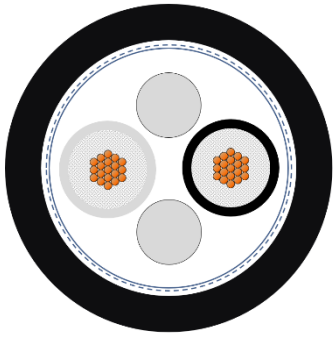
2173004	DATA SHEET	LAPP
valid from: 2025-11-27	UNITRONIC® TRAIN WTB 1x2x0.75	

Application

Field of use:	Bus cable for the Wire Train Bus (WTB) for serial data communication in railway vehicles. WTB is a component of the Train Communication Network (TCN) and standardized in IEC 61375-2-1.
Performance:	Screened foiled cable, having a nominal impedance of 120 Ω. Designed for transmission rates of 1 Mbit/s. The WTB 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:	WTB, TCN, RS-485 and others
Approvals:	NF F 16-101 Fire testing – Types of rolling stock: External category: A2, B Internal category: A1, A2, B NF F 16-101 Fire testing – Fire Classification: Flammability: class D Smoke and toxicity: class F0 EN 45545-2: Hazard Level HL1, HL2, HL3



Design

Conductor	fine-wire stranded tinned copper 0.75 mm² (19 x 0.226 mm) conductor diameter:	 ca. 1.1 mm
Insulation	Foamed skin PE (Polyethylene) core diameter:	 ca. 3.2 mm
Core identification code	white/black	
Stranding	2 cores stranded to pair, with 2 fillers on top: plastic foil (overlapping)	
Screen	plastic laminated aluminium foil (overlapping) on top: braid of tinned copper wires (coverage 85 % ± 5 %) diameter over braid:	 ca. 7.0 mm
Taping	thin non-woven tape (optional)	
Outer sheath	cross-linked polymer compound EM 104 acc. to EN 50264-1, table 4 black, similar RAL 9005 outer diameter:	 ca. 9.0 mm

Electrical properties at 20 °C

Conductor resistance	max. 26.7 Ω/km	
Insulation resistance	core/core: core/screen:	min. 5 GΩxkm min. 5 GΩxkm
Mutual capacitance	max. 65 nF/km (1 MHz)	
Capacitive coupling	max. 1500 pF/km (1 MHz)	
Characteristic impedance	120 Ω ±10% (0.5 MHz - 2 MHz)	
Attenuation	max. 10 dB/km (1 MHz) max. 14 dB/km (2 MHz)	
Velocity of propagation	0.74 c	

Transfer impedance	max. 20 mΩ/m (20 MHz)	
Maximum operating voltage	125 V (not intended to be used in conjunction with low impedance sources, such as power grids)	
Test voltage	core/core: core/screen:	1000 V 1000 V

Mechanical and thermal properties

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

Burning load	0.726 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 IEC 60332-3-25 class D acc. to NF C 32-070, category C1 and C2
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 class F0 acc. to NF X 10-702
Toxicity	acc. to EN 50305 class F0 acc. to NF X 70-100
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).
Environmental information	These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).