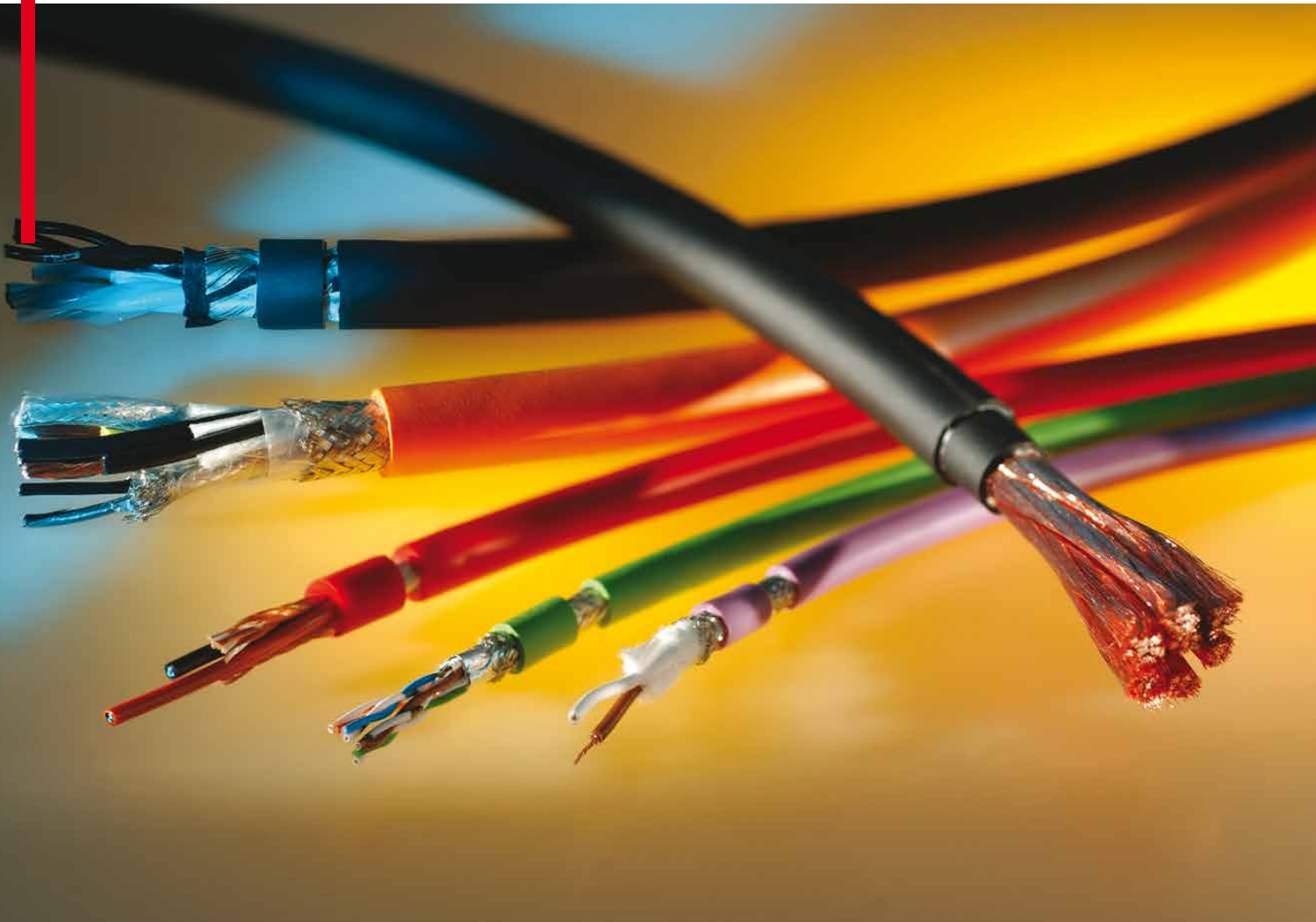


Cables for robot applications



Robot primary cable



Cable design

Internal conductor

- Special conductor
- Strand class VI (super-fine wire)
- Highly flexible

Core insulation

- TPM or PUR

Core identification

- Black cores with continuous white numbering
- PE conductor green/yellow

Core stranding

- With very short lay length, reeled around a filler element in one layer for design reasons.

Outer sheath

- Special PUR

Cable properties

PUR self-extinguishing and flame retardant

- according to IEC 60332-1 / EN 50265-2-1

Oil-resistant

- acc. to VDE 0472

Halogen-free

- Based on EN 50267-2-1

Silicone-free

- The materials used in manufacture are free of silicone and cadmium, as well as of substances that impair paint wetting

Lead-free

- Based on EU Directive (RoHS) 2002/95/EC

Advantages

- Extremely high resilience to mechanical loads
- For extreme loadings
- High flexibility, even at very low temperatures

Application

Primary cables for the most extreme applications.

These robot cables are absolutely torsion-loadable and are highly resistant to flexural stresses. They are particularly suitable for automated production processes with 3D movements, such as occur in the automotive industry, general engineering and plant construction.



RoHS
compliant

Robot primary cable

Technical data

Nominal voltage:

U_0/U : 600 V/1,00 V

Insulation resistance:

min. 100 M Ω x km

Temperature range when moving:

-40 °C to +80 °C max. conductor temp.

Temperature range static:

-50 °C to +80 °C max. conductor temp.

Minimum bending radius flexing:

10 x Cable diameter

Minimum bending radius static:

5 x Cable diameter

| Designation: | Order no. | Colour | \varnothing in mm: | CU kg/km: | Weight kg/km: | Minimum bending radius (mm): | Remarks |
|------------------------------------|-----------|---------|-------------------------|--------------|------------------|---------------------------------|---------|
| Primary cable 1x25 mm ² | 82854001 | Black | 10.8 | 238.0 | 278.0 | 108.0 | |
| Primary cable 1x25 mm ² | 82854002 | bk/gnye | 10.8 | 238.0 | 278.0 | 108.0 | |
| Primary cable 1x35 mm ² | 82854003 | Black | 11.8 | 332.0 | 371.0 | 118.0 | |
| Primary cable 3x16 mm ² | 82851010 | Orange | 21.4 | 460.8 | 721.0 | 214.0 | |
| Primary cable 3x25 mm ² | 82854005 | Yellow | 22.3 | 720.0 | 965.0 | 223.0 | |
| Primary cable 3x35 mm ² | 82854006 | Orange | 24.7 | 1008.0 | 1229.0 | 247.0 | |
| Primary cable 3x50 mm ² | 82854007 | Orange | 32.6 | 1344.0 | 1680.0 | 326.0 | |

Dimensions and specifications may be changed without prior notice.

Robot control cable / motor cable / sensor cable / EMZ cable



Cable design

Internal conductor

- Special conductor
- Strand class VI (super-fine wire)
- Highly flexible

Core insulation

- TPM or PUR

Core identification

- for design reasons

Core stranding

- Wires stranded with optimum lay lengths, low-torsion stranding with matching short lay lengths by one filling element

Innen sheath

- TPM

Screening

- Tin-plated copper braid
- Optical covering > 80%

Outer sheath

- Special PUR

Cable properties

PUR self-extinguishing and flame retardant

- according to IEC 60332-1 / EN 50265-2-1

Oil-resistant

- acc. to VDE 0472

Halogen-free

- Based on EN 50267-2-1

Silicone-free

- The materials used in manufacture are free of silicone and cadmium, as well as of substances that impair paint wetting

Lead-free

- Based on EU Directive (RoHS) 2002/95/EG

Advantages

- Extremely high resilience to mechanical loads
- For extreme loadings
- High flexibility, even at very low temperatures

Application

Robot cables for the most extreme applications.

These robot cables are absolutely torsion-loadable and are highly resistant to flexural stresses. They are particularly suitable for automated production processes with 3D movements, such as occur in the automotive industry, general engineering and plant construction.



Robot control cable / motor cable / sensor cable / EMZ cable

Technical data

Nominal voltage:

U_0/U : 300 V/500 V

Test voltage:

3,000 V

Insulation resistance:

min. 100 MΩ x km

Temperature range when moving:

-30 °C to +80 °C max. conductor temp.

Temperature range static:

-40 °C to +80 °C max. conductor temp.

Minimum bending radius flexing:

10 x Cable diameter

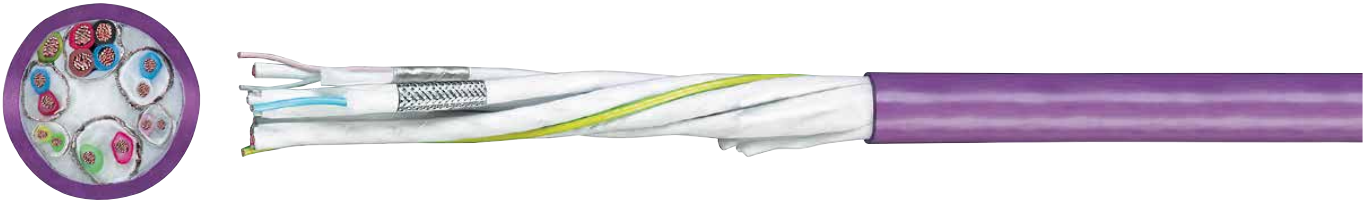
Minimum bending radius static:

5 x Cable diameter

| Designation: | Art no.: | Ø in mm: | CU kg/km: | Weight kg/km: | Minimum bending radius (mm): | Remarks |
|--|----------|-------------|--------------|------------------|---------------------------------|--------------------------|
| Control cable 2x0.5+(2x0.5) mm ² | 82851001 | 8.0 | 32.0 | 72.0 | 80.0 | |
| Control cable 13x0.5+3x1.0+(2x0.5) mm ² | 82851002 | 12.7 | 102.0 | 186.0 | 127.0 | |
| Control cable 6x0.75+(3x0.75) mm ² | 82851003 | 10.0 | 188.1 | 307.0 | 100.0 | |
| Control cable 5x1.0+(2x1.0) mm ² | 82851004 | 10.2 | 91.0 | 132.0 | 102.0 | |
| Control cable 7x1.0+(2x1.0) mm ² | 82851005 | 10.6 | 92.0 | 138.0 | 106.0 | |
| Control cable 16x1.0+(2x1.0) mm ² | 82853006 | 14.6 | 179.0 | 301.0 | 146.0 | |
| Control cable 17x1.0+(2x1.0) mm ² | 82851007 | 14.8 | 188.0 | 309.0 | 148.0 | |
| Control cable 23x1.0+(2x1.0) mm ² | 82851008 | 13.5 | 254.0 | 348.0 | 135.0 | |
| Control cable 24x1.0+(2x1.0) mm ² | 82851009 | 15.7 | 249.0 | 385.0 | 157.0 | |
| Control cable 3x(2x0.75)+17x0.75 mm ² | 82851019 | 15.8 | 185.0 | 333.0 | 158.0 | |
| Control cable 2x(3x0.5)+3x0.5+2x4x0.5+2x0.5 mm ² | 82853010 | 11.4 | 108.0 | 91.6 | 114.0 | |
| Control cable 22x0.75+5x(2x0.75) mm ² | 82851013 | 17.0 | 265.0 | 430.0 | 170.0 | |
| Control cable (2x2x0.5)+3x3x0.5+5x3x1.0 mm ² | 82851020 | 13.6 | 126.0 | 253.0 | 136.0 | |
| Control cable (2x1.0)+(3x1.0)+1x1.0 mm ² | 82853007 | 10.2 | 89.0 | 145.0 | 102.0 | |
| Motor cable (4x2.5+(2x2x0.75)) mm ² | 82859009 | 13.0 | 197.0 | 275.0 | 104.0 | |
| Motor cable (4x2.5+2x1.0) mm ² | 82859019 | 12.3 | 147.0 | 250.0 | 123.0 | |
| Sensor cable 4x(2x0.25) mm ² | 82859010 | 11.6 | 86.0 | 190.0 | 116.0 | |
| Sensor cable 8x(2x0.25) mm ² | 82859018 | 12.0 | 90.0 | 220.0 | 120.0 | |
| EMZ cable [(4x2x0.25)+(5x1.5)+2x(2x0.5)+(5x0.5)] mm ² | 82852002 | 16.3 | 274.0 | 456.0 | 163.0 | |
| EMZ cable [(4x0.75)+(5x0.5)+2x(2x0.5)+(4x2x0.25)] mm ² | 82852003 | 17.4 | 221.0 | 388.0 | 174.0 | |
| EMZ cable [(4x2x0.25)+2x(2x0.5)+(5x2.5)+(5x0.5)] mm ² | 82852004 | 20.0 | 328.0 | 547.0 | 200.0 | Wire colour spiralled |
| EMZ cable [(4x2x0.25)+2x(2x0.5)+(5x2.5)+(5x0.5)] mm ² | 82852005 | 20.0 | 328.0 | 546.0 | 200.0 | Wire colour plain |

Dimensions and specifications may be changed without prior notice.

Robot bus cables



Cable design

Internal conductor

- Special conductor
- Strand class VI (super-fine wire)
- Highly flexible

Core insulation

- TPM or PUR

Core identification

- Coloured wires
- PE conductor green/yellow

Core stranding

- Wires stranded with optimum lay lengths, low-torsion stranding with matching short lay lengths by one filling element

Screening

- Tin-plated copper braid
- Optical covering > 90%

Outer sheath

- Special PUR

Cable properties

Flame-retardant

- acc. to HD 405.1 or IEC 332-1 and VW1/FT1 acc. to C-UL

Oil-resistant

- acc. to VDE 0472

Halogen-free

- in accordance with DIN VDE 0475 Part 815

Silicone-free

- The materials used in manufacture are free of silicone and cadmium, as well as of substances that impair paint wetting

Lead-free

- Based on EU Directive (RoHS) 2002/95/EC

Advantages

- Extremely high resilience to mechanical loads
- For extreme loadings
- High flexibility, even at very low temperatures

Application

Robot bus cables for the most extreme applications.

These robot cables are absolutely torsion-loadable and are highly resistant to flexural stresses. They are particularly suitable for automated production processes with 3D movements, such as occur in the automotive industry, general engineering and plant construction.



Robot bus cables

Technical data

Nominal voltage:

1.0 mm²: U_y/U: 450 V/750 V

Test voltage:

0.25 mm²: 1.5 kV, 1.0 mm²: 2.5 kV

Insulation resistance:

min. 100 MΩ x km

Temperature range when moving:

-20 °C to +60 °C max. conductor temp.

Temperature range static:

-40 °C to +70 °C max. conductor temp.

Minimum bending radius flexing:

10 x Cable diameter

Minimum bending radius static:

5 x Cable diameter

| Type | Order no. | Ø in mm: | CU kg/km: | Weight kg/km: | Minimum bending radius (mm): | Remarks |
|---|-----------|-------------|--------------|------------------|---------------------------------|---------|
| Interbus cable 5x(2x0.25)+2x(2x1.0)+1.0 mm ² | 82853001 | 13.6 | 120.0 | 220.0 | 136.0 | |
| Multibus cable 1x(2x0.34)+2x(2x0.25)+2x(2x0.34)+2x(2x1.0)+1.0 mm ² | 82853003 | 14.7 | 139.0 | 258.0 | 147.0 | |

Dimensions and specifications may be changed without prior notice.

FO data cable and FO supply cables

| Type | Order no. | Ø in mm: | CU kg/km: | Weight kg/km: | Minimum bending radius (mm): | Remarks |
|------------------------------------|-----------|-------------|--------------|------------------|---------------------------------|---------|
| FO data cable 2P 980/1000 | 82859015 | 8.0 | - | 55.0 | 40.0 | |
| Profinet-FO | 82859032 | 8.0 | - | 51.0 | 40.0 | |
| Supply cable 5x1.5 mm ² | 82859013 | 9.9 | 68.2 | 133.2 | 148.5 | |

Dimensions and specifications may be changed without prior notice.

ROBOFLEX recycle

Technical data

- Approval: UL/cUL approved
- Manufacture based on VDE
- Temperature range:
fixed installation: -40 °C to +120 °C
flexible: -30 °C to +120 °C
- Nominal voltage: 300 V
- Test voltage: 2000 V
- Minimum bending radius:
approx. 7.5 cable diameters
(for flexible application)
- Traversing speed:
max. 3.3 m/s for 5 m of horizontal
traverse path length
- Acceleration: max. 5 m/s²
- Flexing and torsion cycles:
min. 10 million
- Torsional stress: +/- 360 °/m

Structure

- Bare copper stranded wire, 42 x 0.10 mm
- Core insulation polyester, bk, bu, bn
- Cores stranded in layers
- Sheath, special mix
- Weld spatter resistant, matt, low-adhesion,
flame retardant and self-extinguishing (acc. to
VDE 0472 Part 804 test type B, IEC 60332-1)
- Sheath colour: black
- Design (3-pin)**
Wire colours bn, bu, bk
OD 5.2 +/- 0.2 mm
- Design (4-pin)**
Wire colours bn, bu, bk, wh
OD 5.5 +/- 0.2 mm
- Design (5-pin)**
Wire colours bn, bu, bk, wh, gy
OD 6.0 +/- 0.2 mm

Properties

- Highly oil resistant
- In accordance with VDE 0473 Part 811-2-1
- Good resistance to acids, alkalis and solvents
- Not cross-linked
- Weld spatter resistant
- Recyclable
- Halogen-free
- Silicone and cadmium-free
- Free of substances harmful to paint adhesion
- Very high mechanical load capacity
- Abrasion-resistant
- Wear-resistant
- Highly flexible
- UV-resistant
- ROHS-compliant
- CE-compliant



For more information, refer to www.robotec-systems.de/roboflex

Notes

- IP67
- A-coded

ROBOFLEX recycle

Pre-assembled special cables

| | |
|------------------|---|
| ROBOFLEX recycle | M12 socket pre-assembled on one side 3-pin, 4-pin and 5-pin |
| ROBOFLEX recycle | M12 4-pin + PE pre-assembled on one side |
| ROBOFLEX recycle | M12 pre-assembled on both sides 3-pin, 4-pin and 5-pin |
| ROBOFLEX recycle | M12 4-pin + PE pre-assembled on both sides |
| ROBOFLEX recycle | M12 plug pre-assembled on one side 3-pin, 4-pin and 5-pin |
| ROBOFLEX recycle | M8 socket pre-assembled on one side 3-pin and 4-pin |
| ROBOFLEX recycle | M8 pre-assembled on both sides 3-pin and 4-pin |
| ROBOFLEX recycle | M8 plug pre-assembled on one side 3-pin and 4-pin |
| ROBOFLEX recycle | M12 shielded pre-assembled on one side 3-pin, 4-pin and 5-pin |
| ROBOFLEX recycle | M12 shielded pre-assembled on both sides 3-pin, 4-pin and 5-pin |
| ROBOFLEX recycle | M12 on M12 twin cables pre-assembled on one side 3-pin |
| ROBOFLEX recycle | M12 on M12 twin cables pre-assembled on both sides 3-pin |
| ROBOFLEX recycle | 3x0.34 mm ² , 4x0.34 mm ² , 5x0.34 mm ² shielded and unshielded per metre length |

Dimensions and specifications may be changed without prior notice.