



<b>DATA SHEET</b>	2170808
<b>UNITRONIC® BUS P COMBI /BS UL/CSA</b> <b>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 UL/CSA 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 UL/CSA 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)

Approvals:           UL/CSA Type: CMX acc. to UL 444 and CSA C22.2 No. 214-02

## Design

Data transmission pairs	stranded conductor: bare copper, 0.22 mm <sup>2</sup> , multicore (7 x 0.2 mm) 24AWG 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) 18 AWG 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 max. 8.0 mm

LAPP KABEL STU<sup>^</sup>TGART **UNITRONIC® BUS P COMBI /BS UL/CSA** 3 x 2 x 0,22 + 3 x 1,0  
c(UL) CMX 75°C 6 x 24AWG / 3 x 18AWG (SHIELDED) E. . . . . ART. 2170808

## Electrical properties at 20° C

### Data transmission pairs

Loop resistance	(acc. to UL 444)	max. Ω/km	87.6
Screen resistance		min. Ωx km	10
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

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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
20 MHz	min. dB	40

Signal velocity of propagation nom. 0.66c

Peak operating voltage V 250  
(not for purposes of power)

**Electricity supply cores**

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	U <sub>eff</sub> V	1500
		core/screen	U <sub>eff</sub> V	1000

Transfer impedance at 30 MHz max. MΩ/m 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/ UL-1581 VW-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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