


2170433	DATA SHEET	
valid from: 2023-08-11	ETHERLINE® P EC FD Cat. 5e 1x4x26/19 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:	quad, overall braid and foil screened quad cable (SF/UTQ), having a nominal impedance of 100 Ω, supporting a bandwidth of 100 Mbit/s (e.g. 10BASE-T, 100BASE-T) over up to 60 m.
Characteristics:	flame retardant, halogen free, oil resistant, UV resistant, abrasion resistant, mechanical resistant, largely resistant to acids, alkalis and certain oils
Applications:	EtherCAT, EtherNet/IP and other




Design

Certification	E236660 c(UL)us CMX 75 °C acc. to UL 444 & CSA 22.2 No. 214
Conductor	fine-wire stranded bare copper 26/19 AWG (0.14 mm ²)
Insulation	PO (Polyolefine) core diameter: max. 1.09 mm
Core identification code	pair 1: white-orange/orange; pair 2: white-green/green
Stranding	four cores stranded to quad
Taping	plastic tape
Screen	plastic laminated aluminium foil on top: braid of tinned copper wires (coverage: nom. 85 %)
Outer sheath	TPU (Thermoplastic polyurethane) green, similar RAL 6018 outer diameter: 4.8 mm ± 0.3 mm

Electrical properties at 20 °C

Loop resistance	20 °C:	≤ 28 Ω/100 m
Test voltage	core/core:	1500 V
	core/screen:	1500 V
Rated voltage	UL:	300 V
Maximum operating voltage	IEC/EN:	125 V (not intended to be used in conjunction with low impedance sources, such as utility mains)
Insulation resistance	20 °C:	≥ 5 GΩxkm
Mutual capacitance	1 kHz:	nom. 53 nF/km
Capacitance unbalance	1 kHz:	≤ 1600 pF/km
Transfer impedance	Grade 1 acc. to IEC 61156-6	
	1 MHz:	≤ 15 mΩ/m
	10 MHz:	≤ 10 mΩ/m
	30 MHz:	≤ 30 mΩ/m
	100 MHz:	≤ 100 mΩ/m

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Coupling attenuation	Type I acc. to IEC 61156-6	
	30 MHz:	≥ 85
	100 MHz:	≥ 85
	1000 MHz:	≥ 65
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	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 ± 5	19.0

Mechanical and thermal properties

Minimum bending radius	fixed installation: continuous flexing:	4× outer diameter 16× outer diameter
Temperature range	fixed installation: continuous flexing: UL:	-40°C up to +80°C -20°C up to +50°C 75 °C
Bending cycles and power chain operation parameters	bending radius: travel distance: acceleration: velocity: cycles:	15× outer diameter 5 m 3 m/s ² 3 m/s 3.000.000
Flammability	flame retardant acc. to ISO 6722-1 and IEC 60332-1-2 resp. EN 60332-1-2 VW-1 acc. to UL 1581 §1080	
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 LV-Directive 2014/35/EU (Low voltage Directive) and the EU-Directive 2011/65/EU (RoHS, Restriction of the use of certain hazardous substances).

Environmental information

These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).

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