LAPP GROUP	**DATA SHEET**	2170817
	UNITRONIC® BUS Yv COMBI *IBS* UL/CSA **3 x 2 x 0.22 mm² + 3 x 1.0 mm²**	valid from : 30.10.2006

Application

UNITRONIC® BUS Yv COMBI IBS UL/CSA is a data cable for the field-bus system INTERBUS, with integrated power supply cores in the cable for the bus logic of member (Installation remote bus cable). UNITRONIC® BUS Yv COMBI IBS is for 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 are conform to the system and guarantee a high operating security during data transmission.
UNITRONIC® BUS Yv COMBI IBS UL/CSA is certified by INTERBUS-CLUB.
The cable is intended for limited flexible use and for permanent installation in- and outdoor, as well as used in ground installation. By aboveground installation the outer sheath is resistant to atmospheric UV-irradiation.

Applicable connectors	D-Sub-connector, 9 pin version Circular connector, 9 pin version (IP 65 / IP 67)

Design

Data transmission pairs	stranded conductor: bare copper, 0.22 mm² 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 mm² insulation: PE, core diameter approx. 1.7 mm colour coding: red, blue, green/yellow
Cable core	3 pairs 0.22 mm² with 3 cores 1.0 mm² stranded taping braid of tinned copper
Inner sheath	PVC, violet Inner sheath diameter max. 7.9 mm
Sheath	PVC, black
Outer diameter	approx 9.5 mm

Sheath printing:

LAPP KABEL STUTTGART **UNITRONIC® BUS Yv COMBI *IBS* UL/CSA** 3 x 2 x 0,22 + 3 x 1,0 c(UL)us
CMX E233660 ROHS ART. 2170817 RV MM

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	64 kHz	Ω	110 ± 20
	≥ 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
		20 MHz	min dB	40
Signal velocity of propagation			nom.	0.66c
Peak operating voltage (not for purposes of power)			V	250
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_{eff} V	1500
		core/screen	U_{eff} V	1000
Transfer impedance at		30 MHz	max. MΩ/m	250

Mechanical and thermal characteristics

Minimum bend radius	static	mm	75
	flex. use	mm	140
Temperature range	static	°C	- 30 up to + 80
	flex. use	°C	- 5 up to + 70
Burning load		kWh/m	0.4
Flame propagation	flame retardant **VW-1 acc. to UL1581** IEC 60332-1		

General requirements

PWIS All materials used for the cable and during manufacturing must be **free of PWIS** (Paint-Wetting impairment Substances e.g. silicone).

RoHS directive Dangerous and forbidden substances acc. to RoHS directive (2002/95 EG) are not allowed to the manufacturing.