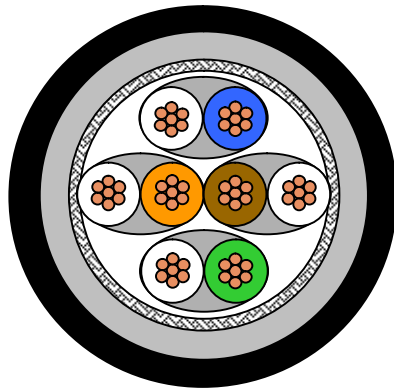


# ICS IE ToughCat 5e MUD Protected S/FTP Installation cable for tougher environments

## 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 <sup>2</sup>
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)	≤ 300 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

Part no.	Description	Colour	Outer diameter mm	Fire load		Weight kg/km
				MJ/km	kWh/m	
1000846	ToughCat MUD C5e S/FTP P 4Px0.22mm2	Dark Grey RAL7024	9,6	*)	*)	100

\*)-On request

## Product Code Table

Product Description	Product Code	PG Reference Code	PG Part Number
ToughCat MUD C5e S/FTP P 4Px0.22mm2	100846	60015701	60015701
ToughCat MUD C5e S/FTP 4Px0.22mm2 500DP	1000846-00500DP	60015701	60015703



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