

NBC-MSD/ 1,25-939/FSD SCO - Network cable



1421775

<https://www.phoenixcontact.com/us/products/1421775>

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Network cable, PROFINET CAT5 (100 Mbps), 4-position, PE-X halogen-free, black, shielded, Plug straight M12 SPEEDCON, coding: D / IP65, on Socket straight M12 SPEEDCON, coding: D / IP65, cable length: 1.2 m, Product tested according to customer specification/rail application

Commercial data

| | |
|--------------------------------------|---------------|
| Item number | 1421775 |
| Packing unit | 1 pc |
| Minimum order quantity | 50 pc |
| Product key | AF1CJN |
| GTIN | 4055626280134 |
| Weight per piece (including packing) | 113.99 g |
| Weight per piece (excluding packing) | 113.99 g |
| Country of origin | PL |

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Technical data

Product properties

| | |
|----------------------|-------------------------|
| Product type | Data cable preassembled |
| Sensor type | PROFINET |
| Number of positions | 4 |
| No. of cable outlets | 1 |
| Shielded | yes |
| Coding | D |

Insulation characteristics

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

Interfaces

| | |
|----------------------|-------------------------------------|
| Bus system | PROFINET |
| Signal type/category | PROFINET CAT5 (IEC 11801), 100 Mbps |

Signaling

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

Electrical properties

| | |
|---|-----------------------|
| Nominal voltage U_N | 48 V AC |
| | 60 V DC |
| Nominal current I_N | 4 A |
| Transmission medium | Copper |
| Transmission speed | 100 Mbps |
| Transmission characteristics (category) | CAT5 (IEC 11801:2002) |

Material specifications

| | |
|--|----|
| Flammability rating according to UL 94 | V0 |
|--|----|

Connector

Connection 1

| | |
|---------------------|-----------------------------------|
| Type | Plug straight M12 SPEEDCON / IP65 |
| Number of positions | 4 |
| Locking type | SPEEDCON |
| Coding type | D (Data) |
| Shielded | yes |
| Handle color | black |
| Material | CuSn (Contact) |
| | Ni/Au (Contact surface) |
| | PA (Contact carrier) |

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| | |
|---------------------------------|---|
| | TPU, hardly inflammable, self-extinguishing (Grip body) |
| | Zinc die-cast, nickel-plated (Screw connection) |
| Insertion/withdrawal cycles | ≥ 100 (Quantity: 500 with Phoenix Contact mating connector) |
| Insulation resistance | ≥ 100 MΩ |
| Tightening torque | 0.4 Nm |
| Degree of protection | IP65 |
| Ambient temperature (operation) | -40 °C ... 90 °C |

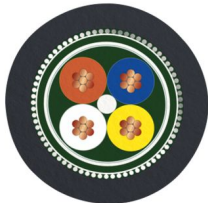
Connection 2

| | |
|---------------------------------|---|
| Type | Socket straight M12 SPEEDCON / IP65 |
| Number of positions | 4 |
| Locking type | SPEEDCON |
| Coding type | D (Data) |
| Shielded | yes |
| Handle color | black |
| Material | CuSn (Contact) |
| | Ni/Au (Contact surface) |
| | PA (Contact carrier) |
| | TPU, hardly inflammable, self-extinguishing (Grip body) |
| | Zinc die-cast, nickel-plated (Screw connection) |
| Insertion/withdrawal cycles | ≥ 100 (Quantity: 500 with Phoenix Contact mating connector) |
| Insulation resistance | ≥ 100 MΩ |
| Tightening torque | 0.4 Nm |
| Degree of protection | IP65 |
| Ambient temperature (operation) | -40 °C ... 90 °C |

Cable/line

| | |
|--------------|-------|
| Cable length | 1.2 m |
|--------------|-------|

PROFINET BETAtans® railway application CAT5 [939]

| | |
|---------------------|--|
| Dimensional drawing |  |
| Cable weight | 71 kg/km |
| Number of positions | 4 |
| Shielded | yes |
| Cable type | PROFINET BETAtans® railway application CAT5 [939] |
| Conductor structure | 1x4xAWG22/7, SF/TQ |
| Signal runtime | 4.4 ns/m |
| Signal speed | 0.75 c |

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| | |
|--|--|
| Conductor structure signal line | 7x 0.25 mm |
| AWG signal line | 22 |
| Conductor cross-section | 4x 0.34 mm ² |
| Wire diameter incl. insulation | 1.4 mm ±0.1 mm |
| External cable diameter | 6.60 mm ±0.2 mm |
| Outer sheath, material | PE-X |
| External sheath, color | black |
| Conductor material | Tin-plated Cu litz wires |
| Material wire insulation | Cell PE |
| Single wire, color | white-blue, orange-yellow |
| Thickness, outer sheath | 1.00 mm |
| Overall twist | Star quad |
| Max. conductor resistance | ≤ 54.4 Ω/km |
| Insulation resistance | ≥ 5 GΩ*km |
| Coupling resistance | < 13.00 mΩ/m (f = 1 MHz) < 8.00 mΩ/m (f = 10 MHz ... 100 MHz) |
| Wave impedance | 100 Ω ±5 Ω (f = 100 MHz) |
| Cable capacity | 44 nF/km (Line-line) |
| Cable impedance | 100 Ω ±15 Ω (f = 0.5 MHz ... 3 MHz) |
| Nominal voltage, cable | 125 V |
| Test voltage Core/Core | 1000 V AC (50 Hz, 1 min.) |
| Test voltage Core/Shield | 1000.00 V AC (50 Hz, 1 min.) |
| Minimum bending radius, fixed installation | 5 x D |
| Minimum bending radius, flexible installation | 6 x D |
| Smallest bending radius, fixed installation | 33 mm |
| Smallest bending radius, movable installation | 40 mm |
| Tensile strength | ≤ 60 N (temporary) ≤ 15 N (Permanent) |
| Near end crosstalk attenuation (NEXT) | 76 dB (with 1 MHz) |
| | 71 dB (at 4 MHz) |
| | 64 dB (at 10 MHz) |
| | 60 dB (at 16 MHz) |
| | 56 dB (at 31.25 MHz) |
| | 52 dB (at 62.5 MHz) |
| | 48 dB (at 100 MHz) |
| | 45 dB (at 155 MHz) |
| Power-summated near end crosstalk attenuation (PSNEXT) | 42 dB (at 200 MHz) |
| | 73 dB (with 1 MHz) |
| | 68 dB (at 4 MHz) |
| | 61 dB (at 10 MHz) |
| | 57 dB (at 16 MHz) |
| | 53 dB (at 31.25 MHz) |
| | 49 dB (at 62.5 MHz) |
| | 45 dB (at 100 MHz) |

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| | 42 dB (at 155 MHz) |
| | 39 dB (at 200 MHz) |
| Return attenuation (RL) | 25 dB (with 1 MHz) |
| | 25 dB (at 4 MHz) |
| | 28 dB (at 10 MHz) |
| | 28 dB (at 16 MHz) |
| | 27 dB (at 31.25 MHz) |
| | 26 dB (at 62.5 MHz) |
| | 25 dB (at 100 MHz) |
| | 25 dB (at 155 MHz) |
| | 23 dB (at 200 MHz) |
| Shield attenuation | 1.5 dB (with 1 MHz) |
| | 3.3 dB (at 4 MHz) |
| | 5.3 dB (at 10 MHz) |
| | 6.9 dB (at 16 MHz) |
| | 9.9 dB (at 31.25 MHz) |
| | 14.5 dB (at 62.5 MHz) |
| | 18.8 dB (at 100 MHz) |
| | 23.6 dB (at 155 MHz) |
| | 27.3 dB (at 200 MHz) |
| | 60.00 dB (up to 1000 MHz) |
| Halogen-free | in accordance with EN 50267-2-1 |
| | in accordance with EN 60684-2 |
| Flame resistance | in accordance with EN 60332-1-2 |
| | in accordance with EN 50266-2-5 |
| | in accordance with ISO 14572 5.21 (UN ECE-R 118.01) |
| Concentration of fumes | EN 61034-2 |
| Resistance to oil | in accordance with EN 50306-4, 72 hours at 100°C, IRM 902 |
| Fire protection in rail vehicles | BS 6853 (Internal cable Ia, Ib, II/external cable Ia, Ib, II) |
| | DIN 5510-2 (Fire protection level 1, 2, 3, 4) |
| | EN 45545-2 (Risk level HL1 - HL3) |
| | EN 50306-4 |
| | NF F16-101 (Classification C/F1) |
| | NF F16-101 (Internal cable A1, A2, B/external cable A1, A2, B) |
| | NFPA 130 |
| | PN-K-02511 |
| | UIC 564-2 (Class A) |
| Other resistance | Resistant to fuel (in accordance with EN 50306-4, 168 hours at 70°C, IRM 903) |
| | Resistant to ozone (in accordance with EN 50306-4, 72 hours at 40°C, method B, volumetric concentration of 200×10^{-6}) |
| Ambient temperature (operation) | -40 °C ... 85 °C (cable, fixed installation) |
| | -25 °C ... 70 °C (Cable, flexible installation) |
| | 160 °C (Short circuit) |

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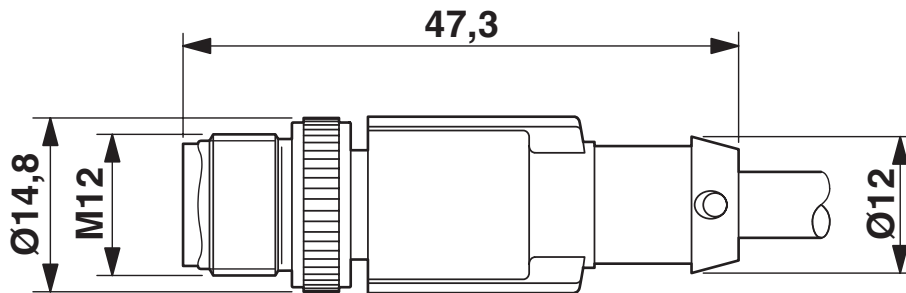
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Standards and regulations

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

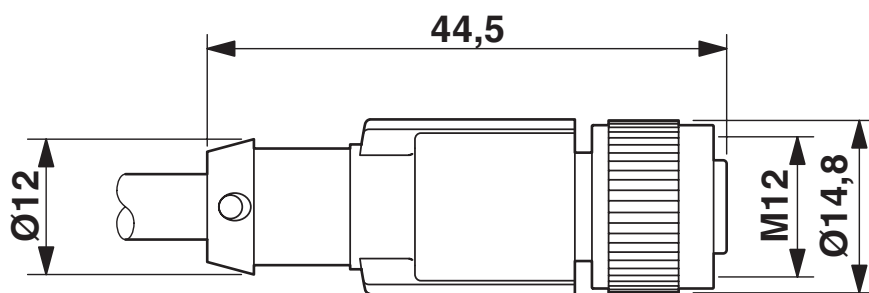
Drawings

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

Dimensional drawing



Socket M12-SPEEDCON, straight, shielded

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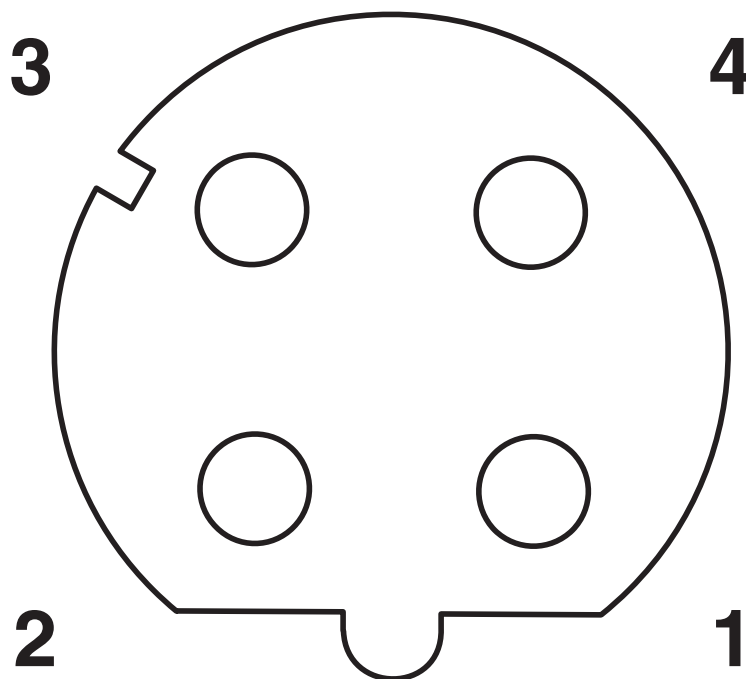
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Schematic diagram



Pin assignment M12 male connector, 4-pos., D-coded, male side

Schematic diagram



Pin assignment M12 socket, 4-pos., D-coded, female side

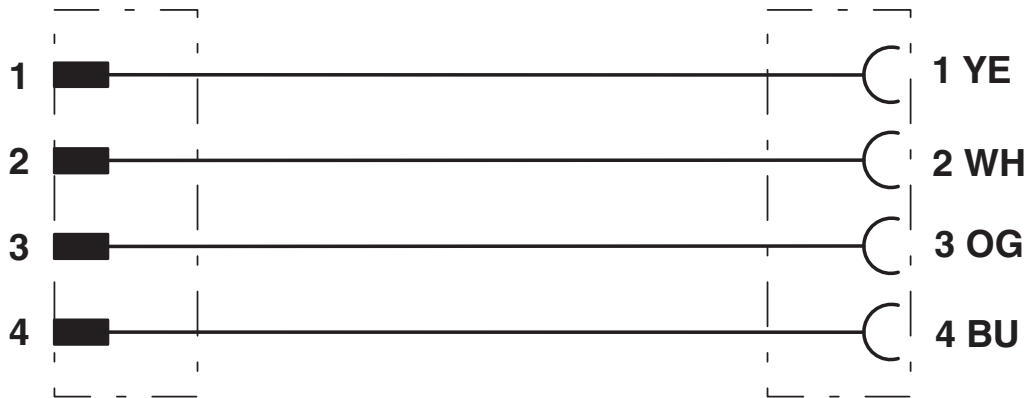
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Circuit diagram



Contact assignment of the M12 connector and the M12 socket

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Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27060307 |
| ECLASS-15.0 | 27060307 |

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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-E |
| | No hazardous substances above the limits |

EU REACH SVHC

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

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