



<b>DATA SHEET</b>	2170208
<b>UNITRONIC® BUS P COMBI /BS 3 x 2 x 0,22 mm<sup>2</sup> + 3 x 1,0 mm<sup>2</sup></b>	valid from : 12.02.2004

## Application

UNITRONIC® BUS P COMBI /BS is a data cable for the field-bus system INTERBUS with a data transmission rate of 500kBit/s at a length of 400m. 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 /BS is certified by the INTERBUS-CLUB.

The cable is intended for limited flexible use and for permanent installation in dry and damp interiors.

Applicable connectors: D-Sub-connector  
Round connector (IP 65)

## Design

Data transmission pairs	stranded conductor: bare copper, 0.22 mm <sup>2</sup> multicore insulation: PE, core diameter approx. 1.0 mm cores twisted to pairs core colour: white-brown, green-yellow, grey-pink (DIN 47100)
Power supply cores	stranded conductor: bare copper, 1.0 mm <sup>2</sup> ,(14 x 0,3 mm) insulation: PE, core diameter approx. 1.7 mm colour coding: red, blue, green/yellow
Cable core	3 pairs 0.22 mm <sup>2</sup> with 3 cores 1.0 mm <sup>2</sup> stranded taping braid of tinned copper
Sheath	PUR, flame retardant, halogen free, violet outer diameter approx. 7.9 mm

LAPP KABEL STUTTGART UNITRONIC® BUS P COMBI /BS 3 x 2 x 0,22 + 3 x 1,0

ART.2170208

## Electrical properties at 20° C

### Data transmission pairs

Loop resistance		max. Ω/km	186
Insulation resistance		min GΩx km	5
Mutual capacitance at	800 Hz	max nF/km	60
Impedance at	f= 64 kHz	Ω	110 ± 20
	f> 1 MHz	Ω	95 ± 15
Attenuation at	256 kHz	max dB/100m	1.0
	772 kHz	max dB/100m	2.5
	1 MHz	max dB/100m	2.8
	4 MHz	max dB/100m	6.9
	10 MHz	max dB/100m	12.0
	16 MHz	max dB/100m	15.5
	20 MHz	max dB/100m	17.2
Near-end cross-talk attenuation at	772 kHz	min dB	61
	1 MHz	min dB	59
	2 MHz	min dB	55
	4 MHz	min dB	50
	8 MHz	min dB	46
	10 MHz	min dB	44
	16 MHz	min dB	41

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	20 MHz	min dB	40
Signal velocity of propagation		nom.	0.66c
Peak operating voltage (not for purposes of power)	V		250
<b>Electricity supply cores</b>			
Conductor resistance	max. Ω/km		19.5
Insulation resistance	min. GΩx km		5
Peak operating voltage (not for purposes of power)	V		450
Cable core	Test voltage	core/core core/screen	U <sub>eff</sub> V
Transfer impedance at		30 MHz	U <sub>eff</sub> V
			max. MΩ/m
			1500
			1000
			250

### Mechanical and thermal characteristics

Minimum bend radius	static	mm	60
	flex. use	mm	120
Temperature range	static	°C	- 30 up to + 80
	flex. use	°C	- 5 up to + 70
Burning load		kWh/m	0.3
Flame propagation	flame retardant to VDE 0482, part 265-2-1 / IEC 60 332-1		

### General properties

All materials used and during manufacturing have to be **free of LBS** (e.g. silicone).  
LBS = substances destructive to lacquer-coatings.

INTERBUS = registered trademark of Phoenix Contact GmbH&Co

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