltage core/screen | 1000 V |
| Breakdown voltage | 3000 V |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/ km |
| Minimum bending radius | 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 ² | 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 (mm²) 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 ² | 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® 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 300 V |
| Test voltage core/core | 1500 V |
| Mutual capacitance core/core | at 800 Hz, approx. 60 pF/m |
| Minimum bending radius | flexible 5x Outer-Ø fixed 3x Outer-Ø |

CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:
0.14 mm²: approx. 18 x 0.1 mm
0.25 mm²: approx. 32 x 0.1 mm
0.34 mm²: 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 (mm²) 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 ² | 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 ² | 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +80°C fixed -40°C to +80°C |
| Nominal voltage | UL (AWM) AC 300 V |
| Test voltage core/core | 1500 V |
| Test voltage core/screen | 1000 V |
| Mutual capacitance core/core | at 800 Hz, approx. 60 pF/m |
| Coupling resistance | at 30 MHz, approx. 250 Ohm/km |
| Minimum bending radius | flexible 7.5x Outer-Ø fixed 4x Outer-Ø |

CABLE STRUCTURE

- Copper wire bare, extra finely stranded
- Wire structure:
 - 0.14 mm²: approx. 18 x 0.1 mm
 - 0.25 mm²: approx. 32 x 0.1 mm
 - 0.34 mm²: 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 (mm²) 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 ² | 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 ² | 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

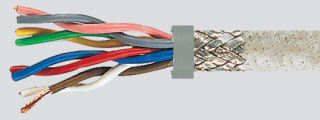


| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|
| 49823 | 7 x 0.34 | 22 | 7.1 | 52.7 | 110.0 |
| 49824 | 10 x 0.34 | 22 | 8.1 | 67.4 | 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 ² | 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



HELUKABEL SUPER-PAAR-TRONIC 340-C-PUR 8x2x0,5 QMM E 170315 AWM STYLE
20233 20 AWG 16C VW-1 AWM III A/B 80°C 300V FT1/49854 001070044 CE

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 mm²: 7,5x outer Ø
0,34 - 1 mm²: 10x outer Ø
fixed installation
0,14 - 0,25 mm²: 4x outer Ø
0,34 - 1 mm²: 5x outer Ø

Cable structure

- Bare copper conductor, extra fine wire from 0,5 mm² acc. to DIN VDE 0295 cl.6 / IEC 60228 cl.6
- Conductor construction:
0,14 mm² approx. 18x0,1 mm
0,25 mm² approx. 32x0,1 mm
0,34 mm² 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 (mm²). 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 ² | 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 ² | 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 |

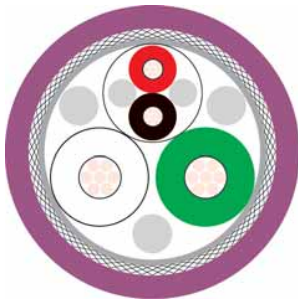
Dimensions and specifications may be changed without prior notice. (RN05)

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.

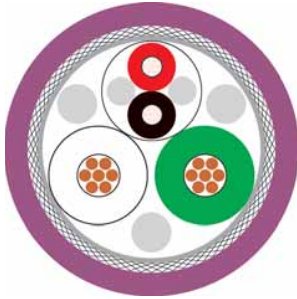
Part no.

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
AWM Style 20236 AWM I/II A/B 80°C 30V FT1
CSA FT1

UL Style:
CSA standard:

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

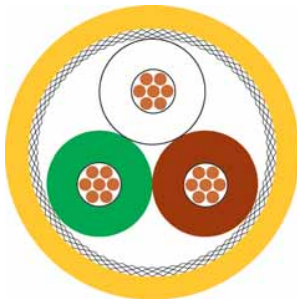
Dimensions and specifications may be changed without prior notice.

BUS Cables

SafetyBUS fixed installed + high flexible

HELUKABEL®

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 mm² (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 mm² (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

| | |
|-------------------------------------|--|
| Temperature range | flexible -10°C to +70°C fixed installation -20°C to +70°C UL (CMG) to +75°C UL (AWM) to +60°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 60.0 Ohm/km |
| Loop resistance at 20°C | max. 120.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 52 pF/m |
| Rel. Velocity of Propagation | approx. 66% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.85 MJ/m |
| Minimum bending radius | 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 retardent 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +75°C fixed installation -40°C to +80°C UL (CMX) to +75°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2500 V |
| Conductor resistance at 20°C | max. 58.6 Ohm/km |
| Loop resistance at 20°C | max. 117.1 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 66% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.85 MJ/m |
| Minimum bending radius | 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 (mm²) 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 |

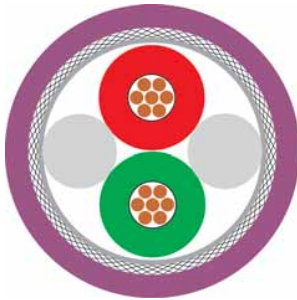
| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , approx. | Conductor Ø mm, approx. | Core Ø mm, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|---------------------|--------------------------------------|-------------------------|--------------------|---------------------|------------------|-----------------------|
| 800655 | 2 x 2 x AWG 22 / 7 | 0.35 | 0.75 | 1.5 | 6.5 | 32.0 | 61.0 |

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

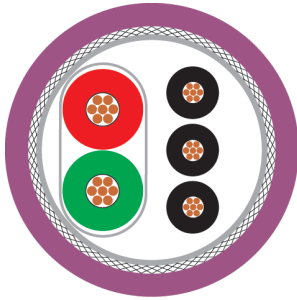
Dimensions and specifications may be changed without prior notice.

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 mm² (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 mm² (stranded)

Copper, bare (AWG 24/19)
Copper, bare (AWG 18/85)
Foam-skin-PE
PE
rd, gn
bk, 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 0,75mm² power conductors, while the type Ecofast 4 has 1,5mm² power conductors and greater current-carrying capacity.

Part no.

82913, Profibus L2

800044, Profibus L2

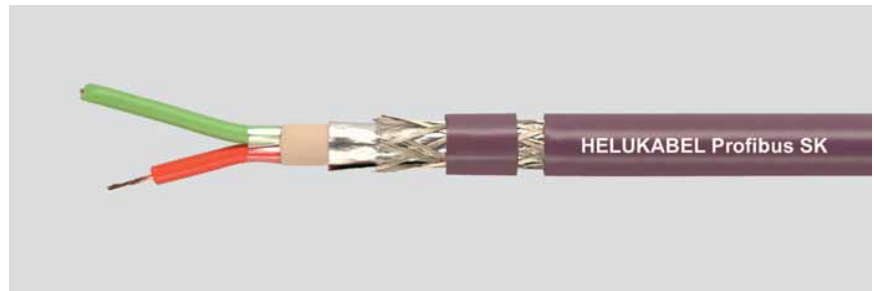
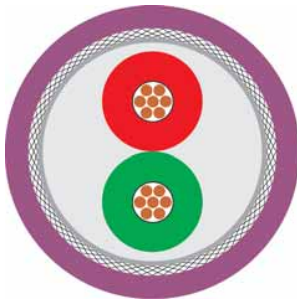
Dimensions and specifications may be changed without prior notice.

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.

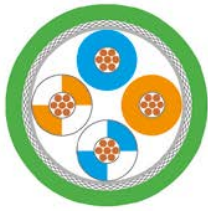
801659, Profibus SK

81906, Profibus SK

Dimensions and specifications may be changed without prior notice.

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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +60°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 500 V |
| Conductor resistance at 20°C | max. 140.0 Ohm/km |
| Loop resistance at 20°C | max. 280.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.37 MJ/m |
| Minimum bending radius | 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 ² , 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 (mm²) 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +60°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 500 V |
| Conductor resistance at 20°C | max. 125.0 Ohm/km |
| Loop resistance at 20°C | max. 250.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.64 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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® 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +60°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 500 V |
| Conductor resistance at 20°C | max. 125.0 Ohm/km |
| Loop resistance at 20°C | max. 250.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.64 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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.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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +70°C fixed installation -40°C to +80°C |
| Peak operating voltage | UL (AWM) to +80°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1000 V |
| Conductor resistance at 20°C | max. 140.0 Ohm/km |
| Loop resistance at 20°C | max. 280.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.65 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -25°C to +80°C fixed installation -40°C to +80°C UL (CMG) to +75°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 1500 V |
| Conductor resistance at 20°C | max. 90.0 Ohm/km |
| Loop resistance at 20°C | max. 180.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.69 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|--|
| Temperature range | flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 700 V |
| Conductor resistance at 20°C | max. 140.0 Ohm/km |
| Loop resistance at 20°C | max. 280.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 250 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.35 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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.6A SF/FTP PVC CHAIN

highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6A 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

| | |
|-------------------------------------|--|
| Temperature range | flexible -10°C to +70°C fixed installation -40°C to +80°C UL (CM) to +75°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) 3000 V |
| Test voltage core/core | |
| Conductor resistance at 20°C | max. 87.6 Ohm/km |
| Loop resistance at 20°C | max. 175.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 75% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.69 MJ/m |
| Minimum bending radius | 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.6A 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 6A 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 (mm²) 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 ² , 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_A SF/FTP PUR CHAIN

halogen-free, highly flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6_A 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

| | |
|-------------------------------------|--|
| Temperature range | flexible -20°C to +60°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 3000 V |
| Conductor resistance at 20°C | max. 87.6 Ohm/km |
| Loop resistance at 20°C | max. 175.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 75% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.69 MJ/m |
| Minimum bending radius | 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_A 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_A 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 (mm²) 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 ² , 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_A SF/FTP SLIM PUR CHAIN

halogen-free, flame-retardant



TECHNICAL DATA

Industrial Ethernet cable / Cat. 6_A 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

| | |
|-------------------------------------|--|
| Temperature range | flexible -20°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 150.0 Ohm/km |
| Loop resistance at 20°C | max. 300.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 76% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 500 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 1.35 MJ/m |
| Minimum bending radius | 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_A 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|--|
| Temperature range | flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 750 V |
| Conductor resistance at 20°C | max. 87.6 Ohm/km |
| Loop resistance at 20°C | max. 175.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 45 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.80 MJ/m |
| Minimum bending radius | 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 (mm²) 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 |

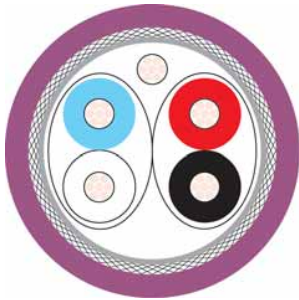
| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , approx. | Conductor Ø mm, approx. | Core Ø mm, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|---------------------|--------------------------------------|-------------------------|--------------------|---------------------|------------------|-----------------------|
| 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

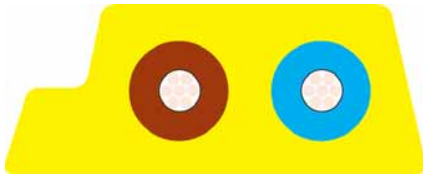
Dimensions and specifications may be changed without prior notice.

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 mm²

Copper, tinned
PO
bu, bn
-
-
-
PUR
Yellow similar to RAL 1023

Drag chain applications 2x2.5 mm²

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.

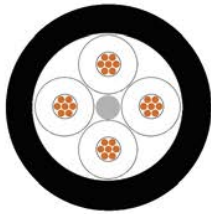
These types are certified for the American market (UL 1581, FT2) through the use of special materials.

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

| | |
|-------------------------------------|--|
| Temperature range | flexible -20°C to +80°C fixed -40°C to +80°C |
| Peak operating voltage | 300 V (not for high power current installation purposes) |
| Test voltage | 2000 V |
| Conductor resistance at 20°C | max. 13.3 Ohm/km |
| Loop resistance at 20°C | max. 26.6 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Caloric load | approx. 1.45 MJ/m |
| Minimum bending radius | 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 (mm²) constructed, AWG numbers are approximated, and are for reference only

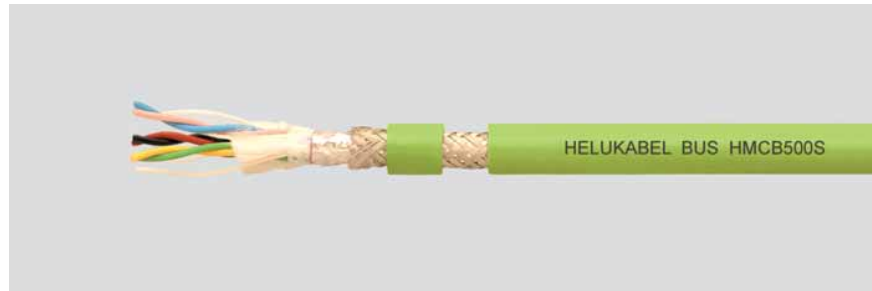
| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Conductor Ø mm, approx. | Core Ø mm, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|-------------------------|--------------------|---------------------|------------------|-----------------------|
| 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**[®]

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
AWM Style 20236 AWM I/II A/B 80°C 30V FT1
CSA FT1

UL Style:

CSA standard:

Application

HELUKABEL[®] 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 ± 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™

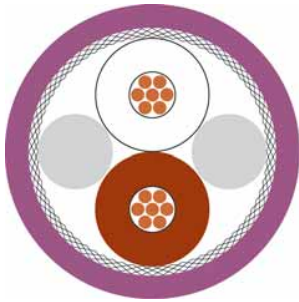
Dimensions and specifications may be changed without prior notice.

BUS Cables

CAN Bus drag chain, 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 mm² (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 mm² (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

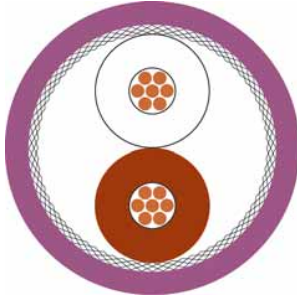
Dimensions and specifications may be changed without prior notice.

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 mm² (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 mm² (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

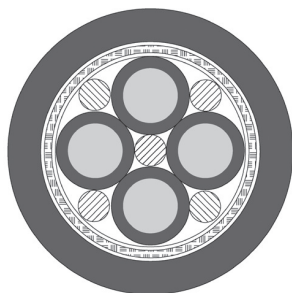
Part no.

805685, CAN BUS, highly flexible

805696, CAN BUS, highly flexible

Dimensions and specifications may be changed without prior notice.

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 U₀/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.

C C= 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 ² | 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 ² | 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 ² | 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 ² | 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 |

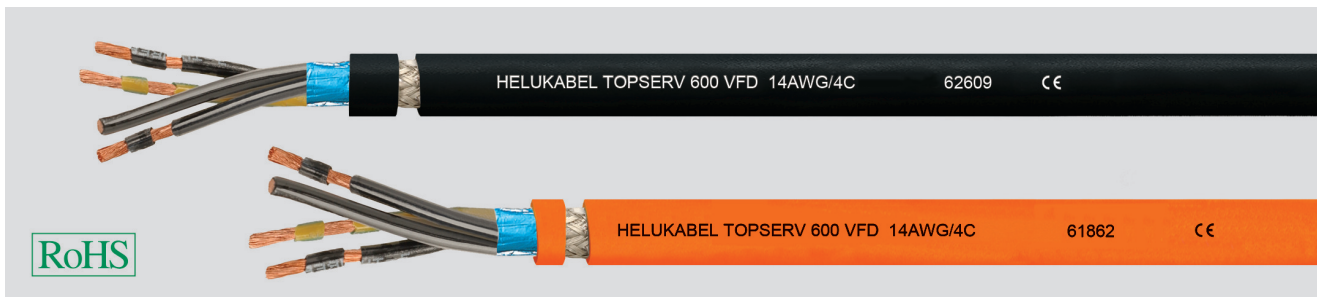
TOPSERV® 121 PUR, acc.to Bosch Rexroth

| Part no. | No.cores x cross-sec. mm ² | 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 ² | 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 ² | 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 ² | 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 ² | 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 U₀/U 600/1000 V
control cores U₀/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 ² | 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 |

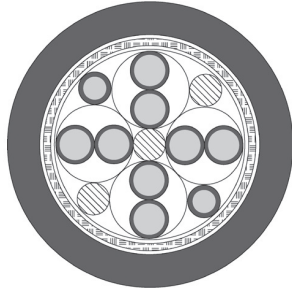
TOPSERV® Hybrid PUR, high flexible for drag chain

| Part no. | No. cores x cross-sec. mm ² | 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.

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 ² | 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

- 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. mm ² | 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. mm ² | 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.



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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | VDE AC U ₀ /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
- 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 °/s²
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/s²
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 (mm²) 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 ² | 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 ² | 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 |

HELUPOWER® ROBOFLEX® PUR UL/CSA



Sheath color: black (RAL 9005)

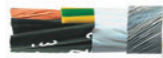
| Part no. | No. cores x cross-sec. mm ² | AWG, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|--|--------------|---------------------|------------------|-----------------------|
| 11022417 | 3 G 4 | 12 | 10.5 | 115.2 | 184.0 |
| 11022418 | 4 G 4 | 12 | 11.5 | 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 ² | 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 |



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 ₀ /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 °/s²
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/s²
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 (mm²) 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 ² | 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 ² | 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 ₀ /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 mm²: extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Wire structure: 0.25 mm²: 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 mm²: acc. to DIN 47100 (paired stranding)
0.5 - 1.5 mm²: 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 °/s²
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/s²
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 ² | 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 ₀ /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 °/s²
 - 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/s²
 - 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 ₀ /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 °/s²
 - 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/s²
 - 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|--|
| Temperature range | flexible -30°C to +105°C fixed -40°C to +105°C UL (AWM) to +80°C |
| Nominal voltage | VDE AC U ₀ /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:
0.34 mm²: 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 °/s²
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/s²
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 (mm²) 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------|---|
| Temperature range | flexible -30°C to +90°C fixed -40°C to +90°C |
| Nominal voltage | VDE AC U ₀ /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:
0.25 mm²: approx. 32 x 0.1 mm
0.34 mm²: 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 °/s²
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/s²
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 (mm²) 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 ² | 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 ² | 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 ₀ /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 mm²: approx. 18 x 0.1 mm
 - 0.25 mm²: approx. 32 x 0.1 mm
 - 0.34 mm²: 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 °/s²
 - 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/s²
 - 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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 ₀ /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 mm²: extra finely stranded acc. to DIN VDE 0295 Class 6 / IEC 60228 Class 6
- Wire structure:
 - 0.14 mm²: approx. 18 x 0.1 mm
 - 0.25 mm²: approx. 32 x 0.1 mm
 - 0.34 mm²: 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 °/s²
 - 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/s²
 - 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 (mm²) 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 ² | 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 ² | 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 ² | 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 ² | 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +70°C fixed installation -40°C to +80°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 59.4 Ohm/km |
| Loop resistance at 20°C | max. 118.8 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 52 pF/m |
| Rel. Velocity of Propagation | approx. 74% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 5 Ohm |
| Caloric load | approx. 0.45 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +70°C fixed installation -40°C to +80°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 140.0 Ohm/km |
| Loop resistance at 20°C | max. 280.0 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 1.23 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|--|
| Temperature range | flexible -30°C to +70°C fixed installation -40°C to +80°C UL (CMX) to +75°C UL (AWM) to +80°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 750 V |
| Conductor resistance at 20°C | max. 87.6 Ohm/km |
| Loop resistance at 20°C | max. 175.2 Ohm/km |
| Insulation resistance | min. 5.0 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 45 pF/m |
| Rel. Velocity of Propagation | approx. 77% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm at 101 to 600 MHz, 100 Ohm ± 20 Ohm |
| Caloric load | approx. 0.80 MJ/m |
| Minimum bending radius | 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 (mm²) 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 ² , 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

| | |
|-------------------------------------|---|
| Temperature range | flexible -30°C to +90°C fixed installation -40°C to +90°C |
| Peak operating voltage | UL (AWM) to +90°C 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 60.0 Ohm/km |
| Loop resistance at 20°C | max. 120.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 50 pF/m |
| Rel. Velocity of Propagation | approx. 66% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 0.55 MJ/m |
| Minimum bending radius | flexible 10x Outer-Ø fixed installation 5x Outer-Ø |

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

- 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 (mm²) are approximated and are for reference only
- UL Voltage Rating: 1000 V

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 |

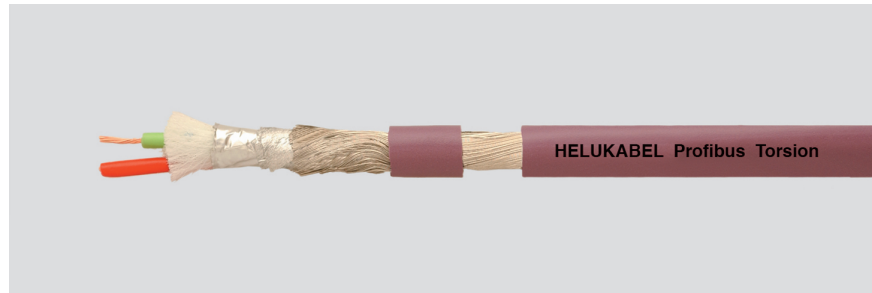
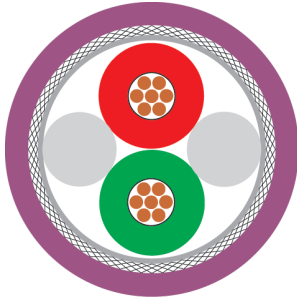
| Part no. | No. cores x AWG-No. | Cross-sec. mm ² , approx. | Conductor Ø mm, approx. | Core Ø mm, approx. | Outer Ø mm, approx. | Cu factor per km | Weight kg/km, approx. |
|----------|---------------------|--------------------------------------|-------------------------|--------------------|---------------------|------------------|-----------------------|
| 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®**

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.

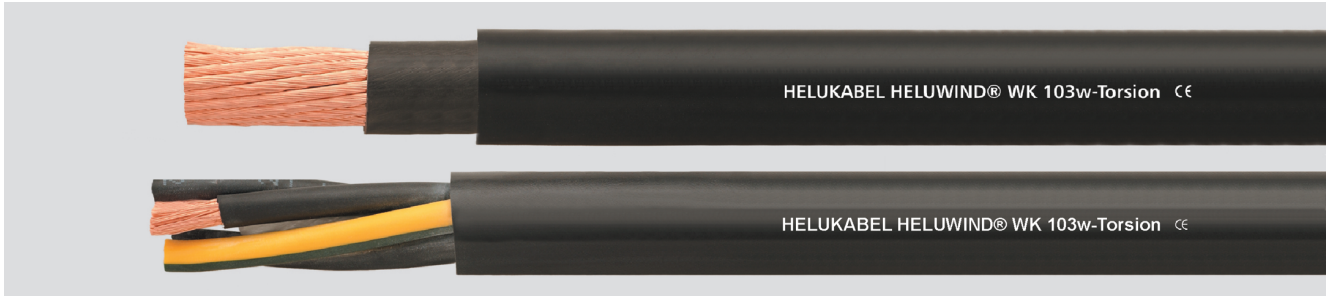
800109, Profibus L2

800649, Profibus L2

Dimensions and specifications may be changed without prior notice.

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 U₀/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 mm²)
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

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 ² | 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 ² | 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 |

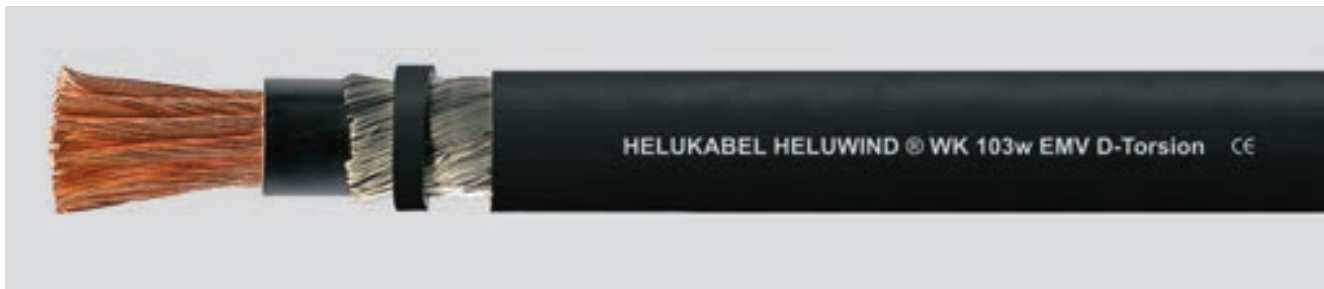
Core identification black

| Part no. | No. cores x cross-sec. mm ² | 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 U₀/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

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 ² | 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 ² | 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 ² | 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 U₀/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

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 ² | 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 ² | 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 ² | 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 U₀/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

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.

HELUWIND® 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 ² | 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 ² | 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 ² | 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 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 U₀/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

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



Core identification black with white numbers, 3 cores and more with GN-YE

| Part no. | No. cores x cross-sec. mm ² | 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 ² | 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 ² | 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 |

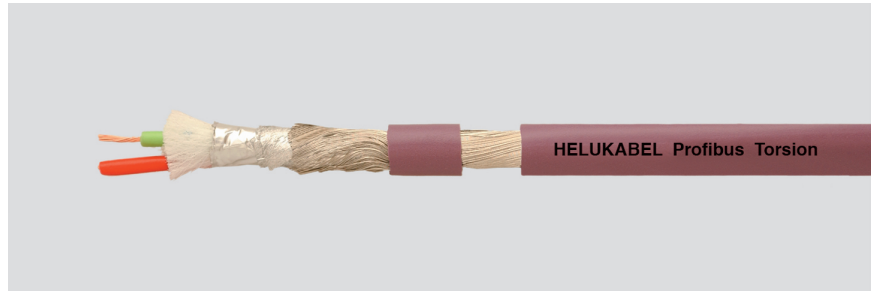
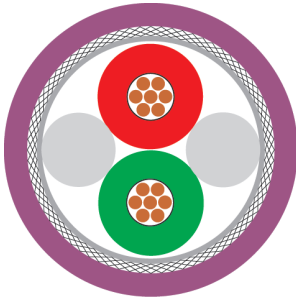
Dimensions and specifications may be changed without prior notice.

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

| | |
|-------------------------------------|--|
| Temperature range | flexible -10°C to +80°C fixed installation -10°C to +80°C UL (CMG) to +75°C UL (AWM) to +60°C |
| Peak operating voltage | 125 V (not for high power current installation purposes) |
| Test voltage core/core | 2000 V |
| Conductor resistance at 20°C | max. 60.0 Ohm/km |
| Loop resistance at 20°C | max. 120.0 Ohm/km |
| Insulation resistance | min. 0.5 GOhm x km |
| Mutual capacitance core/core | at 800 Hz, approx. 52 pF/m |
| Rel. Velocity of Propagation | approx. 67% |
| Characteristic impedance | at 1 to 100 MHz, 100 Ohm ± 15 Ohm |
| Caloric load | approx. 1.20 MJ/m |
| Minimum bending radius | 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 | 310 |
| Pressacavi metallici | 330 |
| Pressacavi metallici EMC | 338 |
| Pressacavi robust | 346 |
| Pressacavi zona pericolosa | 355 |
| Pressacavi montaggi in condizioni speciali | 361 |
| Guaine corrugate | 362 |
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| Guaine cablaggio termorestringenti | 382 |
| Fascette e sistemi di fissaggio | 384 |
| Terminali preisolati | 392 |
| Terminali non isolati | 393 |
| Gestione bobine e cavi | 401 |



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 | 93908 | 93923 | 93937 |
| M16 x 1.5 | 4.0 - 8.0 | 8.0 | 19 | 50 | 93909 | 93924 | 93938 |
| M16 x 1.5 | 5.0 - 10.0 | 8.0 | 19 | 50 | 907275 | 907276 | 907277 |
| M16 x 1.5 | 5.0 - 10.0 | 10.0 | 22 | 50 | 92667 | 92668 | 92669 |
| M20 x 1.5 | 6.0 - 12.0 | 10.0 | 24 | 50 | 93910 | 93925 | 93939 |
| M25 x 1.5 | 11.0 - 17.0 | 8.0 | 29 | 50 | 93911 | 93926 | 93940 |
| M32 x 1.5 | 15.0 - 21.0 | 10.0 | 36 | 25 | 93912 | 93927 | 93941 |
| M40 x 1.5 | 18.0 - 28.0 | 10.0 | 46 | 20 | 93913 | 93928 | 93942 |
| M50 x 1.5 | 30.0 - 38.0 | 18.0 | 60 | 10 | 93914 | 93929 | 93943 |
| M63 x 1.5 | 34.0 - 44.0 | 18.0 | 65 | 10 | 93915 | 93930 | 93944 |

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 | 903532 | 903542 | 903552 |
| M16 x 1.5 | 2.0 - 6.0 | 8.0 | 19 | 50 | 903533 | 903543 | 903553 |
| M20 x 1.5 | 5.0 - 9.0 | 10.0 | 24 | 50 | 903534 | 903544 | 903554 |
| M25 x 1.5 | 9.0 - 13.0 | 8.0 | 29 | 50 | 903535 | 903545 | 903555 |
| M32 x 1.5 | 11.0 - 15.0 | 10.0 | 36 | 25 | 903536 | 903546 | 903556 |
| M40 x 1.5 | 16.0 - 23.0 | 10.0 | 46 | 20 | 903537 | 903547 | 903557 |
| M50 x 1.5 | 25.0 - 31.0 | 18.0 | 60 | 10 | 903538 | 903548 | 903558 |
| M63 x 1.5 | 29.0 - 35.0 | 18.0 | 65 | 10 | 903539 | 903549 | 903559 |

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 | 99300 | 99310 | 99320 |
| PG 9 | 4.0 - 8.0 | 8.0 | 19 | 50 | 99301 | 99311 | 99321 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 99302 | 99312 | 99322 |
| PG 13.5 | 6.0 - 12.0 | 10.0 | 24 | 50 | 99303 | 99313 | 99323 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 50 | 99304 | 99314 | 99324 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 25 | 99305 | 99315 | 99325 |
| PG 29 | 18.0 - 25.0 | 11.0 | 42 | 20 | 99306 | 99316 | 99326 |
| PG 36 | 22.0 - 32.0 | 13.0 | 53 | 10 | 99307 | 99317 | 99327 |
| PG 42 | 30.0 - 38.0 | 13.0 | 60 | 10 | 99308 | 99318 | 99328 |
| PG 48 | 34.0 - 44.0 | 14.0 | 65 | 10 | 99309 | 99319 | 99329 |

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 | 92780 | 92790 | 92800 |
| NPT 1/2" | 6.0 - 12.0 | 15.0 | 24 | 50 | 92781 | 92791 | 92801 |
| NPT 1/2" | 10.0 - 14.0 | 15.0 | 27 | 50 | 92782 | 92792 | 92802 |
| NPT 3/4" | 13.0 - 18.0 | 15.0 | 33 | 25 | 92783 | 92793 | 92803 |
| NPT 1" | 18.0 - 25.0 | 18.0 | 42 | 20 | 92784 | 92794 | 92804 |



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, 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

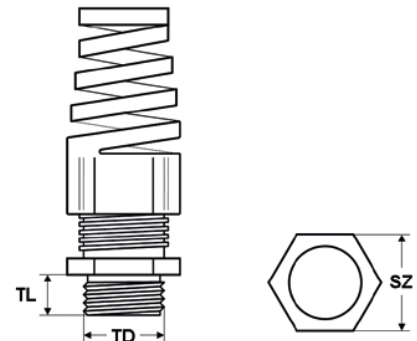
- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction

■ 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 | 94530 | 94540 | 94550 |
| M16 x 1.5 | 5.0 - 10.0 | 10.0 | 22 | 50 | 94531 | 94541 | 94551 |
| M20 x 1.5 | 6.0 - 12.0 | 10.0 | 24 | 50 | 94532 | 94542 | 94552 |
| M25 x 1.5 | 13.0 - 18.0 | 10.0 | 33 | 25 | 94533 | 94543 | 94553 |
| M32 x 1.5 | 18.0 - 25.0 | 15.0 | 42 | 20 | 94534 | 94544 | 94554 |
| M40 x 1.5 | 22.0 - 32.0 | 18.0 | 53 | 10 | 94535 | 94545 | 94555 |
| M50 x 1.5 | 30.0 - 38.0 | 18.0 | 60 | 10 | 94536 | 94546 | 94556 |
| M63 x 1.5 | 34.0 - 44.0 | 18.0 | 65 | 10 | 94537 | 94547 | 94557 |



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 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 | 93867 | 93856 | 93878 |
| M16 x 1.5 | 5.0 - 10.0 | 10.0 | 22 | 50 | 93868 | 93857 | 93879 |
| M20 x 1.5 | 6.0 - 12.0 | 10.0 | 24 | 50 | 93869 | 93858 | 93880 |
| M20 x 1.5 | 10.0 - 14.0 | 10.0 | 27 | 50 | 93870 | 93859 | 93881 |
| M25 x 1.5 | 13.0 - 18.0 | 10.0 | 33 | 25 | 93871 | 93860 | 93882 |

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 | 93861 | 93850 | 93872 |

| 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 | 93862 | 93851 | 93873 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 93863 | 93852 | 93874 |
| PG 13.5 | 6.0 - 12.0 | 10.0 | 24 | 50 | 93864 | 93853 | 93875 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 50 | 93865 | 93854 | 93876 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 25 | 93866 | 93855 | 93877 |

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 | 99804 | 99901 | 99905 |
| NPT 1/2" | 6.0 - 12.0 | 15.0 | 24 | 50 | 99805 | 99902 | 99906 |
| NPT 3/4" | 13.0 - 18.0 | 15.0 | 33 | 50 | 99806 | - | - |
| NPT 3/4" | 13.0 - 18.0 | 15.0 | 33 | 25 | - | 99903 | 99907 |



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 | 97558 | 97550 |
| M16 x 1.5 | 4.0 - 8.0 | 8.0 | 19 | 50 | 96967 | 97551 |
| M16 x 1.5 | 5.0 - 10.0 | 8.0 | 22 | 50 | 97956 | 97960 |
| M20 x 1.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 96968 | 97552 |
| M20 x 1.5 | 10.0 - 14.0 | 9.0 | 27 | 50 | 97957 | 97961 |
| M25 x 1.5 | 13.0 - 18.0 | 11.0 | 33 | 50 | 96969 | 97553 |
| M32 x 1.5 | 18.0 - 25.0 | 11.0 | 42 | 25 | 96970 | 97554 |
| M40 x 1.5 | 22.0 - 32.0 | 13.0 | 53 | 10 | 96971 | 97555 |
| M50 x 1.5 | 32.0 - 38.0 | 13.0 | 60 | 5 | 96972 | 97556 |
| M63 x 1.5 | 37.0 - 44.0 | 14.0 | 65 / 68 | 5 | 96973 | 97557 |

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 | 97873 | 98205 |
| M16 x 1.5 | 2.0 - 6.0 | 8.0 | 19 | 50 | 96974 | 97977 |
| M20 x 1.5 | 5.0 - 9.0 | 9.0 | 24 | 50 | 96975 | 97979 |
| M25 x 1.5 | 9.0 - 16.0 | 11.0 | 33 | 50 | 96976 | 97981 |
| M32 x 1.5 | 13.0 - 20.0 | 11.0 | 42 | 25 | 96977 | 97982 |
| M40 x 1.5 | 20.0 - 26.0 | 13.0 | 53 | 10 | 96978 | 97983 |
| M50 x 1.5 | 25.0 - 31.0 | 13.0 | 60 | 5 | 96979 | 97984 |
| M63 x 1.5 | 29.0 - 35.0 | 14.0 | 65 / 68 | 5 | 96980 | 97985 |

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 | 97967 |
| M16 x 1.5 | 4.0 - 8.0 | 8.0 | 19 | 50 | 97968 |
| M16 x 1.5 | 5.0 - 10.0 | 8.0 | 22 | 50 | 97969 |
| M20 x 1.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 97970 |
| M20 x 1.5 | 10.0 - 14.0 | 9.0 | 27 | 50 | 97971 |
| M25 x 1.5 | 13.0 - 18.0 | 11.0 | 33 | 50 | 97972 |
| M32 x 1.5 | 18.0 - 25.0 | 11.0 | 42 | 25 | 97973 |
| M40 x 1.5 | 22.0 - 32.0 | 13.0 | 53 | 10 | 97974 |
| M50 x 1.5 | 32.0 - 38.0 | 13.0 | 60 | 5 | 97975 |
| M63 x 1.5 | 37.0 - 44.0 | 14.0 | 65 / 68 | 5 | 97976 |

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 | 91826 |
| M16 x 1.5 | 2.0 - 6.0 | 8.0 | 19 | 50 | 91827 |
| M20 x 1.5 | 5.0 - 9.0 | 9.0 | 24 | 50 | 91828 |
| M25 x 1.5 | 9.0 - 16.0 | 11.0 | 33 | 50 | 91829 |
| M32 x 1.5 | 13.0 - 20.0 | 11.0 | 42 | 25 | 91830 |
| M40 x 1.5 | 20.0 - 26.0 | 13.0 | 53 | 10 | 91831 |
| M50 x 1.5 | 25.0 - 31.0 | 13.0 | 60 | 5 | 91832 |
| M63 x 1.5 | 29.0 - 35.0 | 14.0 | 65 / 68 | 5 | 91833 |

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 | 90000 | 90020 |
| PG 9 | 4.0 - 8.0 | 8.0 | 19 | 50 | 90001 | 90021 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 90002 | 90022 |
| PG 13.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 90003 | 90023 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 50 | 90004 | 90024 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 50 | 90005 | 90025 |
| PG 29 | 18.0 - 25.0 | 11.0 | 42 | 25 | 90006 | 90026 |
| PG 36 | 22.0 - 32.0 | 13.0 | 53 | 10 | 90007 | 90027 |
| PG 42 | 32.0 - 38.0 | 13.0 | 60 | 5 | 90008 | 90028 |
| PG 48 | 37.0 - 44.0 | 14.0 | 65 | 5 | 90009 | 90029 |

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 | 90010 | 98290 |
| PG 9 | 2.0 - 6.0 | 8.0 | 19 | 50 | 90011 | 96883 |
| PG 11 | 3.0 - 7.0 | 8.0 | 22 | 50 | 90012 | 96104 |
| PG 13.5 | 5.0 - 9.0 | 9.0 | 24 | 50 | 90013 | 96544 |
| PG 16 | 7.0 - 12.0 | 10.0 | 27 | 50 | 90014 | 96105 |
| PG 21 | 9.0 - 16.0 | 11.0 | 33 | 50 | 90015 | 97306 |
| PG 29 | 13.0 - 20.0 | 11.0 | 42 | 25 | 90016 | 96403 |
| PG 36 | 20.0 - 26.0 | 13.0 | 53 | 10 | 90017 | 98202 |
| PG 42 | 25.0 - 31.0 | 13.0 | 60 | 5 | 90018 | 98203 |
| PG 48 | 29.0 - 35.0 | 14.0 | 65 | 5 | 90019 | 98204 |

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 | 96106 |
| PG 9 | 4.0 - 8.0 | 8.0 | 19 | 50 | 96107 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 96108 |
| PG 13.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 96456 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 50 | 96455 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 50 | 96912 |
| PG 29 | 18.0 - 25.0 | 11.0 | 42 | 25 | 97802 |
| PG 36 | 22.0 - 32.0 | 13.0 | 53 | 10 | 97803 |
| PG 42 | 32.0 - 38.0 | 13.0 | 60 | 5 | 97965 |
| PG 48 | 37.0 - 44.0 | 14.0 | 65 | 5 | 97966 |

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 | 91816 |
| PG 9 | 2.0 - 6.0 | 8.0 | 19 | 50 | 91817 |
| PG 11 | 3.0 - 7.0 | 8.0 | 22 | 50 | 91818 |
| PG 13.5 | 5.0 - 9.0 | 9.0 | 24 | 50 | 91819 |
| PG 16 | 7.0 - 12.0 | 10.0 | 27 | 50 | 91820 |
| PG 21 | 9.0 - 16.0 | 11.0 | 33 | 50 | 91821 |
| PG 29 | 13.0 - 20.0 | 11.0 | 42 | 25 | 91822 |
| PG 36 | 20.0 - 26.0 | 13.0 | 53 | 10 | 91823 |
| PG 42 | 25.0 - 31.0 | 13.0 | 60 | 5 | 91824 |
| PG 48 | 29.0 - 35.0 | 14.0 | 65 | 5 | 91825 |

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 | 91630 | 91637 |
| NPT 1/2" | 6.0 - 12.0 | 13.0 | 24 | 50 | 91631 | 91638 |
| NPT 1/2" | 10.0 - 14.0 | 13.0 | 27 | 50 | 91632 | 91639 |
| NPT 3/4" | 13.0 - 18.0 | 14.0 | 33 | 50 | 91633 | 91640 |
| NPT 1" | 18.0 - 25.0 | 19.0 | 42 | 25 | 91634 | 91641 |

| 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 | 91635 | 91642 |
| NPT 1 1/2" | 22.0 - 32.0 | 20.0 | 53 | 5 | 91636 | 91643 |

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 | 92610 | 92620 |
| NPT 1/2" | 5.0 - 9.0 | 13.0 | 24 | 50 | 92611 | 92621 |
| NPT 1/2" | 7.0 - 12.0 | 13.0 | 27 | 50 | 92612 | 92622 |
| NPT 3/4" | 9.0 - 16.0 | 14.0 | 33 | 50 | 92613 | 92623 |
| NPT 1" | 13.0 - 20.0 | 19.0 | 42 | 25 | 92614 | 92624 |
| NPT 1 1/4" | 13.0 - 20.0 | 16.0 | 42 / 46 | 10 | 92615 | 92625 |
| NPT 1 1/2" | 20.0 - 26.0 | 20.0 | 53 | 5 | 92616 | 92626 |

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 | 91644 |
| NPT 1/2" | 6.0 - 12.0 | 13.0 | 24 | 50 | 91645 |
| NPT 1/2" | 10.0 - 14.0 | 13.0 | 27 | 50 | 91646 |
| NPT 3/4" | 13.0 - 18.0 | 14.0 | 33 | 50 | 91647 |
| NPT 1" | 18.0 - 25.0 | 19.0 | 42 | 25 | 91648 |
| NPT 1 1/4" | 18.0 - 25.0 | 16.0 | 42 / 46 | 10 | 91649 |
| NPT 1 1/2" | 22.0 - 32.0 | 20.0 | 53 | 5 | 91650 |

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 | 92630 |
| NPT 1/2" | 5.0 - 9.0 | 13.0 | 24 | 50 | 92631 |
| NPT 1/2" | 7.0 - 12.0 | 13.0 | 27 | 50 | 92632 |
| NPT 3/4" | 9.0 - 16.0 | 14.0 | 33 | 50 | 92633 |
| NPT 1" | 13.0 - 20.0 | 19.0 | 42 | 25 | 92634 |
| NPT 1 1/4" | 13.0 - 20.0 | 16.0 | 42 / 46 | 10 | 92635 |
| NPT 1 1/2" | 20.0 - 26.0 | 20.0 | 53 | 5 | 92636 |



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 | 91690 | 91700 |
| M16 x 1.5 | 4.0 - 8.0 | 15.0 | 19 | 50 | 91691 | 91701 |
| M16 x 1.5 | 5.0 - 10.0 | 15.0 | 22 | 50 | 99841 | 99849 |
| M20 x 1.5 | 6.0 - 12.0 | 15.0 | 24 | 50 | 99842 | 99850 |
| M20 x 1.5 | 10.0 - 14.0 | 15.0 | 27 | 50 | 99843 | 99851 |
| M25 x 1.5 | 13.0 - 18.0 | 15.0 | 33 | 50 | 99844 | 99852 |
| M32 x 1.5 | 18.0 - 25.0 | 15.0 | 42 | 25 | 99845 | 99853 |
| M40 x 1.5 | 22.0 - 32.0 | 18.0 | 53 | 10 | 99846 | 99854 |
| M50 x 1.5 | 32.0 - 38.0 | 18.0 | 60 | 5 | 99847 | 99855 |
| M63 x 1.5 | 37.0 - 44.0 | 18.0 | 65 / 68 | 5 | 99848 | 99856 |

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 | 91692 | 91702 |
| M25 x 1.5 | 9.0 - 16.0 | 15.0 | 33 | 50 | 91693 | 91703 |
| M32 x 1.5 | 13.0 - 20.0 | 15.0 | 42 | 25 | 91694 | 91704 |
| M40 x 1.5 | 20.0 - 26.0 | 18.0 | 53 | 10 | 91695 | 91705 |
| M50 x 1.5 | 25.0 - 31.0 | 18.0 | 60 | 5 | 91696 | 91706 |
| M63 x 1.5 | 29.0 - 35.0 | 18.0 | 65 / 68 | 5 | 91697 | 91707 |

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 | 91710 |
| M16 x 1.5 | 4.0 - 8.0 | 15.0 | 19 | 50 | 91711 |
| M16 x 1.5 | 5.0 - 10.0 | 15.0 | 22 | 50 | 99857 |
| M20 x 1.5 | 6.0 - 12.0 | 15.0 | 24 | 50 | 99858 |
| M20 x 1.5 | 10.0 - 14.0 | 15.0 | 27 | 50 | 99859 |
| M25 x 1.5 | 13.0 - 18.0 | 15.0 | 33 | 50 | 99860 |
| M32 x 1.5 | 18.0 - 25.0 | 15.0 | 42 | 25 | 99861 |
| M40 x 1.5 | 22.0 - 32.0 | 18.0 | 53 | 10 | 99862 |
| M50 x 1.5 | 32.0 - 38.0 | 18.0 | 60 | 5 | 99863 |
| M63 x 1.5 | 37.0 - 44.0 | 18.0 | 65 / 68 | 5 | 99864 |

metric thread - with reducing seal - for intrinsically safe application

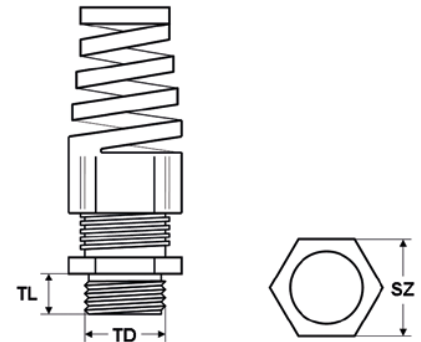
| Size | Cable Ø from / to mm | Thread length mm | Spanner size mm | Packaging unit (in pc.) | blue (RAL 5012) |
|-----------|-------------------------|---------------------|--------------------|----------------------------|--------------------|
| | | | | | Part no. |
| M20 x 1.5 | 5.0 - 9.0 | 15.0 | 24 | 50 | 91712 |
| M25 x 1.5 | 9.0 - 16.0 | 15.0 | 33 | 50 | 91713 |
| M32 x 1.5 | 13.0 - 20.0 | 15.0 | 42 | 25 | 91714 |
| M40 x 1.5 | 20.0 - 26.0 | 18.0 | 53 | 10 | 91715 |
| M50 x 1.5 | 25.0 - 31.0 | 18.0 | 60 | 5 | 91716 |
| M63 x 1.5 | 29.0 - 35.0 | 18.0 | 65 / 68 | 5 | 91717 |

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 | 90040 | 97418 |
| PG 9 | 4.0 - 8.0 | 15.0 | 19 | 50 | 90041 | 97419 |
| PG 11 | 5.0 - 10.0 | 15.0 | 22 | 50 | 90042 | 96405 |
| PG 13.5 | 6.0 - 12.0 | 15.0 | 24 | 50 | 90043 | 96404 |
| PG 16 | 10.0 - 14.0 | 15.0 | 27 | 50 | 90044 | 96003 |
| PG 21 | 13.0 - 18.0 | 15.0 | 33 | 50 | 90045 | 97767 |
| PG 29 | 18.0 - 25.0 | 15.0 | 42 | 25 | 90046 | 96004 |
| PG 36 | 22.0 - 32.0 | 18.0 | 53 | 10 | 90047 | 96253 |
| PG 42 | 32.0 - 38.0 | 18.0 | 60 | 5 | 90048 | 96254 |
| PG 48 | 37.0 - 44.0 | 18.0 | 65 | 5 | 90049 | 96256 |

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 | 91680 |
| PG 9 | 4.0 - 8.0 | 15.0 | 19 | 50 | 91681 |
| PG 11 | 5.0 - 10.0 | 15.0 | 22 | 50 | 91682 |
| PG 13.5 | 6.0 - 12.0 | 15.0 | 24 | 50 | 91683 |
| PG 16 | 10.0 - 14.0 | 15.0 | 27 | 50 | 91684 |
| PG 21 | 13.0 - 18.0 | 15.0 | 33 | 50 | 91685 |
| PG 29 | 18.0 - 25.0 | 15.0 | 42 | 25 | 91686 |
| PG 36 | 22.0 - 32.0 | 18.0 | 53 | 10 | 91687 |
| PG 42 | 32.0 - 38.0 | 18.0 | 60 | 5 | 91688 |
| PG 48 | 37.0 - 44.0 | 18.0 | 65 | 5 | 91689 |



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
- 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

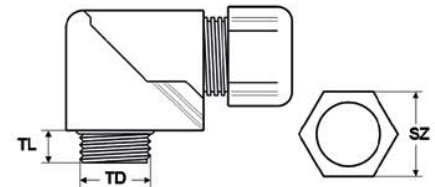
| Size | Cable Ø from / to mm | Thread length mm | Spanner size mm | Packaging unit (in pc.) | grey (RAL 7035) | black (RAL 9005) |
|-----------|-------------------------|---------------------|--------------------|----------------------------|--------------------|---------------------|
| | | | | | Part no. | Part no. |
| M12 x 1.5 | 3.0 - 6.5 | 8.0 | 15 | 50 | 98005 | 98011 |
| M16 x 1.5 | 4.0 - 8.0 | 8.0 | 19 | 50 | 98006 | 98012 |
| M20 x 1.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 98008 | 98014 |
| M20 x 1.5 | 10.0 - 14.0 | 9.0 | 27 | 25 | 98009 | 98015 |
| M25 x 1.5 | 13.0 - 18.0 | 11.0 | 33 | 20 | 98010 | 98016 |

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 | 90320 | 90326 |
| PG 9 | 4.0 - 8.0 | 8.0 | 19 | 50 | 90321 | 90327 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 90322 | 90328 |
| PG 13.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 90323 | 90329 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 25 | 90324 | 90330 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 20 | 90325 | 90331 |

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 | 92300 | 92305 |
| NPT 1/2" | 6.0 - 12.0 | 13.0 | 24 | 50 | 92301 | 92306 |
| NPT 1/2" | 10.0 - 14.0 | 13.0 | 27 | 25 | 92302 | 92307 |
| NPT 3/4" | 13.0 - 18.0 | 14.0 | 33 | 20 | 92303 | 92308 |



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 | 91284 | 91840 |
| M20 x 1.5 | 6.0 - 12.0 | 9.0 | 24 | 25 | 91285 | 91841 |
| M25 x 1.5 | 13.0 - 18.0 | 11.0 | 33 | 10 | 91286 | 91842 |
| M32 x 1.5 | 18.0 - 25.0 | 11.0 | 42 | 5 | 91287 | 91843 |

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 | 96981 | 96581 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 25 | 96982 | 96103 |

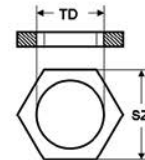
PG thread

| 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 | 90320 | 90326 |
| PG 9 | 4.0 - 8.0 | 8.0 | 19 | 50 | 90321 | 90327 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 90322 | 90328 |
| PG 13.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 90323 | 90329 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 25 | 90324 | 90330 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 20 | 90325 | 90331 |

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 | 92300 | 92305 |
| NPT 1/2" | 6.0 - 12.0 | 13.0 | 24 | 50 | 92301 | 92306 |
| NPT 1/2" | 10.0 - 14.0 | 13.0 | 27 | 25 | 92302 | 92307 |
| NPT 3/4" | 13.0 - 18.0 | 14.0 | 33 | 20 | 92303 | 92308 |

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 | 97816 | 94260 | 98163 |
| M16 x 1.5 | 22 | 100 | 97817 | 94261 | 98164 |
| M20 x 1.5 | 26 | 100 | 97818 | 94262 | 98165 |
| M25 x 1.5 | 32 | 100 | 97819 | 94263 | 98166 |
| M32 x 1.5 | 41 | 100 | 97820 | 94264 | 98167 |
| M40 x 1.5 | 50 | 50 | 97821 | 94265 | 98168 |
| M50 x 1.5 | 60 | 50 | 97822 | 94266 | 98169 |
| M63 x 1.5 | 75 | 25 | 97823 | 94267 | 98170 |

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 | 90710 | 94250 | 96458 |
| PG 9 | 22 | 100 | 90711 | 94251 | 96228 |
| PG 11 | 24 | 100 | 90712 | 94252 | 96459 |

KMK-PA-MB

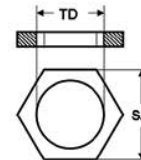
| Size | Spanner size mm | Packaging unit (in pc.) | grey | grey | black |
|---------|-----------------|-------------------------|------------------------|------------------------|------------------------|
| | | | (RAL 7035) Part no. | (RAL 7001) Part no. | (RAL 9005) Part no. |
| PG 13.5 | 27 | 100 | 90713 | 94253 | 96460 |
| PG 16 | 30 | 100 | 90714 | 94254 | 96461 |
| PG 21 | 36 | 100 | 90715 | 94255 | 96176 |
| PG 29 | 46 | 50 | 90716 | 94256 | 96177 |
| PG 36 | 60 | 25 | 90717 | 94257 | 96462 |
| PG 42 | 65 | 25 | 90718 | 94258 | 96463 |
| PG 48 | 70 | 25 | 90719 | 94259 | 96464 |

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 | 97317 | 90870 | 90875 |
| NPT 1/2" | 27 | 100 | 97316 | 90871 | 90876 |
| NPT 3/4" | 33 | 100 | 97315 | 90872 | 90877 |
| NPT 1" | 47 | 100 | 98366 | - | - |
| NPT 1" | 47 | 50 | - | 90873 | 90878 |

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 | 94630 | 94640 | 94650 |
| M16 x 1.5 | 22 | 100 | 94631 | 94641 | 94651 |
| M20 x 1.5 | 26 | 100 | 94632 | 94642 | 94652 |
| M25 x 1.5 | 32 | 100 | 94633 | 94643 | 94653 |
| M32 x 1.5 | 41 | 100 | 94634 | 94644 | 94654 |
| M40 x 1.5 | 50 | 50 | 94635 | 94645 | 94655 |
| M50 x 1.5 | 60 | 50 | 94636 | 94646 | 94656 |
| M63 x 1.5 | 75 | 25 | 94637 | 94647 | 94657 |

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 | 94270 | 94280 | 94290 |
| PG 9 | 22 | 100 | 94271 | 94281 | 94291 |
| PG 11 | 24 | 100 | 94272 | 94282 | 94292 |
| PG 13.5 | 27 | 100 | 94273 | 94283 | 94293 |

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 | 94274 | 94284 | 94294 |
| PG 21 | 36 | 100 | 94275 | 94285 | 94295 |
| PG 29 | 46 | 50 | 94276 | 94286 | 94296 |
| PG 36 | 60 | 25 | 94277 | 94287 | 94297 |
| PG 42 | 65 | 25 | 94278 | 94288 | 94298 |
| PG 48 | 70 | 25 | 94279 | 94289 | 94299 |



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 |

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

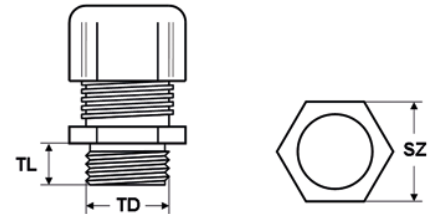
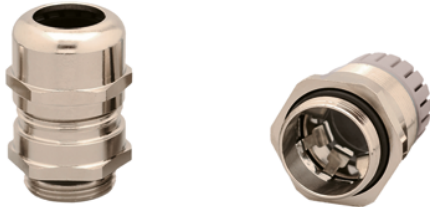
- Legend:
Dimensions
TD - Thread Diameter
TL - Thread Length
SZ - Spanner Size

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 |

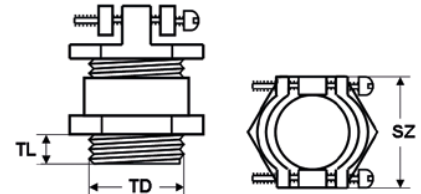
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| Part no. | Size | Cable Ø from / to mm | Thread length mm | Spanner size mm | Packaging unit (in pc.) |
|----------|-------|-------------------------|------------------|-----------------|-------------------------|
| 90429 | PG 29 | 18.0 - 25.0 | 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 |

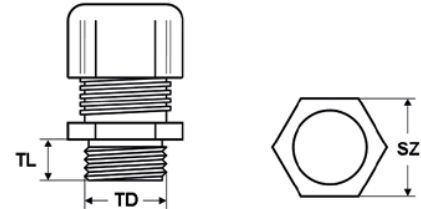
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| Part no. | Size | Cable Ø from / to mm | Thread length mm | Spanner size mm | Packaging unit (in pc.) |
|----------|-------|-------------------------|------------------|-----------------|-------------------------|
| 98201 | PG 21 | 13.0 - 18.0 | 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

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 | 97527 |
| M16 x 1.5 | 4.0 - 8.0 | 8.0 | 19 | 50 | 97528 |
| M20 x 1.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 97529 |
| M25 x 1.5 | 13.0 - 18.0 | 11.0 | 33 | 50 | 97530 |
| M32 x 1.5 | 18.0 - 25.0 | 11.0 | 42 | 25 | 97531 |

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 | 99630 |
| M16 x 1.5 | 2.0 - 6.0 | 8.0 | 19 | 50 | 99631 |
| M20 x 1.5 | 5.0 - 9.0 | 9.0 | 24 | 50 | 99632 |

| 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 | 99633 |
| M32 x 1.5 | 13.0 - 20.0 | 11.0 | 42 | 25 | 99634 |

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 | 97184 |
| PG 9 | 4.0 - 8.0 | 8.0 | 19 | 50 | 96748 |
| PG 11 | 5.0 - 10.0 | 8.0 | 22 | 50 | 97185 |
| PG 13.5 | 6.0 - 12.0 | 9.0 | 24 | 50 | 97186 |
| PG 16 | 10.0 - 14.0 | 10.0 | 27 | 50 | 97187 |
| PG 21 | 13.0 - 18.0 | 11.0 | 33 | 50 | 97188 |
| PG 29 | 18.0 - 25.0 | 11.0 | 42 | 25 | 97189 |
| PG 36 | 22.0 - 32.0 | 13.0 | 53 | 10 | 97190 |
| PG 42 | 32.0 - 38.0 | 13.0 | 60 | 5 | 97191 |
| PG 48 | 37.0 - 44.0 | 14.0 | 65 | 5 | 97192 |

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 | 91675 |
| NPT 1/2" | 6.0 - 12.0 | 13.0 | 24 | 50 | 91676 |
| NPT 1/2" | 10.0 - 14.0 | 13.0 | 27 | 50 | 91677 |
| NPT 3/4" | 13.0 - 18.0 | 14.0 | 33 | 50 | 91678 |



TECHNICAL DATA

Nickel plated brass cable gland

| | |
|-------------------|-------------------------|
| Temperature range | -35°C to +150°C |
| Protection class | 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 |

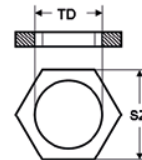
NPT thread

| 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 |

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

| | |
|-------------------|----------------|
| 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 -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



TECHNICAL DATA

Nickel plated brass EX EMC 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

APPLICATION

- Machine and plant construction
- Automation technology
- Vehicle construction and shipbuilding
- 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.) |
|----------|-----------|----------------------|------------------|-----------------|-------------------------|
| 92880 | M12 x 1.5 | 3.0 - 6.5 | 6.5 | 14 | 50 |
| 92881 | M16 x 1.5 | 5.0 - 10.0 | 6.0 | 20 | 50 |
| 92882 | M20 x 1.5 | 10.0 - 14.0 | 6.0 | 24 | 50 |
| 92883 | M25 x 1.5 | 14.0 - 18.0 | 7.0 | 30 | 25 |
| 92884 | M32 x 1.5 | 20.0 - 25.0 | 8.0 | 40 | 25 |
| 92885 | M40 x 1.5 | 22.0 - 32.0 | 8.0 | 50 | 10 |
| 92886 | M50 x 1.5 | 32.0 - 38.0 | 9.0 | 57 | 5 |
| 92887 | 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.) |
|----------|---------|----------------------|------------------|-----------------|-------------------------|
| 92870 | PG 7 | 3.0 - 6.5 | 5.0 | 14 | 50 |
| 92871 | PG 9 | 4.0 - 8.0 | 6.0 | 17 | 50 |
| 92872 | PG 11 | 5.0 - 10.0 | 6.0 | 20 | 50 |
| 92873 | PG 13.5 | 6.0 - 12.0 | 6.5 | 22 | 50 |
| 92874 | PG 16 | 10.0 - 14.0 | 6.5 | 24 | 50 |
| 92875 | PG 21 | 14.0 - 18.0 | 7.0 | 30 | 25 |
| 92876 | PG 29 | 20.0 - 25.0 | 8.0 | 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 |



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 | 908054 | 908060 | 908062 |
| 20.3 | M20 | 6.0 - 12.0 | 24 | 50 | 908055 | 908061 | - |
| 20.3 | M20 | 6.0 - 12.0 | 24 | 25 | - | - | 908063 |
| 25.3 | M25 | 11.0 - 17.0 | 29 | 25 | 908368 | 908383 | 908385 |
| 32.3 | M32 | 15.0 - 21.0 | 36 | 25 | 908369 | 908384 | - |
| 32.3 | M32 | 15.0 - 21.0 | 36 | 50 | - | - | 908386 |



TECHNICAL DATA

PA Corrugated tubes

| | |
|-------------------|--|
| Temperature range | -40°C to +120°C short term up to +150°C |
| Capacity/100mm | 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 | 92675 | 96806 |
| 10.0 | 9.9 | 13.0 | 50 | 90440 | 90456 |
| 12.0 | 12.2 | 15.7 | 50 | 90441 | 90457 |
| 17.0 | 16.6 | 21.2 | 50 | 90443 | 90459 |
| 23.0 | 23.2 | 28.3 | 50 | 90444 | 90460 |
| 29.0 | 29.0 | 34.5 | 25 | 90445 | 90461 |
| 37.0 | 36.0 | 42.4 | 25 | 90446 | 90462 |
| 50.0 | 48.1 | 53.8 | 25 | 90447 | 90463 |

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 | 93790 | 93795 |
| 21.0 | 21.7 | 28.2 | 50 | 93791 | 93796 |
| 29.0 | 27.9 | 34.2 | 25 | 93792 | 93797 |
| 36.0 | 35.5 | 42.3 | 25 | 93793 | 93798 |
| 48.0 | 47.5 | 54.5 | 25 | 93794 | 93799 |



TECHNICAL DATA

PA Corrugated tubes

| | |
|--------------------------|--|
| Temperature range | -40°C to +140°C short term up to +160°C |
| Capacity/100mm | 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 | 920384 | 920394 |
| 10.0 | 9.8 | 13.0 | 50 | 920385 | 920395 |
| 12.0 | 12.0 | 15.8 | 50 | 920386 | 920396 |
| 17.0 | 16.8 | 21.0 | 50 | 920387 | 920397 |
| 23.0 | 22.9 | 28.5 | 50 | 920388 | 920398 |

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 | 920389 | 920399 |
| 21.0 | 21.7 | 28.2 | 50 | 920390 | 920400 |
| 29.0 | 27.9 | 34.2 | 25 | 920391 | 920401 |
| 36.0 | 35.5 | 42.3 | 25 | 920392 | 920402 |
| 48.0 | 47.5 | 54.5 | 25 | 920393 | 920403 |



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

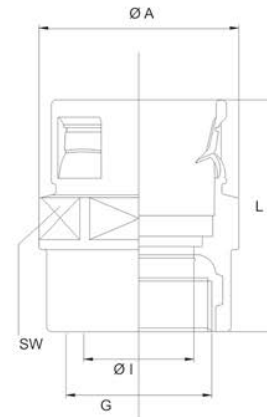
- Machine and plant construction
- Robotics
- Automation technology
- Vehicle construction and shipbuilding
- Railway technology
- Installation technology
- Control cabinet construction
- Quick-insert glands for a reliable, quick connection.
Suitable for parallel-coiled HELUcond protection tubes.

■ 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 | 904805 | 904835 |
| M12 x 1.5 | 10.0 | 10.0 | 50 | 904806 | 904836 |
| M16 x 1.5 | 10.0 | 12.0 | 50 | 904807 | 904837 |
| M16 x 1.5 | 12.0 | 12.0 | 50 | 904808 | 904838 |
| M20 x 1.5 | 12.0 | 13.0 | 50 | 904809 | 904839 |
| M20 x 1.5 | 17.0 | 13.0 | 50 | 904810 | 904840 |
| M25 x 1.5 | 17.0 | 13.0 | 50 | 904811 | 904841 |
| M25 x 1.5 | 23.0 | 13.0 | 25 | 904812 | 904842 |
| M32 x 1.5 | 23.0 | 15.0 | 25 | 904813 | 904843 |
| M32 x 1.5 | 29.0 | 15.0 | 10 | 904814 | 904844 |
| M40 x 1.5 | 29.0 | 15.0 | 10 | 904815 | 904845 |
| M40 x 1.5 | 37.0 | 15.0 | 10 | 904816 | 904846 |
| M50 x 1.5 | 37.0 | 15.5 | 10 | 904817 | 904847 |
| M50 x 1.5 | 50.0 | 15.0 | 5 | 904818 | 904848 |
| M63 x 1.5 | 50.0 | 16.0 | 5 | 904819 | 904849 |



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 | 905858 | 905859 |
| M12 x 1.5 | 10 | 8.9 | 19 | 50 | 94180 | 94190 |
| M16 x 1.5 | 10 | 9.3 | 19 | 50 | 920183 | 920184 |
| M16 x 1.5 | 12 | 8.6 | 21 | 50 | 94181 | 94191 |
| M20 x 1.5 | 16 / 17 | 13.0 | 27 | 50 | 94182 | 94192 |
| M25 x 1.5 | 21 / 23 | 14.3 | 36 | 50 | 94183 | 94193 |
| M32 x 1.5 | 29 | 14.2 | 40 | 25 | 94184 | 94194 |
| M40 x 1.5 | 36 / 37 | 15.0 | 50 | 25 | 94185 | 94195 |
| M50 x 1.5 | 48 / 50 | 15.5 | 65 | 10 | 94186 | 94196 |
| M63 x 1.5 | 48 / 50 | 15.5 | 65 | 10 | 920185 | 920186 |

PG thread

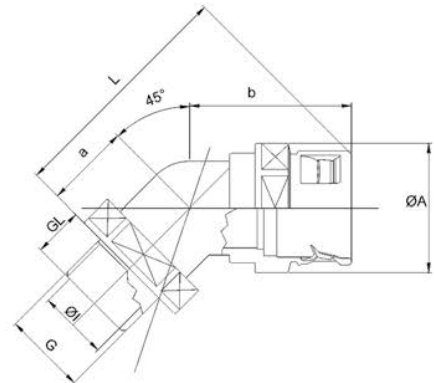
| Size | Suitable for nominal size | Thread length mm | Spanner size mm | Packaging unit (in pc.) | grey | black |
|------|---------------------------|------------------|-----------------|-------------------------|--------------|--------------|
| | | | | | Part no. | Part no. |
| PG 7 | 7.5 | 7.0 | 14 | 50 | 90480 | 90490 |

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 | 90481 | 90491 |
| PG 11 | 12 | 8.5 | 21 | 50 | 90482 | 90492 |
| PG 13.5 | 16 / 17 | 9.8 | 27 | 50 | 90483 | 90493 |
| PG 16 | 16 / 17 | 9.9 | 27 | 50 | 90484 | 90494 |
| PG 21 | 21 / 23 | 11.7 | 36 | 50 | 90485 | 90495 |
| PG 29 | 29 | 11.7 | 40 | 25 | 90486 | 90496 |
| PG 36 | 36 / 37 | 15.0 | 50 | 25 | 90487 | 90497 |
| PG 48 | 48 / 50 | 15.0 | 65 | 10 | 90488 | 90498 |

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.

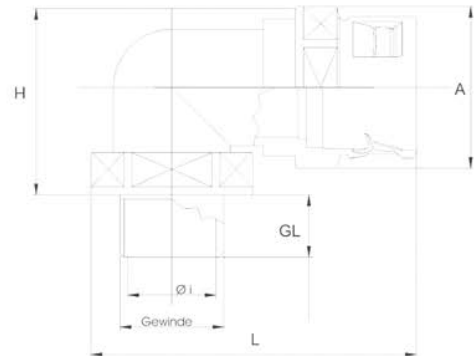
■ NOTES

- 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 | 920196 | 920204 |
| M32 x 1.50 | 29.00 | 13.6 | 25 | 920197 | 920205 |
| M40 x 1.50 | 36.00 / 37.00 | 15.8 | 25 | 920198 | 920206 |
| M50 x 1.50 | 48.00 / 50.00 | 16.3 | 10 | 920199 | 920207 |
| M63 x 1.50 | 48.00 / 50.00 | 15.4 | 10 | 920200 | 920208 |

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 Part no. | black Part no. |
|-----------|---------------------------|------------------|-------------------------|---------------|----------------|
| M12 x 1.5 | 10 | 9.5 | 50 | 94200 | 94210 |
| M16 x 1.5 | 10 | 9.0 | 50 | 98983 | 920190 |
| M16 x 1.5 | 12 | 8.0 | 50 | 94201 | 94211 |
| M20 x 1.5 | 16 / 17 | 10.5 | 50 | 94202 | 94212 |
| M25 x 1.5 | 21 / 23 | 14.8 | 50 | 94203 | 94213 |
| M32 x 1.5 | 29 | 13.8 | 25 | 94204 | 94214 |
| M40 x 1.5 | 36 / 37 | 15.6 | 25 | 94205 | 94215 |
| M50 x 1.5 | 48 / 50 | 16.0 | 10 | 94206 | 94216 |
| M63 x 1.5 | 48 / 50 | 15.5 | 10 | 920191 | 920192 |

PG thread

| Size | Suitable for nominal size | Thread length mm | Packaging unit (in pc.) | grey Part no. | black Part no. |
|-------|---------------------------|------------------|-------------------------|---------------|----------------|
| PG 9 | 10 | 9.0 | 50 | 98440 | 98363 |
| PG 11 | 12 | 7.7 | 50 | 98441 | 97382 |

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 | 98442 | 98435 |
| PG 16 | 16 / 17 | 10.0 | 50 | 98443 | 97944 |
| PG 21 | 21 / 23 | 11.8 | 50 | 98444 | 98436 |
| PG 29 | 29 | 11.5 | 25 | 98445 | 98437 |
| PG 36 | 36 / 37 | 15.5 | 25 | 98446 | 98438 |
| PG 48 | 48 / 50 | 16.0 | 10 | 98447 | 98439 |



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 | 98149 |
| 1/2 | 16.1 | 21.1 | 0.45 | 60 | 98150 |
| 3/4 | 21.1 | 26.4 | 0.65 | 45 | 98151 |
| 1 | 26.8 | 33.1 | 1.05 | 30 | 98152 |
| 1 1/4 | 35.4 | 41.8 | 1.20 | 15 | 98153 |
| 1 1/2 | 40.3 | 47.8 | 1.50 | 15 | 98154 |
| 2 | 51.6 | 59.9 | 2.30 | 15 | 98155 |



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 | 91259 |
| 1/2 | 16.1 | 23.4 | 60 | 91260 |
| 3/4 | 21.0 | 29.5 | 53 | 91261 |
| 1 | 26.5 | 36.3 | 30 | 91262 |
| 1 1/4 | 35.1 | 46.0 | 15 | 91263 |
| 1 1/2 | 40.7 | 52.4 | 15 | 91264 |
| 2 | 52.4 | 66.6 | 15 | 91265 |



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 SealTite®:
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, HX, 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 |



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
 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 | - | - | - | - | - | - | - | - |



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 | 91051 |
| TY 232M | 203.0 | 2.4 | 50 | 80 | 1000 | 91055 |
| TY 234M | 356.0 | 2.4 | 102 | 80 | 1000 | 91058 |
| TYB 24M | 140.0 | 3.6 | 29 | 180 | 1000 | 91061 |
| TY 242M | 204.0 | 3.6 | 50 | 180 | 1000 | 91064 |
| TY 26M | 284.0 | 3.6 | 76 | 130 | 1000 | 91067 |
| TY 244M | 368.0 | 3.6 | 103 | 130 | 1000 | 91070 |
| TYB 25M | 186.0 | 4.8 | 45 | 220 | 1000 | 91073 |
| TY 253M | 295.0 | 4.8 | 78 | 220 | 1000 | 91076 |
| TY 28M | 361.0 | 4.8 | 102 | 220 | 1000 | 91079 |
| TY 272M | 223.0 | 6.9 | 50 | 540 | 500 | 91082 |
| TY 27M | 340.0 | 6.9 | 90 | 540 | 500 | 91085 |
| TY 29M | 771.0 | 6.9 | 229 | 540 | 500 | 91088 |

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 | 91050 |
| TY 5-232M | 203.0 | 2.4 | 50 | 80 | 100 | 91054 |

| 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 | 91057 |
| TY 5-24M | 140.0 | 3.6 | 29 | 180 | 100 | 91060 |
| TY 5-242M | 204.0 | 3.6 | 50 | 180 | 100 | 91063 |
| TY 5-26M | 284.0 | 3.6 | 76 | 130 | 100 | 91066 |
| TY 5-244M | 368.0 | 3.6 | 103 | 130 | 100 | 91069 |
| TY 5-25M | 186.0 | 4.8 | 45 | 220 | 100 | 91072 |
| TY 5-253M | 295.0 | 4.8 | 78 | 220 | 100 | 91075 |
| TY 5-28M | 361.0 | 4.8 | 102 | 220 | 100 | 91078 |
| TY 5-272M | 223.0 | 6.9 | 50 | 540 | 50 | 91081 |
| TY 5-27M | 340.0 | 6.9 | 90 | 540 | 50 | 91084 |
| TY 5-29M | 771.0 | 6.9 | 229 | 540 | 50 | 91087 |



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)

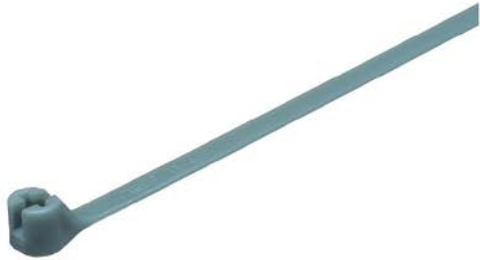
■ PROPERTIES

- 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 | 97280 |
| TYH 232M | 203.0 | 2.4 | 50 | 80 | 1000 | 96481 |
| TYH 24M | 140.0 | 3.6 | 29 | 130 | 1000 | 96577 |
| TYH 242M | 208.0 | 3.6 | 50 | 130 | 1000 | 98520 |
| TYH 26M | 284.0 | 3.6 | 76 | 130 | 1000 | 97249 |
| TYH 25M | 186.0 | 4.8 | 45 | 220 | 1000 | 97213 |
| TYH 253M | 290.0 | 4.8 | 78 | 220 | 1000 | 98521 |
| TYH 28M | 360.0 | 4.8 | 102 | 220 | 1000 | 96291 |
| TYH 29M | 771.0 | 6.9 | 229 | 530 | 500 | 97250 |
| TYH 27M | 340.0 | 7.0 | 90 | 540 | 500 | 97154 |
| TYH 272M | 222.0 | 7.6 | 50 | 540 | 500 | 98522 |



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 | 91108 |
| TY 512M | 210.0 | 2.4 | 51 | 80 | 25.40 x 7.90 | 1000 | 91109 |
| TY 46M | 184.0 | 4.8 | 45 | 220 | 13.10 x 27.00 | 1000 | 91111 |
| TY 48M | 360.0 | 4.8 | 102 | 220 | 13.10 x 57.20 | 1000 | 91110 |
| TY 46MD | 184.0 | 4.8 | 45 | 220 | 29.70 x 27.00 | 500 | 91112 |
| TY 46MT | 184.0 | 4.8 | 45 | 220 | 46.00 x 27.00 | 500 | 91113 |
| TY 46MF | 184.0 | 4.8 | 45 | 220 | 63.10 x 27.00 | 250 | 91114 |

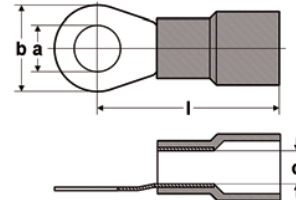
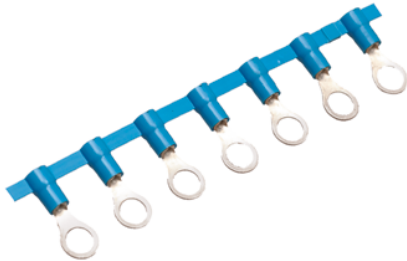
Marking area above the latch

| 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 | 91106 |
| TY 532M | 212.0 | 2.4 | 51 | 80 | 20.60 x 9.30 | 1000 | 91107 |

ST-PR / FP



| Part no. | Type | Colour | Cross-sec. mm ² , 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 |



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

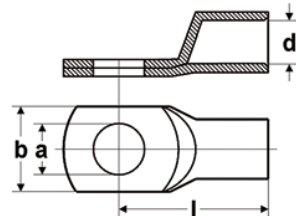
| Part no. | Type | Colour | Cross-sec. mm ² , approx. | Packaging unit (in pc.) |
|----------|--------|--------|---|----------------------------|
| 93740 | BHA 3 | red | 0.25 - 1.50 | 2000 |
| 93741 | BHA 35 | red | 0.25 - 1.50 | 2000 |
| 93742 | BHA 4 | red | 0.25 - 1.50 | 2000 |
| 93743 | BHA 5 | 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 ² , 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 |



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

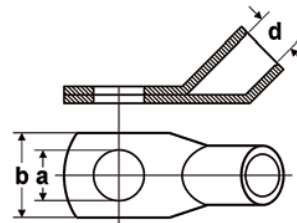
■ NOTES

- 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 ² | 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.) |
|----------|----------------------------|---------------|-----------------------|------------------------|-----------------------------|------------------|-----------------------|-------------------------|
| 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 ² | 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

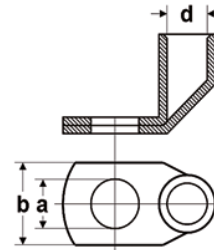
- Recommended pressing method: WM pressing
- Legend:
Dimensions
a - Diameter of stud hole
b - Width of flange
d - Inner diameter of wire receptable

| Part no. | Cross-sec. mm ² , 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 ² , 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 ² , 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 |

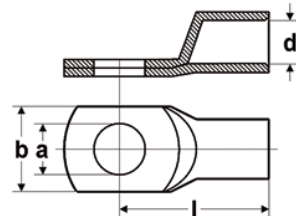


| Part no. | Cross-sec. mm ² , approx. | Stud hole (M) | Ø Stud hole (a) in mm | Flange width (b) in mm | Ø Wire receptable (d) in mm | Weight in kg/1000 pc. | Packaging unit (in pc.) |
|----------|--------------------------------------|---------------|--------------------------|---------------------------|--------------------------------|--------------------------|----------------------------|
| 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 ² | 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 ² | 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 |

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

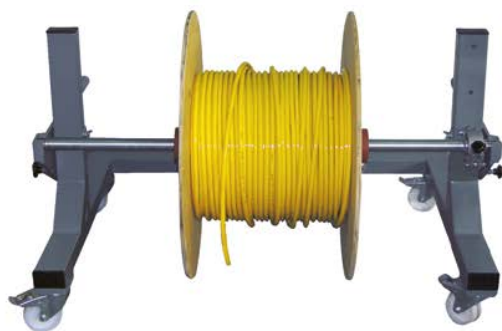
- with axis

■ 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

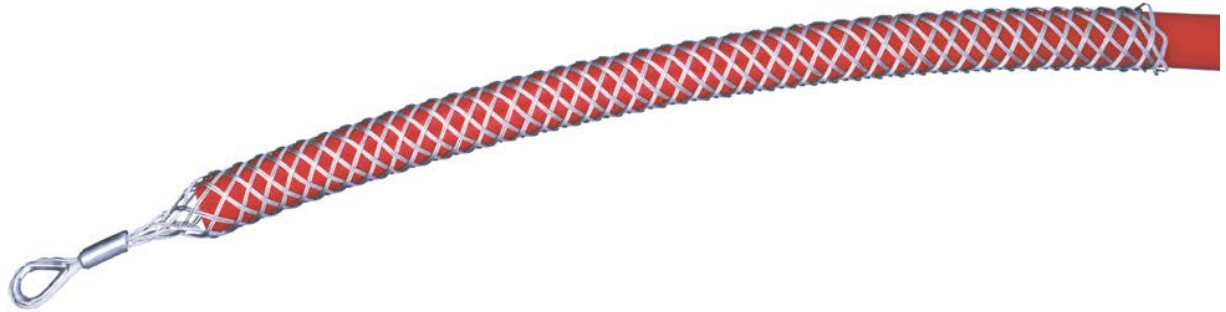
Longimetry devices

■ 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 tapping grips

■ STRUCTURE

- Material: steel galvanized

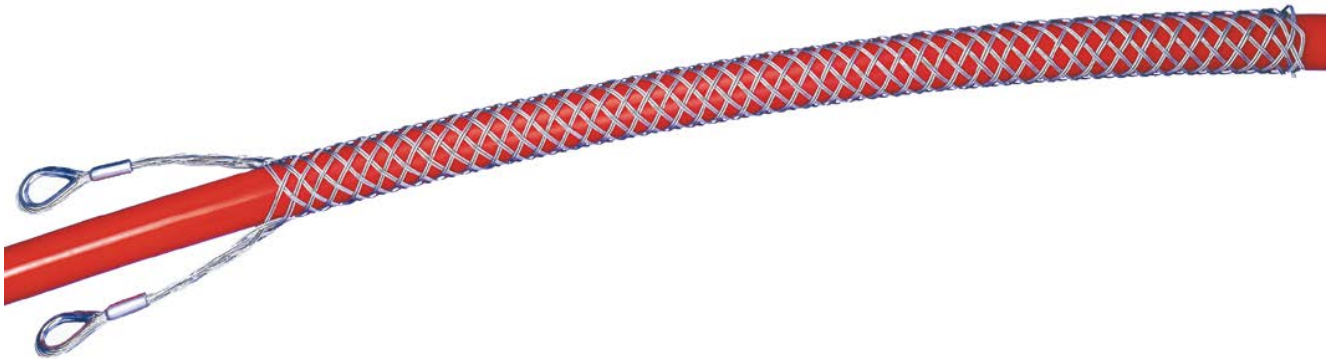
■ APPLICATION

- 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 fleeing grips

■ STRUCTURE

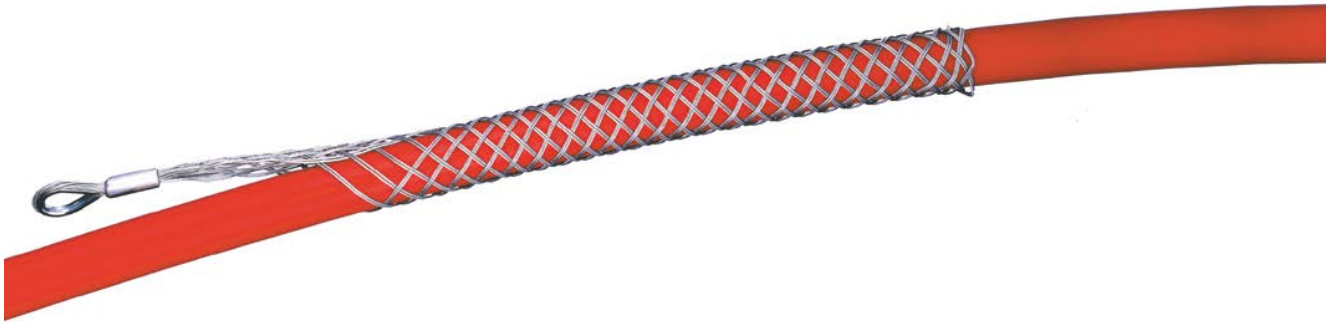
- Material: steel galvanized

■ 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 |







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Drum



Spool



Coil



Barrel



Coil in cardboard

