


2173001	DATA SHEET	
valid from: 26.09.2022	UNITRONIC® TRAIN MVB 1x2x0,5+ 1x0,5	

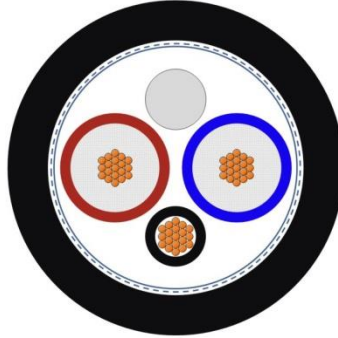
Application

Field of use: Flexible 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 twisted pair 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
fire prevention acc. to NF F 16-101
Internal: Vehicle Categories A1, A2, B
External: Vehicle Categories A2, B
Category D for flame propagation
Category F0 for smoke density

Conductor Control wire and data pair:
fine-wire stranded tinned copper
0.5 mm² (19 x 0.185 mm)
conductor diameter: ca. 0.92 mm

Insulation Data pair:
foamed polyolefine
core diameter: ca. 2.45 mm
Control wires:
polyolefine
core diameter: ca. 1.5 mm

Core identification code Datapair: red/blue
Control wire: black

Stranding data cores stranded to pair, stranded together with control wire and filler

Screen plastic laminated aluminium foil (overlapping)
on top:
braid of tinned copper wires (coverage 85 % ± 5 %)
diameter over braid: ca. 5.6 mm


Taping thin non-woven tape (optional)

Outer sheath cross-linked polymer compound, halogen free and flame retardant
acc. to EN 50264-1, EM 104
black, similar RAL 9005
outer diameter: ca. 7.6 mm

Electrical properties at 20 °C

Conductor resistance	Data pair:	max. 40.1 Ω/km
	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)
Attenuation	Data pair:	max. 15 dB/km (1.5 MHz)

Creator: KIOS / PDC	Document: DB2173001EN	Page 1 of 2
Released: ALTE / PDC	Version: 05	

2173001	DATA SHEET	
valid from: 26.09.2022	UNITRONIC® TRAIN MVB 1x2x0,5+1x0,5	

Near-end cross-talk	Data pair:	max. 20 dB/km (3 MHz) 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	occasional flexing:	10 x outer diameter
	fixed installation:	3 x outer diameter
Temperature range	occasional flexing:	-35 °C up to +90 °C
	fixed installation:	-45 °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 flame propagation acc. to IEC 60332-3-25 resp. EN 60332-3-25
Halogen free		acc. to IEC 60754-1 resp. EN 60754-1 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 resp. VDE 0819-289-4-17 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 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).
Environmental information		These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).

Creator: KIOS / PDC	Document: DB2173001EN	Page 2 of 2
Released: ALTE / PDC	Version: 05	