# Data sheet

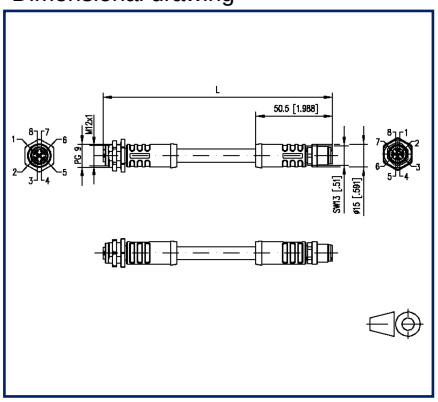
## M12 Bus-/Railcat connection line, X-coded, 2.0 m, M12 plug - M12 jack, 8-pole, RADOX®

**P/N 142MQX12020**
**EAN 4251394663166**
2026/09/30
Version: D

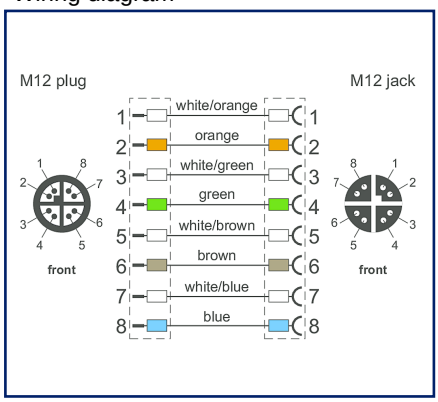
## Illustrations



Dimensional drawing




Wiring diagram




See enlarged drawings at the end of document

## Product specification

Halogen-free, electron beam crosslinked Cat.7 data wire with improved fire resistance. Very good properties in terms of NEXT, attenuation and shield design. This wire is used in fixed and protected installation in railway vehicles and buses and meets the fire protection requirement according to EN 45545-2 (HL1 - HL3). It is optimally suited for Ethernet applications of classes D to F (ECN and ETB) according to IEEE 802.3. For installation, the notes according to EN 50355 and EN 50343 must be observed. RADOX® is a registered trademark of HUBER+SUHNER AG, Switzerland. Special properties: flame retardant, RoHs compliant, halogen free, increased thermal load capacity, low smoke emission, oil and fuel resistant. Fire protection: DIN EN 45545-2 HL1-3, DIN 5510 fire protection levels 1-4, NF F16-101 category A1, A2, B, UNI CEI 11170, danger level LR1-LR4

- Standard variants: 1.0 m, 2.0 m, 5.0 m, 10.0 m.
- Other cable lengths on request.

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## Technical Data

### General Data

| | |
|---|---|
| Fields of application | Railway vehicle<br>Buses |
| Applications | Train Communication Network: ETB– Ethernet Train Backbone |
| Design | Ethernet-Connection line |
| Cable length (m) | 2 m |
| Cable length (ft) | 6.56 ft |
| Cable | |
| Cable Type | S/FTP |
| Wiring | Profinet |
| Wire color | white/orange, orange, white/green, green, white/brown, brown, white/blue, blue |
| Color - cable jacket | blue |
| Transmission properties | Cat.7 |
| Connection 1 | |
| Shielding | shielded |
| Dimension (L x W x H) | 50.5 mm x 15 mm x 15 mm |
| Dimension (L x W x H) | 1.988 in. x 0.591 in. x 0.591 in. |
| Connection 2 | |
| Shielding | shielded |
| Dimension (L x W x H) | 48.5 mm x 21.5 mm x 21.5 mm |
| Dimension (L x W x H) | 1.909 in. x 0.846 in. x 0.846 in. |

### Connections/interfaces

| | |
|---|---|
| Cable | |
| Conductor cross section AWG | AWG 24 |
| Conductor diameter (mm) | 0.75 m |
| Conductor diameter (inch) | 0.03 in. |
| Cable construction | 4x2 |
| Stranded wire structure | 7x0.25mm |
| Outer diameter cable jacket (mm) | 8.1 mm |
| Outer diameter cable jacket (inch) | 0.319 in. |

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## Technical Data

| | |
|---|---|
| **Connections/interfaces** | |
| Connection 1 | |
| Connector type | M12-plug |
| Coding | X-coded |
| Type of plug contact, field side | Male (plug) |
| Cable feed arrangement, field side | straight |
| Number of poles | 8 |
| Pin Assignment | 1 WH/OG, 2 OG, 3 WH/GN, 4 GN, 5 WH/BN, 6 BN, 7 WH/BU, 8 BU |
| Latching lever protection | no |
| Color of the cable boot | black |
| Connection 2 | |
| Connector type | M12-jack |
| Coding | X-coded |
| Type of plug contact, field side | Female (bus) |
| Cable feed arrangement, field side | straight |
| Number of poles | 8 |
| Pin Assignment | 1 WH/OG, 2 OG, 3 WH/GN, 4 GN, 5 WH/BN, 6 BN, 7 WH/BU, 8 BU |
| Latching lever protection | no |
| Color of the cable boot | black |
| **Electrical characteristics** | |
| Connection 1 | |
| Current carrying capacity per pin (at 40 °C) | 0.5 A |
| **Mechanical data** | |
| Cable | |
| Bending radius (fixed) | 4 x Ø cable |
| Connection 1 | |
| Mechanical life | min. 100 mating cycles |
| Connection 2 | |
| Mechanical life | min. 100 mating cycles |

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## Technical Data

### Materials and material properties

| | |
|---|---|
| Cable | |
| Material - Cable jacket | RADOX® EM 104 according to EN 50264-1 |
| Material - Wire insulation | RADOX Foam |
| Flame retardancy | yes, according to IEC 60332-1-2 |
| Connection 1 | |
| Material - Contact | CuZnPb (brass) |
| Material - Contact surface | Au (gold) |
| Material - Contact carrier | Plastics, PA, BK |
| Material - Body | Plastics, TPU, BK |
| Material - Cap nut | Metal, CuZn, nickel-plated |
| Connection 2 | |
| Material - Contact | CuZnPb (brass) |
| Material - Contact surface | Au (gold) |
| Material - Contact carrier | Plastics, PA, BK |
| Material - Body | Plastics, TPU, BK |
| Material - Flange housings | Metal, CuZn, nickel-plated |
| Material - Sealing (jack) | FPM/FKM |
| Material - Outer sealing | NBR |
| RoHS | compliant |

### Environmental conditions

| | |
|---|---|
| Cable | |
| Temperature range (fixed) | -50 °C - max. 70 °C |
| Temperature range (fixed) | -58 °F - 158 °F |
| Connection 1 | |
| | -30 °C |
| | -22 °F |
| Protection category (mounted) | IP67 (-30 °C...+90 °C), IP65 (-40 °C...+90 °C) |
| Connection 2 | |
| Protection category (mounted) | IP67 (-30 °C...+90 °C), IP65 (-40 °C...+90 °C) |
| Operating temperature classes | OT1 - OT4 |
| Operating temperature range | -40 to 70 |

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## Technical Data

| Standards/Regulations | |
|---|---|
| General requirements | ISO/IEC 11801-1 \| DIN EN 50173-1 |
| Cable | |
| Buses - Fire safety | UN ECE-R 118.01 |
| Connection 1 | |
| Circular connector | DIN EN 61076-2-101:2013 |
| Shock and vibration | Class 1, category B (DIN EN 61373) |
| Degrees of Protection Provided by Enclosures | EN 60529:1991 + A1:2000 + A2:2013 |
| Connection 2 | |
| Circular connector | DIN EN 61076-2-101:2013 |
| Shock and vibration | Class 1, category B (DIN EN 61373) |
| Degrees of Protection Provided by Enclosures | EN 60529:1991 + A1:2000 + A2:2013 |
| Contact holder | Thermoplastic |
| Sealings | Elastomer |
| Shock and vibration | EN 50155:2021, EN 61373:2010 Class 1 Category B |
| Salt spray | EN 50155:2021, (DIN EN 60068-2-11:2000-02/ 48-hour KA test) |

| Classifications | |
|---|---|
| ETIM 8.0 | EC002599 |
| ETIM 9.0 | EC002599 |
| ETIM 10.0 | EC002599 |

| Packing details | |
|---|---|
| Type of packaging | 1 pc(s) / plastic bag |

### Application note

This product is a standard product of METZ CONNECT. METZ CONNECT is not aware of the specific intended use of the goods by the Customer or any customers of the Customer. The Customer guarantees that it has fully and sufficiently tested the use of the goods and any product modifications, product changes or product enhancements with regard to the specific intended use in accordance with the state of the art or in any other way.

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## Accessories

| P/N | Designation |
|---|---|
| MMF881A115 | M12 jack, D-coded, IP67, Cat.5, Ø 6-9.7 mm, field assembly, straight |
| MNF881A115 | M12 plug, D-coded, IP67, Cat.5, Ø 6-9.7 mm, field assembly, straight |
| MWN811A115 | M12 Panel feed through adapters, D-coded, to RJ45 - straight |

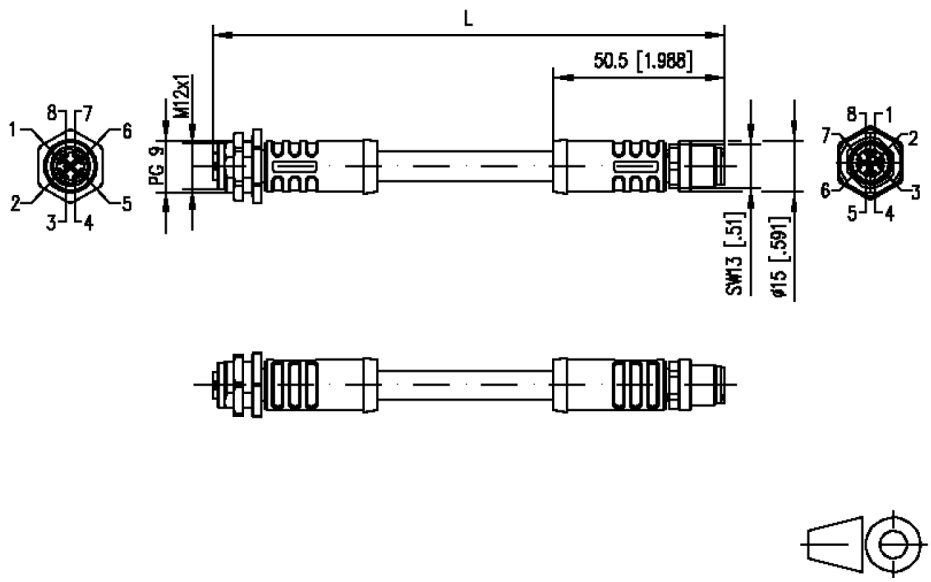
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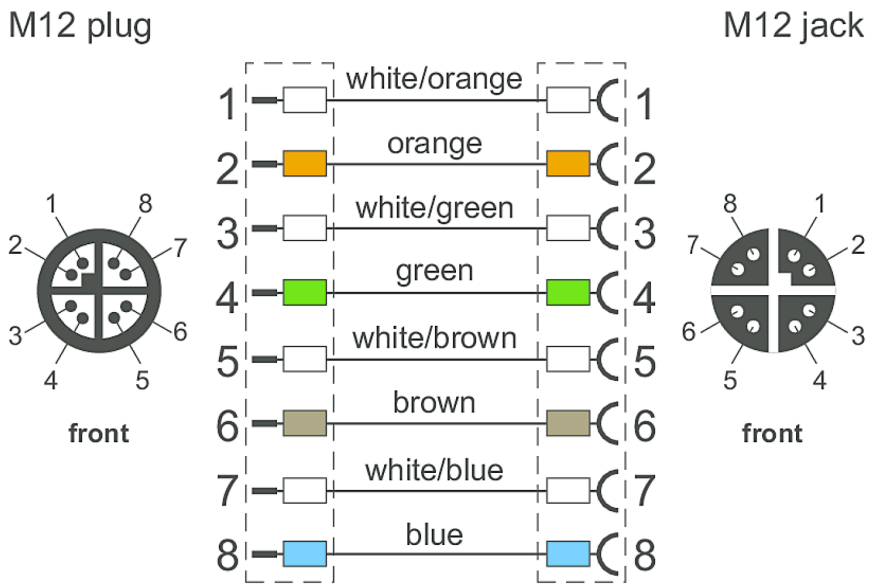
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## Illustrations

Dimensional drawing




Wiring diagram



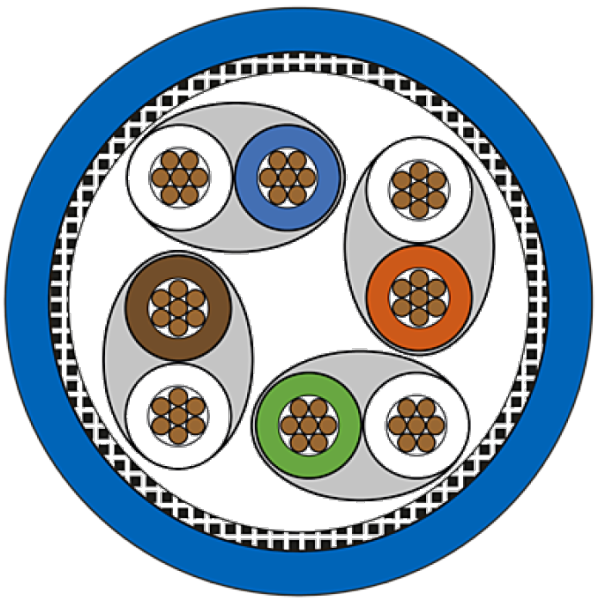

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Principle diagram



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