

2173002	DATA SHEET	
valid from: 01.01.2019	UNITRONIC® TRAIN MVB 2x2x0,5	

Application

Multifunction Vehicle Bus (MVB) stands for a field bus for the Train Communication Network (TCN) and is normatively specified by IEC 61375-3-1 (Edi.1.0/2012-06). It has a data transfer rate of 1.5 Mbit/s and is used primarily for the transmission of commands in a railway vehicle. The MVB is used in conjunction with the WTB (Wire Train Bus) for data communication in trains.

Design

Certification	classification EN 45545-2: Hazard Level HL1, HL2, HL3 classification acid and alkaline resistance acc. to EN 50264-1, EM 104 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	tinned copper wire 19 x 0.185 mm, $\varnothing$ approx. 0.92 mm
Insulation	foamed skin polyethylene (02YS), $\varnothing$ 2.30 mm (nominal value)
Core identification code	Core identification code quad: red/grey/blue/brown
Stranding	4 cores stranded to quad
Screen	aluminium laminated shield foil under braid, braid of tinned copper wires, coverage approx. 85 %
Taping	plastic tape Wrapping (optional) thin non-woven tape
Outer sheath	Outer sheath electron beam cross-linked polymer compound, halogen free and flame retardant acc. to EN 50264-1, EM 104 colour: black (similar RAL 9005), outer $\varnothing$: 830 mm

Electrical properties at 20°C

Conductor resistance	DC resistance (conductor) max. 40.1 Ω /km
Insulation resistance	Insulation resistance min. 5 G Ω x km
Inductance	nom. 850 μ H/km (1 kHz)
Capacitive coupling	max. 46 nF/km (1 MHz)
Characteristic impedance	Characteristic impedance - normative 120 Ω ($\pm$ 10%), (0.5-2) MHz Characteristic impedance - nominal 120 Ω ($\pm$ 10%), (0.5-5) MHz
Attenuation	Attenuation - normative max. 15 dB/km (1 MHz) max. 20 dB/km (2 MHz) Attenuation - nominal nom. 26.4 dB/km (3 MHz) nom. 30.1 dB/km (4 MHz) nom. 33.1 dB/km (5MHz)
Velocity of propagation	v/c ratio nom. 0.74
Signal transit time	nom. 450 ns/ 100m (2 MHz)
Transfer impedance	Transfer impedance - normative max. 20 m Ω /m (20.0 MHz) Transfer impedance - nominal nom. 10 m Ω /m (20.0 MHz)
Peak operating voltage	125 V (not for power purposes)
Test voltage	conductor/conductor 1000 V conductor/screen 1000 V

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Mechanical and thermal properties

Minimum bending radius	moved: 10 x cable Ø fixed installation: 6 x cable Ø
Temperature range	moved: -35° C up to +90° C fixed installation: -45° C up to +90° C
Flammability	flame retardant acc. to IEC 60332-1-2 no flame propagation > 6 mm and <12 mm: acc. to IEC 60332-3-25 / acc. to NF C 32-070, Category C1 and C2
Halogen free	acc. to EN 60684-2 (fluorine) acc. to IEC 60754-1; EN 60754-1; EN 50267-2-1 (chlorine and bromine)
Corrosivity of gases	acc. to EN 50264-1, pH ≥ 4.3 and conductivity ≤ 10µS/mm acc. to IEC 60754-2; EN 60754-2; EN 50267-2-2
Smoke density	acc. to EN 50264-1 (light transmission: min. 70%) acc. to IEC 61034-2; EN 61034-2 / acc. to NF X 10-702
Toxicity	acc. to EN 50264-1 (< 3) acc. to EN 50305 / acc. to NF X 70-100
UV resistance	acc. to EN 50525-1 (VDE 0285-525-1) are cables with black sheath suitable for permanent outdoor use.
Ozone resistance	acc. to EN 50264-3-2, method A or B acc. to EN 50305
Oil resistance	acc. to EN 50264-1, EM 104
Fuel resistance	acc. to EN 50264-1, EM 104
General requirements	This cable is conform to the EU-Directive 2011/65/EU (RoHS, Restriction of the use of certain hazardous substances).

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