
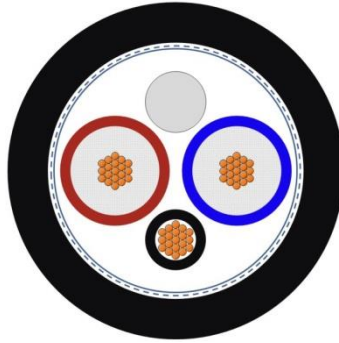


|                           |   |   |
|---------------------------|---|---|
| 2173001                   | <b>DATA SHEET</b>                         |  |
| valid from:<br>2025-11-27 | <b>UNITRONIC® TRAIN MVB 1x2x0.5+1x0.5</b> |   |

## Application

|                  |   |
|------------------|---|
| Field of use:    | Bus cable for the Multifunction Vehicle Bus (MVB) for serial data communication in railway vehicles. MVB is a component of the Train Communication Network (TCN) and standardized in IEC 61375-3-1. |
| Performance:     | Screened foiled star quad cable, having a nominal impedance of 120 Ω. Designed for transmission rates of 1.5 Mbit/s. The MVB transmits time-critical control signals in real time.                  |
| Characteristics: | flame retardant, no flame propagation, halogen free, low smoke density, ozone resistant, UV resistant, oil resistant, fuel resistant, resistant to acids and alkalis                                |
| Applications:    | MVB, TCN, RS-485 and others   |




## Design

|                          |  |
|--------------------------|--|
| Certification            | EN 45545-2: Hazard Level HL1, HL2, HL3<br>fire prevention acc. to NF F 16-101<br>Internal: Vehicle Categories A1, A2, B<br>External: Vehicle Categories A2, B<br>Category D for flame propagation<br>Category F0 for smoke density |
| Conductor                | Control wire and data pair:<br>fine-wire stranded tinned copper<br>0.5 mm <sup>2</sup> (19 x 0.185 mm)<br>conductor diameter: ca. 0.92 mm  |
| Insulation               | Data pair:<br>foamed polyolefine<br>core diameter: ca. 2.45 mm<br>Control wires:<br>polyolefine<br>core diameter: ca. 1.5 mm   |
| Core identification code | Datapair: red/blue<br>Control wire: black  |
| Stranding                | data cores stranded to pair, stranded together with control wire and filler  |
| Screen                   | plastic laminated aluminium foil (overlapping)<br>on top:<br>braid of tinned copper wires (coverage 85 % ± 5 %)<br>diameter over braid: ca. 5.6 mm   |
| Taping                   | thin non-woven tape (optional)   |
| Outer sheath             | cross-linked polymer compound, halogen free and flame retardant<br>acc. to EN 50264-1, EM 104<br>black, similar RAL 9005<br>outer diameter: ca. 7.6 mm   |

## Electrical properties at 20 °C

|                          |  |
|--------------------------|--|
| Conductor resistance     | Data pair: max. 40.1 Ω/km<br>Control wires: max. 40.1 Ω/km |
| Insulation resistance    | min. 5 GΩ x km   |
| Mutual capacitance       | Data pair: max. 46 nF/km (1.5 MHz)                         |
| Capacitive coupling      | Data pair: max. 1500 pF/km (1.5 MHz)                       |
| Characteristic impedance | Data pair: 120 Ω ± 10% (0.75 MHz - 3 MHz)                  |

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| <b>2173001</b>                    | <b>DATA SHEET</b>                         |  |
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|                           |              |  |
|---------------------------|--------------|--|
| Attenuation               | Data pair:   | max. 15 dB/km (1.5 MHz)<br>max. 20 dB/km (3 MHz) |
| Near-end cross-talk       | Data pair:   | min. 45.0 dB/km (0.75 MHz - 3 MHz)               |
| Velocity of propagation   | Data pair:   | 0.74 c   |
| Transfer impedance        |              | max. 20 mΩ/m (20 MHz)                            |
| Maximum operating voltage |              | 125 V (not for power purposes)                   |
| Test voltage              | core/core:   | 1000 V   |
|                           | core/screen: | 1000 V   |

### Mechanical and thermal properties

|                        |                     |                     |
|------------------------|---------------------|---------------------|
| Minimum bending radius | fixed installation: | 3 x outer diameter  |
|                        | occasional flexing: | 10 x outer diameter |
| Temperature range      | fixed installation: | -40 °C up to +90 °C |

|                                  |   |
|----------------------------------|---|
| Burning load                     | 0.319 kWh/m (calculated value)  |
| Flammability                     | flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2<br>flame propagation acc. to IEC 60332-3-25 resp. EN IEC 60332-3-25  |
| Halogen free                     | acc. to IEC 60754-1 resp. EN 60754-1<br>acc. to EN 50264-1 appendix B   |
| Corrosivity of gases             | acc. to IEC 60754-2 resp. EN 60754-2  |
| Smoke density                    | acc. to IEC 61034-2 resp. EN 61034-2  |
| Toxicity                         | acc. to EN 50305  |
| Weather and UV resistance        | acc. to EN 50289-4-17 cables with black sheath are suitable for permanent outdoor use   |
| Ozone resistance                 | acc. to EN 50305  |
| Oil resistance                   | acc. to EN 50264-1, EM 104  |
| Fuel resistance                  | acc. to EN 50264-1, EM 104  |
| Tests                            | Test procedures for electrical characteristics and transmission characteristics acc. to EN 50288-1.   |
| General requirements             | These cables are conform to the EU-Directive 2011/65/EU (RoHS, Restriction of the use of certain hazardous substances) and the LV-Directive 2014/35/EU (Low voltage Directive). |
| <b>Environmental information</b> | These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).  |

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