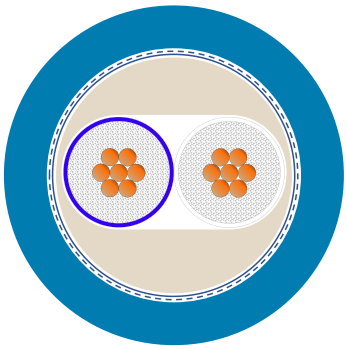
2170919	DATA SHEET	LAPP
valid from: 26.10.2023	ETHERLINE® T1L FLEX FC Y 1x2x18/7 AWG	

Application

Field of use:	Flexible Industrial Ethernet cable for generic cable system acc. to ISO/IEC 11801 and EN 50173. Suitable for occasional flexing. Meeting the transmission requirements of IEC 61156-13, T1-A-1000 (Downwards compatible to T1-A-400, T1-A-250 and T1-A-100).
Performance:	1-pair, overall braid and foil screened symmetrical cable (SF/UTP), having a nominal impedance of 100 Ω, supporting a bandwidth of 10 Mbit/s (e.g. 10BASE-T1L) over up to 1000 m.
Characteristics:	flame retardant, no flame propagation, oil resistant, UV resistant
Applications:	10BASE-T1 (IEEE 802.3cg), PoDL (IEEE 802.3bu), Ethernet APL, 2 WISE Ethernet and other



Design

Certification	E224262 UL PLTC 75°C OIL RES I SUN RES acc. to UL 13 E236660 c(UL)us CM 75 °C acc. to UL 444 & CSA 22.2 No. 214 E63634 cRUus AWM Style 2570 AWM I/II A/B 80°C 600V FT1 gemäß UL 758 & CSA 22.2 No. 210	
Conductor	stranded bare copper 18/7 AWG	
Insulation	foam-skin polyolefine core diameter:	max. 2.6 mm
Core identification code	white and blue	
Stranding	two cores stranded to pair	
Taping	plastic tape (optional)	
Inner sheath	PVC (Polyvinylchloride) outer diameter:	nom. 5.6 mm
Screen	plastic laminated aluminium foil (overlapping) on top: braid of tinned copper wires (coverage: nom. 80 %)	
Outer sheath	PVC (Polyvinylchloride) blue, similar to RAL 5015 outer diameter:	nom. 8.0 mm (± 0.3 mm)

Electrical properties at 20 °C

Loop resistance	20 °C:	≤ 4.6 Ω/100 m
Test voltage	core/core: core/screen:	2000 V 2000 V
Rated voltage	UL:	300 V acc. to UL 13 and UL 444 600 V acc. to UL 758
Maximum operating voltage	IEC/EN:	125 V (not intended to be used in conjunction with low impedance sources, such as power grids)
Insulation resistance	20 °C:	≥ 5 GΩxkm
Mutual capacitance	1 kHz:	nom. 50 nF/km
Capacitance unbalance	1 kHz:	≤ 1600 pF/km

Transfer impedance	Grade 1 acc. to IEC 61156-13	
	0.1 MHz:	≤ 15 mΩ/m
	1 MHz:	≤ 15 mΩ/m
	10 MHz:	≤ 10 mΩ/m
	20 MHz:	≤ 20 mΩ/m
Coupling attenuation	Type I acc. to IEC 61156-13	
	0.1 MHz:	≥ 110 dB
	1 MHz:	≥ 100 dB
	10 MHz:	≥ 90 dB
	20 MHz:	≥ 86 dB
Velocity of propagation	100 MHz:	nom. 0.72 c

Transmission properties at 20°C

The transmission characteristics meet the requirements of IEC 61156-13, T1-A-1000.

Frequency	(max.) Phase delay	(max.) Attenuation	(min.) TCL Level 1	(min.) EL TCTL Level 1, 2	Char. Impedance	(min.) RL
f [MHz]	[ns/ 100 m]	[dB/ 100 m]	[dB]	[dB]	[Ohm]	[dB]
0.1	648	1.0	(40.0)	(53.0)	—	15.0
0.5	585	1.2	(40.0)	(46.0)	—	18.5
1	570	1.4	40.0	40.0	—	20.0
2	559	1.9	35.5	34.0	—	21.5
4	552	2.6	31.0	28.0	—	23.0
8	547	3.6	26.5	21.9	—	24.5
10	545	4.1	25.0	20.0	—	25.0
16	543	5.1	21.9	15.9	—	25.0
20	542	5.7	20.5	14.0	100 ± 5	25.0

Mechanical and thermal properties

Minimum bending radius	fixed installation:	4× outer diameter
	occasional flexing:	8× outer diameter
Temperature range	fixed installation:	-40 °C up to +80 °C
	occasional flexing:	-30 °C up to +70 °C
	UL:	75 °C acc. to UL 13 and UL 444 80 °C acc. to UL 758
Flammability	flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2 no flame propagation acc. to IEC 60332-3-24 resp. EN 60332-3-24 FT1 vertical flame test acc. to UL 1581 §1060 FT4 vertical tray flame test acc. to UL 2556, 9.6 CFT cable flame test acc. to UL 1581 §1061	
Oil resistance	OIL RES I acc. to UL 13, 40.2	
UV resistance	SUN RES acc. to UL 13, 29	

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).