

NBC-MSX/ 2,0-94S/MSX SCO RAIL - Network cable



1415595

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Network cable, Ethernet CAT6_A (10 Gbps), 8-position, PE-X halogen-free, black, shielded, Plug straight M12 SPEEDCON, coding: X / IP65, on Plug straight M12 SPEEDCON, coding: X / IP65, cable length: 2 m

Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Securely locked by special vibration brake
- Resistant to temperature influences – tested for an extended temperature range and for resistance to temperature shocks
- Reliable signal transmission – 360° shielding in environments with electromagnetic interference

Commercial data

| | |
|--------------------------------------|--------------------------------|
| Item number | 1415595 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | BF04 |
| Product key | AF1CMJ |
| GTIN | 4055626047645 |
| Weight per piece (including packing) | 152 g |
| Weight per piece (excluding packing) | 151.9 g |
| Customs tariff number | 85444290 |
| Country of origin | PL |

Technical data

Product properties

| | |
|----------------------|-------------------------|
| Product type | Data cable preassembled |
| Application | Railway applications |
| Sensor type | Ethernet |
| Number of positions | 8 |
| No. of cable outlets | 1 |
| Shielded | yes |
| Coding | X |

Interfaces

| | |
|----------------------|--------------------------------------|
| Bus system | Ethernet |
| Signal type/category | Ethernet CAT6 _A , 10 Gbps |

Signaling

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

Electrical properties

| | |
|---|-------------------|
| Nominal voltage U_N | 48 V AC |
| | 60 V DC |
| Nominal current I_N | 0.5 A |
| Transmission medium | Copper |
| Transmission speed | 10 Gbps |
| Transmission characteristics (category) | CAT6 _A |

Connector

Connection 1

| | |
|-----------------------------|---|
| Type | Plug straight M12 SPEEDCON / IP65 |
| Number of positions | 8 |
| Locking type | SPEEDCON |
| Coding type | X (Data) |
| Handle color | black |
| Material | CuZn (Contact) |
| | Ni/Au (Contact surface) |
| | TPU (Contact carrier) |
| | PA 6.6 (Grip body) |
| | Zinc die-cast, nickel-plated (Screw connection) |
| Standards/regulations | PA 6.6: Fire protection in rail vehicles - requirement sets R22, R23, and R24 acc. to DIN EN 45545-2 (Risk level HL1 - HL3) |
| Insertion/withdrawal cycles | ≥ 100 |
| Insulation resistance | ≥ 100 MΩ |

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| | |
|---------------------------------|------------------|
| Tightening torque | 0.4 Nm |
| Degree of protection | IP65 |
| | IP67 |
| Ambient temperature (operation) | -25 °C ... 90 °C |

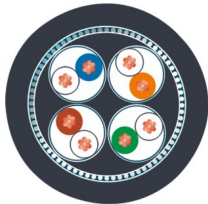
Connection 2

| | |
|---------------------------------|---|
| Type | Plug straight M12 SPEEDCON / IP65 |
| Number of positions | 8 |
| Locking type | SPEEDCON |
| Coding type | X (Data) |
| Handle color | black |
| Material | CuZn (Contact) |
| | Ni/Au (Contact surface) |
| | TPU (Contact carrier) |
| | PA 6.6 (Grip body) |
| | Zinc die-cast, nickel-plated (Screw connection) |
| Standards/regulations | PA 6.6: Fire protection in rail vehicles - requirement sets R22, R23, and R24 acc. to DIN EN 45545-2 (Risk level HL1 - HL3) |
| Insertion/withdrawal cycles | ≥ 100 |
| Insulation resistance | ≥ 100 MΩ |
| Tightening torque | 0.4 Nm |
| Degree of protection | IP65 |
| | IP65 |
| Ambient temperature (operation) | -25 °C ... 90 °C |

Cable/line

| | |
|--------------|-----|
| Cable length | 2 m |
|--------------|-----|

Ethernet BETrans® railway application CAT7 [94S]

| | |
|---------------------|--|
| Dimensional drawing |  |
| Cable weight | 59 kg/km |
| Copper weight | 28 kg/km |
| Number of positions | 8 |
| Shielded | yes |
| Cable type | Ethernet BETrans® railway application CAT7 [94S] |
| Conductor structure | 4x2xAWG26/7; S/FTP |
| Signal runtime | 4.4 ns/m |
| Signal speed | 0.78 c |

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| | |
|--|--|
| Conductor structure signal line | 7x 0.16 mm |
| AWG signal line | 26 |
| Conductor cross section | 4x 2x 0.14 mm ² |
| Wire diameter incl. insulation | 1.05 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, white-orange, white-green, white-brown |
| Twisted pairs | 2 cores to the pair |
| Type of pair shielding | Aluminum-lined polyester foil |
| Overall twist | 4 pairs, twisted |
| Max. conductor resistance | ≤ 145 Ω/km |
| Insulation resistance | ≥ 5 GΩ*km |
| Coupling resistance | 5.00 mΩ/m (at 10 MHz) |
| Wave impedance | 100 Ω ±5 Ω (at 100 MHz) |
| Working capacitance | 44 nF (per kilometer) |
| Nominal voltage, cable | 125 V AC (U _o) |
| 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 | 6 x D |
| Smallest bending radius, fixed installation | 40 mm |
| Tensile strength | ≤ 60 N (temporary) ≤ 15 N (Permanent) |
| Near end crosstalk attenuation (NEXT) | 100 dB (with 1 MHz) |
| | 99 dB (at 10 MHz) |
| | 95 dB (at 100 MHz) |
| | 92 dB (at 200 MHz) |
| | 90 dB (at 250 MHz) |
| | 83 dB (at 500 MHz) |
| | 81 dB (at 600 MHz) |
| | 80 dB (at 700 MHz) |
| | 77 dB (at 800 MHz) |
| | 75 dB (at 900 MHz) |
| Power-summated near end crosstalk attenuation (PSNEXT) | 74 dB (at 1000 MHz) |
| | 72 dB (at 1100 MHz) |
| | 70 dB (at 1200 MHz) |
| | 97 dB (with 1 MHz) |
| | 96 dB (at 10 MHz) |
| | 92 dB (at 100 MHz) |
| | 89 dB (at 200 MHz) |
| | 87 dB (at 250 MHz) |
| | 80 dB (at 500 MHz) |

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| | |
|---|-----------------------|
| | 78 dB (at 600 MHz) |
| | 77 dB (at 700 MHz) |
| | 74 dB (at 800 MHz) |
| | 72 dB (at 900 MHz) |
| | 71 dB (at 1000 MHz) |
| | 69 dB (at 1100 MHz) |
| | 67 dB (at 1200 MHz) |
| Return attenuation (RL) | 24 dB (with 1 MHz) |
| | 33.9 dB (at 10 MHz) |
| | 38.3 dB (at 100 MHz) |
| | 35.3 dB (at 200 MHz) |
| | 32.9 dB (at 250 MHz) |
| | 29.7 dB (at 500 MHz) |
| | 30.6 dB (at 600 MHz) |
| | 31 dB (at 700 MHz) |
| | 26.7 dB (at 800 MHz) |
| | 28.6 dB (at 900 MHz) |
| | 27.5 dB (at 1000 MHz) |
| | 26.9 dB (at 1100 MHz) |
| Crosstalk attenuation (ACR) | 26.3 dB (at 1200 MHz) |
| | 100 dB (with 1 MHz) |
| | 99 dB (at 10 MHz) |
| | 93 dB (at 100 MHz) |
| | 88 dB (at 200 MHz) |
| | 86 dB (at 250 MHz) |
| | 78 dB (at 500 MHz) |
| | 74 dB (at 600 MHz) |
| | 72 dB (at 700 MHz) |
| | 69 dB (at 800 MHz) |
| | 67 dB (at 900 MHz) |
| | 65 dB (at 1000 MHz) |
| Power-summated crosstalk attenuation (PS-ACR) | 63 dB (at 1100 MHz) |
| | 61 dB (at 1200 MHz) |
| | 97 dB (with 1 MHz) |
| | 96 dB (at 10 MHz) |
| | 90 dB (at 100 MHz) |
| | 85 dB (at 200 MHz) |
| | 83 dB (at 250 MHz) |
| | 75 dB (at 500 MHz) |
| | 71 dB (at 600 MHz) |
| | 69 dB (at 700 MHz) |
| | 66 dB (at 800 MHz) |
| | 64 dB (at 900 MHz) |
| | 62 dB (at 1000 MHz) |

| | |
|----------------------------------|---|
| Shield attenuation | 60 dB (at 1100 MHz) |
| | 58 dB (at 1200 MHz) |
| | 0.25 dB (with 1 MHz) |
| | 0.76 dB (at 10 MHz) |
| | 2.49 dB (at 100 MHz) |
| | 3.69 dB (at 200 MHz) |
| | 4.18 dB (at 100 MHz) |
| | 5.6 dB (at 500 MHz) |
| | 6.74 dB (at 600 MHz) |
| | 7.32 dB (at 700 MHz) |
| | 7.89 dB (at 800 MHz) |
| | 8.5 dB (at 900 MHz) |
| | 9.11 dB (at 1000 MHz) |
| | 9.5 dB (at 1100 MHz) |
| | 9.9 dB (at 1200 MHz) |
| Halogen-free | 60.00 dB (up to 1000 MHz) |
| | in accordance with EN 50267-2-1 |
| Flame resistance | in accordance with EN 60684-2 |
| | in accordance with EN 60332-1-2 |
| | EN 60332-3-25 |
| Concentration of fumes | in accordance with ISO 14572 5.21 (UN ECE-R 118.01) |
| Resistance to oil | EN 61034-2 |
| Fire protection in rail vehicles | in accordance with EN 50306-4, 72 hours at 100°C, IRM 902 |
| Other resistance | 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 (Class A) |
| Ambient temperature (operation) | UIC 564-2 (Class A) |
| | 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}) |

Environmental and real-life conditions

Ambient conditions

| | |
|----------------------|-----------|
| Degree of protection | IP65/IP67 |
|----------------------|-----------|

Standards and regulations

M12

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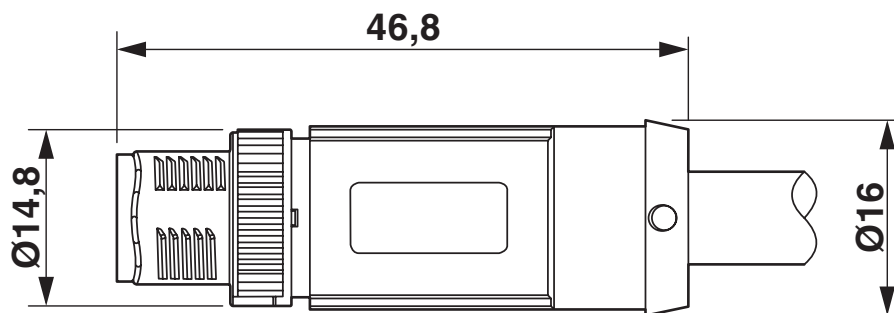
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| | |
|--------------------------|------------------|
| Standard designation | M12 connector |
| Standards/specifications | IEC 61076-2-109 |
| Standard designation | Shock, vibration |
| Standards/specifications | EN 50155 |

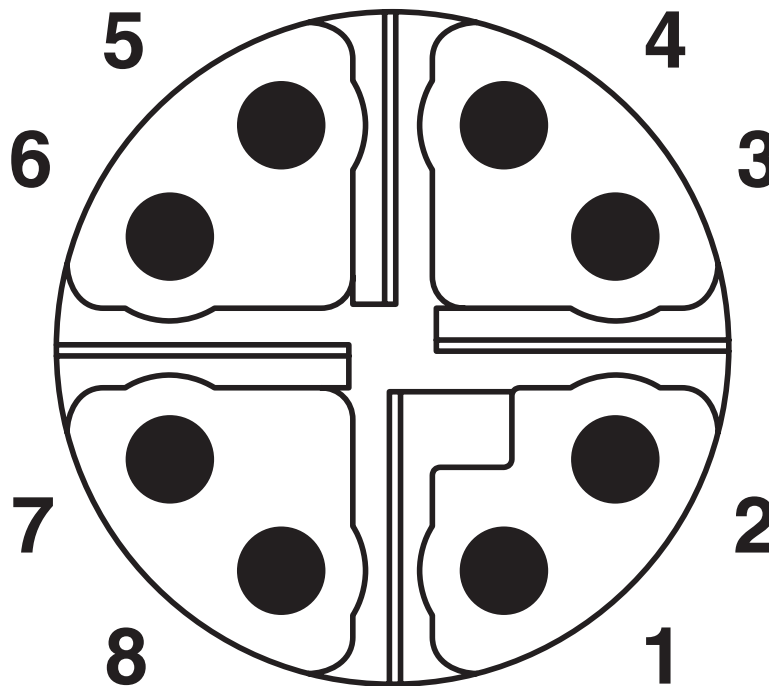
Drawings

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

Schematic diagram

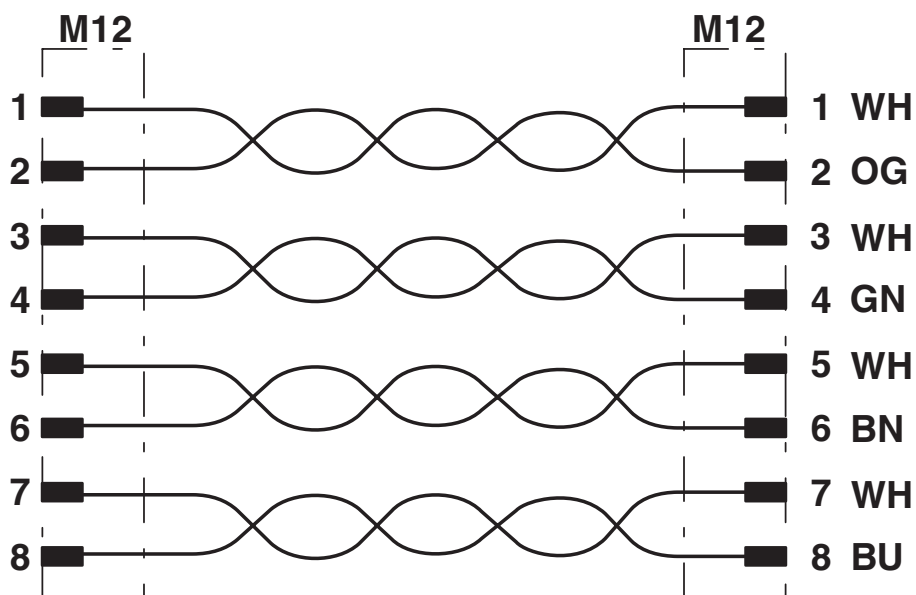


Pin assignment of M12 plug, 8-pos., X-coded, pin side view

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Circuit diagram



Contact assignment of the M12 plugs

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Approvals

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EAC-RoHS

Approval ID: RU D-DE.HB35.B.00387

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Classifications

ECLASS

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

ETIM

| | |
|----------|----------|
| ETIM 9.0 | EC001855 |
|----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 26121600 |
|-------------|----------|

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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.) | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: n/a) |
| SCIP | 3b39da27-7a1f-48f6-b55b-662ec19120f1 |
| EF3.0 Climate Change | |
| CO2e kg | 6.828 kg CO2e |

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