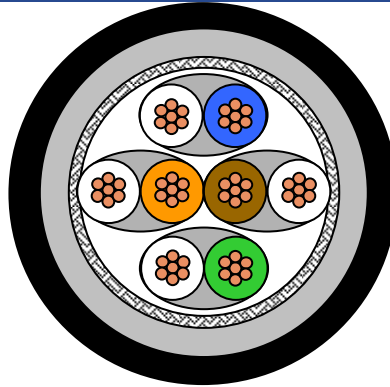


ToughCat 5e MUD Protected

S/FTP Installation Cable for tougher environments



Application

Generic Data transmission. This **Cat.5e S/FTP** cable is based on our **DNV and Lloyd Register certified ToughCat**, but with an additional fire retardant, halogen-free, low smoke MUD protecting outer jacket. This cable is meant for use as installation/horizontal cable in tougher electrical and mechanical environment, including ships and offshore units.

Standards

EN 50173-1; EN 50288-2-1
ISO/IEC 11801; IEC 61156-5

Fire rating

MUD protecting outer sheath : IEC 60754-2, IEC 61034, IEC 60332-3-24
Inner sheath LSHF-FR(SHF1) : IEC 60754-2, IEC 61034, IEC 60332-3-24

Chemical resistance

Mineral oils IRM 902 (IEC60811-2-1) : 7 days/100°C
Diesel - IRM 903 (IEC60811-2-1) : 7 days/100°C

Construction

Conductor	Stranded copper wire Ø 0.22 mm ²
Insulation	PE, Ø 1.4 mm
Twisting	2 cores to the pair
Cable lay up	4 pairs
Pair screen	Al-laminated plastic foil around each pair
Overall screen	Copper braid, tinned Ø 6,2 mm
Inner sheath	Oil resistant, Fire retardant and halogen free LSHF-FR (SHF1) Ø 7,7 mm
Outer sheath	MUD protecting

Mechanical Properties

Bending radius	Installation	8 x D
	Installed	4 x D
Temperature range	During operation	-40°C to + 85°C
	During installation	-15°C to + 50°C
Fire load	4 pair	(On request) MJ/km
Maximum tensile load, installation	During installation	100 N
	Installed	No load



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Electrical Properties

at 20°C

DC loop resistance		≤ 158 Ω/km
Resistance unbalance		≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩxkm
Capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 1500 pF/km
Mean Characteristic impedance	@ 100 MHz	100 ± 5 Ω
Nominal velocity of propagation		0,75c
Propagation delay		≤ 450 ns/100 m
Delay skew		≤ 15 ns/100 m
Transfer impedance	at 1 MHz	≤ 10 mΩ /m
	at 10 MHz	≤ 8 mΩ /m
	at 30 MHz	≤ 10 mΩ /m
Coupling attenuation		≥ 85 dB

Nominal Transmission characteristics

at 20°C

F (MHz)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	Return loss (dB)	PS-NEXT (dB)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)
1	2,1	90	88		87	85	85	82
4	4,0	90	86	27	87	83	85	82
10	6,3	90	84	30	87	81	79	76
16	8,0	90	82	30	87	79	75	72
20	9,0	90	81	30	87	78	73	70
31.25	11,4	90	79	30	87	76	69	66
62.50	16,5	86	70	30	83	67	63	60
100	21,3	83	62	30	80	59	59	56
155.00	24,2	81	57	26	78	54	57	54
200.00	31,5	78	47	25	75	44	53	50
250.00	35,8	77	41	25	74	38	51	48
300.00	47,1	73	26	23	70	23	47	44
600.00	60,1	71	11	20	68	8	44	41

Technical Data

Description	Variant	Colour	Outher diameter (D) mm	Delivery form	Weigth kg/km	Material code		El. No	DCN No.
ToughCat S/FTP + MUD 4x2/0,22mm ²	MUD Protected	Grey, RAL 7024	9,5	Drum	100	1000846	-xxxxx	1080893	799090