21704891	DATA SHEET	LAPP
valid from: 2024-04-08	ETHERLINE® FD bioP Cat. 5e 4x2x26/19 AWG	

Application

Field of use:	Highly flexible Industrial Ethernet cable for generic cable system acc. to ISO/IEC 11801 and EN 50173. Suitable for applications in energy chains and permanent moved machine parts. Meeting the transmission requirements of IEC 61156-6, Category 5e and EN 50288-2-2.
Performance:	4-pair, overall braid screened symmetrical cable (S/UTP), having a nominal impedance of 100 Ω, supporting a bandwidth of 2.5 Gbit/s (e.g. 100BASE-T, 1000BASE-T, 2.5GBASE-T) over up to 60 m.
Characteristics:	flame retardant, halogen free, oil resistant, UV resistant, abrasion resistant, mechanical resistant, largely resistant to acids and alkalis
Applications:	EtherCAT, EtherNet/IP and other



Design

Certification	E63634 cRUus AWM Style 21576 AWM I/II A/B 1000 V 80 °C FT2 acc. to UL 758 and CSA C22.2 No.210
Conductor	fine-wire stranded tinned copper 26/19 AWG (0.14 mm²)
Insulation	PO (Polyolefine) core diameter: max. 1.08 mm
Core identification code	pair 1: white-blue/blue; pair 2: white-orange/orange; pair 3: white-green/green; pair 4: white-brown/brown
Stranding	cores twisted to pairs four pairs stranded to bundle
Inner sheath	TPE (Thermoplastic elastomer) outer diameter: nom. 5.2 mm
Screen	braid of tinned copper wire (coverage: nom. 85 %)
Outer sheath	TPU (Thermoplastic polyurethane) blue, similar RAL 5021 outer diameter: 6.3 mm ± 0.3 mm

Electrical properties at 20 °C

Loop resistance	20 °C:	≤ 28.0 Ω/100 m
Test voltage	core/core: core/screen:	3000 V 3000 V
Rated voltage	UL:	1000 V
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 2 acc. to IEC 61156-6 1 MHz: 10 MHz: 30 MHz: 100 MHz:	 ≤ 50 mΩ/m ≤ 100 mΩ/m ≤ 200 mΩ/m ≤ 1000 mΩ/m

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Coupling attenuation	Type Ib acc. to IEC 61156-6	
	30 MHz:	≥ 70
	100 MHz:	≥ 70
	1000 MHz:	≥ 50
Velocity of propagation	100 MHz:	nom. 0.67 c

Transmission properties at 20°C

The transmission characteristics meet the requirements of IEC 61156-6 for category 5e.

Frequency	(max.) Phase delay	(max.) Differential delay	(max.) Attenuation	(min.) TCL Level 1	(min.) EL TCTL Level 1	(min.) NEXT	(min.) PS NEXT	(min.) ACR-F	(min.) PS ACR-F	(nom.) Char. Impedance	(min.) RL
f [MHz]	[ns/ 100 m]	[ns/ 100 m]	[dB/ 100 m]	[dB]	[dB]	[dB]	[dB]	[dB/ 100 m]	[dB/ 100 m]	[Ohm]	[dB]
4	552.0	45.0	6.0	34.0	23.0	56.3	53.3	55.0	52.0	—	23.0
10	545.4	45.0	9.5	30.0	15.0	50.3	47.3	49.0	46.0	—	25.0
16	543.0	45.0	12.1	28.0	10.9	47.2	44.2	45.9	42.9	—	25.0
20	542.0	45.0	13.5	27.0	9.0	45.8	42.8	44.5	41.5	—	25.0
30	540.6	45.0	16.7	25.2	5.5	43.1	40.1	41.8	38.8	—	23.5
62.5	538.6	45.0	24.8	22.0	—	38.4	35.4	37.1	34.1	—	20.7
100	537.6	45.0	32.0	20.0	—	35.3	32.3	34.0	31.0	100	19.0

Mechanical and thermal properties

Minimum bending radius	fixed installation:	8× outer diameter
	continuous flexing:	15× outer diameter
Temperature range	fixed installation:	-40 °C up to +80 °C
	continuous flexing:	-30 °C up to +70 °C
	UL temperature rating:	80 °C
Flammability	flame retardant acc. to IEC 60332-2-2 resp. EN 60332-2-2 FT2 acc. to UL 1581 §1100	
Halogen free	acc. to IEC 60754-1 resp. EN 60754-1	
Oil resistance	acc. to. EN 50363-10-2	
UV resistance	acc. to. ISO 4892-2, method A	

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).

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