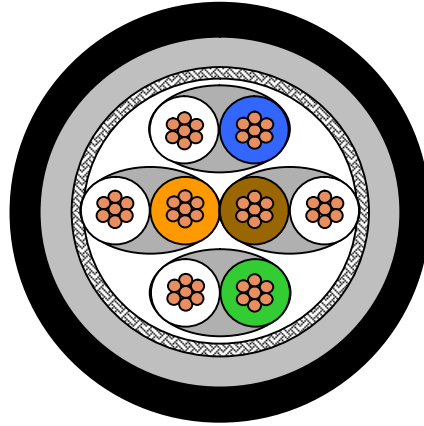




## ICS IE ToughCat 7 LSHF-FR MUD

### S/FTP Installation Cable 4x2xAWG23/7 for tougher environments



#### Application

Generic Data transmission. This **Cat7 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 50288-4-1  
ISO/IEC 11801; IEC 61156-5  
Det Norske Veritas (DNV) specification No. 6-827.50-2

#### 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

#### Certification

Pending

#### Construction

Conductor	Stranded copper wire, cross section 0.27 mm <sup>2</sup> (AWG23/7)
Insulation	PE, Ø 1.6 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 6.6 mm
Inner Sheath	Oil resistant, Fire retardant and halogen free LSHF-FR (SHF1), diameter 8.1 mm
Colour	Grey RAL 7035
Outer sheath	MUD protecting, diameter 10.1 mm
Colour	Grey RAL 7024
Marking	DRAKA ToughCat Part No. <mat.code> CATEGORY 7 S/FTP 4x2/0,27mm2 IEC 61156-5 EN 50288-4-1 MUD PROTECTED Batch no. <factory code/batch no./date-time> <meter> m

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### Mechanical Properties

Bending radius	Without load	8 x D
	With load	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	During operation	No load
	During installation	100 N

### Electrical Properties

at 20°C

DC loop resistance		≤ 138 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		0.76c
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	2.0	90	88		87	85	85	82
4	3.6	90	86	27	87	83	85	82
10	5.5	90	84	30	87	81	79	76
16	7.5	90	82	30	87	79	75	72
20	7.7	90	82	30	87	79	73	70
31.25	9.8	90	80	30	87	77	69	66
62.50	14.0	86	72	30	83	69	63	60
100	17.9	83	65	30	80	62	59	56
155.00	22.4	81	59	26	78	55	57	54
200.00	25.6	78	52	25	75	49	53	50
250.00	28.8	77	48	25	74	45	51	48
300.00	31.6	73	41	23	70	38	47	44
600.00	45.7	71	25	20	68	22	44	41



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### Technical data

Part number	Cable type DIN/VDE	Product name	Outer diameter nominal mm	Weight  kg/km	Delivery length  m	Copper content	Tensile force  N
1019269	Li-2YSCHH 4x2AWG23/7 PiMF-100 Cat. 7	ToughCat 7 LSHF-FR MUD	10.1	112	1000	36.4	100