

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

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Sensor/actuator cable, 3-position, Variable cable type, Plug angled M12 SPEEDCON, coding: A, on Socket straight M8, cable length: Free input (0.2 ... 40.0 m)

Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Save time, thanks to installation with SPEEDCON fast locking system
- Flexible solutions - configurable materials with variable cable types and cable lengths

Commercial data

| | |
|-----------------------|--------------------------------|
| Item number | 1541856 |
| Packing unit | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | BF01 |
| Product key | AF1BBA |
| Customs tariff number | 85444290 |
| Country of origin | PL |

1541856

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Technical data

Product properties

| | |
|----------------------|-----------------------|
| Product type | Sensor/actuator cable |
| Application | Standard |
| Number of positions | 3 |
| No. of cable outlets | 1 |
| Shielded | no |
| Coding | A |

Insulation characteristics

| | |
|----------------------|----|
| Overvoltage category | II |
| Degree of pollution | 3 |

Material specifications

| | |
|--|---|
| Flammability rating according to UL 94 | HB |
| Seal material | NBR |
| Material of grip body | TPU, hardly inflammable, self-extinguishing |
| Contact material | CuSn |
| Contact surface material | Ni/Au |
| Contact carrier material | TPU GF |
| Material for screw connection | Zinc die-cast, nickel-plated |

Electrical properties

| | |
|-----------------------|----------------------------|
| Insulation resistance | $\geq 100 \text{ M}\Omega$ |
| Nominal voltage U_N | 48 V AC |
| | 60 V DC |
| Nominal current I_N | 4 A |
| Test voltage | 2500 V |

Mechanical properties

Mechanical data

| | |
|-----------------------------|------------|
| Insertion/withdrawal cycles | ≥ 100 |
|-----------------------------|------------|

Signaling

| | |
|------------------------|----|
| Status display | no |
| Status display present | no |

Connection data

Conductor connection

| | |
|-------------------|------------------------|
| Tightening torque | 0.4 Nm (M12 connector) |
| | 0.2 Nm (M8 connectors) |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

<https://www.phoenixcontact.com/us/products/1541856>

Connector

Connection 1

| | |
|---------------------|--------------------------|
| Type | Plug angled M12 SPEEDCON |
| Number of positions | 3 |
| Locking type | SPEEDCON |
| Coding type | A |

Connection 2

| | |
|---------------------|--------------------|
| Type | Socket straight M8 |
| Number of positions | 3 |

Cable/line

| | |
|--------------|-----------------------------|
| Cable length | Free input (0.2 ... 40.0 m) |
|--------------|-----------------------------|

PUR halogen-free black [PUR]

| | |
|---|---|
| Cable weight | 18 kg/km |
| UL AWM Style | 20549 / 10493 (80°C/300 V) |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR halogen-free black [PUR] PUR halogen-free black PUR |
| Conductor structure signal line | 32x 0.10 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.17 mm ±0.02 mm |
| External cable diameter | 3.60 mm ±0.15 mm |
| Outer sheath, material | PUR |
| External sheath, color | black-gray RAL 7021 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) |
| Thickness, outer sheath | approx. 0.50 mm |
| Overall twist | 3 wires, twisted |
| Length of twist, overall twist | 40 mm |
| Max. conductor resistance | ≤ 78 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 GΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 3000 V |
| Smallest bending radius, fixed installation | 18 mm |
| Smallest bending radius, movable installation | 36 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 44 mm, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ² |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

<https://www.phoenixcontact.com/us/products/1541856>

| | |
|---------------------------------|---|
| Dynamic load capacity (torsion) | Torsion: ± 180 °/m, Torsion cycles: ≥ 5000000 , Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Flame resistance | in accordance with UL 758/1581 FT2 DIN EN 60332-2-2 (20 s) |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | hydrolysis and microbe resistant Highly resistant to acids, alkaline solutions and solvents Resistant to salt water partly UV-resistant (in accordance with DIN EN ISO 4892-2-A) |
| Special properties | Flexible cable conduit capable Silicone-free Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) -25 °C ... 80 °C (Cable, flexible installation) |

PUR halogen-free yellow [240]

| | |
|---|--|
| Cable weight | 24 kg/km |
| UL AWM Style | 20549 |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR halogen-free yellow [240] PUR halogen-free yellow 240 |
| Conductor structure signal line | 32x 0.10 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.17 mm \pm 0.02 mm |
| External cable diameter | 4.40 mm \pm 0.15 mm |
| Outer sheath, material | PUR |
| External sheath, color | yellow |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.21 mm |
| Thickness, outer sheath | approx. 0.90 mm |
| Overall twist | 3 wires, twisted |
| Length of twist, overall twist | 40 mm |
| Max. conductor resistance | 78 Ω /km (at 20 °C) |
| Insulation resistance | ≥ 1 G Ω *km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V AC |
| Test voltage | ≥ 3000 V AC (Spark test) |
| Minimum bending radius, fixed installation | 5 x D |
| Minimum bending radius, flexible installation | 10 x D |
| Smallest bending radius, fixed installation | 22 mm |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

<https://www.phoenixcontact.com/us/products/1541856>

| | |
|---|---|
| Smallest bending radius, movable installation | 44 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 10 x D, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±180 °/m, Torsion cycles: ≥5000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| | in accordance with EN 50267-2-1 |
| Flame resistance | in accordance with UL 758/1581 FT2 |
| Resistance to oil | According to DIN EN 60811-2-1, 168 h at 100 °C |
| | according to UL 758, 168 h at 60 °C |
| Other resistance | hydrolysis and microbe resistant |
| | Resistant to salt water |
| | abrasion-resistant |
| | Low adhesion |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (Cable, flexible installation) |

PUR halogen-free orange [180]

| | |
|---|---|
| Cable weight | 24 kg/km |
| UL AWM Style | 20549 |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR halogen-free orange [180] |
| | PUR halogen-free orange 180 |
| Conductor structure signal line | 32x 0.10 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.17 mm ±0.02 mm (Signal line) |
| External cable diameter | 4.40 mm ±0.15 mm |
| Outer sheath, material | PUR |
| External sheath, color | orange RAL 2003 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) |
| | approx. 0.90 mm (Outer cable sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 78 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 10 GΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 3000 V |
| Smallest bending radius, fixed installation | 22 mm |
| Smallest bending radius, movable installation | 44 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 44 mm, |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

<https://www.phoenixcontact.com/us/products/1541856>

| | |
|---------------------------------|---|
| | Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±180 °/m, Torsion cycles: ≥5000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Flame resistance | in accordance with DIN UL-Style 20549 in accordance with UL 758/1581 FT2 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | hydrolysis and microbe resistant Resistant to salt water |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) -25 °C ... 80 °C (Cable, flexible installation) |

PUR halogen-free gray [280]

| | |
|---|--|
| Cable weight | 18 kg/km |
| UL AWM Style | 20549 / 10493 (80°C/300 V) |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR halogen-free gray [280] PUR halogen-free gray 280 |
| Conductor structure signal line | 32x 0.10 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² |
| Wire diameter incl. insulation | 1.17 mm ±0.02 mm |
| External cable diameter | 3.60 mm ±0.15 mm |
| Outer sheath, material | PUR |
| External sheath, color | gray RAL 7001 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) |
| Thickness, outer sheath | approx. 0.50 mm |
| Overall twist | 3 wires, twisted |
| Length of twist, overall twist | 40 mm |
| Max. conductor resistance | ≤ 78 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 GΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 3000 V |
| Smallest bending radius, fixed installation | 18 mm |
| Smallest bending radius, movable installation | 36 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 44 mm, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±180 °/m, Torsion cycles: ≥5000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

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| | |
|---------------------------------|---|
| Flame resistance | in accordance with UL 758/1581 FT2 |
| | DIN EN 60332-2-2 (20 s) |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | hydrolysis and microbe resistant |
| | Highly resistant to acids, alkaline solutions and solvents |
| | Resistant to salt water |
| | partly UV-resistant (in accordance with DIN EN ISO 4892-2-A) |
| Special properties | Flexible cable conduit capable |
| | Silicone-free |
| | Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (Cable, flexible installation) |

PVC black [PVC]

| | |
|---|---|
| Cable weight | 29 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC black [PVC] |
| | PVC black PVC |
| Conductor structure signal line | 14x 0.15 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.17 mm ±0.05 mm |
| External cable diameter | 4.20 mm ±0.15 mm |
| Outer sheath, material | PVC |
| External sheath, color | black RAL 9005 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| Thickness, outer sheath | ≥ 0.76 mm |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 79 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Nominal voltage, cable | ≥ 300 V |
| Test voltage | ≤ 3000 V |
| Smallest bending radius, fixed installation | 13 mm |
| Flame resistance | As per UL-Style 2464 |
| Resistance to oil | EN 60811-2-1 |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |
| | -10 °C ... 80 °C (Cable, flexible installation) |

PVC gray [500]

| | |
|--------------|----------|
| Cable weight | 29 kg/km |
|--------------|----------|

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

<https://www.phoenixcontact.com/us/products/1541856>

| | |
|---|---|
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC gray [500] |
| | PVC gray 500 |
| Conductor type | Assembled shielded round cable |
| Conductor structure signal line | 14x 0.15 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.17 mm ±0.05 mm |
| External cable diameter | 4.20 mm ±0.15 mm |
| Outer sheath, material | PVC |
| External sheath, color | gray RAL 7001 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| Thickness, outer sheath | ≥ 0.76 mm |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 79 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Nominal voltage, cable | ≥ 300 V |
| Test voltage | ≤ 3000 V |
| Smallest bending radius, fixed installation | 13 mm |
| Halogen-free | no |
| Flame resistance | As per UL-Style 2464 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (Cable, flexible installation) |

Gray, highly flexible PUR [800]

| | |
|---------------------------------|--|
| Note | Due to the extremely robust outer sheath, this cable should only be stripped in 5 cm increments. |
| Cable weight | 24 kg/km |
| UL AWM Style | 20549 |
| Number of positions | 3 |
| Shielded | no |
| Cable type | Gray, highly flexible PUR [800] |
| | Gray, highly flexible PUR 800 |
| Conductor structure signal line | 32x 0.10 mm |
| AWG signal line | 24 |
| Conductor cross-section | 3x 0.25 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.2 mm ±0.05 mm (Signal line) |
| External cable diameter | 4.30 mm ±0.2 mm |
| Outer sheath, material | PUR |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



1541856

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| | |
|---|--|
| External sheath, color | gray RAL 7001 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | approx. 76 Ω/km |
| Insulation resistance | ≥ 20 MΩ*km |
| Nominal voltage, cable | 300 V |
| Test voltage | 2000 V |
| Minimum bending radius, fixed installation | 4 x D |
| Minimum bending radius, flexible installation | 7.5 x D |
| Smallest bending radius, fixed installation | 18 mm |
| Smallest bending radius, movable installation | 33 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 7,5 x D, Traversing path: 5 m, Traversing rate: 3.3 m/s, Acceleration: 5 m/s ² |
| | Max. bending cycles: 15000000, Bending radius: 50 mm, Traversing path: 0.9 m, Traversing rate: 5 m/s, Acceleration: 30 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±360 °/m, Torsion cycles: 1000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Flame resistance | in accordance with UL 758/1581 FT2 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | Highly resistant to acids, alkaline solutions and solvents |
| | Silicone-free |
| Special properties | Cable jacket is welding spark-resistant, recyclable, matt, low-adhesion, abrasion-resistant, flame-retardant, and self-extinguishing |
| | Free from silicone and cadmium |
| | Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (Cable, flexible installation) |

Environmental and real-life conditions

Ambient conditions

| | |
|---|----------------------------------|
| Degree of protection | IP65 |
| | IP67 |
| | IP68 |
| Ambient temperature (operation) (male connector/female connector) | -25 °C ... 90 °C (Plug / socket) |

Standards and regulations

| | |
|--------------------------|-----------------|
| Standard designation | M12 connector |
| Standards/specifications | IEC 61076-2-101 |

SAC-3P-MR-M8FS SCO/.../... - Sensor/actuator cable



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| | |
|--------------------------|-----------------|
| Standard designation | M8 connector |
| Standards/specifications | IEC 61076-2-104 |

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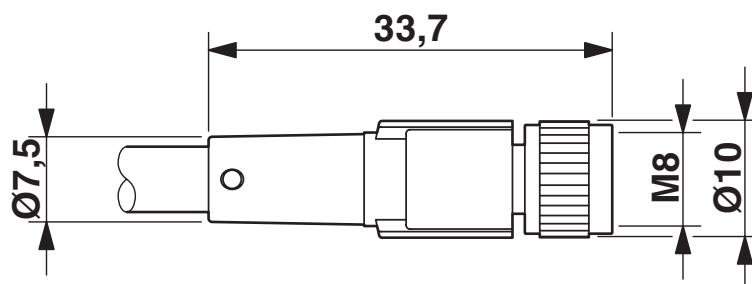
Drawings

Dimensional drawing



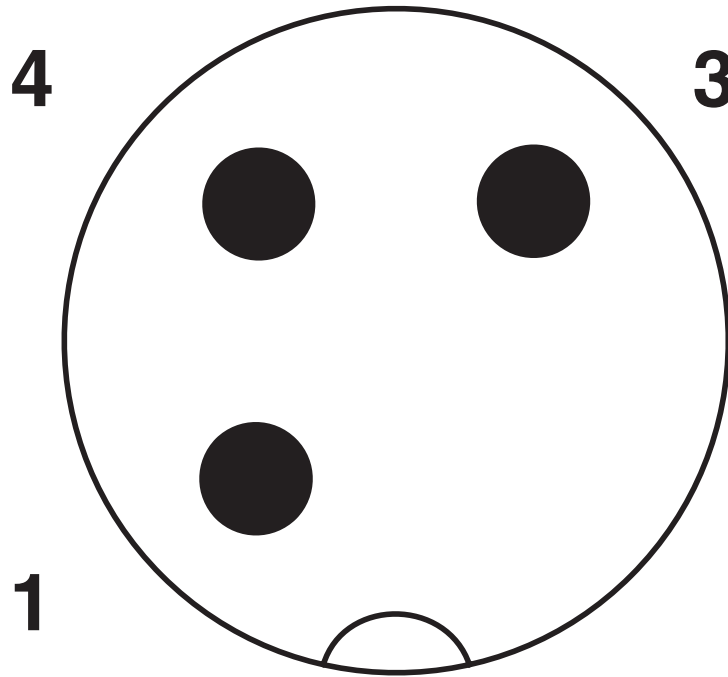
M12 x 1 male plug, angled

Dimensional drawing



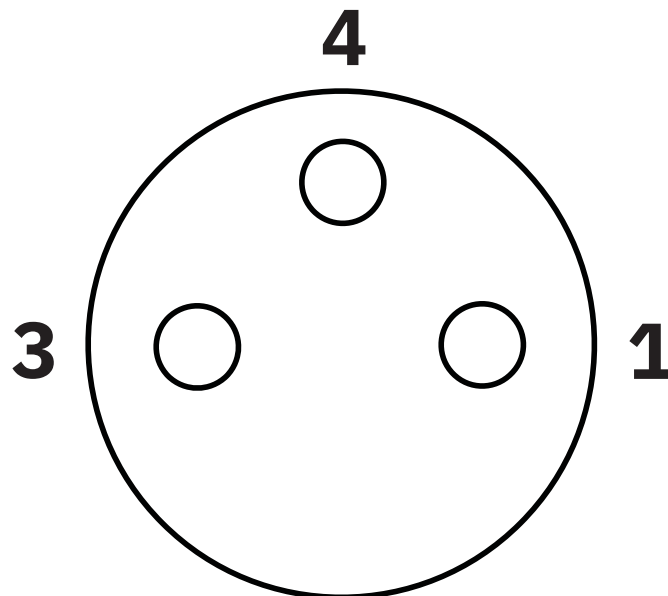
Socket M8 x 1, straight

Schematic diagram



Pin assignment M12 plug, 3-pos., A-coded, view male side

Schematic diagram



Pin assignment M8 socket, 3-pos., view female side

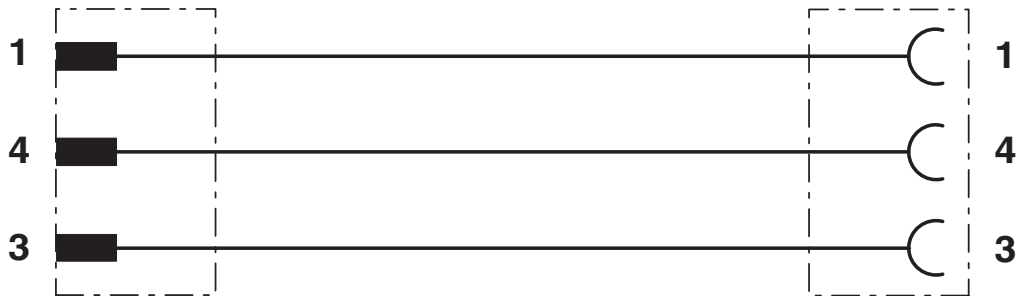
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Circuit diagram



Contact assignment of M8 plugs / M12 sockets

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27060311 |
| ECLASS-15.0 | 27060311 |

1541856

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Environmental product compliance

EU RoHS

| | |
|---|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|---|--------------------|

China RoHS

| | |
|--|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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