
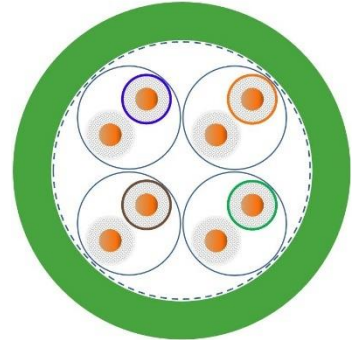


2170465	DATA SHEET	
valid from: 09.08.2021	ETHERLINE® P Cat. 6A 4x2x22/1 AWG	

Application

Field of use:	Installation cable for cabling systems acc. to ISO/IEC 11801 and EN 50173. Meeting the transmission requirements of IEC 61156-5, Category 6A and EN 50288-10-1. Compliant to the "PROFINET Cabling and Interconnection Technology" guideline.
Performance:	4-pair, screened foiled twisted pair cable (S/FTP), having a nominal impedance of 100 Ω, supporting a bandwidth of 10 Gbit/s (e.g. 100BASE-T, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, 10GBASE-T) over up to 100 m.
Characteristics:	Flame retardant, halogen free, UV-resistant, oil resistant, abrasion resistant
Applications:	PROFINET, EtherCAT, EtherNet/IP, PoE (IEEE 802.3af), PoE+ (IEEE 802.3at), PPOE (IEEE 802.3bt) and others




Design

Conductor	solid bare copper 22/1 AWG
Insulation	polyolefin (foamed) core diameter: nom. 1.50 mm
Core identification code	pair 1: white/blue, pair 2: white/orange, pair 3: white/green, pair 4: white/brown (colored ring marking on the white cores is optional)
Stranding	2 cores stranded to pair, 4 pairs stranded to bundle
Pair screen	plastic laminated aluminium foil (overlapping)
Screen	braid of tinned copper wires (coverage 85 % ± 5 %)
Outer sheath	PUR green, similar RAL 6018 outer diameter: 8.70 mm (± 0.3 mm)

Electrical properties at 20 °C

Loop resistance	≤ 12.2 Ω/100 m	
Insulation resistance	≥ 5 GΩ×km	
Mutual capacitance	800 Hz:	42 nF/100 m
Coupling attenuation	30 MHz - 100 MHz:	≥ 80 dB
	100 MHz - 500 MHz:	≥ 80 - 20×log ₁₀ (f / 100)
Characteristic impedance	100 MHz:	100 Ω acc. to IEC 61156-5
Velocity of propagation	100 MHz:	0.80 c
Signal propagation time	4 MHz - 500 MHz:	≤ 480 ns/100 m
Delay skew	4 MHz - 500 MHz:	≤ 20 ns/100 m
Maximum operating voltage	EN:	100 V (not for power applications)
Test voltage	core/core:	700 V
	core/screen:	700 V

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Electrical transmission properties at 20°C

The transmission characteristics meet the requirements of the standards EN 50288-10-1 and IEC 61156-5 for category 6A. The normative requirements for the transmission properties are shown in the following table:

f [MHz]		4	10	20	62,5	100	200	250	500
(max.) Attenuation	[dB/100 m]	3,8	5,9	8,4	15	19,1	27,6	31,1	45,3
(min.) TCL	[dB]	34	30	27	22	20	17	16	—
(min.) EL TCTL	[dB/100 m]	23	15	9	—	—	—	—	—
(min.) NEXT	[dB]	66,3	60,3	55,8	48,4	45,3	40,8	39,3	34,8
(min.) PS EL FEXT	[dB/100 m]	53	45	39	29,1	25	19	17	11
(min.) ACR-F/EL FEXT	[dB/100 m]	56	48	42	32,1	28	22	20	17
(min.) Return Loss	[dB]	23	25	25	21,5	20,1	18	17,3	17,3

Mechanical and thermal properties

Minimum bending radius	fixed installation:	10 × outer diameter
Temperature range	fixed installation:	-40 °C up to +80 °C
Flammability	flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2	
Halogen free	acc. to VDE 0472-815	
UV resistance	acc. to ISO 4892-2, method A	
Oil resistance	acc. to EN 50363-10-2	

General requirements

This cable is 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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