2170590	DATA SHEET	LAPP
valid from: 17.11.2020	ETHERLINE® PN CAT.6A P FD FC 4x2x24/7 AWG	

Application

Field of use:	Connecting cable for generic cabling systems acc. to ISO/IEC 11801 and EN 50173
Performance:	Bandwidth up to 500 MHz acc. to IEC 61156-6 Category 6A and EN 50288-10-2
Characteristics:	Halogen free, flame retardant and abrasion resistant and largely resistant to acids, alkalis and certain oils,the "Fast Connect" design allows easy stripping and assembly of the cable
Applications:	PROFINET, EtherCAT, EtherNet/IP, PoE (IEEE 802.3af), PoE+ (IEEE 802.3at) and many others

Design

Certification	c(UL)us CMX 75°C acc. to UL 444 and CSA C22.2 No. 214
Conductor	stranded bare copper 24/7 AWG
Insulation	polyolefin core diameter: ca. 1.05 mm
Core identification code	pair 1: blue-white/blue, pair 2: orange-white/orange, pair 3: green-white/green, pair 4: brown-white/brown
Stranding	2 cores stranded to pair, 4 pairs stranded to bundle with central separating element on top: plastic tape (overlapping)
Inner sheath	TPE-V outer diameter: nom. 6.50 mm
Screen	plastic laminated aluminium foil (overlapping) on top: braid of tinned copper wires (coverage 85 % ±5 %)
Outer sheath	PUR green, similar RAL 6018 outer diameter: 8.9 mm (± 0.3 mm)

Electrical properties at 20°C

Loop resistance	max. 18.84 Ω/100 m	
Insulation resistance	min. 5 GΩxkm	
Mutual capacitance	nom. 52 nF/km	
Characteristic impedance	nom. 100 Ω acc. to IEC 61156-6	
Velocity of propagation	0.67c	
Signal propagation time	≤ 520 ns/100 m	
Delay skew	≤ 25 ns/100 m	
Operating voltage (max.)	EN:	125 V (not for power purposes)
Rated voltage	UL:	300 V acc. to UL 444
Test voltage	core/core: core/screen:	1700 V 1700 V

Electrical transmission properties at 20°C

The transmission characteristics meet the requirements of the standards EN 50288-10-2 and IEC 61156-6 for category 6A.
The normative requirements for the transmission properties are shown in the following table:

f [MHz]		4	10	16	62,5	100	250	500
(max.) Attenuation	[dB/100 m]	5,7	8,9	11,2	22,5	28,7	46,6	67,9
(min.) TCL	[dB]	34	30	28	22	20	16	—
(min.) EL TCTL	[dB/100 m]	23	15	10,9	—	—	—	—
(min.) NEXT	[dB]	66,3	60,3	57,2	48,4	45,3	39,3	34,8
(min.) PS EL FEXT	[dB/100 m]	53	45	40,9	29,1	25	17	11
(min.) ACR-F/EL FEXT	[dB/100 m]	56	48	43,9	32,1	28	20	14
(min.) Return Loss	[dB]	23	25	25	21,5	20,1	17,3	17,3

Mechanical and thermal properties

Minimum bending radius	fixed installation: continous flexing:	4x outer diameter 15x outer diameter
Temperature range	fixed installation: continous flexing: c(UL)us CMX:	-40 °C up to +80 °C -30 °C up to +50 °C 75 °C
Power chain operation parameters	travel distance: Acceleration: Velocity: Cycles:	5 m 3 m/s² 3 m/s 5.000.000
Flammability	flame retardant acc. to. IEC 60332-1-2 resp. EN 60332-1-2 VW-1 acc. to UL 1581 §1080	
Halogen free	acc. to VDE 0472-815	
UV resistance	acc. to EN ISO 4892-2-2013, method A (change of colour allowed)	
Oil resistance	acc. to. EN 50363-10-2	
General requirements	This cable is conform to EU-Directive 2014/35/EU (Low Voltage Directive) and to 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).	