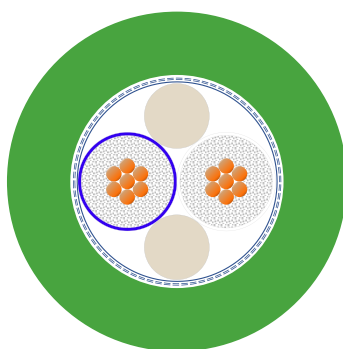


2170922	DATA SHEET	
valid from: 26.10.2023	ETHERLINE® T1 PN FLEX T Y 1x2x22/7 AWG	

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 61156-11, T1-D (Downwards compatible to T1-C and T1-A-100). PROFINET® Type B acc. to the "PROFINET Cabling and Interconnection Technology" guideline.
Performance:	1-pair, overall braid and foil screened symmetrical cable (SF/UTP), having a nominal impedance of 100 Ω, supporting a bandwidth of 1 Gbit/s (e.g. 10BASE T1, 100BASE-T1, 1000BASE-T1) over up to 40 m.
Characteristics:	flame retardant, no flame propagation, oil resistant, UV resistant
Applications:	PROFINET® Type B flexible cable for occasional movement or vibration, 10BASE-T1 (IEEE 802.3cg), 100BASE-T1 (IEEE 802.3bw), 1000BASE-T1 (IEEE 802.3bp), PoDL (IEEE 802.3bu) 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 21695 AWM I/II A/B 80°C 600V FT1 acc. to UL 758 & CSA 22.2 No. 210
Conductor	stranded bare copper 22/7 AWG (0.34 mm ²)
Insulation	foam-skin polyolefine core diameter: max. 1.65 mm
Core identification code	white/blue
Stranding	two cores stranded to pair (with filling elements)
Taping	plastic tape
Screen	plastic laminated aluminium foil (overlapping) on top: braid of tinned copper wires (coverage: nom. 85 %)
Outer sheath	PVC (Polyvinylchloride) green, similar to RAL 6018 outer diameter: nom. 5.8 mm (± 0.3 mm)

Electrical properties at 20 °C

Loop resistance	20 °C:	≤ 11.08 Ω/100 m
Test voltage	core/core:	2000 V
	core/screen:	2000 V
Rated voltage	UL:	300 V acc. to UL 13 and UL 444 600 V acc. to UL 758
	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. 45 nF/km
Capacitance unbalance	1 kHz:	≤ 1200 pF/km
Inductance	1 kHz:	nom. 700 mH/km

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Transfer impedance Grade 1b acc. to IEC 61156-11
0.1 MHz: ≤ 30 mΩ/m
1 MHz: ≤ 30 mΩ/m
10 MHz: ≤ 20 mΩ/m
20 MHz: ≤ 60 mΩ/m

Coupling attenuation Type I acc. to IEC 61156-11
0.1 MHz: ≥ 110 dB
1 MHz: ≥ 100 dB
10 MHz: ≥ 90 dB
30 MHz: ≥ 85 dB
100 MHz: ≥ 85 dB
1250 MHz: ≥ 63 dB

Velocity of propagation 100 MHz: nom. 0.76 c

Transmission properties at 20°C

The transmission characteristics meet the requirements of IEC 61156-11, T1-D. The table contains informative values at key frequencies. Values in brackets are for further studies (ffs).

Frequency	(max.) Phase delay	(max.) Attenuation	(min.) TCL Level 1	(min.) EL TCTL Level 1	Char. Impedance	(min.) RL
f [MHz]	[ns/ 100 m]	[dB/ 100 m]	[dB]	[dB]	[Ohm]	[dB]
0.1	(648)	(1.4)	(40.0)	(53.0)	—	(10.0)
1	570	2.1	40.0	40.0	—	20.0
2	559	2.7	35.5	34.0	—	21.5
4	552	3.7	31.0	28.0	—	23.0
10	545	5.8	25.0	20.0	—	25.0
20	542	8.2	20.5	14.0	—	25.0
62.5	539	14.6	13.1	6.0	—	21.5
100	538	18.5	10.0	6.0	100 ± 5	20.1
200	537	26.5	7.0	6.0	—	18.0
300	536	32.7	7.0	6.0	—	16.8
500	536	42.8	7.0	6.0	—	15.2
600	535	47.1	7.0	6.0	—	17.3
1000	535	61.9	7.0	6.0	—	15.1
1250	535	69.9	7.0	6.0	—	14.1

Mechanical and thermal properties

Minimum bending radius fixed installation: 4× outer diameter
occasional flexing: 8× outer diameter

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Temperature range	fixed installation:	-40 °C up to +80 °C
	occasional flexing:	-10 °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
	FT2 horizontal flame test acc. to UL 1581 §1100
	FT1 vertical flame test acc. to UL 1581, §1060
	UL flame exposure acc. to UL 1685, §4 - §11

Oil resistance	OIL RES I acc. to UL 13, §40.2
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UV resistance	SUN RES acc. to UL 13, § 29
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General requirements

These cables 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).

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