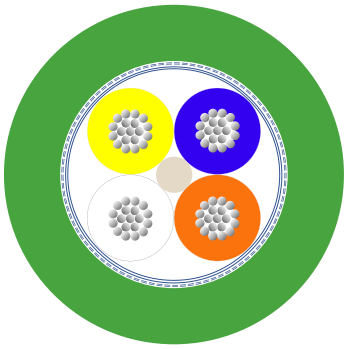
2170884	DATA SHEET	LAPP
valid from: 10.07.2025	ETHERLINE® PN TORSION Cat.5e DP 1x4x22/19 AWG	

Application

Field of use:	Highly flexible Industrial Ethernet cable for generic cable system acc. to ISO/IEC 11801 and EN 50173. Suitable for applications under torsional stress and permanent moved machine parts. Meeting the transmission requirements of IEC 61156-6, Category 5e and EN 50288-2-2. PROFINET® Type C acc. to the "PROFINET Cabling and Interconnection Technology" guideline.
Performance:	quad, overall spiral shielded 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 100 m.
Characteristics:	flame retardant, halogen free, oil resistant, UV resistant, abrasion resistant, largely resistant to acids, alkalis and certain oils
Applications:	PROFINET® Type C highly flexible cable for torsion applications, EtherCAT, EtherNet/IP, Wired ethernet (IEEE 802.3), PoE (IEEE 802.3af), PoE+ (IEEE 802.3at) and other



Design

Certification	E63634 cRUus AWM Style 21238 AWM I/II A/B 80°C, 600 V FT2 acc. to UL 758 & CSA 22.2 No. 210
Conductor	22/19 AWG (nom. 0.34 mm²) conductor diameter: nom. 0.75 mm
Insulation	PO (Polyolefine) core diameter: max. 1.6 mm
Core identification code	pair 1: white/blue, pair 2: yellow/orange
Stranding	cores standed to quad (with central filler)
Taping	non-woven tape
Screen	plastic laminated aluminum foil and aluminum coated non-woven tape on top: double spiral shield of tinned copper wires (coverage: nom. 75 %)
Outer sheath	TPU (Thermoplastic polyurethane) colour: green, similar RAL 6018 outer diameter: 6.5 mm ± 0.3 mm

Electrical properties at 20 °C

Loop resistance	≤ 118.8 Ω/km
Test voltage	core/core: 2000 V core/screen: 2000 V
Rated voltage	600 V acc. to UL 758
Maximum operating voltage	125 V (not intended to be used in conjunction with low impedance sources, such as power grids)
Insulation resistance	min. 5 GΩxkm
Mutual capacitance	nom. 52 nF/km
Coupling attenuation	Type I acc. to IEC 61156-6 30 MHz: ≥ 85 dB 100 MHz: ≥ 85 dB 1000 MHz: ≥ 65 dB segregation class d acc. to EN 50174-2 E_3 acc. to ISO/IEC 11801-1 (MICE)
Velocity of propagation	100 MHz: 0.76 c

Transmission properties at 20°C

The transmission characteristics meet the requirements of IEC 61156-6 for category 5e and the requirements of the PROFINET Cabling and Interconnection Technology Guideline.

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	20.0	6.0	34.0	23.0	56.3	53.3	52.0	49.0	—	23.0
10	545.4	20.0	9.5	30.0	15.0	50.3	47.3	44.0	41.0	—	25.0
16	543.0	20.0	12.1	28.0	10.9	47.2	44.2	39.9	36.9	—	25.0
20	542.0	20.0	13.5	27.0	9.0	45.8	42.8	38.0	35.0	—	25.0
30	540.6	20.0	16.7	25.2	5.5	43.1	40.1	34.5	31.5	—	23.5
62.5	538.6	20.0	24.8	22.0	—	38.4	35.4	28.1	25.1	—	20.7
100	537.6	20.0	32.0	20.0	—	35.3	32.3	24.0	21.0	100 ± 5	19.0

Mechanical and thermal properties

Minimum bending radius	fixed installation: continuous flexing:	5× outer diameter 12× outer diameter
Temperature range	fixed installation: continuous flexing:	-40°C up to +80°C -20°C up to +60°C
Torsional stress	torsion angle: cycles:	± 180°/m 1.000.000
Flammability	flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2 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 EN 50618, Appendix E	

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).