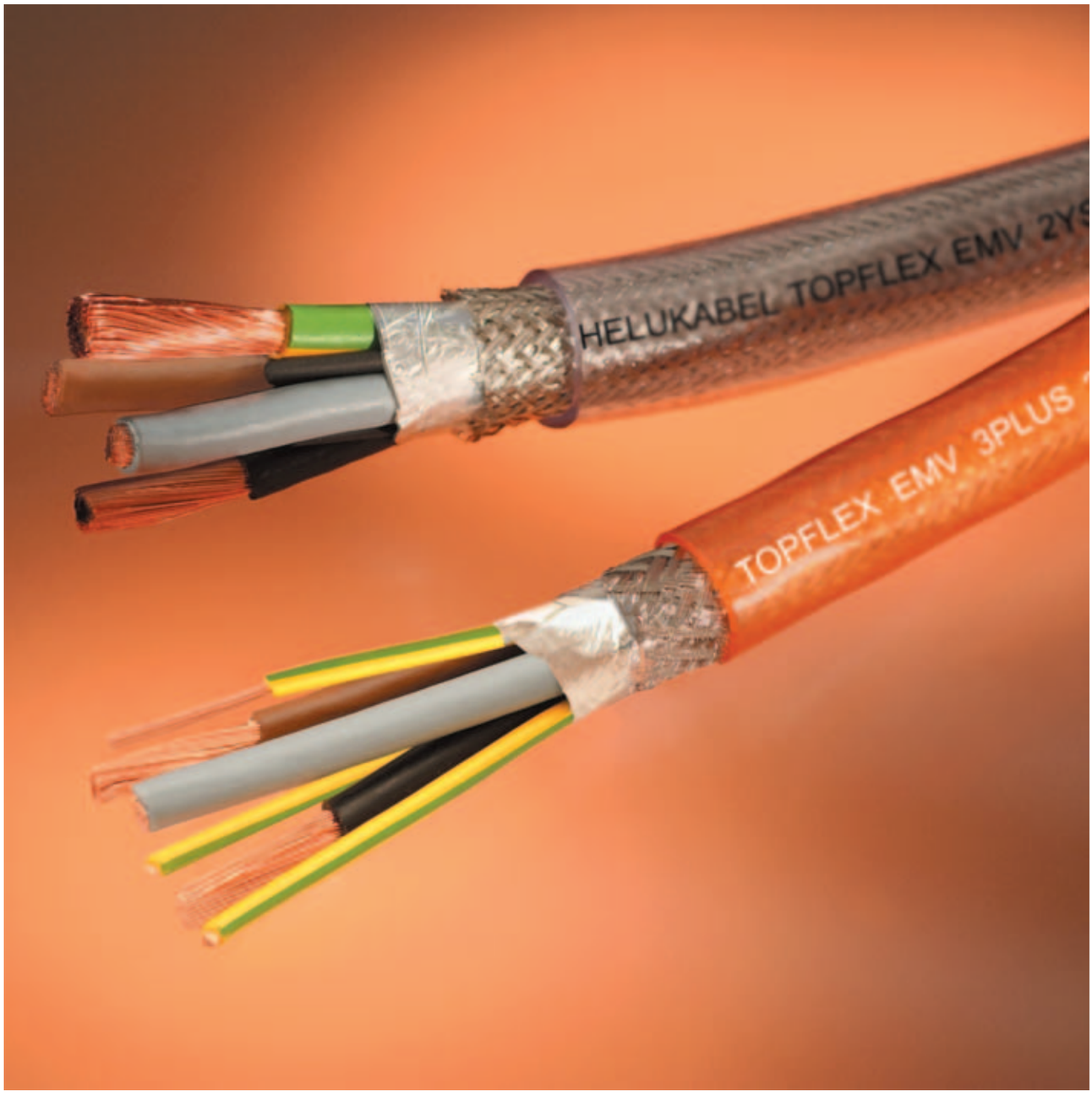



Photo: HELUKABEL®

# Servo, Feedback & Motor Cables

# Servo, Feedback & Motor Cables



A multitude of applications requires the construction of many special cables. Corresponding to the customers requirements, those cables may be constructed with different stranding elements and cross-sections of the cable. In this case we are speaking about combination or hybrid cables.

There could turn out to be technical reasons, specific to the application, for using different insulating materials or choosing special stranding types or a special screen, for example multiple or mixed screening.

# Contents

# TOPFLEX® 600-PVC for power supply connections 0,6/1kV, meter marking

ME01


D

## Technical data

- Special PVC-insulated sheathed cable
- Based on DIN VDE 0293, 0295, 0472 part 804
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Test voltage** 4000 V
- **Durchschlagsspannung**
  min. 8000V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing approx. 7,5x cable Ø
  fixed installation approx. 4x cable Ø
- **Radiation resistance**
  up to 80x10⁶ cJ/kg (to 80 Mrad)

## Cable structure

- Finely stranded, plain Cu wire conductor according to VDE 0295 cl. 5 and IEC 60228 cl. 5
- PVC core insulation
- Cores black with sequential numbering imprinted in white, according to DIN VDE 0293
- Earth core green-yellow
- Cores stranded in layers with optimal lay-length
- Special-PVC-insulated outer jacket
- Colour grey (RAL 7001)
- with meter marking, change-over in 2009

## Properties

- PVC outer jacket: extensively oil resistant Chemical Resistance - see table Technical Informations
- Flame retardant and self-extinguishing, test method B according to DIN VDE 0472 part 804 and IEC 60332-1
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For use in drag chains, we recommend our versions TOPFLEX® 611-PUR and TOPFLEX® 611-C-PUR.
- screened analogue type:
  **TOPFLEX® 600-C-PVC** see page D 6

## Application

As supply cable for electronically controlled servo-motors and connections to DNC motors. The cable is suitable for permanent and flexible installation for medium mechanical loads in dry, damp and wet environments.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22860 | 4 G 1,5 | 9,9 | 58,0 | 130,0 | 16 |
| 22861 | 4 G 2,5 | 11,1 | 95,0 | 220,0 | 14 |
| 22862 | 4 G 4 | 13,8 | 154,0 | 330,0 | 12 |
| 22863 | 4 G 6 | 15,6 | 231,0 | 445,0 | 10 |
| 22864 | 4 G 10 | 18,4 | 384,0 | 660,0 | 8 |
| 22865 | 4 G 16 | 21,2 | 615,0 | 1060,0 | 6 |

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22866 | 4 G 25 | 26,9 | 960,0 | 1805,0 | 4 |
| 22867 | 4 G 35 | 29,4 | 1344,0 | 2060,0 | 2 |
| 22868 | 4 G 50 | 34,2 | 1920,0 | 2900,0 | 1 |
| 22869 | 4 G 70 | 41,0 | 2640,0 | 4050,0 | 2/0 |
| 22854 | 4 G 95 | 46,2 | 3648,0 | 5540,0 | 3/0 |
| 22855 | 4 G 120 | 50,2 | 4608,0 | 7000,0 | 4/0 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX® 611-PUR for power supply connections 0,6/1kV, meter marking


## Technical data

- Special-PUR drag chain cable Based on DIN VDE 0293, 0295, 0250, 0281
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -50°C to +90°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Test voltage** 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Min. bending radius**
  flexing 7,5x cable Ø
  fixed installation 4x cable Ø

## Cable structure

- Bare copper, ultra-fine wire conductors acc. to DIN VDE 0295 cl. 6, BS 6360 cl. 6 and/or IEC 60228 cl. 6
- TPE-core insulation
- Cores black with sequential numbering imprinted in white, according to DIN VDE 0293
- Green-yellow earth core
- Cores stranded together with optimal lay-length and stabilising filler
- Fleece wrapping facilitates sliding
- PUR-insulated outer jacket
- Sheath colour grey (RAL 7001)
- with meter marking, change-over in 2009

## Properties

- Adhesion-free, extremely abrasion resistant, halogen-free, flame retardant, resistant to hydrolysis and microbial attack
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.
- screened analogue type:
  **TOPFLEX® 611-C-PUR** see page D 7

## Application

As optimized supply cable for the supply to motors, in particular to DNC motors, servo-motors. These cables are specially designed for use in power drag chains, handling equipment, robotics, tooling machinery, processing and manufacturing machinery. Optimised insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents. Favourable outer diameters, reduced weights and enhanced torsion characteristics assure the use in multi-layer operations with extremely high continuous bending loads. Suitable for outdoor use.

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

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22870 | 4 G 1,5 | 8,0 | 58,0 | 125,0 | 16 |
| 22871 | 4 G 2,5 | 10,8 | 95,0 | 215,0 | 14 |
| 22872 | 4 G 4 | 12,5 | 154,0 | 310,0 | 12 |
| 22873 | 4 G 6 | 14,8 | 231,0 | 470,0 | 10 |
| 22874 | 4 G 10 | 18,7 | 384,0 | 760,0 | 8 |
| 22875 | 4 G 16 | 22,8 | 615,0 | 1250,0 | 6 |

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22876 | 4 G 25 | 26,9 | 960,0 | 1510,0 | 4 |
| 22877 | 4 G 35 | 30,7 | 1344,0 | 2100,0 | 2 |
| 22978 | 4 G 50 | 36,5 | 1920,0 | 2950,0 | 1 |
| 22979 | 4 G 70 | 41,6 | 2640,0 | 4090,0 | 2/0 |
| 22980 | 4 G 95 | 48,2 | 3648,0 | 5580,0 | 3/0 |
| 22981 | 4 G 120 | 51,6 | 4608,0 | 7040,0 | 4/0 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX® 600-C-PVC Motor power supply cable 0,6/1kV, halogen-free, meter marking

ME01


D

## Technical data

- Special PVC-insulated sheathed cable
- Based on DIN VDE 0293, 0295, 0472 part 804
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Test voltage** 4000 V
- **Durchschlagsspannung**
  min. 8000V
- **Kopplungswiderstand**
  max. 250 Ohm/km
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing approx. 7,5x cable Ø
  fixed installation approx. 4x cable Ø
- **Radiation resistance**
  up to 80x$10^6$ cJ/kg (to 80 Mrad)

## Cable structure

- Finely stranded, plain Cu wire conductor according to VDE 0295 cl. 5 and IEC 60228 cl. 5
- PVC core insulation
- Cores black with sequential numbering imprinted in white, according to DIN VDE 0293
- Earth core green-yellow
- Cores stranded in layers with optimal lay-length
- Special-PVC-insulated outer jacket
- PVC-Innenmantel
- Abschirmgeflecht aus verzinnten Cu-Drähten, Bedeckung ca. 85%
- Colour grey (RAL 7001)
- with meter marking, change-over in 2009

## Properties

- PVC outer jacket: extensively oil resistant Chemical Resistance - see table Technical Informations
- Flame retardant and self-extinguishing, test method B according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- Applicatons as described above with additional compliance with electromagnetic compatibility (EMC compatibility) requirements on account of the 90% coverage by the braided screening

## Note

- For use in drag chains, we recommend our versions TOPFLEX® 611-PUR and TOPFLEX® 611-C-PUR.
- unscreened analogue type:
  **TOPFLEX® 600-PVC** see page D 4

## Application

As supply cable for electronically controlled servo-motors and connections to DNC motors. The cable is suitable for permanent and flexible installation for medium mechanical loads in dry, damp and wet environments.
CE= The product is conformed with the EC Low-Voltage Directive 2006/95/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22960 | 4 G 1,5 | 11,8 | 99,0 | 250,0 | 16 |
| 22961 | 4 G 2,5 | 13,8 | 169,0 | 360,0 | 14 |
| 22962 | 4 G 4 | 16,2 | 234,0 | 530,0 | 12 |
| 22963 | 4 G 6 | 18,7 | 316,0 | 620,0 | 10 |
| 22964 | 4 G 10 | 21,2 | 549,0 | 1050,0 | 8 |
| 22965 | 4 G 16 | 27,0 | 807,0 | 1465,0 | 6 |

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22966 | 4 G 25 | 32,0 | 1169,0 | 1920,0 | 4 |
| 22967 | 4 G 35 | 35,8 | 1680,0 | 2515,0 | 2 |
| 22856 | 4 G 50 | 43,4 | 2370,0 | 3315,0 | 1 |
| 22857 | 4 G 70 | 49,1 | 3257,0 | 4600,0 | 2/0 |
| 22858 | 4 G 95 | 54,1 | 4060,0 | 6060,0 | 3/0 |
| 22859 | 4 G 120 | 59,4 | 5231,0 | 7315,0 | 4/0 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX® 611-C-PUR Motor power supply cable 0,6/1kV, halogen-free, meter marking

ME01


## Technical data

- Special-PUR drag chain cable Based on DIN VDE 0293, 0295, 0250, 0281
- **Temperature range** flexing -30°C to +80°C fixed installation -50°C to +90°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Test voltage** 4000 V
- **Kopplungswiderstand** max. 250 Ohm/km
- **Insulation resistance** min. 20 MOhm x km
- **Min. bending radius** flexing 10x cable Ø fixed installation 5x cable Ø

## Cable structure

- Bare copper, ultra-fine wire conductors acc. to DIN VDE 0295 cl. 6, BS 6360 cl. 6 and/or IEC 60228 cl. 6
- TPE-core insulation
- Cores black with sequential numbering imprinted in white, according to DIN VDE 0293
- Green-yellow earth core
- Cores stranded together with optimal lay-length and stabilising filler
- Fleece wrapping facilitates sliding
- PUR-insulated outer jacket
- TPE-Innenmantel
- Abschirmgeflecht aus verzinnten Cu-Drähten, Bedeckung ca. 85%
- Sheath colour grey (RAL 7001)
- with meter marking, change-over in 2009

## Properties

- Adhesion-free, extremely abrasion resistant, halogen-free, flame retardant, resistant to hydrolysis and microbial attack
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.
- unscreened analogue type: **TOPFLEX® 611-PUR** see page D 5

## Application

As optimized supply cable for the supply to motors, in particular to DNC motors, servo-motors. These cables are specially designed for use in power drag chains, handling equipment, robotics, tooling machinery, processing and manufacturing machinery. Optimised insulation materials ensure resistance to oils (including mineral oils), greases, coolants, hydraulic fluids as well as many alkalis and solvents. Favourable outer diameters, reduced weights and enhanced torsion characteristics assure the use in multi-layer operations with extremely high continuous bending loads. Suitable for outdoor use.

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

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22970 | 4 G 1,5 | 11,3 | 99,0 | 220,0 | 16 |
| 22971 | 4 G 2,5 | 13,5 | 169,0 | 340,0 | 14 |
| 22972 | 4 G 4 | 16,0 | 234,0 | 490,0 | 12 |
| 22973 | 4 G 6 | 18,0 | 316,0 | 680,0 | 10 |
| 22974 | 4 G 10 | 22,2 | 549,0 | 1035,0 | 8 |
| 22975 | 4 G 16 | 27,2 | 807,0 | 1460,0 | 6 |

| Part No. | No.cores x cross-sec. mm² | Outer ø app. mm | Cop. weight kg / km | Weight app. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22976 | 4 G 25 | 31,2 | 1169,0 | 1990,0 | 4 |
| 22977 | 4 G 35 | 35,7 | 1680,0 | 2535,0 | 2 |
| 22982 | 4 G 50 | 42,2 | 2370,0 | 3360,0 | 1 |
| 22983 | 4 G 70 | 49,5 | 3257,0 | 4650,0 | 2/0 |
| 22984 | 4 G 95 | 54,6 | 4060,0 | 6090,0 | 3/0 |
| 22985 | 4 G 120 | 58,5 | 5231,0 | 7380,0 | 4/0 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPSERV® 130 flexible servo cable 0,6/1kV, meter marking


new

D

## Technical data

- Special PVC drag chain cable acc. to DIN VDE 0281, 0245, 0250
- **Temperature range**
  flexing -5°C to +80°C
  fixed installation -40°C to +80°C
- **Nominal voltage**
  power supply cores $U_0$/U 600/1000 V
  control cores $U_0$/U 300/500 V
- **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 approx. 10x cable Ø
  fixed installation approx. 5x cable Ø

## Cable structure

- Bare copper, fine wire conductors to DIN VDE 0295 cl. 5 and/or IEC 60228 cl. 5
- Special-PVC core insulation
- Core identification
  Power supply cores black with imprint white and earth core green-yellow
  Control cores
  0,34mm2: white/brown, green/yellow
  from 0,5mm2: black with imprint white
- Screening of the control cores in pairs wrapped with plastic aluminium foil, copper drain-wire tinned and tinned copper braided screening, approx. coverage 85%
- Polyester foil wrapping over screen
- Control cores stranded in pairs and laid up in layers together with the power supply cores with optimal lay length and stabilising filler
- Polyester fleece wrapping
- Overall screening from tinned copper braid, optimal. coverage min. 85%
- Special-PVC outer sheath, grey (RAL 7001)
- with meter marking

## Properties

- extensive oil-resistant
- self-extinguishing and flame retardant according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Optimum compliance with requirements for electromagnetic compatibility (EMC) by approx. 85% coverage from the braided screen
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.

## Application

The supply conductors for these cables are ideally combined with the control conductors for the brake function and the thermal protection. Accurately working servomotors require high performance, reliable and durable cables. These requirements are fully met. The cables have an additional total shield for EMC compatibility. The production is based on the specifications of well known servo-drive and control system manufacturers as well as on several VDE standards.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 59212 | (4 x 0,75 + 2 x (2x 0,34)) | 10,7 | 109,0 | 167,0 | 17 |
| 59213 | (4 x 1,5 + 2 x (2x 0,75)) | 12,7 | 154,0 | 241,0 | 17 |
| 59214 | (4 x 2,5 + (2 x 2 x 0,75)) | 14,7 | 229,0 | 381,0 | 17 |
| 59215 | (4 x 4 + (2 x 0,75 + 2 x 1,0)) | 16,5 | 317,0 | 480,0 | 17 |
| 59216 | (4 x 6 + (2 x 0,75 + 2 x 1,0)) | 17,6 | 420,0 | 604,0 | 17 |
| 59217 | (4 x 10 + (2 x 0,75 + 2 x 1,0)) | 21,6 | 604,0 | 831,0 | 17 |
| 59218 | (4 x 16 + (2 x 2 x 1,0)) | 24,4 | 891,0 | 1215,0 | 17 |
| 59219 | (4 x 25 + (2 x 2 x 1,5)) | 30,0 | 1271,0 | 1647,0 | 17 |

Dimensions and specifications may be changed without prior notice. (RN07)

# TOPSERV® 110 / 120 / Feedback-Cable drag

**chain cable, 0,6/1kV EMC-preferred type, servo/feedback cable, high flexible, meter marking**

ME01


## Technical data

- Spezial-PUR drag chain cable based on DIN VDE 0295, 0250, 0281
- **Temperature range**
  flexing -40°C to +90°C
  fixed installation -40°C to +90°C
- **Nominal voltage**
  power supply cores $U_0$/U 600/1000 V
  control cores $U_0$/U 300/500 V
- **Test voltage**
  power supply cores 4000 V
  control cores 1000 V
- **Power rating**
  to DIN VDE 0298 part 4
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing approx. 7,5x cable Ø
  fixed installation approx. 4x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

## Cable structure

- Plain copper conductor, ultra-fine wire for TOPSERV® 110:
  1 mm² = 19x0,25 mm
- TPE core insulation, halogen-free
- Core identification:
  Power supply cores black with imprint U1, V2, W3 and earth core green-yellow, Control cores black with imprint BR1, BR2 or nos. 5-6 and 7-8 for the 2-pair-version
- Screening of the control cores in pairs with Al film, tinned drain wire and tinned Cu braid; single pair with tinned Cu braid only
- Control cores stranded in pairs and laid up in layers together with the power supply cores
- Fleece wrapping
- Overall screening of tinned cu braid, visible coverage min. 80%
- Fleece wrapping
- PUR-outer sheath, flame-resistant
- Colour petrol (RAL 5018)
- with meter marking, change-over in 2009

## Properties

- PUR-outer sheath flame retardant, low adhesion, resistant to hydrolysis and microbial attack, halogen-free
- These highly flexible cables are fitted with an additional overall screen to assure EMC compatibility, i.e. the protection against electromagnetic interference
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.

## Application

The combination of feeder cores with the control cores for the braking function and the thermal protection in these cables is ideal. Precision servomotors, as used today in many areas of highly-automated manufacturing processes, call for high-quality, reliable and long-lasting cables. These requirements are met to a high degree as is the electromagnetic compatibility (EMC).
These cables can also be used as drag chain cables.
Manufacturing is based on specifications from renowned manufacturers of servo-actuators and servo-controls as well as in accordance with diverse VDE standards. Application for system SIMODRIVE.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

### TOPSERV® 110
### (1 pair screened and overall screening)

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 71491 | (4 x 1,5 + (2 x 1,0)) | 11,5 | 139,0 | 211,0 | 16 |
| 71493 | (4 x 2,5 + (2 x 1,0)) | 13,6 | 188,0 | 273,0 | 14 |
| 71705 | (4 x 4 + (2 x 1,0)) | 14,6 | 260,0 | 352,0 | 12 |
| 71706 | (4 x 6 + (2 x 1,0)) | 16,0 | 360,0 | 500,0 | 10 |
| 71707 | (4 x 10 + (2 x 1,0)) | 20,2 | 590,0 | 753,0 | 8 |
| 71708 | (4 x 16 + (2 x 1,0)) | 23,8 | 845,0 | 1061,0 | 6 |
| 71709 | (4 x 25 + (2 x 1,0)) | 27,0 | 1320,0 | 1499,0 | 4 |
| 71710 | (4 x 35 + (2 x 1,0)) | 31,9 | 1840,0 | 1992,0 | 2 |
| 71711 | (4 x 50 + (2 x 1,0)) | 36,7 | 2530,0 | 2880,0 | 1 |

### TOPSERV® 120
### (2 pairs individually screened and overall screening)

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 71990 | (4 x 1,5 + 2 x (2 x 1,0)) | 12,6 | 186,0 | 242,0 | 16 |
| 71991 | (4 x 2,5 + 2 x (2 x 1,0)) | 14,6 | 231,0 | 316,0 | 14 |
| 71992 | (4 x 4 + 2 x (2 x 1,0)) | 16,0 | 308,0 | 415,0 | 12 |
| 71993 | (4 x 6 + 2 x (2 x 1,0)) | 19,2 | 420,0 | 574,0 | 10 |
| 71994 | (4 x 10 + 2 x (2 x 1,0)) | 22,8 | 647,0 | 805,0 | 8 |
| 71995 | (4 x 16 + 2 x (2 x 1,0)) | 25,9 | 918,0 | 1122,0 | 6 |
| 71996 | (4 x 25 + 2 x (2 x 1,0)) | 29,8 | 1400,0 | 1584,0 | 4 |
| 72106 | (4 x 35 + 2 x (2 x 1,0)) | 30,1 | 1882,0 | 2185,0 | 2 |
| 71997 | (4 x 50 + 2 x (2 x 1,0)) | 36,0 | 2574,0 | 2977,0 | 1 |

### TOPSERV®Feedback-Cable (overall braid-screened)

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. | Cable structure (deviation from TOPSERV®) |
|---|---|---|---|---|---|---|
| 72042 | (12 x 0,25) | 7,5 | 49,0 | 90,0 | 24 | PVC-core insulation, cores colour coded, foil taped, PUR-jacket |
| 71492 | (3 x (2 x 0,14) + 4 x 0,14 + 4 x 0,25 + 2 x 0,5) | 10,7 | 92,0 | 145,0 | | TPE-core insulation, cores colour coded, fleece wrapping, PUR-jacket |
| 72043 | (4 x 2 x 0,34 + 4 x 0,5) | 9,5 | 77,0 | 144,0 | 22 | PVC-core insulation, cores colour coded, foil taped, PUR-jacket |

Dimensions and specifications may be changed without prior notice. (RD01)

# Tachofeedback-Cable-C-PVC, Incremental feedback-cable-C-PVC EMC-preferred type, meter marking



D

## Technical data

- Special core and sheath compound from PVC
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Nominal voltage**
  Tachofeedback-cable-C-PVC
  450 V
  Increm. feedback-cable-C-PVC
  250 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Breakdown voltage**
  min. 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  10x cable Ø
- **Radiation resistance**
  up to 80x10$^6$ 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/or IEC 60228 cl. 5
- Special PVC core insulation
- **Colour code**
  Tachofeedback-cable:
  blue, white, red, pink, green, yellow, brown, black, grey
  Incremental feedback-cable:
  brown, black/red, green/light-brown, white, pink/grey, violet/blue
- Single cores or pairs stranded in layer with optimal lay-length pairs part no. 22825)
- Core wrapping with film
- Drain wire
- Tinned copper braided screening, coverage approx. 85%
- Special PVC outer sheath
- Colour grey (RAL 7001)
- with meter marking, change-over in 2009

## Properties

- Extensively oil resistant, for Chemical Resistance see Techn. Information table
- PVC self-extinguishing and flame resistant to VDE 0482 part 265-2-1/ EN 50265-2-1/ IEC 60332-1 (equivalent to DIN VDE 0472 part 804 test type B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Application

Both cables fulfil differing tasks for the control of servo-motors.
The tachofeedback-cable or response cable serves the regulation of the motor speed and measurement of the actual values.
The incremental feedback-cable or position response cable transfers the control signals for positioning and engineering characteristics and is used as the flexible connecting cable for tachometer, brakes, pulse transmitter in system and mechanical engineering, in dry, damp and wet environments.
**EMC** = Electromagnetic compatibility
To optimise 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/EG.

### Tachofeedback-Cable

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22824 | (9 x 0,5) | 8,8 | 81,0 | 150,0 | 20 |

### Incremental feedback-cable

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22825 | (4 x 2 x 0,25 + 2 x 1,0) | 8,8 | 66,0 | 110,0 | 24 |

Dimensions and specifications may be changed without prior notice. (RD01)

# Tachofeedback-Cable-C-PUR, Incremental feedback-cable-C-PUR

**drag chain cable, EMC-preferred type, meter marking**



## Technical data

- Special core and sheath compound of TPE-E/PUR
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -50°C to +80°C
- **Nominal voltage**
  Tachofeedback-cable-C-PUR = 450 V
  Incremental feedback-cable-C-PUR = 250 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing approx. 10x cable Ø
  fixed installation approx. 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation resistance**
  up to 100x10$^6$ cJ/kg (up to 100 Mrad)

## Cable structure

- Bare copper, ultra-fine wire conductors acc. to DIN VDE 0295 cl. 6, BS 6360 cl. 6 and/or IEC 60228 cl. 6
- TPE-core insulation
- **Colour code**
  Tachofeedback-cable:
  blue, white, red, pink, green, yellow, brown, black, grey
  Incremental feedback-cable:
  brown, black/red, green/light-brown, white, pink/grey, violet/blue
- Single cores or pairs stranded in layer with optimal lay-length pairs part no. 22818)
- Fleece wrapping
- Drain wire
- Tinned copper braided screening, coverage approx. 85%
- Special PUR (polyurethane) outer sheath matt
- Sheath colour orange (RAL 2003)
- with meter marking, change-over in 2009

## Properties

- Special PUR outer sheath low adhesion and flame retardant
- **Resistant to**
  Oils and fats
  Acids and alkalis
  Hydraulic fluids
  Oxygen and ozone
  UV-radiation
  Hydrolysis
  Microbial attack
  Water and weathering effects
- The high abrasion resistance and notch resistance meet the highest requirements
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.

## Application

Both cables fulfil differing tasks for the control of servo-motors.
The tachofeedback-cable or response cable serves the regulation of the motor speed and measurement of the actual values.
The incremental feedback-cable or position response cable transfers the control signals for positioning and engineering characteristics and is used as the flexible connecting cable for tachometer, brakes and pulse transmitter in case of high mechanical stress in plant, machine and control engineering in dry, moist and wet rooms. Particularly suitable for continuous operating in drag chains, industrial robotics and handling equipment as these cables enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available. The braided screen guarantees reliable signal transmission. Optimum functionality, long service life and an excellent cost-performance ratio are given for the mentioned applications by the special compounds used for insulation and sheath.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

**Tachofeedback-cable**

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22823 | (9 x 0,5) | 8,8 | 80,8 | 128,0 | 20 |

**Incremental feedback cable**

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22818 | (4 x 2 x 0,25 + 2 x 1,0) | 8,8 | 65,2 | 105,0 | 24 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX® 240-PVC / 240-PUR

**special measuring and data cable, EMC-preferred type, meter marking**



D

## Technical data

- Special core and sheath compound from PVC
- **Core resistance** at 20°C
  0,38 mm² max. 47 Ohm/km
  0,50 mm² max. 36 Ohm/km
- **Temperature range**
  flexing -10°C to +70°C
  fixed installation -30°C to +80°C
- **Nominal voltage** 500 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 100 MOhm x km
- **Minimum bending radius**
  approx. 10x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

## Cable structure

**TOPFLEX® 240-PVC**

- Tinned copper conductor
  0,38 mm2 19x0,16 mm
  0,50 mm2 28x0,15 mm
- PVC core insulation
- Cores stranded in pairs with optimal lay-length
- Film wrap
- Pairs stranded in layers with optimal lay-length
- Tinned copper braided screening, coverage approx. 85%
- PVC outer sheath
- Sheath colour grey (RAL 7000)
- with meter marking, change-over in 2009

**TOPFLEX®240-PUR**

- Highly-flexible copper wire stranding
- PUR-outer sheath
- Sheath colour orange (RAL 2003)
- with meter marking, change-over in 2009

## Properties

- **PVC-outer sheath** largely oil resistant; for Chemical Resistance see Technical Information table
- **PUR-outer sheath** particularly resistant to oil alkali as well as tear and abrasion proof
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- **Colour code No. 1 (Standard)**
  0,38 mm²: orange/red violet/blue brown/black yellow/green
  0,50 mm²: brown/black yellow/red
- **Colour code No. 2 (alternative)**
  0,38 mm²: orange/red violet/blue brown/black yellow/grey
  0,50 mm²: brown/black yellow/red
- **Colour-code No. 3 (to DIN 47100)**
  0,38 mm²: white/brown green/yellow grey/pink blue/red
  0,50 mm²: black/violet grey-pink/red-blue

## Application

**TOPFLEX® 240-PVC**

Used as a data and electronics cable in machines, plant installation, conveyor systems etc.

**TOPFLEX® 240-PUR**

This cable type is available in the following types for use under extreme conditions in machine and plant engineering.

**EMC** = Electromagnetic compatibility

To optimise 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/EG.

**TOPFLEX® 240-PVC grey**

| Part No. | Col. code no. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|
| 22801 | 1 | 4 x 2 x 0,38 + 4 x 0,5 | 10,5 | 77,0 | 125,0 | 21 |
| 22891 | 3 | 4 x 2 x 0,38 + 4 x 0,5 | 10,5 | 77,0 | 125,0 | 21 |
| 22890 | 2 | 4 x 2 x 0,38 + 4 x 0,5 | 10,5 | 77,0 | 125,0 | 21 |

**TOPFLEX® 240-PUR orange**

| Part No. | Col. code no. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|
| 22827 | 1 | 4 x 2 x 0,38 + 4 x 0,5 | 10,9 | 77,0 | 135,0 | 21 |
| 22892 | 2 | 4 x 2 x 0,38 + 4 x 0,5 | 10,9 | 77,0 | 135,0 | 21 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX®-PVC feedback cable, EMC-preferred type, meter marking


## Technical data

- Special core and sheath compound from PVC
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Nominal voltage** 350 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Breakdown voltage**
  min. 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  10x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

## Cable structure

- Bare copper, fine and/or ultra-fine wire conductors acc. to DIN VDE 0295 cl. 5, BS 6360 cl. 5 and/or IEC 60228
- PVC core insulation
- Cores colour coded according to DIN 47100
- Cores stranded in layers with optimal lay-length
- Core wrapping with film
- Tinned copper braided screening, coverage approx. 85%
- Special PVC outer sheath
- Colour grey (RAL 7001)
- with meter marking, change-over in 2009

**Colour code for cores**
Part no. / Core / colours
22845 / 10x0,14 / to DIN 47100
22845 / 2x0,5 / white, brown
22846 / 10x0,14 / to DIN 47100
22846 / 4x0,5 / white, brown, green, yellow
22820 / 15x0,14 / to DIN 47100
22820 / 4x0,5 / white, brown, green, yellow

## Properties

- Largely oil-resistant.
  For Chemical Resistance see Technical Information table
- PVC self-extinguishing and flame resistant to VDE 0482 part 265-2-1/ EN 50265-2-1/ IEC 60332-1 (equivalent to DIN VDE 0472 part 804 test type B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Application

These feedback cables are used in machinery and control construction as well as in plant engineering as these enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22845 | (10 x 0,14 + 2 x 0,5) | 8,0 | 46,2 | 70,0 | 26 |
| 22846 | (10 x 0,14 + 4 x 0,5) | 8,2 | 56,3 | 86,0 | 26 |

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22820 | (15 x 0,14 + 4 x 0,5) | 8,7 | 59,0 | 123,0 | 26 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX®-PUR drag chain feedback cable, EMC-preferred type, halogen-free, meter marking


D

## Technical data

- Special core and sheath compound from PUR
- **Temperature range** flexing -30°C to +80°C
- **Nominal voltage** 350 V
- **Test voltage** core/core 2000 V core/screen 1000 V
- **Insulation resistance** min. 20 MOhm x km
- **Minimum bending radius** flexing approx. 10x cable Ø fixed installation approx. 5x cable Ø
- **Coupling resistance** max. 250 Ohm/km

## Cable structure

- Bare copper, fine and/or ultra-fine wire conductors acc. to DIN VDE 0295, BS 6360 and/or IEC 60228
- TPE-core insulation
- Cores colour coded according to DIN 47100
- Cores stranded in layers with optimal lay-length
- Common fleece wrapping
- Tinned copper braided screening, coverage approx. 85%
- Special PUR outer sheath
- Sheath colour grey (RAL 7001)
- with meter marking, change-over in 2009

## Properties

- PUR outer sheath, low adhesion, notch resistant
- The outer sheath on the basis of PUR is adhesion-free, flame retardant and resistant to hydrolysis and microbial attack
- The high abrasion resistance and notch resistance meet the highest requirements

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Please observe applicable installation regulations for use in energy supply chains.

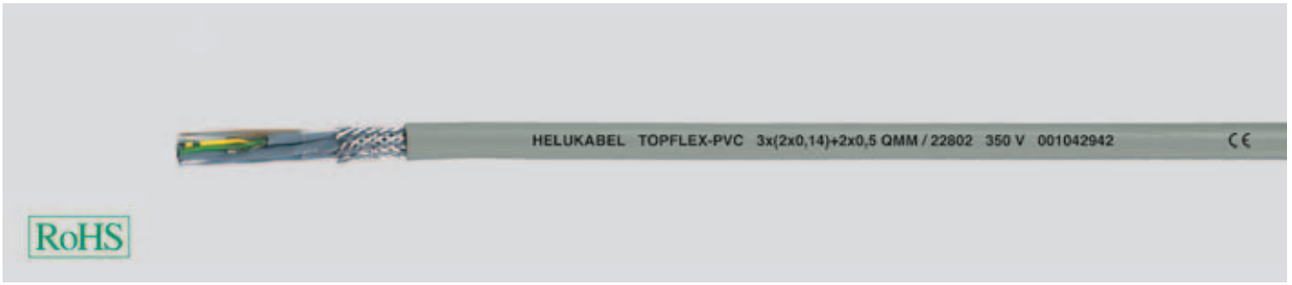
## Application

These feedback-cables are used in machinery and control construction as well as in plant engineering as these enable an excellent transmission of data and signals.
Particularly suitable in power drag chains, robotics and handling equipment. Additional cores for the power supply to individual components are available. The braided screen guarantees reliable signal transmission.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22849 | (10 x 0,14 + 2 x 0,5) | 7,2 | 39,0 | 83,0 | 26 |
| 22848 | (10 x 0,14 + 4 x 0,5) | 7,7 | 54,3 | 96,0 | 26 |
| 22834 | (15 x 0,14 + 4 x 0,5) | 7,9 | 58,0 | 120,0 | 26 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX®-PVC feedback cable, EMC-preferred type, meter marking




## Technical data

- Special core and sheath compound
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -30°C to +80°C
- **Nominal voltage** 350 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Breakdown voltage**
  min. 4000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  10x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km

## Cable structure

- Copper, fine and/or ultra-fine wire conductors acc. to DIN VDE 0295, BS 6360 and/or IEC 60228
- PVC core insulation
- Cores colour coded1) Cores or pairs stranded in layers with optimal lay-length
- Design includes
- Cu screen of single pairs or single cores and PVC-insulated sheath
- Common film wrapping
- Tinned copper braided screening, coverage approx. 85%
- Special PVC outer sheath
- Sheath colour grey (RAL 7001)
- with meter marking, change-over in 2009

**Colour code for cores**
Part no./Core/colours
22800 / 0,14 / gn/ye, gy/pk, bu/rd
22802 / 0,14 / gn/ye, gy/pk, bu/rd
22803 / 0,14 / gn/gy, pk/rd, bn/bk
22806 / 0,14 / rd/bk, bn/gn, ye/vt,gy/pk
22800 / 0,5 / wh, bn
22802 / 0,5 / wh, bn
22803 / 0,5 / wh, bu, whgn, bngn
22806 / 0,5 / wh, bu, whgn, bngn

## Properties

- Largely oil-resistant.
  For Chemical Resistance see Technical Information table
- PVC self-extinguishing and flame resistant to VDE 0482 part 265-2-1/ EN 50265-2-1/ IEC 60332-1 (equivalent to DIN VDE 0472 part 804 test type B)
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Application

These feedback-cables are used in machinery and control construction as well as in plant engineering as these enable an excellent transmission of data and signals. Additional cores for the power supply to individual components are available.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22800 | (3 x (2 x 0,14) + 2 x (0,5)) | 8,5 | 78,0 | 112,0 | 26 |
| 22802 | (3 x (2 x 0,14) + 2 x 0,5) | 8,5 | 72,0 | 108,0 | 26 |

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22803 | (3 x 2 x 0,14 + 4 x 0,5) | 8,5 | 66,0 | 98,0 | 26 |
| 22806 | (4 x 2 x 0,14 + 4 x 0,5) | 8,5 | 68,0 | 111,0 | 26 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX®-PUR drag chain feedback cable, EMC-preferred type, halogen-free, meter marking


D

## Technical data

- Special core and sheath compound
- **Temperature range**
  flexing -30°C to +80°C
  fixed installation -50°C to +80°C
- **Nominal voltage** 350 V
- **Test voltage**
  core/core 2000 V
  core/screen 1000 V
- **Insulation resistance**
  min. 20 MOhm x km
- **Minimum bending radius**
  flexing approx. 10x cable Ø
  fixed installation approx. 5x cable Ø
- **Coupling resistance**
  max. 250 Ohm/km
- **Radiation-resistance**
  up to 50x10$^6$ cJ/kg (up to 50 Mrad)

## Cable structure

- Bare copper, ultra-fine wire conductor to DIN VDE 0295 cl. 6, BS 6360 cl. 6 and/or IEC 60228 cl. 6
- TPE-core insulation
- Cores colour coded
- Adern adrig bzw. paarig mit optimalen Schlaglängen in Lagen verseilt
- Design includes Cu screen of single pairs or single cores and PETP (polyethylene terephthalate) sheath
- Fleece wrapping
- Tinned copper braided screening, coverage approx. 85%
- PUR outer sheath, matt
- Sheath colour grey (RAL 7001)
- with meter marking, change-over in 2009

**Colour code for cores**
Part no./Core/colours
22847 / 0,14 / to DIN 47100 from green
22850 / 0,14 / to DIN 47100 from green
22851 / 0,14 / gn/ye, gy/pk, rd/bu
22852 / 0,14 / bn/gn, ye/vt, gy/pk,rt/bu
22853 / 0,25 / rd/bk, bn/gn, gy/pk,bu/vt
22847 / 0,5 / wh, bn
22850 / 0,5 / wh, bn
22851 / 0,5 / wh, bn
22852 / 0,5 / wh, bu, whgn, bngn
22853 / 0,5 / wh, bn

## Properties

- PUR outer sheath is adhesion-free, flame retardant and resistant to hydrolysis and microbial attack.
- The high abrasion resistance and notch resistance meet the highest requirements
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- For extreme applications extending beyond standard solutions we recommend that you request our questionnaire, which has been especially designed for energy supply systems.
- Art.-No. 22847 diameter of conductor 0,5 mm² per core screened
- Please observe applicable installation regulations for use in energy supply chains.

## Application

These feedback-cables are used in machinery and control construction as well as in plant engineering as these enable an excellent transmission of data and signals, e.g. in energy management chains, robotics and handling equipment. Additional cores for the power supply to individual components are available. The braided screen guarantees reliable signal transmission.
**EMC** = Electromagnetic compatibillity
To optimise 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/EG.

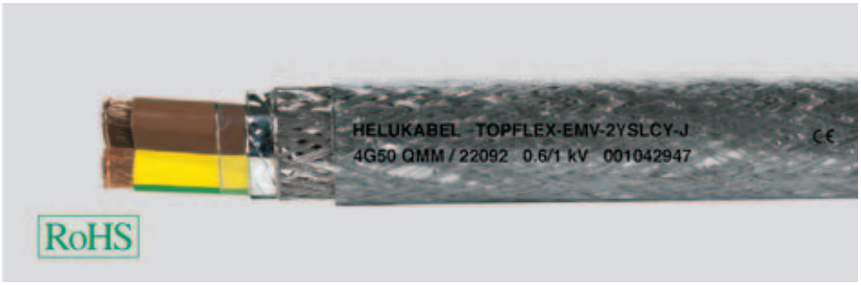
| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22847 | (3 x (2 x 0,14) + 2 x (0,5)) | 8,3 | 78,0 | 103,0 | 26 |
| 22851 | 3 x (2 x 0,14) + 2 x 0,5 | 8,4 | 72,0 | 105,0 | 26 |
| 22850 | (3 x (2 x 0,14) + 20,5) | 8,0 | 72,0 | 102,0 | 26 |

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22852 | 4 x 2 x 0,14 + 4 x 0,5 | 8,4 | 73,0 | 105,0 | 26 |
| 22853 | 4 x 2 x 0,25 + 2 x 0,5 | 8,6 | 77,0 | 125,0 | 24 |

Dimensions and specifications may be changed without prior notice. (RD01)

# TOPFLEX® -EMV-2YSLCY-J for power supply connections to frequency converters, double screened, 0,6/1kV, meter marking

ME01




## Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** $U_0$/U 600/1000 V
- Max. **operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 2500 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  according to different cross-sections
  max. 250 Ohm/km
- **Mutual capacitance**
  according 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: approx. 5x cable Ø
  >12 to 20 mm: approx. 7,5x cable Ø
  >20 mm: approx. 10x cable Ø
  free-movement for outerØ:
  up to 12 mm: approx. 10x cable Ø
  >12 to 20 mm: approx. 15x cable Ø
  >20 mm: approx. 20x cable Ø
- **Radiation-resistance**
  up to 80x$10^6$ 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
- Polyethylene (PE) core insulation
- Core colours: black, brown, grey, green-yellow
- Cores stranded in concentric layers
- 1. screening with special aluminum foil
- 2. screening with copper braiding, tinned copper, coverage approx. 80%
- Transparent special PVC outer sheath
- with meter marking, change-over in 2009

## Properties

- Behavior in fire: Test according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Low mutual capacitance, to DIN VDE 0472 part 504, test method B
- Features PE-insulation secures a lower dielectric loss, double potential strength, high longevity and low screen-interference currents
- Installation in hazardous areas
- Low mutual capacitance
- 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 PE 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
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

## Note

- G = with green-yellow earth core.
- 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

## Application

This TOPFLEX®-EMV-2YSLCY-J 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, not however for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools.
Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications.
**EMC** = Electromagnetic compatibility
The screen must be connected at both ends and ensure lare-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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Mutual capacitance core/core ca. nF/km | Mutual capacitance core/shield ca. nF/km | Coupling resistance with 1 MHz Ohm/km | Coupling resistance with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 22084 | (4 x 1,5) | 10,4 | 70,0 | 110,0 | | | 18,0 | 95,0 | 230,0 | 16 |
| 22085 | (4 x 2,5) | 12,5 | 80,0 | 130,0 | 18,0 | 210,0 | 26,0 | 150,0 | 300,0 | 14 |
| 22086 | (4 x 4) | 14,2 | 90,0 | 150,0 | 11,0 | 210,0 | 34,0 | 235,0 | 485,0 | 12 |
| 22087 | (4 x 6) | 15,2 | 90,0 | 150,0 | 6,0 | 150,0 | 44,0 | 320,0 | 633,0 | 10 |

Dimensions and specifications may be changed without prior notice. (RD01)

Continuation ▸



HELUKABEL

# TOPFLEX® -EMV-2YSLCY-J for power supply connections to frequency converters, double screened, 0,6/1kV, meter marking

ME01

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Mutual capacitance core/core ca. nF/km | Mutual capacitance core/shield ca. nF/km | Coupling resistance with 1 MHz Ohm/km | Coupling resistance with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 22088 | (4 x 10) | 19,5 | 120,0 | 200,0 | 7,0 | 180,0 | 61,0 | 533,0 | 863,0 | 8 |
| 22089 | (4 x 16) | 22,9 | 140,0 | 230,0 | 9,0 | 190,0 | 82,0 | 789,0 | 1291,0 | 6 |
| 22090 | (4 x 25) | 27,1 | 120,0 | 210,0 | 4,0 | 95,0 | 108,0 | 1236,0 | 1862,0 | 4 |
| 22091 | (4 x 35) | 29,6 | 150,0 | 260,0 | 3,0 | 85,0 | 135,0 | 1662,0 | 2611,0 | 2 |
| 22092 | (4 x 50) | 35,2 | 190,0 | 320,0 | 2,0 | 40,0 | 168,0 | 2345,0 | 2955,0 | 1 |
| 22093 | (4 x 70) | 41,4 | 190,0 | 320,0 | 2,0 | 45,0 | 207,0 | 3196,0 | 3953,0 | 2/0 |
| 22094 | (4 x 95) | 46,0 | 250,0 | 410,0 | 1,0 | 50,0 | 250,0 | 4316,0 | 5304,0 | 3/0 |
| 22095 | (4 x 120) | 50,8 | | | | | 292,0 | 5435,0 | 6604,0 | 4/0 |
| 22096 | (4 x 150) | 58,3 | | | | | 335,0 | 6394,0 | 7043,0 | 300 kcmil |
| 22097 | (4 x 185) | 65,5 | | | | | 382,0 | 7639,0 | 8384,0 | 350 kcmil |

Dimensions and specifications may be changed without prior notice. (RD01)

D

Large cabling machine with backtwist at our Windsbach factory.

# TOPFLEX® -EMV-UV-2YSLCYK-J for power supply connections

## to frequency converters, double screened, 0,6/1kV, meter marking

ME01


### Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Max. operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 2500 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  according to different cross-sections
  max. 250 Ohm/km
- **Mutual capacitance**
  according 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: approx. 5x cable Ø
  >12 to 20 mm: approx. 7,5x cable Ø
  >20 mm: approx. 10x cable Ø
  free-movement for outer Ø:
  up to 12 mm: approx. 10x cable Ø
  >12 to 20 mm: approx. 15x cable Ø
  >20 mm: approx. 20x cable Ø
- **Radiation-resistance**
  up to 80x$10^6$ 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
- Polyethylene (PE) core insulation
- Core colours: black, brown, grey, green-yellow
- Cores stranded in concentric layers
- 1. screening with special aluminium film
- 2. screening with copper braiding, tinned copper, coverage approx. 80%
- Special PVC outer sheath, black (RAL 9005)
- with meter marking, change-over in 2009

### Properties

- Behavior in fire: Test according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Low mutual capacitance, to DIN VDE 0472 part 504, test method B
- Features PE-insulation secures a lower dielectric loss, double potential strength, high longevity and low screen-interference currents
- Low mutual capacitance
- Meets EMC requirements according to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- UV-resitant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE 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
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers

### Application

This TOPFLEX®-EMC-2YSLCY-J motor power supply cable for the frequency converters assures electromagnetic compatibility in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications.
Installation in hazardous areas.
**EMC** = Electromagnetic compatibility
The screen must be connected at both ends and ensure lare-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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Mutual capacitance core/core ca. nF/km | Mutual capacitance core/shield ca. nF/km | Coupling resistance with 1 MHz Ohm/km | Coupling resistance with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 22234 | (4 x 1,5) | 10,4 | 70,0 | 110,0 | | | 18,0 | 95,0 | 230,0 | 16 |
| 22235 | (4 x 2,5) | 12,5 | 80,0 | 130,0 | 18,0 | 210,0 | 26,0 | 150,0 | 300,0 | 14 |
| 22236 | (4 x 4) | 14,2 | 90,0 | 150,0 | 11,0 | 210,0 | 34,0 | 235,0 | 485,0 | 12 |
| 22237 | (4 x 6) | 15,2 | 90,0 | 150,0 | 6,0 | 150,0 | 44,0 | 320,0 | 630,0 | 10 |
| 22238 | (4 x 10) | 19,5 | 120,0 | 200,0 | 7,0 | 180,0 | 61,0 | 533,0 | 860,0 | 8 |
| 22239 | (4 x 16) | 22,9 | 140,0 | 230,0 | 9,0 | 190,0 | 82,0 | 789,0 | 1290,0 | 6 |

Dimensions and specifications may be changed without prior notice. (RD01)

Continuation ▸



HELUKABEL

# TOPFLEX® -EMV-UV-2YSLCYK-J for power supply connections

## to frequency converters, double screened, 0,6/1kV, meter marking

ME01

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Mutual capacitance core/core ca. nF/km | Mutual capacitance core/shield ca. nF/km | Coupling resistance with 1 MHz Ohm/km | Coupling resistance with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 22240 | (4 x 25) | 27,1 | 120,0 | 210,0 | 4,0 | 95,0 | 108,0 | 1236,0 | 1860,0 | 4 |
| 22241 | (4 x 35) | 29,6 | 150,0 | 260,0 | 3,0 | 85,0 | 135,0 | 1662,0 | 2610,0 | 2 |
| 22242 | (4 x 50) | 35,2 | 190,0 | 320,0 | 2,0 | 40,0 | 168,0 | 2345,0 | 2950,0 | 1 |
| 22243 | (4 x 70) | 41,4 | 190,0 | 320,0 | 2,0 | 45,0 | 207,0 | 3196,0 | 3950,0 | 2/0 |
| 22244 | (4 x 95) | 46,0 | 250,0 | 410,0 | 1,0 | 50,0 | 250,0 | 4316,0 | 5300,0 | 3/0 |
| 22245 | (4 x 120) | 50,8 | | | | | 292,0 | 5435,0 | 6600,0 | 4/0 |
| 22246 | (4 x 150) | 58,3 | | | | | 335,0 | 6394,0 | 7040,0 | 300 kcmil |
| 22247 | (4 x 185) | 65,5 | | | | | 382,0 | 7639,0 | 8380,0 | 350 kcmil |

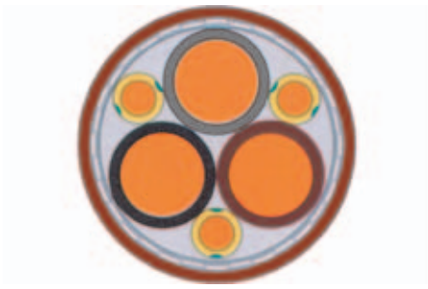
Dimensions and specifications may be changed without prior notice. (RD01)

D

# TOPFLEX®-EMV-3 PLUS 2YSLCY-J for power supply

## connections to frequency converters, double screened, 0,6/1kV, meter marking

ME01




### Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range**
  flexing +5°C to +70°C
  fixed installation -40°C to +70°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Max. operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Peak value** Û 1700 V
- **Test voltage** 2500 V
- Insulation resistance
  min. 200 MOhm x km
- **Coupling resistance**
  according to different cross-sections
  max. 250 Ohm/km
- **Minimum bending radius**
  fixed installation for outer Ø:
  up to 12 mm: approx. 5x cable Ø
  >12 to 20 mm: approx. 7,5x cable Ø
  >20 mm: approx. 10x cable Ø
  free-movement for outer Ø:
  up to 12 mm: approx. 10x cable Ø
  >12 to 20 mm: approx. 15x cable Ø
  >20 mm: approx. 20x cable Ø
- **Radiation-resistance**
  up to 80x10$^6$ cJ/kg (up to 80 Mrad)

### Cable structure

- Plain copper, fine wire conductor according to DIN VDE 0295 cl. 5, BS 6360 cl. 5 and/or IEC 60228 cl. 5
- Polyethylene (PE) core insulation
- Core colours: black, brown, grey, green-yellow (earth core divided into 3)
- 3+3-core structure
- Cores stranded in concentric layers
- 1. screening with special aluminium film
- 2. screening with copper braiding, tinned copper, coverage approx. 80%
- Transparent orange special PVC outer sheath
- with meter marking, change-over in 2009
- Pos.no. 22380 = capacitance
  core/core 270 nF/km
  core/screen 520 nF/km

### Properties

- Behavior in fire: Test according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- PE-insulation secures a lower dielectric loss, double potential strength, high longevity and low screen-interference currents
- Application in ex-area
- Low mutual capacitance
- Meets EMC requirements according to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- The screen must be connected at both ends and ensure lare-area contact over the entire cable circumference for compliance with the functional interference requirements of EN 55011
- The minimum cross-section of 0,75² meets the requirements of DIN EN 60204 part 1

### Application

As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications. Installation in hazardous areas
This screened motor supply cable with low mutual capacitance of the single cores because of the special PE 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.
**EMC** = Electromagnetic compatibility
The screen must be connected at both ends and ensure lare-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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Coupling resistance with 1 MHz Ohm/km | with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|
| 22368 | (3 x 1,5 + 3 x 0,25) | 10,0 | | | 18,0 | 86,0 | 140,0 | 16 |
| 22369 | (3 x 2,5 + 3 x 0,5) | 11,4 | 18,0 | 210,0 | 26,0 | 144,0 | 220,0 | 14 |
| 22370 | (3 x 4 + 3 x 0,75) | 13,0 | 11,0 | 210,0 | 34,0 | 224,0 | 323,0 | 12 |
| 22371 | (3 x 6 + 3 x 1,0) | 15,0 | 6,0 | 150,0 | 44,0 | 298,0 | 420,0 | 10 |
| 22372 | (3 x 10 + 3 x 1,5) | 18,4 | 7,0 | 180,0 | 61,0 | 491,0 | 615,0 | 8 |
| 22373 | (3 x 16 + 3 x 2,5) | 21,0 | 9,0 | 190,0 | 82,0 | 723,0 | 819,0 | 6 |
| 22374 | (3 x 25 + 3 x 4,0) | 25,3 | 4,0 | 95,0 | 108,0 | 1138,0 | 1325,0 | 4 |

Dimensions and specifications may be changed without prior notice. (RD01)

Continuation ▸



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# TOPFLEX®-EMV-3 PLUS 2YSLCY-J for power supply

## connections to frequency converters, double screened, 0,6/1kV, meter marking

ME01

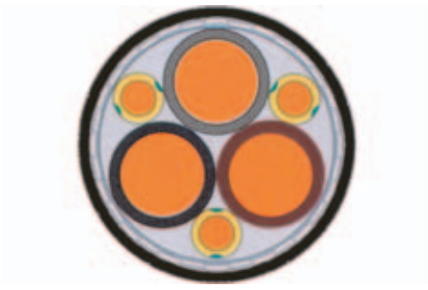
| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Coupling resistance with 1 MHz Ohm/km | with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|
| 22375 | (3 x 35 + 3 x 6,0) | 27,8 | 3,0 | 85,0 | 135,0 | 1535,0 | 1718,0 | 2 |
| 22376 | (3 x 50 + 3 x 10,0) | 32,6 | 2,0 | 40,0 | 168,0 | 2208,0 | 2399,0 | 1 |
| 22377 | (3 x 70 + 3 x 10,0) | 38,1 | 2,0 | 45,0 | 207,0 | 2871,0 | 3056,0 | 2/0 |
| 22378 | (3 x 95 + 3 x 16,0) | 41,0 | 1,0 | 50,0 | 250,0 | 3953,0 | 4162,0 | 3/0 |
| 22379 | (3 x 120 + 3 x 16,0) | 46,4 | | | 292,0 | 4836,0 | 5074,0 | 4/0 |
| 22380 | (3 x 150 + 3 x 25,0) | 53,5 | | | 335,0 | 5412,0 | 6128,0 | 300 kcmil |
| 22381 | (3 x 185 + 3 x 35,0) | 59,5 | | | 382,0 | 6969,0 | 7189,0 | 350 kcmil |
| 22382 | (3 x 240 + 3 x 42,5) | 65,1 | | | 453,0 | 8540,0 | 9540,0 | 500 kcmil |

Dimensions and specifications may be changed without prior notice. (RD01)

D

# TOPFLEX®-EMV-UV-3 PLUS 2YSLCYK-J for power supply connections to frequency converters, double screened, 0,6/1kV, meter marking

ME01




## Technical data

- Special motor power supply cable for frequency converters adapted to DIN VDE 0250
- **Temperature range** flexing -5°C bis +70°C fixed installation -40°C bis +70°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Operating voltage, max.** A.C. and 3-phase 700/1200 V DC operation 900/1800 V
- **Peak value** Û 1700 V
- **Test voltage** 2500 V
- **Insulation resistance** min. 200 MOhm x km
- **Coupling resistance** depending on the cross-section max. 250 Ohm/km
- **Minimum bending radius** fixed installation for outer Ø: up to 12 mm: 5x cable Ø >12 to 20 mm: 7,5x cable Ø >20 mm: 10x cable Ø free-movement for outer Ø: up to 12 mm: 10x cable Ø >12 to 20 mm: 15x cable Ø >20 mm: 20x cable Ø
- **Radiation resistance** up to 80x$10^6$ cJ/kg (up to 80 Mrad)

## Cable structure

- Bare copper, fine wire conductor to DIN VDE 0295 cl. 5, BS 6360 cl. 5 and IEC 60228 cl. 5
- Polyethylene (PE) core insulation
- Core colour: black, brown, grey, green-yellow (earth core divided into 3)
- Cores stranded in concentric layers
- 3+3 core design
- 1. screening with special aluminum foil
- 2. screening with copper braiding, tinned copper, coverage approx. 80%
- Special PVC outer sheath, schwarz (RAL 9005)
- with meter marking, change-over in 2009
- Pos.no. 22685 = capacitance core/core 270 nF/km core/screen 520 nF/km

## Properties

- Behavior in fire: Test according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- PE-insulation secures a lower dielectric loss, double potential strength, high longevity and low screen-interference currents
- Low mutual capacitance
- Meets EMC requirements according to EN 55011 and DIN VDE 0875 part 11
- Low coupling resistance for high electromagnetic compatibility
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- The 3 Plus-construction of motor power supply cables features a symmetrical 3-core design, improved in terms of EMC characteristics comparing favorably with a 4-core version
- The protective conductor PE, divided into 3 is uniformly stranded in the interstices
- This enables an extremely concentric structure
- The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers
- The minimum cross-section of 0,75² meets the requirements of DIN EN 60204 part 1
- Resistant to ultra violet rays
- This screened motor supply cable with low mutual capacitance of the single cores because of the special PE core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables

## Application

As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automobile industry, food industry, environmental engineering, packaging industry, toolmaking machinery, handling equipment, for SIMOVERT drivers, 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 lare-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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Coupling resistance with 1 MHz Ohm/km | with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|
| 22673 | (3 x 1,5 + 3 x 0,25) | 10,0 | | | 18,0 | 86,0 | 140,0 | 16 |
| 22674 | (3 x 2,5 + 3 x 0,5) | 11,4 | 18,0 | 210,0 | 26,0 | 144,0 | 220,0 | 14 |
| 22675 | (3 x 4 + 3 x 0,75) | 13,0 | 11,0 | 210,0 | 34,0 | 224,0 | 323,0 | 12 |
| 22676 | (3 x 6 + 3 x 1,0) | 15,0 | 6,0 | 150,0 | 44,0 | 298,0 | 420,0 | 10 |

Dimensions and specifications may be changed without prior notice. (RD01)

Continuation ▸



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# TOPFLEX®-EMV-UV-3 PLUS 2YSLCYK-J for power

## supply connections to frequency converters, double screened, 0,6/1kV, meter marking

ME01

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Coupling resistance with 1 MHz Ohm/km | with 30 MHz Ohm/km | Power ratings **) with 3 loaded cores in Ampère | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|---|---|---|
| 22677 | (3 x 10 + 3 x 1,5) | 18,4 | 7,0 | 180,0 | 61,0 | 491,0 | 615,0 | 8 |
| 22678 | (3 x 16 + 3 x 2,5) | 21,0 | 9,0 | 190,0 | 82,0 | 723,0 | 819,0 | 6 |
| 22679 | (3 x 25 + 3 x 4,0) | 25,3 | 4,0 | 95,0 | 108,0 | 1138,0 | 1325,0 | 4 |
| 22680 | (3 x 35 + 3 x 6,0) | 27,8 | 3,0 | 85,0 | 135,0 | 1535,0 | 1718,0 | 2 |
| 22681 | (3 x 50 + 3 x 10,0) | 32,6 | 2,0 | 40,0 | 168,0 | 2208,0 | 2399,0 | 1 |
| 22682 | (3 x 70 + 3 x 10,0) | 38,1 | 2,0 | 45,0 | 207,0 | 2871,0 | 3056,0 | 2/0 |
| 22683 | (3 x 95 + 3 x 16,0) | 41,0 | 1,0 | 50,0 | 250,0 | 3953,0 | 4162,0 | 3/0 |
| 22684 | (3 x 120 + 3 x 16,0) | 46,4 | | | 292,0 | 4836,0 | 5075,0 | 4/0 |
| 22685 | (3 x 150 + 3 x 25,0) | 53,5 | | | 335,0 | 5412,0 | 6128,0 | 300 kcmil |
| 22686 | (3 x 185 + 3 x 35,0) | 59,5 | | | 382,0 | 6969,0 | 7189,0 | 350 kcmil |
| 22687 | (3 x 240 + 3 x 42,5) | 65,1 | | | | 8540,0 | 9540,0 | 500 kcmil |

Dimensions and specifications may be changed without prior notice. (RD01)

D

# TOPFLEX® Motor 109 low capacitance power supply cable 0,6/1kV, increased ampacity, meter marking

ME01


## Technical data

- Special motor power supply cable for frequency converters
- **Temperature range**
  flexing -5°C to +70°C
  fixed installation -40°C to +80°C
- Permissible **operating temperature** at conductor +90°C
- **Nominal voltage** $U_0$/U 600/1000 V
- **Max. operating voltage**
  A.C. and 3-phase 700/1200 V
  DC operation 900/1800 V
- **Test voltage** 2500 V
- **Insulation resistance**
  min. 200 MOhm x km
- **Coupling resistance**
  according to different cross-sections
  max. 250 Ohm/km
- **Mutual capacitance**
  according 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: approx. 5x cable Ø
  >12 to 20 mm: approx. 7,5x cable Ø
  >20 mm: approx. 10x cable Ø
  free-movement for outer Ø:
  up to 12 mm: approx. 10x cable Ø
  >12 to 20 mm: approx. 15x cable Ø
  >20 mm: approx. 20x cable Ø
- **Radiation-resistance**
  up to 80x$10^6$ 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
- Special-Polymer core insulation
- Cores coded to DIN VDE 0293-308
- Core colours:
  above 5 cores color coded
  7 cores black with numbering
- Green-yellow earth-core
- Cores stranded in concentric layers
- 1. screening with special aluminium film
- 2. screening with copper braiding, tinned copper, coverage approx. 80%
- Special PUR outer sheath, orange (RAL 2003)
- with meter marking, change-over in 2009

## Properties

- Behavior in fire: Test according to VDE 0482-332-1-2, DIN EN 60332-1-2/ IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B)
- Low mutual capacitance, to DIN VDE 0472 part 504, 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
- UV-resitant
- Outdoor application
- This screened motor supply cable with low mutual capacitance of the single cores because of the special Polymer core insulation and low screen capacitance enable a low-loss transmission of the power compared to PVC-sheathed connecting cables
- Due to the optimal screening an interference-free operation of frequency converters is obtained
- Design according 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

## Application

This motor power supply cable for the frequency converters assures electromagnetic compatibility in plants and buildings, facilities with units and operating equipment where the fields of electromagnetic interference might cause adverse effects on the surroundings. As a supply and connecting cable for medium mechanical stresses in fixed installations and forced movements in dry, moist and wet environments and for outdoor applications. Used in the automotive and food industries, environmental technology, packaging industry, machine tools. Handling equipment, for SIMOVERT drives, they are particularly suitable for use with industrial pumps, ventilators, conveyor belts and air-conditioning installations and similar applications.
Installation in hazardous areas.
**EMC** = Electromagnetic compatibility
The screen must be connected at both ends and ensure lare-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/EG.

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22724 | (3 x 1,5) | 9,4 | 72,0 | 200,0 | 16 |
| 22707 | (4 x 1,5) | 10,4 | 95,0 | 230,0 | 16 |
| 22708 | (5 x 1,5) | 11,2 | 117,0 | 258,0 | 16 |
| 22709 | (7 x 1,5) | 13,2 | 148,0 | 281,0 | 16 |
| 22710 | (3 x 2,5) | 11,2 | 137,0 | 270,0 | 16 |
| 22711 | (4 x 2,5) | 12,5 | 150,0 | 300,0 | 16 |
| 22712 | (5 x 2,5) | 13,5 | 200,0 | 352,0 | 16 |
| 22713 | (7 x 2,5) | 16,0 | 230,0 | 473,0 | 16 |
| 22714 | (4 x 4) | 14,2 | 235,0 | 485,0 | 16 |
| 22715 | (5 x 4) | 15,4 | 321,0 | 567,0 | 16 |
| 22716 | (7 x 4) | 18,2 | 352,0 | 603,0 | 16 |
| 22717 | (4 x 6) | 15,2 | 320,0 | 633,0 | 16 |

Dimensions and specifications may be changed without prior notice. (RD01)

Continuation ▸



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# TOPFLEX® Motor 109 low capacitance power supply cable 0,6/1kV, increased ampacity, meter marking

ME01

| Part No. | No.cores x cross-sec. mm² | Outer ø ca. mm | Cop. weight kg / km | Weight ca. kg / km | AWG-No. |
|---|---|---|---|---|---|
| 22718 | (5 x 6) | 16,8 | 439,0 | 679,0 | 16 |
| 22719 | (7 x 6) | 20,0 | 501,0 | 771,0 | 16 |
| 22720 | (4 x 10) | 19,5 | 533,0 | 860,0 | 16 |
| 22721 | (5 x 10) | 21,6 | 711,0 | 1029,0 | 16 |
| 22722 | (4 x 16) | 23,1 | 789,0 | 1290,0 | 16 |
| 22723 | (4 x 25) | 27,1 | 1236,0 | 1862,0 | 16 |

Dimensions and specifications may be changed without prior notice. (RD01)

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