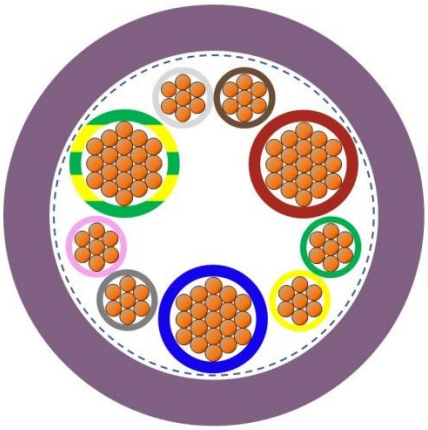
2170208	DATA SHEET	LAPP
valid from: 15.07.2020	UNITRONIC® BUS IBS P COMBI 3x2x0,22 mm² + 3x1,0 mm²	

Application

UNITRONIC® BUS P COMBI IBS is a data cable for the field-bus system INTERBUS with integrated power supply. The field-bus cable is designed to the requirements of the bus-system INTERBUS, the transmission characteristics conform to the system and guarantee a high operating security during data transmission.
UNITRONIC® BUS P COMBI IBS is desigend for a data transmission rate of 500kBit/s at a length of 400m. The cable is intended for limited flexible use and for permanent installation in dry and damp interiors.

Design



Conductor	data pairs: stranded bare copper 0.22 mm² (24 AWG), 7 x 0.2 mm power cores: stranded bare copper 1.0 mm² (18 AWG), 14 x 0.3 mm
Insulation	data pairs: PE core Ø: ca. 1.0 mm power cores: PE core Ø: ca. 1.7 mm
Core identification code	data pairs: white-brown, green-yellow, grey-pink power cores: red, blue, green/yellow
Stranding	data cores twisted to pairs, data pairs stranded together with power cores wrapping on top
Screen	braid of tinned copper wires
Outer sheath	PUR violet outer Ø: max. 8.0 mm

Electrical properties at 20°C

Conductor resistance	power cores:	max. 19.5 Ω/km
	data cores:	max. 87.6 Ω/km
Insulation resistance	power cores:	min. 5 GΩ x km
Mutual capacitance	800 Hz:	max. 60 nF/km
Characteristic impedance	64 kHz:	110 Ω (±20 Ω)
	>1 MHz:	95 Ω (±15 Ω)
Attenuation	256 kHz:	max. 1.0 dB/100m
	772 kHz:	max. 2.5 dB/100m
	1 MHz:	max. 2.8 dB/100m
	4 MHz:	max. 6.9 dB/100m
	10 MHz:	max. 12.0 dB/100m
	16 MHz:	max. 15.5 dB/100m
	20 MHz:	max. 17.2 dB/100m
Near-end cross-talk	772 kHz:	min. 61 dB
	1 MHz:	min. 59 dB
	2 MHz:	min. 55 dB
	4 MHz:	min. 50 dB
	8 MHz:	min. 46 dB
	10 MHz:	min. 44 dB
	16 MHz:	min. 41 dB
	20 MHz:	min. 40 dB
Velocity of propagation	0,66 c	
Transfer impedance	screen resistance:	max. 10 Ω/km
	transfer impedance:	max. 250 mΩ/m (30 MHz)
Peak operating voltage	data pair:	250 V (not for power applications)
	power pair:	450 V (not for power applications)
Test voltage	core/core:	1500 V
	core/screen:	1000 V

Mechanical and thermal properties

Minimum bending radius	fixed:	7.5 x cable Ø
	flexing:	15 x cable Ø
Temperature range	fixed:	-30 °C up to +80 °C
	flexing:	-5 °C up to +70 °C
Burning load	0,3 kWh/m	
Flammability	flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2	
Halogen free	acc. to VDE 0472-815	
Oil resistance	acc. to EN 50363-10-2	
General requirements	This cable is conform to EU-Directive 2014/35/EU (Low Voltage Directive) and to EU-Directive 2011/65/EU (RoHS, Restriction of the use of certain hazardous substances).	
Environmental information	These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).	