

2170889	DATA SHEET	
valid from: 05.07.2021	ETHERLINE® MARINE FRNC FC CAT.5 2x2x22/7 AWG	

Application

Field of use:	Industrial Ethernet Cat.5 cable for Marine and Offshore applications, Connecting cable for generic cabling systems acc. to ISO/IEC 11801 and EN 50173
Performance:	Bandwidth up to 100 MHz acc. to IEC 61156-6 Category 5e and EN 50288-2-2
Characteristics:	halogen free, UV resistant, flame retardant 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, Power over Ethernet (IEEE 802.3af), Power over Ethernet Plus (IEEE 802.3at) and many others



Design

Certification	E236660 c(UL)us CM 75 °C acc. to UL 444 & CSA 22.2 No.214 E224262 (UL) PLTC acc. to UL 13 DNV GL certificate TAE00001JE
Conductor	stranded tinned copper 22/7 AWG
Insulation	polyolefin core diameter: nom. 1.5 mm
Core identification code	pair 1: white/blue, pair 2: yellow/orange
Stranding	star quad (optional with central filler) on top: plastic tape (overlapping)
Inner sheath	FRNC outer diameter: nom. 3.9 mm
Screen	plastic laminated aluminium foil (overlapping) on top: braid of tinned copper wires (coverage 85 % ± 5 %)
Outer sheath	FRNC green, similar RAL 6018 outer diameter: nom. 6.5 mm (± 0.3 mm)

Electrical properties at 20 °C

Loop resistance	max. 11.48 Ω/100 m
Insulation resistance	min. 5 GΩxkm
Transfer impedance	1 MHz: ≤ 20 mΩ/m 10 MHz: ≤ 20 mΩ/m 30 MHz: ≤ 50 mΩ/m 100 MHz: ≤ 200 mΩ/m
Coupling attenuation	30 MHz up to 500 MHz: ≥ 90 dB
Characteristic impedance	100 MHz: 100 Ω acc. to IEC 61156-6
Velocity of propagation	100 MHz: 0.67c
Signal propagation time	4 MHz up to 500 MHz: ≤ 530 ns/100 m
Delay skew	4 MHz up to 500 MHz: ≤ 25 ns/100 m
Maximum operating voltage	EN: 100 V (not for power applications)
Rated voltage	UL/CSA: 300 V
Test voltage	core/core: 1500 V core/screen: 1500 V

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Electrical transmission properties at 20°C

The transmission characteristics meet the requirements of the standards EN 50288-2-2 and IEC 61156-6 for category 5e. The normative requirements for the transmission properties are shown in the following table:

f [MHz]		4	10	16	20	31,25	62,5	100
(max.) Attenuation	[dB/100 m]	6	9,5	12,1	13,5	17,1	24,8	32
(min.) TCL	[dB]	34	30	28	27	25,1	22	20
(min.) EL TCTL	[dB/100 m]	23	15	10,9	9	5,1	—	—
(min.) NEXT	[dB]	56,3	50,3	47,2	45,8	42,9	38,4	35,3
(min.) PS EL FEXT	[dB/100 m]	49	41	36,9	35	31,1	25,1	21
(min.) ACR-F/EL FEXT	[dB/100 m]	52	44	39,9	38	34,1	28,1	24
(min.) Return Loss	[dB]	23	25	25	25	23,6	21,5	20,1

Mechanical and thermal properties

Minimum bending radius	fixed installation:	3 x outer diameter
	occasional flexing:	7.5 x outer diameter
Temperature range	fixed installation:	-40 °C up to +75 °C
	occasional flexing:	0 °C up to +50 °C
	UL/CSA:	75 °C
Flammability	UL flame exposure acc. to UL 13, §28.2 and UL 444, §7.14.4 flame retardant acc. to IEC 60332-3-22 resp. EN 60332-3-22 flame retardant acc. to IEC 60332-1-2 resp. EN 60332-1-2	
Halogen free	acc. to IEC 60754-1 resp. EN 60754-1	
Corrosivity of gases	acc. to IEC 60754-2 resp. EN 60754-2	
Smoke density	acc. to IEC 61034-2 resp. EN 61034-2	
UV resistance	SUN RES acc. to UL 13, §29.1	
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).	

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