



Cable excellence engineered through quality

Armada™ Marine Cables for Commercial Shipbuilding and Offshore Platforms

The range of Armada Cables have been designed and manufactured with Quality, Safety, Security and Reliability at their core. Our design engineers ensure that the materials used are optimised for the demands placed on cables in marine engineering and shipbuilding. Each project has its own special requirements and our FireFighter™ range of LSZH compounds extends from oil resistant SHF-1 & SHF-2, low & high temperature environment, UV, Fire Resistant & Flame Retardant all the way to our specially designed FFxT i-XL-MUD compound which is fully tested to meet the requirements of MUD resistance set out in NEK606.

The range of Data, LAN, Bus & Coaxial copper cables are stocked in depth in conjunction with fully certified Fibre Optic Cables meaning shipbuilders, rig operators & installation contractors can take advantage of our next day delivery service. Getting the right cable to the right place at the right time is our job and we take pride in it, that goes for assessing the right manufacturing partner, collaborating with them on third party testing and approval of materials through to establishing the optimum cable stock levels to give an efficient service to our customers. Our cables are installed in some of the most demanding environments in the world and we know the cost and time that it takes to install cables far outweighs the cost of the cable itself, and once commissioned that cable needs to keep working at peak performance during its life cycle, we can only achieve this through careful quality control and continual assessment of material performance and cable construction methods backed up by third party testing and verification, when we are happy that we've done this we sleep better.



Applications

Communications and LAN cable

Bus Cables

RS232, RS422 and TIA-485 Data Cable

Fire resistant Cable

Fibre Optic Cable

Coaxial Cable



Approvals

- Det Norske Veritas
- ABS Europe Ltd
- Lloyds Register of Shipping
- Germanischer Lloyd
- Bureau Veritas



Publication Contents

Descriptions are correct at time of publication, however these may be reviewed at any time and are subject to change without notice. E&OE (Errors and Omissions Excepted) which means that whilst every effort has been made to ensure that the information contained within this publication is accurate, specifications may vary or be subject to change at Belcom's discretion. As such, this publication should be used as a guide only. Exact details can be confirmed at point of enquiry.

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Bus Cables



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Characteristics :

- SHF-1
- SHF-2
- Mud resistant
- Flexible
- Fixed
- Armoured protection

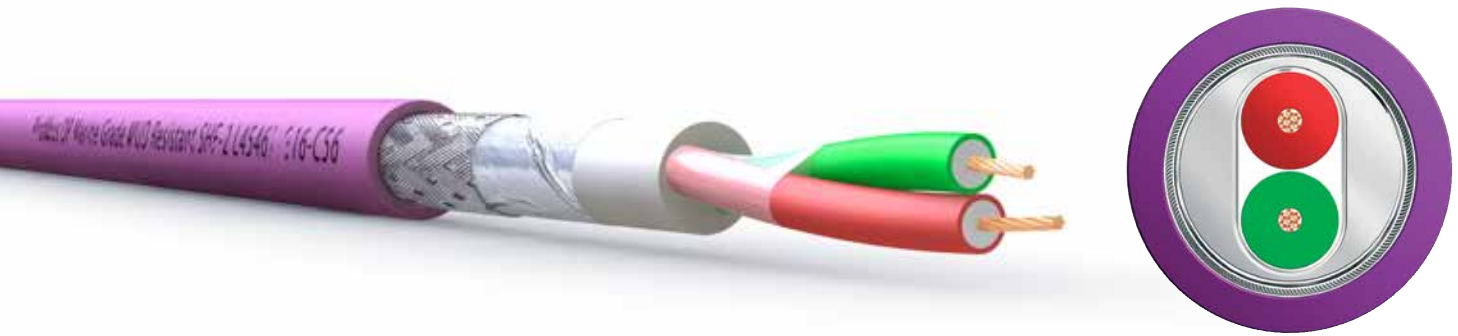
Areas of Installation :

- Offshore platforms
- Commercial ships



Armada™ Profibus DP Marine Grade

SHF-2



Cable Construction		Electrical Characteristics	
Conductor	Stranded bare copper wire, 7x0.25 (22awg)	Loop resistance	≤ 110 Ohm/km
Insulation	Foamed Polyethylene (PE) with skin	Insulation resistance	≥ 16,000 MOhm*km
Colour Code	Red, Green twisted pair, Plastic tape overlapped	Capacitance (1KHz)	≈ 28.5 nF/km
EasyStrip	Soft Thermoplastic Copolymer (FRNC) white	Characteristic impedance	3-20 MHz 150±15 Ohm
Screen	Longitudinal Alulaminat foil		31.25 -38.4 kHz 185±18.5 Ohm
Shield	Tinned copper wire braid, 85% coverage		9.6 kHz 270±27 Ohm
Outer Jacket:	SHF-2, Violet	Attenuation	16 MHz < 42 dB/km
			4 MHz < 22 dB/km
			38.4 kHz < 4 dB/km
			9.6 kHz < 2.5 dB/km
		Capacitance unbalance to ground	≤ 1500 pF/km
		Operating voltage	≤ 60 V
		Test voltage (wire/wire/screen rms 50Hz 1min)	=1000 V

Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092	
Approved By	
Germanischer Lloyd, Lloyds Register, Bureau Veritas, ABS, Dett Norske Veritas	

Part Number	No. of Pairs	Dimensions (mm)	
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)
L45467-G17-C56	1	2.55	8.0

Armada™ Profibus DP Marine Grade Sienopyr M-02Y(ST)CHX



Application	Cable Construction			
<p>Profibus DP Sienopyr for marine applications.</p> <p>Features:</p> <p>Resistance to chemicals (tests to VG 95218 part 2)</p> <p>1) Diesel fuel to DIN VDE 51601</p> <p>2) ASTM oil No. 2 to DIN 3521</p> <p>3) Oils, NATO code 0-178, BW-TL 9150-0031/2 to VG 95214 part 4</p> <p>4) Hydraulic fluids, NATO code H-515, BW-TL 9150-0020 to VG 95214 part 4</p> <p>5) Solvent cleansing agents, BW-TL 6850-0017 to VG 95214 part 4</p> <p>6) De-ionized water to VG 95214 part 4</p> <p>7) De-ionized water 3.5% NaCl</p> <p>IEC60332-3 IEC60754-2 IEC 61031 DIN VDE 0472 part 805 test B</p>	Conductor:	7 bare copper wires E-Cu58 F21 to DIN 40500 part 4	0.35mm ²	
	Insulation:	Polyethylene Foam (cellular HDPE)	Ø 2.55 mm	
	Colour Code:	Red, Green twisted pair	Ø 2.75 mm	
	Fillers:	2 blind cores		
	Core assembly wrapping:	Nonwoven plastic textile band		
	Screen	-Longitudinal Alulaminat foil		
	Shield	-Tinned copper wire braid		
	Inner Jacket:	Halogen-free polymer (HM4)	Ø 8.0 mm	
	Outer Jacket:	LSZH SHF-1	Ø 9.8 / 10.8 mm	
	Electrical Data			
	Nominal voltage		100 V	
	Loop resistance (max.)		110 Ohm/km	
	Insulation resistance (min.)		16000 MOhm*km	
Surface resistance of outer sheath (min.)		10 MOhm		
Mutual Capacitance	800Hz	30 nF/km		
	3-20 MHz	150 ± 15 Ω		
Characteristic Impedance	38.4 kHz	185 ± 18.5 Ω		
	9.6 kHz	250 ± 25 Ω		
Attenuation	16 MHz	45 dB/km max.		
	4 MHz	22 dB/km max.		
	38.4 MHz	5 dB/km max.		
	9.6 MHz	3 dB/km max.		

Armada™ Profibus DP Ecofast Marine Grade

SHF-2



Cable Construction	
A) Wire LIH 1.5/2.4	
Conductor	Stranded Bare Copper Wire, 84x0.15 (1.5mm ²)
Insulation	Number printed FRNC, 0.43mm wall thickness
B) Screened pair	
Conductor	Stranded Bare Copper Wire, 19x0.14 (0.3mm ²)
Insulation	Foamed Polyethylene (PE)
Colour Code	Red, Green twisted pair, Plastic tape overlapped
Screen	-Longitudinal Alulaminat foil
Shield	-Tinned copper wire braid, 0.15mm
Core	
Single pair	B) Screened pair
Power cores	A) Wire LIH 1.5/2.4, numbered 1 - 4
Filler	Fillers in gaps
Tape	Plastic tape overlapped
Shield	Tinned copper wire braid, 85% coverage, 0.15mm
Outer Jacket	SHF-2, Black
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092	

Electrical Characteristics		
Conductor resistance (wire to a)	≤ 14 Ohm/km	
Loop resistance (wire to b)	≤ 138 Ohm/km	
Screen resistance	≤ 15 Ohm/km	
Insulation resistance	≥ 20 MOhm*km	
Operating voltage (peak)	300 V	
Test voltage (wire/wire/screen rms 50Hz 1min.)	2000 V	
Ampacity (up to 25°C) wire to a)	≤ 12 A	
B) Screened pair		
Characteristic Impedance	3-20 MHz	150 ± 15 Ω
	31.25 - 38.4 kHz	185 ± 18.5 Ω
Attenuation	9.6 kHz	270 ± 27 Ω
	16 MHz	≤ 42 dB/km
	4 MHz	≤ 22 dB/km
	38.4 MHz	≤ 4 dB/km
Capacitance (1KHz)	≈ 30 nF/km	
	Surface transfer impedance 20 MHz	≤ 60 mΩ/m
Rel. Velocity of propagation	≈ 81 %	

Part Number	Formation	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
L45467-G116-W16	1x2x22/19awg + 4x1.50mm ²	A) Wire : 2.40 B) Screened Pair : 2.56	11.6	Black

Armada™ Profibus DP Offshore Cable

SHF-1 • UV-Stabilised



Cable Construction	
Conductor	Solid bare copper wire, 1x0.65mm (22awg)
Insulation	Foamed Polyethylene (PE) with skin
Colour Code	Red, Green twisted pair, Plastic tape overlapped
EasyStrip	Soft Thermoplastic Copolymer (FRNC) white
Screen	Longitudinal Alulaminat foil
Shield	Tinned copper wire braid, 85% coverage
Inner Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised, Violet
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)
Outer Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092	

Electrical Characteristics		
Loop resistance		≤ 110 Ohm/km
Insulation resistance		≥ 16,000 MOhm*km
Capacitance (1KHz)		≈ 28.5 nF/km
Characteristic impedance	3-20 MHz	150±15 Ohm
	31.25 -38.4 kHz	185±18.5 Ohm
	9.6 kHz	270±27 Ohm
Attenuation	16 MHz	< 42 dB/km
	4 MHz	< 22 dB/km
	38.4 kHz	< 4 dB/km
	9.6 kHz	< 2.5 dB/km
Capacitance unbalance to ground		≤ 1500 pF/km
Operating voltage		≤ 60 V
Test voltage (wire/wire/screen rms 50Hz 1min)		=1000 V

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
24L45467-G16-C286-01	1	2.55	8.0	10.65	Black
24L45467-G16-C286-09	1	2.55	8.0	10.65	Violet
24L45467-G16-C286-02	1	2.55	8.0	10.65	Blue

Armada™ Profibus DP Vibration Resistant Offshore SHF-1

SHF-1

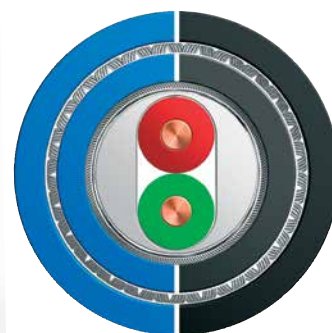
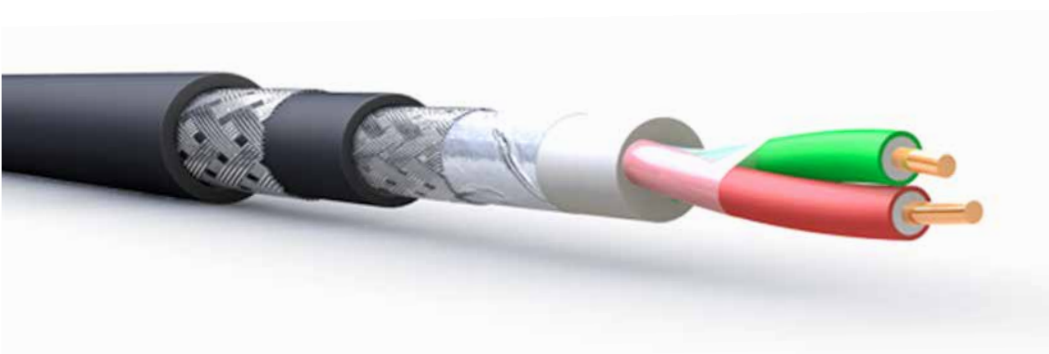


Cable Construction		Electrical Characteristics	
Conductor	Stranded Bare Copper Wire, 7x0.25 (22awg) 0.76mm	Loop resistance	≤ 110 Ohm/km
Insulation	Foamed Polyethylene (PE) with skin	Insulation resistance	≥ 16,000 MOhm*km
Colour Code	Red, Green twisted pair, Plastic tape overlapped	Capacitance (1KHz)	≈ 28.5 nF/km
EasyStrip	Soft Thermoplastic Copolymer (FRNC) white		3-20 MHz 150±15 Ohm
Screen	Longitudinal Alulaminat foil	Characteristic impedance	31.25 -38.4 kHz 185±18.5 Ohm
Shield	Tinned copper wire braid, 85% coverage		9.6 kHz 270±27 Ohm
Inner Jacket	LSZH FireFighter™ SHF-1, Violet	Attenuation	16 MHz < 42 dB/km
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)		4 MHz < 22 dB/km
Outer Jacket	LSZH FireFighter™ SHF-1, Black		38.4 kHz < 4 dB/km
			9.6 kHz < 2.5 dB/km
		Capacitance unbalance to ground	≤ 1500 pF/km
		Operating voltage	≤ 60 V
		Test voltage (wire/wire/screen rms 50Hz 1min)	=1000 V
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
24231P2244	1	2.55	8.0	10.65	Black

Armada™ Profibus PA Offshore SHF-1

SHF-1



Cable Construction	
Conductor	Solid Bare Copper Wire, 18awg (1.05mm)
Insulation	Foamed Polyethylene (PE) with skin
Colour Code	Red, Green twisted pair, Plastic tape overlapped
EasyStrip	Soft Thermoplastic copolymer (FRNC)
Screen	Longitudinal Alumininate foil
Shield	Tinned copper wire braid, 85% coverage
Inner Jacket	LSZH FireFighter™, Black
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)
Outer Jacket	LSZH FireFighter™ SHF-1, Black

Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092	

Electrical Characteristics		
Conductor resistance		≤ 22 Ω/km
Insulation resistance		≥ 10 MΩ*km
Capacitance (1KHz wire/wire)		≈ 50 nF/km
Capacitance (1KHz wire/screen)		≈ 92 nF/km
Operating voltage		100 V
UL-Rating		600 V
Test voltage (wire/wire/screen rms 50Hz 1min)		2000 V
Characteristic impedance	31.25 kHz	100 ± 20 Ω
Attenuation	39 kHz	≤ 3 dB/km
Capacitance unbalance e		≤ 2 nF/km
Inductance	31.25 kHz	650 μH/km
Surface transfer impedance	20 MHz	≤ 5 mΩ/m
Rel. Velocity of propagation		≈ 81 %

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
24L45467-J20-C46	1	2.55	8.0	11.50	Black
24L45467-J20-C86	1	2.55	8.0	11.50	Blue

Armada™ PROFINET Type B Marine Grade SHF-1



Cable Construction		Electrical Characteristics	
Conductor	Stranded Tinned Copper Wire, 7x0.25mm	Loop resistance	≤ 120 Ω/km
Insulation	Polyethylene (PE)	Signal run time	≤ 5.55 ns/m
Colour Code	WH-YW-BU-OE, Plastic tape overlapped + filler	Insulation resistance	≥ 500 MΩ*km
EasyStrip	Thermoplastic copolymer	Characteristic Impedance 1-100 MHz	100 ± 15 Ω
Screen	Longitudinal Alumininate foil	UL Rating	300 V
Shield	Tinned copper wire braid, 85% coverage	Surface transfer impedance 10 MHz	≤ 10 mΩ/m
Outer Jacket	LSZH FireFighter™ SHF-1	Test voltage (wire/wire/screen) rms 50Hz min.	= 700 V
Standards		Frequency	1 4 10 16 20 31.25 62.5 100
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092		NeXt (dB/100m)	80 76 70 65 63 60 55 50
Approved By Germanischer Lloyd, Lloyds Register, Bureau Veritas, ABS, Dett Norske Veritas		Attenuation (dB/100m)	2,1 4 6,3 8 9 11,4 16,5 21,3

Part Number	No. of Pairs	Dimensions (mm)	
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)
L45467-J16-B26	2 in Quad formation	1.5	6.9

Armada™ Foundation Fieldbus ISA/SP50 Type A Offshore SHF-1

SHF-1



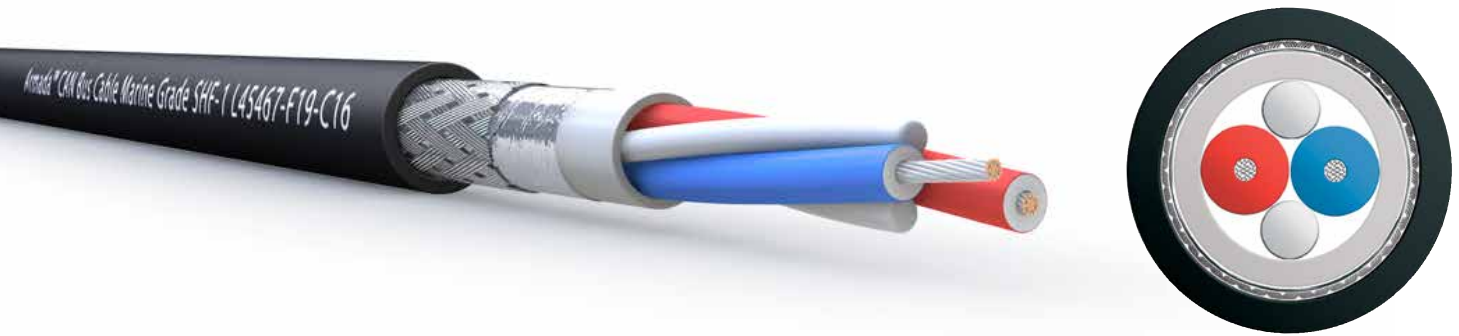
Cable Construction	
Conductor	Stranded tinned copper Wire, 18awg (7x0.40mm)
Insulation	Polyethylene (PE)
Colour Code	Orange/Blue twisted pair, Plastic tape overlapped
Drain Wire	Stranded tinned copper wire, (7x0.30mm)
Screen	Overall Aluminium/polyester tape
Inner Jacket	LSZH FireFighter™ SHF-1
Armour	DataGuard™ Galvanised Steel Wire Braid (GSWB)
Outer Jacket	LSZH FireFighter™ SHF-1
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092	

Electrical Characteristics		
Impedance	100 Ohm/km	
Inductance	62.7 µH/m	
Capacitance Conductor/Shield at 1 kHz	148.5 pF/m	
Mutual Capacitance at 1KHz	79.2 pF/m	
Maximum Capacitance Unbalance at 1 kHz	3.96 pF/m	
Velocity of Propagation	66%	
Conductor D.C.Resistance	19.33 Ohms/km	
Shield D.C.Resistance	24.75 Ohms/km	
Attenuation	0.01 MHz	0.4 dB/100m
	0.039 MHz	0.5 dB/100m
	0.10 MHz	0.8 dB/100m
	0.50 MHz	2.1 dB/100m
	1.00 MHz	3.2 dB/100m

Part Number	No. of Pairs	Dimensions (mm)		Colour
		Outer Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
244101P18104-01	1	6.70	9.35	Black
244101P18104-02	1	6.70	9.35	Blue (IS)
244101P18104-05	1	6.70	9.35	Grey
244101P18104-08	1	6.70	9.35	Orange

Armada™ CAN Bus Cable 1x2x21/19awg Marine Grade

SHF-1



Cable Construction		Electrical Characteristics		
Conductor	Stranded Tinned Copper Wire, 21awg (19x0.18mm), Ø 0.9mm	Conductor Resistance	≤ 44 Ohm/km	
Insulation	Foamed Polypropylene (PP) with skin	Insulation Resistance	≥ 5 GOhm/km	
Colour Code	Red, Blue twisted pair with fillers in gaps.	Capacitance (1kHz)	~ 36 nF/km	
EasyStrip	Soft Thermoplastic Copolymer (FRNC) white	Characteristic Impedance (1 MHz)	120±18 Ohm	
Screen	Longitudinal Alulaminat foil	Surface transfer impedance of screen (30MHz)	250 mOhm/m	
Shield	Tinned copper wire braid, 85% coverage	Rel. Velocity of Propagation	80%	
Outer Jacket:	LSZH FireFighter™ SHF-1	Operating voltage (peak)	≤ 250 V	
Standards		Test voltage (wire/wire rms 50Hz 1min)	1500 V	
Cable meets technical requirements of IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC 60092-350, IEC 60092-351, IEC 60092-352, IEC 60092-353, IEC 60092-359, IEC 60092-370, IEC 60092-376		Test voltage (wire/screen rms 50Hz 1min)	1000 V	
Approved By Germanischer Lloyd		Attenuation	0.1 MHz	0.65 dB/100m
			1 MHz	1.9 dB/100m
			5 MHz	4.3 dB/100m
			10 MHz	8.1 dB/100m
			20 MHz	10.5 dB/100m
		Thermal Characteristics		
		Temperature Range	-30° C up to +80° C	

Part Number	No. of Pairs	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
L45467-F19-C16	1	2.40	7.70	Black
L45467-F19-C6	1	2.40	7.70	Violet

Armada™ CAN Bus Cable 2x2x21/19awg Marine Grade SHF-1



Cable Construction	
Conductor	Stranded Tinned Copper Wire, 21awg (19x0.18mm), Ø 0.9mm
Insulation	Foamed Polypropylene (PP) with skin
Filler	Filler as central element
1. Layer	4 wires, RD (printing:L1 Hi), BU (printing:L2 Lo) BN (printing:L1 Lo), GN (printing:L2 Hi)
EasyStrip	Soft Thermoplastic Copolymer (FRNC) white
Screen	Longitudinal Alumininate foil
Shield	Tinned copper wire braid, 85% coverage
Outer Jacket:	LSZH FireFighter™ SHF-1
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC 60092-359/SHF-1	
Approved By Germanischer Lloyd, Det Norske Veritas	

Electrical Characteristics		
Conductor Resistance	≤ 44 Ohm/km	
Insulation Resistance	≥ 5 GOhm*km	
Capacitance (1kHz)	≈ 36 nF/km	
Characteristic Impedance (1 MHz)	120 ± 18 Ohm	
Surface transfer impedance of screen (30MHz)	250 mOhm/m	
Rel. Velocity of Propagation	≈ 80%	
Operating voltage (peak)	≤ 300 V	
Test voltage (wire/wire rms 50Hz 1min)	2000 V	
Attenuation	0.1 MHz	0.3 dB/100m
	1 MHz	1.1 dB/100m
	5 MHz	2.8 dB/100m
	10 MHz	3.9 dB/100m
	20 MHz	5.7 dB/100m
Thermal Characteristics		
Temperature Range	-30° C up to +80° C	

Part Number	No. of Pairs	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
L45467-F19-C26	2 pairs in Quad formation	2.20	8.40	Black

Armada™ DeviceNet™ THIN Cable Marine Grade

SHF-1



Cable Construction		Electrical Characteristics		
a) Data Pair 02YS 1.3/3.8		Conductor resistance	Pair to a)	≤ 90 Ω/km
Conductor	Stranded tinned copper wire, 19x0.13mm, Ø 0.67mm	Conductor resistance	Pair to b)	≤ 55 Ω/km
Insulation	Foamed polyethylene (PE) with skin, Ø 1.9mm	Capacitance (1kHz wire/wire)	Pair to a)	≈ 39.8 nF/km
Screen	Alulminate foil overlapped	Characteristic impedance (1MHz)	Pair to a)	120 ± 12 Ω
b) Power Pair LI2Y		Signal run time	Pair to a)	≤ 4.46 ns/m
Conductor	Stranded tinned copper wire, 19x0.16mm, Ø 0.75mm	Capacity unbalanced to ground	Pair to a)	≤ 3937 pF/0km
Insulation	Polyethylene (PE), Ø 1.4mm	Operating voltage (peak)		≤ 300 V
Screen	Alulminate foil overlapped	Insulation resistance		≥ 200 MΩ*km
Core		Test voltage (wire/wire/screen)	rms 50Hz	= 2000 V
Central element	Stranded tinned copper drain wire, 19x0.16mm	Attenuation	125 MHz	0.95 dB/100m
Data Pair	02YS 0.67/1.9		500 MHz	1.64 dB/100m
Power Pair	LI2Y 0.75/1.4		1000 MHz	2.29 dB/100m
Filler	fillers in gaps			
Shield	Tinned copper wire braid, 0.13mm, 70% coverage			
Outer Jacket	LSZH FireFighter™ SHF-1			
Standards				
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092				
Approved By				
Germanischer Lloyd, Det Norske Veritas				

Part Number	Formation	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
L45467-F16-W26	1x2x22awg + 1x2x24awg	A) Data Pair : 1.9 B) Power Pair : 1.4	6.9	Violet

Armada™ DeviceNet™ THICK Cable Marine Grade

SHF-1



Cable Construction	
a) Data Pair 02YS 1.3/3.8	
Conductor	Stranded tinned copper wire, 19x0.25mm, Ø 1.3mm
Insulation	Foamed polyethylene (PE) with skin, Ø 3.8mm
Screen	Alulminate foil overlapped
b) Power Pair LI2Y	
Conductor	Stranded tinned copper wire, 19x0.34mm, Ø 1.7mm
Insulation	Polyethylene (PE), Ø 2.7mm
Screen	Alulminate foil overlapped
Core	
Central element	Stranded tinned copper drain wire, 19x0.24mm
Data Pair	02YS 1.3/3.8
Power Pair	LI2Y 1.7/2.7
Filler	fillers in gaps
Shield	Tinned copper wire braid, 0.13mm, 70% coverage
Outer Jacket	LSZH FireFighter™ SHF-1
Standards	

IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092

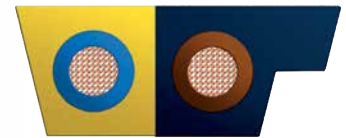
Approved By

Germanischer Lloyd, Det Norske Veritas

Electrical Characteristics		
Conductor resistance	Pair to a)	≤ 22.6 Ω/km
Conductor resistance	Pair to b)	≤ 11.7 Ω/km
Capacitance (1kHz wire/wire)	Pair to a)	≈ 39.8 nF/km
Characteristic impedance (1MHz)	Pair to a)	120 ± 12 Ω
Signal run time	Pair to a)	≤ 4.46 ns/m
Capacity unbalanced to ground	Pair to a)	≤ 3937 pF/0km
Operating voltage (peak)		≤ 300 V
Insulation resistance		≥ 200 MΩ*km
Test voltage (wire/wire/screen)	rms 50Hz	= 2000 V
Attenuation	125 MHz	0.42 dB/100m
	500 MHz	0.81 dB/100m
	1000 MHz	1.31 dB/100m

Part Number	Formation	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
L45467-F21-W36	(1x2x15awg + (1x2x18awg)	A) Data Pair : 3.8 B) Power Pair : 2.7	12.2	Violet

Armada™ AS-Interface Cable Marine Grade

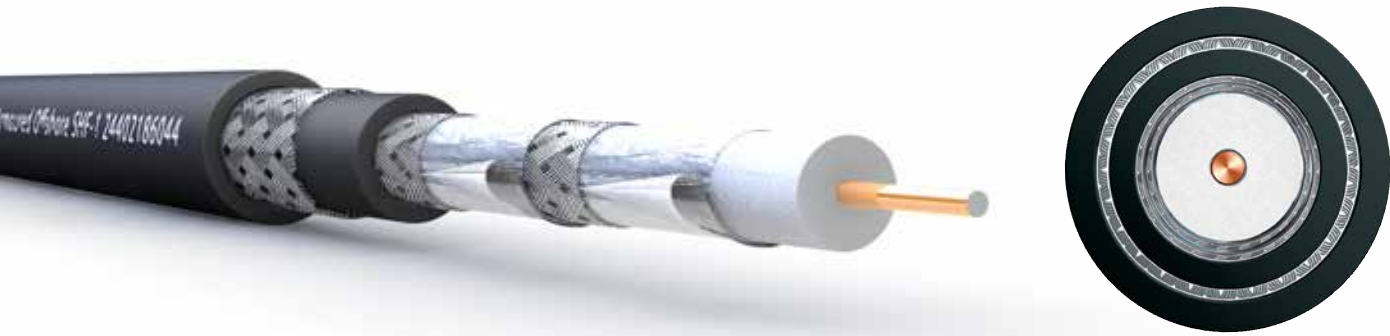


Cable Construction		Electrical Characteristics	
Conductor	Stranded wire highly flexible to DIN VDE 0295 class 6	According to AS-I KO1E, Version 12.09.96 / speci_4E	
Insulation	Thermoplastic elastomer-compound BN/BU		
Wall thickness	about 0.5mm 0.35mm minimum		
Outer Jacket	Polyurethane (PUR)		
Standards			
Cable meets technical requirements of IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC 60092-350, IEC 60092-351, IEC 60092-352, IEC 60092-353, IEC 60092-359, IEC 60092-370, IEC 60092-376			
Approved By Germanischer Lloyd, Lloyds Register, Bureau Veritas, ABS, Dett Norske Veritas			

Part Number	Dimensions (mm)		Colour
	Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
L45587-M21-B48	2.50mm (bare strnd)	10 x 4.0	Black
L45587-M21-B38	2.50mm (tin-plated strnd)	10 x 4.0	Yellow

Armada™ Quad Shield RG6 Cable Armoured Offshore

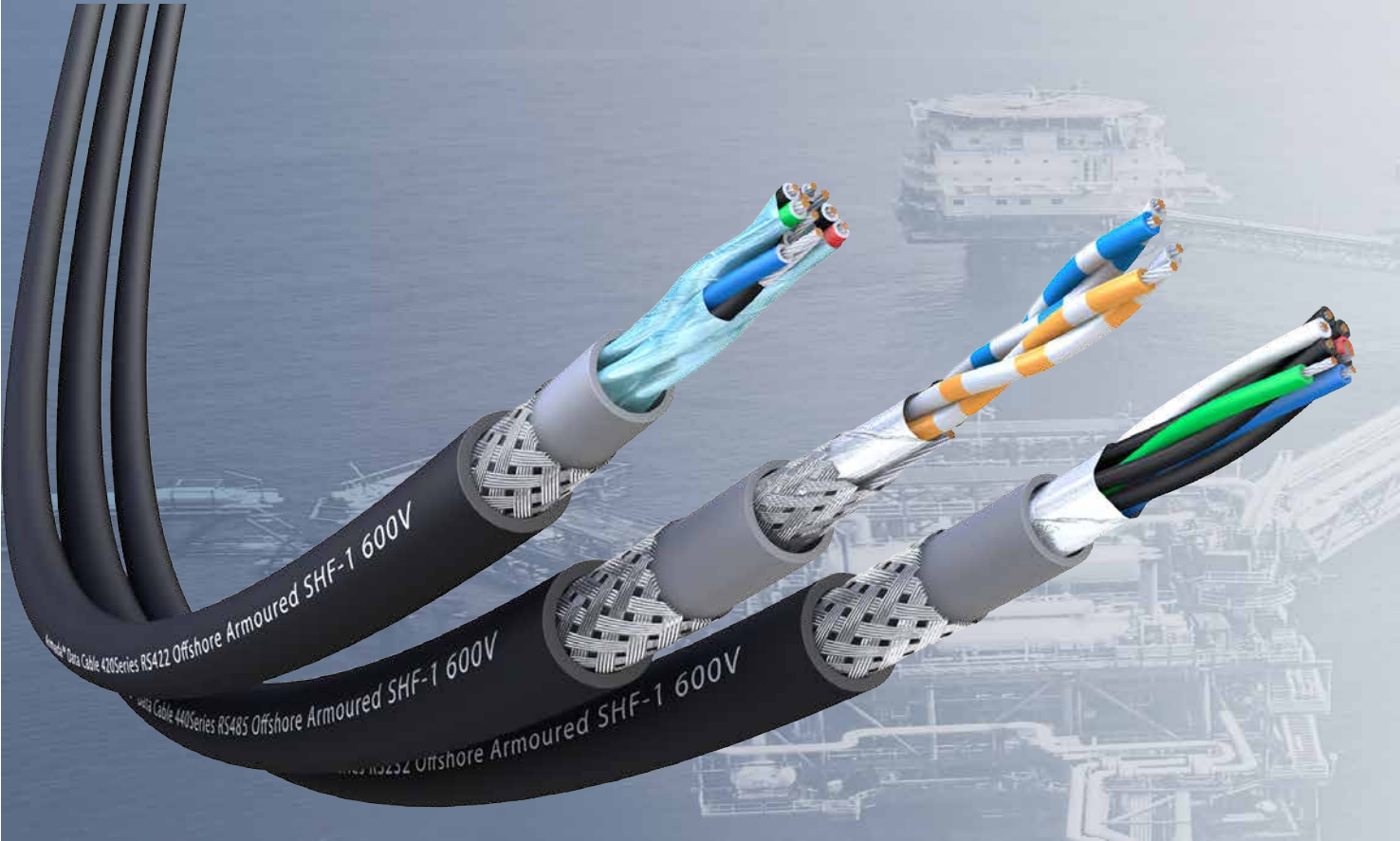
SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Inner Conductor:	Solid copper coated steel, 1z0.98mm	Characteristic Impedance (nom.)	75 Ohm
RG Type:	6/U	Inductance (nom.)	0.3201 µH/m
AWG:	18	Capacitance Conductor to Shield (nom.)	53.46 pF/m
Dielectric:	Gas-Injected Foam Polyethylene	Velocity of Propagation (nom.)	82%
Screen 1):	Aluminium/polyester tape screen, 100% coverage	Nominal Delay	4.224 ns/m
Shield 2):	Aluminium Braid, 60% coverage	Conductor D.C.R	92.4 Ohm/km
Screen 3):	Aluminium/polyester tape screen, 100% coverage	Outer Shield D.C.R	11.88 Ohm/km
Shield 4):	Aluminium Braid, 40% coverage	Min. Structural Return Loss 5 MHz Start to 50MHz Stop	23dB
Inner Jacket:	LSZH FireFighter™ SHF-1 - UV Stabilised, Black	1 MHz	1.15 dB/100m
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)	2 MHz	1.25 dB/100m
Outer Jacket:	LSZH FireFighter™ SHF-1 - UV Stabilised, Black	5 MHz	1.48 dB/100m
		10 MHz	1.94 dB/100m
		20 MHz	2.83 dB/100m
		50 MHz	4.52 dB/100m
		100 MHz	6.50 dB/100m
		200 MHz	9.30 dB/100m
		300 MHz	11.48 dB/100m
		400 MHz	13.33 dB/100m
Standards		Attenuation	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

Part Number	Dimensions (mm)		Colour
	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
24402186044	7.7	10.67	Black

Data TIA-485, RS232, RS422 Cable



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410Series RS-232 Offshore
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430Series TIA-485 Offshore
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440Series TIA-485 SHF-2
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420Series RS-422 Offshore
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440Series TIA-485 Offshore
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440Series TIA-485 Armourd SHF-MUD
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Characteristics :

SHF-1
SHF-2
Mud resistant
Armoured protection

Areas of Installation :

Offshore platforms
Commercial ships

Armada™ Data Cable 410Series RS232 Offshore Armoured SHF-1 600V



Cable Construction		Electrical Characteristics		
Conductor	24awg Stranded tinned copper wire		1 pair	131 pF/m
Insulation	LSZH FireFighter™, SHF-1, Chart 3 colour code	Nom. Capacitance (cond./cond.)	2,3,4 pair	243 pF/m
Screen	Overall Aluminium/polyester tape		1 pair	98 pF/m
Drain Wire	Stranded tinned copper drain wire	Nom. Capacitance (cond./cond./shield)	2,3,4 pair	164 pF/m
Bedding:	LSZH FireFighter™, SHF-1, Grey	Impedance		75 ohm
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)	Nom. D.C.R Conductor		78.7 ohm/km
Outer Jacket:	LSZH FireFighter™ SHF-1 - UV Stabilised, Black	Nom. D.C.R Shield	1 pair	59.1 ohm/km
Standards			2,3,4 pair	55.8 ohms/km
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092				

Part Number	No. of Pairs	Dimensions (mm)	
		Bedding - Ø	Outer Jacket - Ø
244101P2444-01	1	3.96	7.16
244102P2444-01	2	5.64	8.84
244103P2444-01	3	5.89	9.09
244104P2444-01	4	6.73	9.93

Armada™ Data Cable 420Series RS422 Offshore Armoured SHF-1 600V



Cable Construction		Electrical Characteristics	
Conductor	24awg Stranded tinned copper wire	Nom. Capacitance (cond./cond.)	41 pF/m
Insulation	Foam Polyolefin, Chart 3 colour code	Nom. Capacitance (cond./cond./shield)	76.1 pF/m
Screen	Individual Aluminium/polyester tape	Impedance	100 ohm
Drain Wire	Stranded tinned copper drain wire with each pair	Nom. D.C.R Conductor	78.7 ohm/km
Bedding:	LSZH FireFighter™, SHF-1, Grey	Nom. D.C.R Shield	59.1 ohm/km
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)		
Outer Jacket:	LSZH FireFighter™ SHF-1 - UV Stabilised, Black		
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

Part Number	No. of Pairs	Dimensions (mm)	
		Bedding - Ø	Outer Jacket - Ø
244202P2454-01	2	8.05	11.25
244203P2454-01	3	8.48	11.64
244204P2454-01	4	9.22	12.42

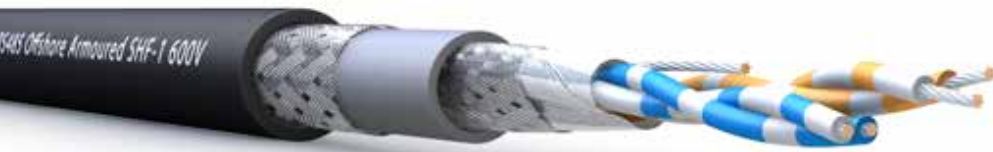
Armada™ Data Cable 430Series TIA-485 Offshore Armoured SHF-1 600V



Cable Construction		Electrical Characteristics	
Inner Conductor:	Stranded Tinned Copper Wire, 7x0.30mm, 22awg	Nom. Impedance	120 Ohm
Insulation	Foamed Polyethylene	Nom. Capacitance (cond./cond.)	36.1 pF/m
Colour Code	Chart 5	Nom. Capacitance (cond./cond./shield)	65.6 pF/m
Screen	Longitudinal Aluminium/polyester tape screen	Nom. Velocity of Propagation	78%
Drain Wire	Stranded Tinned Copper Wire, 22awg	Nom. Conductor D.C.R	48.2 Ohm/km
Shield	Tinned copper wire braid, 65% coverage		4301P2254-08 9.5 Ohm/km
Bedding	LSZH FireFighter™ UV-stable Black		4301.5P2254-08 9.2 Ohm/km
Armour	DataGuard™ Galvanised Steel Wire Braid (GSWB)		4302P2254-08 4.6 Ohm/km
Outer Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised, Black	Nom. Shield D.C.R	4303P2254-08 4.6 Ohm/km
			4304P2254-08 3.6 Ohm/km
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

Part Number	Formation (No. of Pairs)	Dimensions (mm)	
		Bedding - Ø	Outer Jacket - Ø
4301P2254-08	1 x 2 x 22 awg	7.26	10.46
4301.5P2254-08	1 x 2 x 22 awg + 1 x 22 awg	7.67	10.87
4302P2254-08	2 x 2 x 22 awg	9.15	12.70
4303P2254-08	3 x 2 x 22 awg	10.63	13.83
4304P2254-08	4 x 2 x 22awg	11.63	14.83

Armada™ Data Cable 440Series TIA-485 Offshore Armoured SHF-1 600V



Cable Construction		Electrical Characteristics	
Conductor	24awg Stranded tinned copper wire	Nom. Capacitance (cond./cond.)	42 pF/m
Insulation	Foam Polyolefin, Chart 5 colour code	Nom. Capacitance (cond./cond./shield)	75.5 pF/m
Screen	Overall Aluminium/polyester tape	Impedance	120 ohm
Drain Wire	Stranded tinned copper drain wire	Nom. Velocity of Propagation	66 %
Shield	Tinned Copper Wire Braid, 90% coverage.	Nom. Electrical Resistance	82 ohm/km
Bedding:	LSZH FireFighter™, SHF-1, Grey	Nom. Inductance	0.56 µH/m
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)		
Outer Jacket:	LSZH FireFighter™ SHF-1 - UV Stabilised, Black		
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

Part Number	No. of Pairs	Dimensions (mm)	
		Bedding - Ø	Outer Jacket - Ø
244401P2454-01	1	5.89	9.69
244402P2454-01	2	8.64	11.84
244403P2454-01	3	9.14	12.34
244404P2454-01	4	9.91	13.11

Armada™ FFxT™ Data Cable 440Series TIA-485 SHF-2

Halogen Free • Flame Retardant • Low Temperature



Cable Construction		Electrical Characteristics	
Conductor	24awg Stranded tinned copper wire	Nom. Capacitance (cond./cond.)	42 pF/m
Insulation	Foam Polyolefin, Chart 5 colour code	Nom. Capacitance (cond./cond./shield)	75.5 pF/m
Screen	Overall Aluminium/polyester tape	Impedance	120 ohm
Drain Wire	Stranded tinned copper drain wire	Nom. Velocity of Propagation	66 %
Shield	Tinned Copper Wire Braid, 90% coverage.	Nom. Electrical Resistance	82 ohm/km
Outer Jacket:	SHF-2 FFxT, UV-Stabilised, Black	Nom. Inductance	0.56 µH/m
Standards		Thermal Characteristics	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359		-40° C up to +90° C	

Part Number	No. of Pairs	Dimensions (mm)
		Outer Jacket - Ø
M4401P18F4	1	6.0
M4402P18F4	2	8.2

Armada™ FFXt™ Data Cable 440Series TIA-485 Armoured SHF-MUD

Halogen Free • Flame Retardant • Low Temperature



Cable Construction	
Conductor	24awg Stranded tinned copper wire
Insulation	Foam Polyolefin, Chart 5 colour code
Screen	Overall Aluminium/polyester tape
Drain Wire	Stranded tinned copper drain wire
Shield	Tinned Copper Wire Braid, 90% coverage.
Bedding:	SHF-2 FFXt MUD Resistant, UV-Stabilised, Black
Armour:	DataGuard™ Galvanised Steel Wire Braid (GSWB)
Outer Jacket:	SHF-2 FFXt, UV-Stabilised, Black
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359	

Electrical Characteristics	
Nom. Capacitance (cond./cond.)	42 pF/m
Nom. Capacitance (cond./cond./shield)	75.5 pF/m
Impedance	120 ohm
Nom. Velocity of Propagation	66 %
Nom. Electrical Resistance	82 ohm/km
Nom. Inductance	0.56 µH/m
Thermal Characteristics	
-40°C up to +90°C	

Part Number	No. of Pairs	Dimensions (mm)	
		Bedding - Ø	Outer Jacket - Ø
M244401P18F4	1	6.0	9.5 ± 0.1 mm
M244402P18F4	2	8.2	11.9 ± 0.1 mm

Fibre Optic Cable



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QFCI-F1

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AICI SHF-1

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DGBLT SHF-1

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DGPLT

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Optical Characteristics

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QFCB MUD Resistant

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FFCi SHF-1

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DGBTB SHF-1

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DGPTB

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Characteristics :

SHF-1

SHF-2

Circuit Integrity

Multimode & Singlemode

Loose tube & Tight buffered

Phosphor bronze wire braid

Areas of Installation :

Offshore platforms

Commercial ships

Armada™ QFCI-F1 Fibre Optic Cable

Fire Resistant • Halogen Free • Flame retardant • SHF-1 • DNV approved



Cable Construction

Central Strength Member:	Steel with plastic oversheathing
Loose Tube:	Thermoplastic material (PBT), jelly filled
Fire Barrier:	Fire resistant mica/glass tapes
Fibre Colour Code:	EIA/TIA 598
Tubes Colour Code:	1 - Red / 2 - Green - others White
Filler Elements:	Thermoplastic rods
Cable Core:	Loose tubes (and fillers) are stranded around a steel strength member
Inner Jacket:	Black LSZH FireFighter™ SHF-1
Metallic Armour:	Galvanised Steel Wire Braid (GSWB)
Outer Jacket:	Black LSZH FireFighter™ SHF-1

Mechanical Characteristics

Tensile strength (max.)	Installation	1500 N
	Operation	500 N
Bending radius (min.)	Static	10 x Ø
	Dynamic	20 x Ø
Crush resistance	3000 N/10cm	
Impact	20 impacts, 5J	
Torsion	± 1 turns/ 1m	
Immersion Test SAE 20 4h/70° C	IEC 60811-2-1	PASS
Immersion Test IRM 902 4h/70° C	IEC 60811-2-1	PASS

Thermal Characteristics

Temperature range	Storage	-40° C to +70° C
	Installation	-10° C to +70° C
	Operating	-40° C to +70° C

Fire behaviour

Fire Resistance	IEC 60331-25 Upgraded 1000° C, 3 hours < 1.5 dB/excess loss
Flame retardant	IEC 60332-1-2
No-Fire propagation	IEC 60332-3-22
Halogen content	IEC 60754-1-2
Smoke density	IEC 61034-1-2

No. of fibres	No. of Tubes + Fillers	Tube Diameter (mm)	Nominal Ø (mm)	Cable Weight (kg/km)
4	2+2	2.5	13.5	230
6	3+2	2.5	13.5	230
8	2+2	2.5	13.5	230
12	3+1	2.5	13.5	230
24	4+0	2.5	13.5	230
36	3+1	3.0	14.5	250
48	4+0	3.0	14.5	250

Armada™ QFCB Fibre Optic Cable

MUD Resistant • Fire Resistant • Halogen Free • Flame retardant • SHF-2

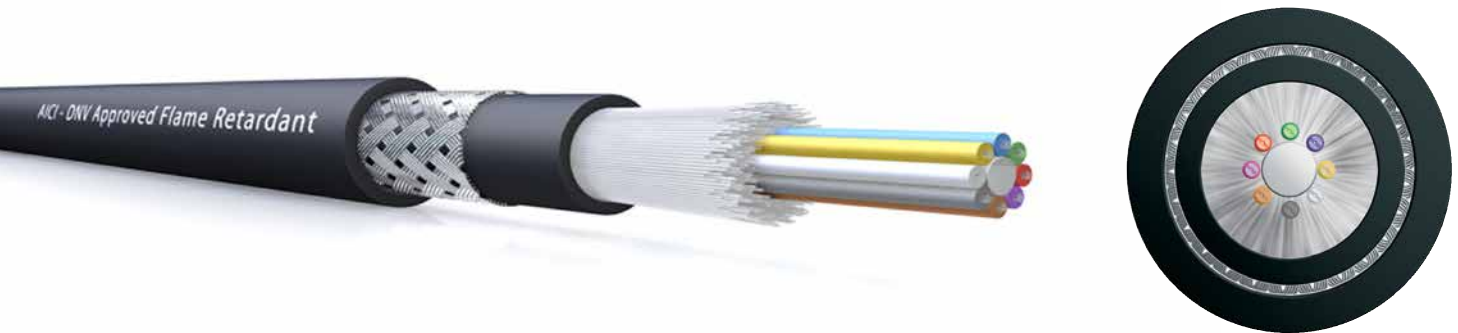


Cable Construction		Mechanical Characteristics		
Central Strength Member:	Steel with plastic oversheathing	Tensile strength (max.)	Installation	1500 N
Loose Tube:	Thermoplastic material (PBT), jelly filled		Operation	500 N
Fire Barrier:	Fire resistant mica/glass tapes	Bending radius (min.)	Static	10 x Ø
Fibre Colour Code:	EIA/TIA 598		Dynamic	20 x Ø
Tubes Colour Code:	1 - Red / 2 - Green - others White	Crush resistance	3000 N/10cm	
Filler Elements:	Thermoplastic rods	Impact	20 impacts, 5J	
Cable Core:	Loose tubes (and fillers) are stranded around a steel strength member	Torsion	± 1 turns/ 1m	
Inner Jacket:	Black LSZH FireFighter™ SHF-1	Immersion Test SAE 20 4h/70°C	IEC 60811-2-1	PASS
Metallic Armour:	Galvanised Steel Wire Braid (GSWB)	Immersion Test IRM 902 4h/70°C	IEC 60811-2-1	PASS
Outer Jacket 1:	Black LSZH FireFighter™ SHF-1	Thermal Characteristics		
Outer Jacket 2:	SHF-2 Compound (mud, oil, hydrocarbon and UV-Stabilised)	Temperature range	Storage	-40°C to +70°C
			Installation	-10°C to +70°C
			Operating	-40°C to +70°C
Fire behaviour				
Fire Resistance	IEC 60331-25 Upgraded 1000°C, 3 hours < 1.5 dB/excess loss			
Flame retardant	IEC 60332-1-2			
No-Fire propagation	IEC 60332-3-22			
Halogen content	IEC 60754-1-2			
Smoke density	IEC 61034-1-2			

No. of fibres	No. of Tubes + Fillers	Tube Diameter (mm)	Nominal Ø (mm)	Cable Weight (kg/km)
12	3+1	2.5	15.0	290
24	4+1	2.5	15.0	290

Armada™ AICI Fibre Optic Cable

NEK606 • Flame retardant • SHF-1 • DNV Approved



Cable Construction		Mechanical Characteristics	
Central Support Element:	Dielectric strength member (FRP)	Tensile strength (max.)	<i>see table below</i>
Tight Coating:	850 micron tight buffered optical fibres	Bending radius (min.)	Static 10 x Ø
Fibre Colour Code:	EIA/TIA 598		Dynamic 20 x Ø
Cable Core Stranded:	The fibres are bundled around a central strength member (FRP)	Crush resistance	2000 N/100mm
Strain Relief:	Water blocking aramid yarns	Impact	1 impacts, 25J
Inner Jacket:	Black LSZH FireFighter™ SHF-1	Torsion	± 1 turns/ 1m
Metallic Armour:	Galvanised Steel Wire Braid (GSWB)	Watertightness*	< 3 m/24 hours
Outer Jacket:	Black LSZH FireFighter™ NEK 606	* steel wire braid is not watertight	
		Thermal Characteristics	
		Storage	-40° C to +70° C
		Installation	-10° C to +70° C
		Operating	-40° C to +70° C
		Fire behaviour	
		Flame retardant	IEC 60332-1-2
		No-Fire propagation	IEC 60332-3-22
		Halogen content	IEC 60754-1-2
		Smoke density	IEC 61034-1-2

No. of fibres	Tight Diameter (µm)	Nominal Ø (mm)	Cable Weight (kg/km)	Tensile strength (Inst./Oper.) (N)
2	850 ± 50	7.8	88	500 / 200
4	850 ± 50	8.0	98	600 / 240
8	850 ± 50	9.0	110	800 / 350
12	850 ± 50	10.0	130	1000 / 400
16	850 ± 50	10.5	165	1000 / 400
24	850 ± 50	12.0	190	1200 / 480

Armada™ FFCi Fibre Optic Cable

Fire Resistant • Halogen Free • Flame retardant • SHF-1



Cable Construction

Central tube:	Thermoplastic material (PBT), jelly filled
Colour Code:	EIA/TIA 598
Strength member:	Glass fibre yarns
Fire Barrier:	Fire resistant Glass tape
Inner Jacket:	LSZH FireFighter™SHF-1, Black
Armour:	DataGuard™ Galvanised steel wire braid (GSWB)
Outer Jacket:	LSZH FireFighter™SHF-1, UV-Stabilised Black

Mechanical Characteristics

Pulling Tension (max.)	Installation	1700 N
	Operation	500 N
Bending radius (min.)	Static	10 x Ø
	Dynamic	20 x Ø
Crush		3000 N/10cm

Thermal Characteristics

Temperature range	Storage	-40° C to +80° C
	Installation	-10° C to +60° C
	Operating	-30° C to +80° C

Fire behaviour

Fire resistance	IEC 60331-25	-	CEI 20-36/2-5
Flame retardant	IEC 60332-1-2	EN 50265-2-1	CEI 20-35/1-1
Fire No-fire propagation	IEC 60332-3-24	EN 50266-2-4	CEI 20-22/3-4
Halogen content	IEC 60754-1	EN 50267-2-1	CEI 20-37/2-1
Smoke density	IEC 61034-2	EN 50268-2	CEI 20-37/3-1

Part Number	No. of fibres	Tube diameter (mm)	Ø of Jacket (Inner / Outer) (mm)	Weight (kg/km)
2410*0443CLT-01	4	2.7	9.5	130
2410*0843CLT-01	8	2.7	9.5	130
2410*1243CLT-01	12	2.7	9.5	130
2410*1643CLT-01	16	3.5	10.0	140
2410*2443CLT-01	24	3.5	10.0	140

*denotes fibre type required 1 = 62.5/125 | 2 = 50/125 | 8 = 9/125

Armada™ DGBLT Fibre Optic Cable

Halogen Free • Flame retardant • SHF-1



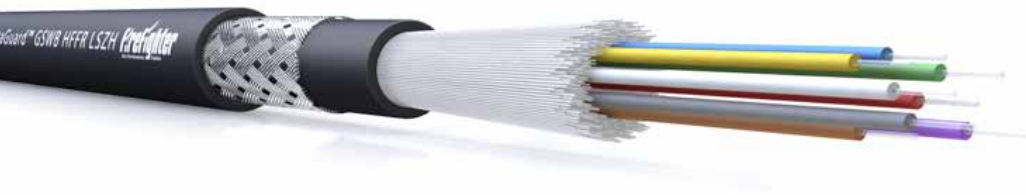
Cable Construction		Mechanical Characteristics	
Optical Fibres:	Primary coated, $\varnothing 250 \pm 15\mu\text{m}$	Bending radius for fibres and tube	> 25 mm
Central tube:	Jelly filled (non-dripping silicon free with up to 24 fibres) $\varnothing 3.20\text{mm}$	Bending radius for cable	Static 10 x \varnothing Dynamic 20 x \varnothing
Colour Code:	to IEC 60304	Watertightness	acc. to IEC 60794-1-2-F5 YES
Strength member:	Glass fibre yarns (swellable for longitudinal watertightness and as rodent protection)	Thermal Characteristics	
Inner Jacket:	LSZH FireFighter™, Black	Storage	-30° C to +70° C
Armour:	DataGuard™ Galvanised steel wire braid (GSWB)	Temperature range	Installation -5° C to +50° C Operating -30° C to +70° C
Outer Jacket:	LSZH FireFighter™SHF-1, UV-Stabilised	Fire behaviour	
		Halogen free	acc. to IEC 60754-2 (602)
		Flame retardant	acc. to IEC 60332-3C

Part Number	No. of fibres	\varnothing of Jacket (Inner / Outer)(mm)	Weight (kg/km)	Colour
2410*044CLT-01	4	6.1 / 9.06	145	Black
2410*084CLT-01	8	6.1 / 9.06	145	Black
2410*124CLT-01	12	6.1 / 9.06	145	Black
2410*164CLT-01	16	6.1 / 9.06	145	Black
2410*244CLT-01	24	6.1 / 9.06	145	Black

*denotes fibre type required 1 = 62.5/125 | 2 = 50/125 | 8 = 9/125

Armada™ DGBTB Fibre Optic Cable

Halogen Free • Flame retardant • SHF-1



Cable Construction		Mechanical Characteristics*	
Tight coating:	900 ± 50 µm tight buffered optical fibre	Bending radius (min.)	long term 15 x Ø (no load)
Colour Code:	to IEC 60304		short term 25 x Ø (load)
Strength member:	Glass fibre yarns (swellable for longitudinal watertightness)	Crush resistance	2000 N/10cm
Rip cord:	1 x under jacket	Impact resistance	3 impacts (w/20N.m)
Inner Jacket:	LSZH FireFighter™	Thermal Characteristics*	
Armour:	DataGuard™ Galvanised steel wire braid (GSWB)	Temperature range	Storage -40° C to +60° C
Outer Jacket:	LSZH FireFighter™SHF-1, UV-Stabilised		Installation -5° C to +40° C
			Operating -20° C to +50° C
		Fire behaviour*	
		Halogen free	acc. to IEC 60754-2
		Flame retardant	acc. to IEC 60332-1

*of cable without armour and additional jacket

Part Number	No. of fibres	Ø of Jacket (Inner / Outer) (mm)	Tensile Strength (N)	Colour
2410*044TB-01	4	5.5 / 8.47 ± 0.5	1000	Black / Black
2410*084TB-01	8	6.5 / 9.47 ± 0.5	1400	Black / Black
2410*124TB-01	12	7.3 / 10.27 ± 0.5	1600	Black / Black
2410*244TB-01	24	10.4 / 13.37 ± 0.5	2900	Black / Black

*denotes fibre type required 1 = 62.5/125 | 2 = 50/125 | 8 = 9/125

Armada™ DGPLT Fibre Optic Cable

Halogen Free • Flame retardant • SHF-2 • UV-Stable



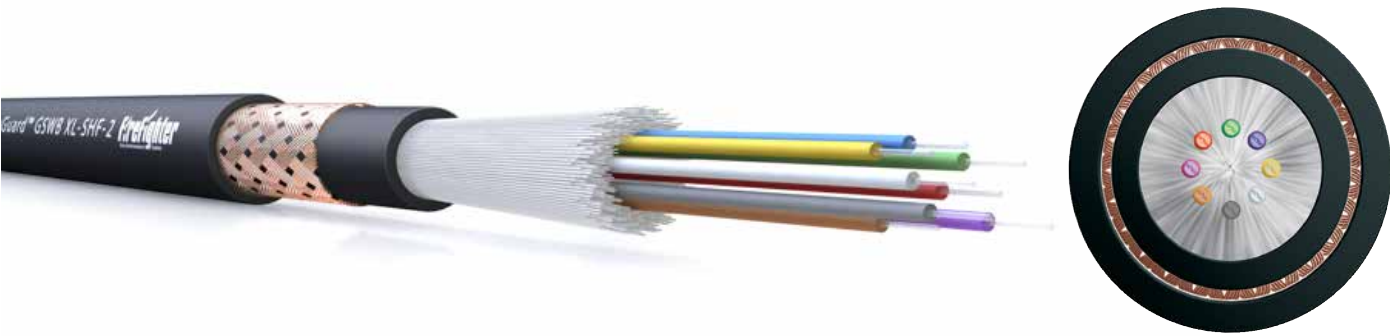
Cable Construction		Mechanical Characteristics	
Optical Fibres:	Primary coated, $\varnothing 250 \pm 15\mu\text{m}$	Bending radius for fibres and tube	> 25 mm
Central tube:	Jelly filled (non-dripping silicon free with up to 24 fibres) $\varnothing 3.20\text{mm}$	Bending radius for cable	Static 10 x \varnothing Dynamic 20 x \varnothing
Colour Code:	to IEC 60304	Watertightness	acc. to IEC 60794-1-2-F5 YES
Strength member:	Glass fibre yarns (swellable for longitudinal watertightness and as rodent protection)	Thermal Characteristics	
Inner Jacket:	LSZH FireFighter™ SHF-1	Storage	-40°C to +90°C
Armour:	DataGuard™ 0.20mm Phosphor Bronze Wire Braid	Temperature range	Installation -15°C to +70°C Operating -40°C to +90°C
Armour Coverage:	Min. 80%	Fire behaviour	
Outer Jacket:	XL-LSZH, FFxT™ SHF-2	Halogen free	acc. to IEC 60754-2
		Flame retardant	acc. to IEC 60332-3-24, IEC 60332-1
		Smoke emissions	acc. to IEC 61034

Part Number	No. of fibres	\varnothing of Jacket (Inner / Outer)(mm)	Weight (kg/km)	Colour
P4M410*04M4CLT-01	4	6.1 / 9.06	145	Black
P4M410*08M4CLT-01	8	6.1 / 9.06	145	Black
P4M410*12M4CLT-01	12	6.1 / 9.06	145	Black
P4M410*16M4CLT-01	16	6.1 / 9.06	145	Black
P4M410*24M4CLT-01	24	6.1 / 9.06	145	Black

*denotes fibre type required 1 = 62.5/125 | 2 = 50/125 | 8 = 9/125

Armada™ DGPTB Fibre Optic Cable

Halogen Free • Flame retardant • SHF-2 • UV-Stable



Cable Construction		Mechanical Characteristics*		
Tight coating:	900 ± 50 µm tight buffered optical fibre	Bending radius (min.)	long term	15 x Ø (no load)
Colour Code:	to IEC 60304		short term	25 x Ø (load)
Strength member:	Glass fibre yarns (swellable for longitudinal watertightness)	Crush resistance		2000 N/10cm
Rip cord:	1 x under jacket	Impact resistance		3 impacts (w/20N.m)
Inner Jacket:	LSZH FireFighter™ SHF-1	Thermal Characteristics*		
Armour:	DataGuard™ 0.20mm Phospher Bronze Wire Braid	Temperature range	Storage	-40° C to +60° C
Armour Coverage:	Min. 80%		Installation	-15° C to +40° C
Outer Jacket:	XL-LSZH, FFxT™ SHF-2		Operating	-40° C to +90° C
of cable without armour and outer jacket		Fire behaviour		
		Halogen free	acc. to IEC 60754-2	
		Flame retardant	acc. to IEC 60332-3-24, IEC 60332-1	
		Smoke emissions	acc. to IEC 61034	

Part Number	No. of fibres	Ø of Jacket (Inner / Outer) (mm)	Tensile Strength (N)	Colour
P4M410*04M4TB-01	4	5.5 / 8.47 ± 0.5	1000	Black / Black
P4M410*08M4TB-01	8	6.5 / 9.47 ± 0.5	1400	Black / Black
P4M410*12M4TB-01	12	7.3 / 10.27 ± 0.5	1600	Black / Black
P4M410*24M4TB-01	24	10.4 / 13.37 ± 0.5	2900	Black / Black

*denotes fibre type required 1 = 62.5/125 | 2 = 50/125 | 8 = 9/125

Optical Characteristics



QFCI-F1



QFCB MUD



AICI SHF-1



FFCi SHF-1

		Single Mode
IEC 11801 Classification		OS1/OS2
ITU-T Type		G.652D
Mode Field Diameter	at 1310 nm	$9.0 \pm 0.4 \mu\text{m}$
Mode Field Diameter	at 1550 nm	$10.1 \pm 0.5 \mu\text{m}$
Cladding Diameter		$125.0 \pm 0.7 \mu\text{m}$
Coating Diameter (nom.)		$242 \pm 7 \mu\text{m}$
Numerical Aperture		0.13 (nom.)
Attenuation (max.)	at 850 nm	-
	at 1300 nm	-
	at 1310 nm	$\leq 0.35 \text{ dB/km}$
	at 1383 nm	$\leq 0.35 \text{ dB/km}$
	at 1460 nm	$\leq 0.25 \text{ dB/km}$
	at 1550 nm	$\leq 0.21 \text{ dB/km}$
	at 1625 nm	$\leq 0.23 \text{ dB/km}$
Bending Loss 1 turns D= 30mm	at 1550 nm	$\leq 0.25 \text{ dB}$
	at 1625 nm	$\leq 1.0 \text{ dB}$
Chromatic Dispersion	at 1285 - 1330 nm	$\leq 3.0 \text{ ps/nm} \times \text{km}$
	at 1550 nm	$\leq 18 \text{ ps/nm} \times \text{km}$
	at 1565 - 1625 nm	$\leq 22 \text{ ps/nm} \times \text{km}$
Gigabit Ethernet	SX (1310 nm)	10000 m
	LX (1550 nm)	40000 m
10 Gigabit Ethernet	SX (1310 nm)	10000 m
	LX (1550 nm)	40000 m

		Multi Mode 62.5/125	Multi Mode 50/125
IEC 11801 Classification		OM1	OM2
ITU-T Type		-	G.651
Core Diameter		$62.5 \pm 2.5 \mu\text{m}$	$50 \pm 2.5 \mu\text{m}$
Cladding Diameter		$125.0 \pm 2.0 \mu\text{m}$	$125.0 \pm 2.0 \mu\text{m}$
Coating Diameter		$242 \pm 5.0 \mu\text{m}$	$242 \pm 7.0 \mu\text{m}$
Numerical Aperture		0.275 ± 0.015	0.200 ± 0.015
Attenuation (max.)	at 850 nm	$\leq 3.5 \text{ dB/km}$	$\leq 2.8 \text{ dB/km}$
	at 1300 nm	$\leq 1.0 \text{ dB/km}$	$\leq 1.0 \text{ dB/km}$
Bending Loss 100 turns D= 75mm	at 1550 nm	$\leq 0.05 \text{ dB}$	$\leq 0.5 \text{ dB}$
	at 1625 nm	$\leq 0.05 \text{ dB}$	$\leq 0.5 \text{ dB}$
Bandwidth	at 850 nm	$\geq 200 \text{ MHz} \times \text{km}$	$\geq 500 \text{ MHz} \times \text{km}$
	at 1300 nm	$\geq 500 \text{ MHz} \times \text{km}$	$\geq 500 \text{ MHz} \times \text{km}$
Gigabit Ethernet	SX (850 nm)	275 VCLS (m)	550 VCLS (m)
	LX (1300 nm)	550 Laser (m)	550 Laser (m)
10 Gigabit Ethernet	SX (850 nm)	33 VCSL (m)	82 VCSL (m)
	LX (1300 nm)	300 WWDM (m)	300 WWDM (m)



DGBLT SHF-1



DGBTB SHF-1



DGPTB



DGPLT

62.5/125 OM1 multi-mode graded-index optical fibres acc. to IEC 60793

Fibre Type	Mode-Field Diameter (μm)	Wavelength (nm)	Attenuation average/max. (dB/km)	Bandwidth (MHz·km)	Ethernet Performance (m)		Num. Aperture (μm)	Refr. Index
					1 GBE	10 GBE		
62.5/125 OM1	62.5 ± 2.5 125 ± 1	850	2.7 / 3.2	≥ 200	275	33	0.275 ± 0.015	1.495
		1300	0.6 / 1.1	≥ 600	550	n.a		

50/125 OM2 multi-mode graded-index optical fibres acc. to IEC 60793

Fibre Type	Mode-Field Diameter (μm)	Wavelength (nm)	Attenuation average/max. (dB/km)	Bandwidth (MHz·km)	Ethernet Performance (m)		Num. Aperture (μm)	Refr. Index
					1 GBE	10 GBE		
50/125 OM2	50 ± 2.5 125 ± 1	850	2.3 / 2.8	≥ 600	600	82	0.20 ± 0.015	1.481
		1300	0.6 / 0.9	≥ 1200	600	n.a		

9/125 G652D Single-mode matched-cladded optical fibre acc. to ITU

Fibre Type	Mode-Field Diameter (μm)	Wavelength (nm)	Attenuation average/max. (dB/km)	Dispersion (ps/(nm·km))	PMD (ps/km)	Cable Cut-off Wavelength (nm)
9/125 G652D	9.2 ± 0.4 125 ± 0.7	1310 1550	0.32 / 0.40 0.21 / 0.30	≤ 3.5 ≤ 18	≤ 0.2	≤ 1260

LAN Network Cable



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Cat5e U/UTP Offshore SHF-1

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Cat5e U/UTP FFxT™

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Cat6 U/UTP Offshore SHF-1

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**Cat7a <1000MHz> SU/FTP Marine Grade
Orange GL**

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**Nexans Cat7a <1000 MHz> SU/FTP
Marine Grade Grey DNV**

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ToughCat5e SU/FTP Marine Grade

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Cat5e F/UTP Offshore SHF-1

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Cat5e F/UTP FFxT™

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Cat6 F/UTP Offshore SHF-1

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**Cat7a <1000MHz> SU/FTP
Offshore SHF-1**

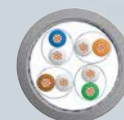
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**Nexans Cat7a <1000 MHz> SU/FTP
Offshore SHF-1 Grey**

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ToughCat7 SU/FTP Marine Grade

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Characteristics :

SHF-1

SHF-2

Mud resistant

Frequency up to <1000 MHz>

Areas of Installation :

Offshore platforms

Commercial ships

Armada™ Cat5e U/UTP Offshore Armoured Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Conductor	Solid bare copper wire (24awg)	Complete conductor resistance	≤ 190 Ω/km
Insulation	Polyethylene (PE)	Resistance unbalance	≤ 2 %
No. of Pairs	4	Dielectric strength (continuous current)	1kV during 1min=no reakdown
Inner Jacket	LSZH FireFighter™	Insulation resistance (500V)	≥ 5000 MΩ . km
Armour	DataGuard™ Galvanised steel wire braid	Capacitance unbalance Real-ground	≤ 1600 pF/km
Outer Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised	Characteristic impedance at 100 MHz	100 ± 5 Ω
Standards		Nom. Velocity	66 %
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092		Thermal Characteristics	
		Installing	-15° C up to +70° C
		Operating (fixed)	-40° C up to +70° C
		Storage	-40° C up to +70° C

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
244965	4	0.90	5.10	8.07	Black

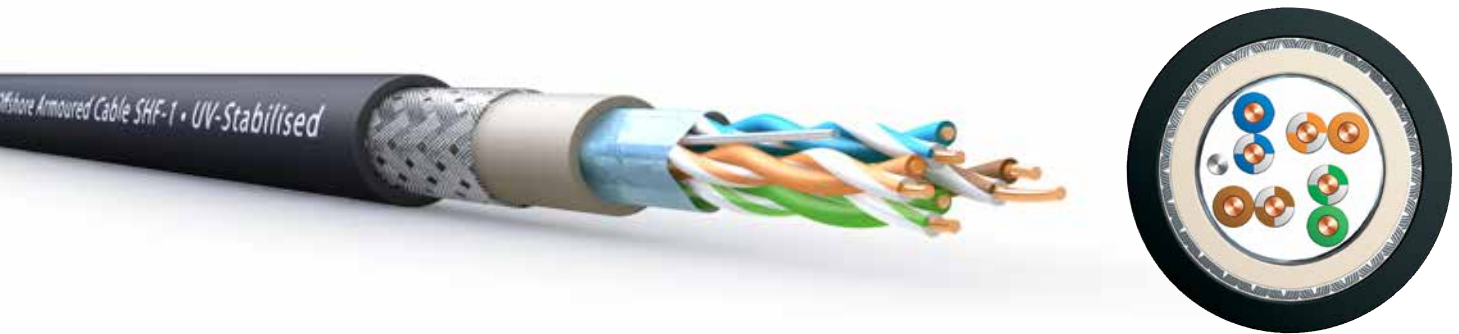
Transmission Characteristics at 20°C								
Frequency MHz		4	10	20	62.5	100	155**	200**
Max. Attenuation (dB/100m)	Typical value	3.8	6	8.5	15.2	19.5	25	28
	Cat. 5e* (max.)	4.1	6.5	9.3	17	22	-	-
Min. NEXT (dB)	Typical value	63	57	52	45	42	39	37
	Cat. 5e* (min.)	56.3	50.3	45.8	38.4	35.3	-	-
Min. ACR (dB)	Typical value	59.2	51	43.5	29.8	22.5	14	9
	Cat. 5e* (min.)	52.2	43.8	36.5	21.4	13.3	-	-
PS NEXT (dB)	Typical value	60	54	49	42	39	36	34
	Cat. 5e* (min.)	53.3	47.3	42.8	35.4	32.3	-	-
ELFEXT (dB/100m)	Typical value	63	55	48	39	35	31	29
	Cat. 5e* (min.)	52	44	38	28	24	-	-
PS ELFEXT (dB/100m)	Typical value	60	52	45	36	32	28	26
	Cat. 5e* (min.)	49	41	35	25	21	-	-
Return Loss (dB)	Typical value	25	25	25	23.8	23	22	21
	Cat. 5e* (min.)	23	25	25	21.5	20.1	-	-

* Category 5 acc. to IEC 61156-5

** For information only

Armada™ Cat5e F/UTP Offshore Armoured Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Conductor	Solid bare copper wire (24awg)	Complete conductor resistance	≤ 190 Ω/km
Insulation	Polyethylene (PE)	Resistance unbalance	≤ 2 %
No. of Pairs	4	Dielectric strength (continuous current)	1kV during 1min=no reakdown
Drain Wire	Tinned copper	Insulation resistance (500V)	≥ 5000 MΩ . km
Screen	Aluminium/polyester tape	Capacitance unbalance Real-ground	≤ 1600 pF/km
Inner Jacket	LSZH FireFighter™	Characteristic impedance at 100 MHz	100 ± 5 Ω
Armour	DataGuard™ Galvanised steel wire braid	Nom. Velocity	66 %
Outer Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised		
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			
		1 MHz	≤ 40 mΩ/m
		10 MHz	≤ 40 mΩ/m
		30 MHz	≤ 50 mΩ/m
		100 MHz	≤ 200 mΩ/m

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
244969	4	0.95	5.75	8.72	Black

Transmission Characteristics at 20°C								
Frequency MHz		4	10	20	62.5	100	155**	200**
Max. Attenuation (dB/100m)	Typical value	3.8	6	8.5	15.2	19.5	25	28
	Cat. 5e* (max.)	4.1	6.5	9.3	17	22	-	-
Min. NEXT (dB)	Typical value	63	57	52	45	42	39	37
	Cat. 5e* (min.)	56.3	50.3	45.8	38.4	35.3	-	-
Min. ACR (dB)	Typical value	59.2	51	43.5	29.8	22.5	14	9
	Cat. 5e* (min.)	52.2	43.8	36.5	21.4	13.3	-	-
PS NEXT (dB)	Typical value	60	54	49	42	39	36	34
	Cat. 5e* (min.)	53.3	47.3	42.8	35.4	32.3	-	-
ELFEXT (dB/100m)	Typical value	63	55	48	39	35	31	29
	Cat. 5e* (min.)	52	44	38	28	24	-	-
PS ELFEXT (dB/100m)	Typical value	60	52	45	36	32	28	26
	Cat. 5e* (min.)	49	41	35	25	21	-	-
Return Loss (dB)	Typical value	25	25	25	23.8	23	22	21
	Cat. 5e* (min.)	23	25	25	21.5	20.1	-	-

* Category 5 acc. to IEC 61156-5

** For information only

Armada™ FFxT Cat5e U/UTP Offshore Armoured Cable

SHF-2 • Halogen Free • Flame Retardant • Low Temperature



Cable Construction		Electrical Characteristics	
Conductor	Solid bare copper wire (24awg)	Conductor resistance	98.6 Ω/km
Insulation	Polyethylene (PE)	Dielectric strength (at 50Hz)	1 kV/1min
No. of Pairs	4	Insulation resistance (Min.)	5000 MΩ . km
Inner Jacket	LSZH FireFighter™	Nom. Velocity	78 %
Armour	DataGuard™ Galvanised steel wire braid	Characteristic impedance at 100 MHz	100 ± 5 Ω
Outer Jacket	SHF-2 FFxT, UV-Stabilised		
Standards		Temperature Range	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092		-40° C up to +90° C	

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
M244965	4	0.98	4.9	8.7	Black

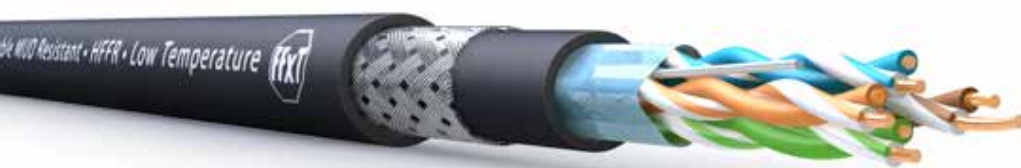
Transmission Characteristics at 20°C								
Frequency MHz		4	10	20	62.5	100	155**	200**
Max. Attenuation (dB/100m)	Typical value	3.8	6	8.5	15.2	19.5	25	28
	Cat. 5e* (max.)	4.1	6.5	9.3	17	22	-	-
Min. NEXT (dB)	Typical value	63	57	52	45	42	39	37
	Cat. 5e* (min.)	56.3	50.3	45.8	38.4	35.3	-	-
Min. ACR (dB)	Typical value	59.2	51	43.5	29.8	22.5	14	9
	Cat. 5e* (min.)	52.2	43.8	36.5	21.4	13.3	-	-
PS NEXT (dB)	Typical value	60	54	49	42	39	36	34
	Cat. 5e* (min.)	53.3	47.3	42.8	35.4	32.3	-	-
ELFEXT (dB/100m)	Typical value	63	55	48	39	35	31	29
	Cat. 5e* (min.)	52	44	38	28	24	-	-
PS ELFEXT (dB/100m)	Typical value	60	52	45	36	32	28	26
	Cat. 5e* (min.)	49	41	35	25	21	-	-
Return Loss (dB)	Typical value	25	25	25	23.8	23	22	21
	Cat. 5e* (min.)	23	25	25	21.5	20.1	-	-

* Category 5 acc. to IEC 61156-5

** For information only

Armada™ FFxT Cat5e F/UTP Offshore Armoured Cable

SHF-2 • Halogen Free • Flame Retardant • Low Temperature



Cable Construction		Electrical Characteristics	
Conductor	Solid bare copper wire (24awg)	Conductor resistance	98.6 Ohm/km
Insulation	Polyethylene (PE)	Dielectric strength at 50Hz	1 kV/1min
No. of Pairs	4	Insulation resistance (Min.)	5000 MOhm.km
Drain Wire	Tinned copper	Capacitance unbalance - pair to ground (max.)	800 pF/500m
Screen	Aluminium/polyester tape	Transfer impedance (Zt) at 10 MHz (max.)	100 mOhm/m
Inner Jacket	LSZH FireFighter™	Velocity (nom.)	78 %
Armour	DataGuard™ Galvanised steel wire braid	Characteristic impedance (Zc) from 1 - 100 MHz	100 Ohm
Outer Jacket	SHF-2 FFxT, UV-Stabilised		
Standards		Temperature Range	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092		-40° C up to +90° C	

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
M244969	4	0.98	5.9	9.4	Black

Transmission Characteristics at 20°C								
Frequency MHz		4	10	20	62.5	100	155**	200**
Max. Attenuation (dB/100m)	Typical value	3.8	6	8.5	15.2	19.5	25	28
	Cat. 5e* (max.)	4.1	6.5	9.3	17	22	-	-
Min. NEXT (dB)	Typical value	63	57	52	45	42	39	37
	Cat. 5e* (min.)	56.3	50.3	45.8	38.4	35.3	-	-
Min. ACR (dB)	Typical value	59.2	51	43.5	29.8	22.5	14	9
	Cat. 5e* (min.)	52.2	43.8	36.5	21.4	13.3	-	-
PS NEXT (dB)	Typical value	60	54	49	42	39	36	34
	Cat. 5e* (min.)	53.3	47.3	42.8	35.4	32.3	-	-
ELFEXT (dB/100m)	Typical value	63	55	48	39	35	31	29
	Cat. 5e* (min.)	52	44	38	28	24	-	-
PS ELFEXT (dB/100m)	Typical value	60	52	45	36	32	28	26
	Cat. 5e* (min.)	49	41	35	25	21	-	-
Return Loss (dB)	Typical value	25	25	25	23.8	23	22	21
	Cat. 5e* (min.)	23	25	25	21.5	20.1	-	-

* Category 5 acc. to IEC 61156-5

** For information only

Armada™ Cat6 U/UTP Offshore Armoured Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Conductor	Solid bare copper wire (24awg)	Conductor loop resistance	≤ 19 Ω/100m
Insulation	Polyethylene (PE)	Insulation resistance	≥ 5 GΩxkm
No. of Pairs	4	Operating capacitance (nom.)	50 nF/km
Central Element	Cross separator	Capacitance unbalance (nom.)	≤ 150 pF/100m
Inner Jacket	LSZH FireFighter™	rel. velocity of propagation	67 %
Armour	DataGuard™ Galvanised steel wire braid	Characteristic impedance at 1-100 MHz	100 ± 15 Ω
Outer Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised	Characteristic impedance at 100-250 MHz	100 ± 22 Ω
Standards		Test voltage	700 V-AC
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

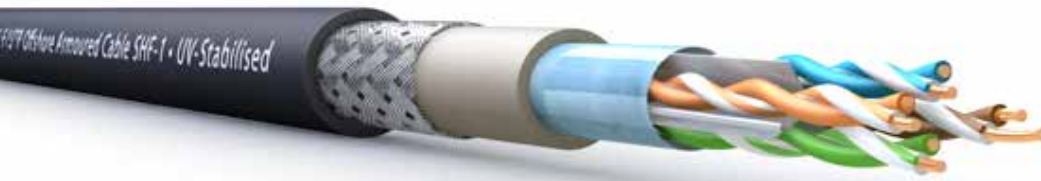
Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
245001	4	0.90	6.5	9.47	Black

Frequency (MHz)	Attenuation (dB/100m)		NEXT (dB)		ACR (dB/100m)	Return Loss (dB)	
	Nom.	Max. Cat 6	Nom.	Min. Cat 6	Nom.	Nom.	Min. Cat 6
1	1.8	[2.1]	92	66	90.2	24	[20.0]
4	3.4	3.8	83	65	79.6	27	23.1
10	5.3	6.0	78	60	72.7	30	25.0
16	6.8	7.6	72	56	65.2	30	25.0
20	7.7	8.5	71	55	63.3	30	25.0
31.25	9.9	10.8	68	52	58.1	30	23.6
62.5	13.7	15.5	64	47	50.3	30	21.5
100	17.8	19.9	62	44	44.2	30	20.1
155	22.0	22.5	58	41	36.0	28	18.8
200	25.3	29.2	56	40	30.7	26	18.0
250	28.2	33.0	54	38	25.8	25	17.3
300	31.8	-	53	-	21.2	23	-
350	33.9	-	50	-	16.1	22	-

The performance data given are typical measured values

Armada™ Cat6 F/UTP Offshore Armoured Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Conductor	Solid bare copper wire (24awg)	Conductor loop resistance	≤ 19 Ω/100m
Insulation	Polyethylene (PE)	Insulation resistance	≥ 5 GΩxkm
No. of Pairs	4	Operating capacitance (nom.)	50 nF/km
Central Element	Cross separator	Capacitance unbalance (nom.)	≤ 150 pF/100m
Drain wire	Tinned copper	rel. velocity of propagation	76 %
Screen	Aluminium/polyester tape	Transfer impedance at 10 MHz (nom.)	≤ 10mΩ/m
Inner Jacket	LSZH FireFighter™	Characteristic impedance at 1-100 MHz	100 ± 15 Ω
Armour	DataGuard™ Galvanised steel wire braid	Characteristic impedance at 100-250 MHz	100 ± 22 Ω
Outer Jacket	LSZH FireFighter™ SHF-1 - UV Stabilised	Test voltage	700 V-AC
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			

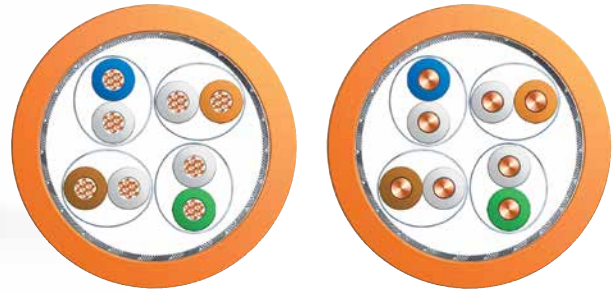
Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
245007	4	0.90	7.0	9.97	Black

Frequency (MHz)	Attenuation (dB/100m)		NEXT (dB)		ACR (dB/100m)	Return Loss (dB)	
	Nom.	Max. Cat 6	Nom.	Min. Cat 6	Nom.	Nom.	Min. Cat 6
1	1.8	[2.1]	95	66	93.2	24	[20.0]
4	3.4	3.8	90	65	86.6	27	23.1
10	5.4	6.0	85	60	79.6	30	25.0
16	6.9	7.6	78	56	71.1	30	25.0
20	7.8	8.5	75	55	67.2	30	25.0
31.25	9.8	10.8	72	52	62.2	30	23.6
62.5	13.8	15.5	68	47	54.2	30	21.5
100	17.5	19.9	64	44	46.5	28	20.1
155	21.8	25.3	60	41	38.2	26	18.8
200	24.9	29.2	57	40	32.1	25	18.0
250	27.5	33.0	55	38	27.5	24	17.3
300	29.5	-	53	-	23.5	23	-
350	33.0	-	50	-	22.0	22	-

The performance data given are typical measured values

Armada™ Cat7a <1000 MHz> Marine Grade Orange

SHF-1 • GL approved



Cable Construction		Electrical Characteristics		
Conductor	Solid bare copper wire (23/1awg)	Loop resistance (max.) (solid conductor)	150 Ω/km	
	Stranded bare copper wire (23/7awg)	Loop resistance (max.) (stranded conductor)	160 Ω/km	
Insulation	SFS-PE	Insulation resistance (min.)	5 GΩ x km @ 20° C	
No. of Pairs	4	Operating capacity (nom.)	45 nF/km	
Screen	Individual plastic laminated foil	Test voltage	700 V / AC	
Shield	Tinned copper wire braid, 0.10mm	Characteristic impedance at 100 MHz	100 ± 5 Ω	
Inner Jacket	LSZH FireFighter™ SHF-1	Velocity of propagation	79 %	
Standards		Signal term (max.)	425 ns/100m	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092		Running time difference	< 8 ns/100m	
Approved By Germanischer Lloyd		Screening attenuation to 600 MHz	> 100 dB	
Mechanical & Thermal Characteristics		Coupling resistance	1 MHz	< 6 mΩ/m
Bending Radius	During installation		8 x Ø	
	Fixed		4 x Ø	
Temperature range			10 MHz	< 3 mΩ/m
			30 MHz	< 3 mΩ/m
Max. Tractive force				

Part Number	No. of Pairs	Stranding	Dimensions (mm)		Colour
			Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
M747508	4	Solid 23/1 awg	1.38	7.7	Orange
M4747508	4	Stranded 23/7 awg	1.48	8.2	Orange

M7475-08 Solid 23/1awg

Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	EL-FEXT (dB/100m)	Return Loss (dB)
	Nom.	Nom.	Nom.	Nom.	Nom.
1	1.7	100	98.3	95	25
4	3.2	100	96.8	93	28
10	5.2	100	94.8	92	30
16	6.5	100	93.5	91	30
20	7.3	100	92.7	90	30
31.25	9.4	100	90.6	86	30
62.5	13.6	100	86.4	82	30
100	17.0	100	83.0	77	30
155	22.2	98	75.8	73	28
200	24.3	95	70.7	70	26
300	30.2	93	62.8	67	25
400	25.2	90	54.8	64	24
500	39.1	87	47.9	62	23
600	43.5	85	41.5	60	23
800	50.0	80	30.0	56	22
900	55.2	78	21.8	53	21
1000	58.1	75	16.9	50	20

M47475-08 Stranded 23/7awg

Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	EL-FEXT (dB/100m)	Return Loss (dB)
	Nom.	Nom.	Nom.	Nom.	Nom.
1	1.8	100	98.2	95	25
4	3.4	100	96.6	93	28
10	5.4	100	94.6	92	30
16	6.8	100	93.2	91	30
20	7.6	100	92.4	90	30
31.25	9.7	100	90.3	86	30
62.5	14.0	98	84.0	82	30
100	17.8	95	77.2	77	30
155	22.3	92	69.7	73	28
200	25.4	89	63.6	70	27
250	29.3	85	55.7	69	26
300	31.4	82	50.6	67	25
400	36.5	79	42.5	64	24
500	40.5	77	36.5	62	23
600	45.2	75	29.8	60	23
800	52.0	72	20.0	56	21
900	57.3	71	13.7	53	20
1000	60.3	70	9.7	50	19

The performance data given are typical measured values

Armada™ Cat7a <1000 MHz> Offshore Armoured Cable

SHF-1 • Halogen Free • Flame Retardant • Low Temperature



Cable Construction		Electrical Characteristics		
Conductor	Solid bare copper wire (23/1awg)	Loop resistance (max.) (solid conductor)	150 Ω/km	
	Stranded bare copper wire (23/7awg)	Loop resistance (max.) (stranded conductor)	160 Ω/km	
Insulation	SFS-PE	Insulation resistance (min.)	5 GΩ x km @ 20° C	
No. of Pairs	4	Operating capacity (nom.)	45 nF/km	
Screen	Individual plastic laminated foil	Test voltage	700 V / AC	
Shield	Tinned copper wire braid, 0.10mm	Characteristic impedance at 100 MHz	100 ± 5 Ω	
Inner Jacket	LSZH FireFighter™ SHF-1	Velocity of propagation	79 %	
Armour	DataGuard™ Galvanised steel wire braid	Signal term (max.)	425 ns/100m	
Outer Jacket	LSZH FireFighter™ SHF-1	Running time difference	< 8 ns/100m	
Standards IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092 The inner cable is approved By Germanischer Lloyd		Screening attenuation to 600 MHz	> 100 dB	
		Coupling resistance	1 MHz	< 6 mΩ/m
			10 MHz	< 3 mΩ/m
		30 MHz	< 3 mΩ/m	

Part Number	No. of Pairs	Dimensions (mm)			Colour	
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)		
M24747508	4	Solid 23/1 awg	1.38	7.7	10.57	Black
M244747508	4	Stranded 23/7 awg	1.48	8.2	11.1	Black

M247475-08 Solid 23/1awg

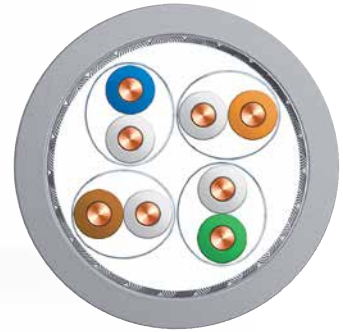
Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	EL-FEXT (dB/100m)	Return Loss (dB)
	Nom.	Nom.	Nom.	Nom.	Nom.
1	1.7	100	98.3	95	25
4	3.2	100	96.8	93	28
10	5.2	100	94.8	92	30
16	6.5	100	93.5	91	30
20	7.3	100	92.7	90	30
31.25	9.4	100	90.6	86	30
62.5	13.6	100	86.4	82	30
100	17.0	100	83.0	77	30
155	22.2	98	75.8	73	28
200	24.3	95	70.7	70	26
300	30.2	93	62.8	67	25
400	25.2	90	54.8	64	24
500	39.1	87	47.9	62	23
600	43.5	85	41.5	60	23
800	50.0	80	30.0	56	22
900	55.2	78	21.8	53	21
1000	58.1	75	16.9	50	20

M2447475-08 Stranded 23/7awg

Frequency (MHz)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	EL-FEXT (dB/100m)	Return Loss (dB)
	Nom.	Nom.	Nom.	Nom.	Nom.
1	1.8	100	98.2	95	25
4	3.4	100	96.6	93	28
10	5.4	100	94.6	92	30
16	6.8	100	93.2	91	30
20	7.6	100	92.4	90	30
31.25	9.7	100	90.3	86	30
62.5	14.0	98	84.0	82	30
100	17.8	95	77.2	77	30
155	22.3	92	69.7	73	28
200	25.4	89	63.6	70	27
250	29.3	85	55.7	69	26
300	31.4	82	50.6	67	25
400	36.5	79	42.5	64	24
500	40.5	77	36.5	62	23
600	45.2	75	29.8	60	23
800	52.0	72	20.0	56	21
900	57.3	71	13.7	53	20
1000	60.3	70	9.7	50	19

The performance data given are typical measured values

Armada™ LANmark-7 maritime CAT7a 23awg LSZH SHF-1 Grey SHF-1



Cable Construction		Electrical Characteristics at 20°C		
Conductor	Stranded bare copper wire (23awg)	Max. transfer impedance at 30 Hz	5 Ohm/km	
Insulation	Foam PE	Mutual capacitance	56 pF/km	
No. of Pairs	4	Max. DC-resistance of conductor at 20°C	80 Ohm/km	
Screen	Individual Aluminium tape foil	Characteristic impedance	100 Ohm	
Shield	Tinned copper wire braid	Velocity of Propagation	80 %	
Outer Jacket	LSZH FireFighter™ SHF-1 acc. to IEC 60092-359	Propagation delay, max. 100 MHz	536 ns/100m	
Standards		Transfer Impedance	1 MHz	10 mOhm/m
EN 50172; EN 50288-4-1; ISO/IEC 11801; ISO/IEC 61156-5			10 MHz	10 mOhm/m
Oil resistant IRM902, 4h at 70°C, IEC 60811-2-1			30 MHz	30 mOhm/m
Flame retardant to IEC 60332 Part 3 Cat. C			100 MHz	60 mOhm/m
Mechanical & Thermal Characteristics				
Bending Radius	Min. static operating	35.0 mm		
	laying operating	70.0 mm		
Temperature range	Operating	-20°C up to +70°C		
	Ambient	-5°C up to +70°C		
Fire load		1000 MJ/km		
Maximum Pulling force	laying	0.21 kN		
Weight		70 kg/km		

Part Number	No. of Pairs	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
N10m.002	4	1.45	7.90	Grey

Frequency	Attenuation dB/100m		NEXT dB		ACR dB/100m		PSNEXT(*) dB		ELFEXT dB/100m		PSELFEXT dB/100m		RL dB	
	Std	Typ	Std	Typ	Std	Typ	Std	Typ	Std	Typ	Std	Typ	Std	Typ
1	2.0	1.9	>80	100.0	78.0	98.1	>77	100.0	>80	92.0	>77	89.0	20.0	23.0
4	3.6	3.5	>80	100.0	76.4	96.5	>77	100.0	>80	91.0	>77	88.0	23.0	26.0
10	5.7	5.5	>80	100.0	74.3	94.5	>77	100.0	74.0	91.0	71.0	88.0	25.0	28.0
16	7.2	7.0	>80	100.0	72.8	93.0	>77	100.0	69.9	91.0	66.9	88.0	25.0	28.0
20	8.1	7.8	>80	100.0	71.9	92.2	>77	100.0	68.0	91.0	65.0	88.0	25.0	28.0
31.25	10.1	9.9	>80	100.0	69.9	90.1	>77	100.0	64.1	91.0	61.1	88.0	23.6	26.6
62.5	14.5	14.1	75.5	100.0	61.0	85.9	72.5	98.0	58.1	79.0	55.1	76.0	21.5	24.5
100	18.5	18.0	72.4	95.0	53.9	77.0	69.4	93.0	54.0	71.0	51.0	68.0	20.1	23.1
155	23.4	22.7	69.6	90.0	46.2	67.3	66.6	88.0	50.2	63.0	47.2	60.0	18.8	23.1
200	26.8	26.0	67.9	86.0	41.1	60.0	64.9	84.0	48.0	60.0	45.0	57.0	18.0	23.1
250	30.2	29.4	66.5	83.0	36.3	53.6	63.5	81.0	46.0	57.0	43.0	54.0	17.3	23.1
300	33.3	32.5	65.3	80.0	32.0	47.5	62.3	78.0	44.5	55.0	41.5	52.0	17.3	22.0
600	48.9	47.6	60.8	69.0	11.9	21.4	57.8	67.0	38.4	45.0	35.4	42.0	17.3	20.3
1000	-	63.6	-	67.0	-	3.4	-	65.0	-	40.0	-	37.0	-	18.0

Armada™ LANmark-7 maritime CAT7a 23awg LSZH SHF-1/GSWB/SHF-1 Grey SHF-1



Cable Construction		Electrical Characteristics at 20°C		
Conductor	Stranded bare copper wire (23awg)	Max. transfer impedance at 30 Hz	5 Ohm/km	
Insulation	Foam PE	Mutual capacitance	56 pF/km	
No. of Pairs	4	Max. DC-resistance of conductor at 20°C	80 Ohm/km	
Screen	Individual Aluminium tape foil	Characteristic impedance	100 Ohm	
Shield	Tinned copper wire braid	Velocity of Propagation	80 %	
Inner Jacket	LSZH FireFighter™ SHF-1 acc. to IEC 60092-359	Propagation delay, max. 100 MHz	536 ns/100m	
Armour	Galvanised Steel Wire Braid	Skew	25 ns/100m	
Outer Jacket	LSZH FireFighter™ SHF-1 acc. to IEC 60092-359	Attenuation Crosstalk Ratio 250 MHz	66.5 dB/100m	
Standards		Coupling attenuation at 30 MHz	80 dB	
EN 50172; EN 50288-4-1; ISO/IEC 11801; ISO/IEC 61156-5		Transfer Impedance	1 MHz	10 mOhm/m
Oil resistant IRM902, 4h at 70°C, IEC 60811-2-1			10 MHz	10 mOhm/m
Flame retardant to IEC 60332 Part 3 Cat. C			30 MHz	30 mOhm/m
			100 MHz	60 mOhm/m
Mechanical & Thermal Characteristics				
Bending Radius	Min. static operating	45.0 mm		
	laying operating	85.0 mm		
Temperature range	Operating	-20°C up to +70°C		
	Ambient	-5°C up to +70°C		
Max. Permanent tensile load		0.2 kN		
Maximum Pulling force	laying	0.42 kN		
Weight		100 kg/km		

Part Number	No. of Pairs	Dimensions (mm)			Colour
		Core - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)	
N10m.003	4	1.45	7.90	11.2	Grey

Frequency	Attenuation dB/100m		NEXT dB		ACR dB/100m		PSNEXT(*) dB		ELFEXT dB/100m		PSELFEXT dB/100m		RL dB	
	Std	Typ	Std	Typ	Std	Typ	Std	Typ	Std	Typ	Std	Typ	Std	Typ
1	2.0	1.9	>80	100.0	78.0	98.1	>77	100.0	>80	92.0	>77	89.0	20.0	23.0
4	3.6	3.5	>80	100.0	76.4	96.5	>77	100.0	>80	91.0	>77	88.0	23.0	26.0
10	5.7	5.5	>80	100.0	74.3	94.5	>77	100.0	74.0	91.0	71.0	88.0	25.0	28.0
16	7.2	7.0	>80	100.0	72.8	93.0	>77	100.0	69.9	91.0	66.9	88.0	25.0	28.0
20	8.1	7.8	>80	100.0	71.9	92.2	>77	100.0	68.0	91.0	65.0	88.0	25.0	28.0
31.25	10.1	9.9	>80	100.0	69.9	90.1	>77	100.0	64.1	91.0	61.1	88.0	23.6	26.6
62.5	14.5	14.1	75.5	100.0	61.0	85.9	72.5	98.0	58.1	79.0	55.1	76.0	21.5	24.5
100	18.5	18.0	72.4	95.0	53.9	77.0	69.4	93.0	54.0	71.0	51.0	68.0	20.1	23.1
155	23.4	22.7	69.6	90.0	46.2	67.3	66.6	88.0	50.2	63.0	47.2	60.0	18.8	23.1
200	26.8	26.0	67.9	86.0	41.1	60.0	64.9	84.0	48.0	60.0	45.0	57.0	18.0	23.1
250	30.2	29.4	66.5	83.0	36.3	53.6	63.5	81.0	46.0	57.0	43.0	54.0	17.3	23.1
300	33.3	32.5	65.3	80.0	32.0	47.5	62.3	78.0	44.5	55.0	41.5	52.0	17.3	22.0
600	48.9	47.6	60.8	69.0	11.9	21.4	57.8	67.0	38.4	45.0	35.4	42.0	17.3	20.3
1000	-	63.6	-	67.0	-	3.4	-	65.0	-	40.0	-	37.0	-	18.0

Armada™ ToughCat 5e SU/FTP

SHF-1 • DNV approved • Lloyd Register approved



Cable Construction		
Conductor	Stranded bare copper wire (Ø 0.22mm ²)	
Insulation	PE	
No. of Pairs	4	
Screen	Individual plastic Al-laminated foil	
Shield	Tinned copper wire braid	
Outer Jacket	LSZH FireFighter™ SHF-1, HFFR, Oil resistant	
Standards		
EN 50173-1; EN50288-4-1, ISO/IEC 11801; IEC 61156-5, IEC60754-2; IEC61034; IEC60332-3-24		
Approved By Det Norske Veritas (DNV) specification No. 6-827.50-2 and Lloyd Register approval system, 2002		
Mechanical & Thermal Characteristics		
Bending Radius	without load	8 x Ø
	with load	4 x Ø
Temperature range	during operation	-40° C up to +85° C
	during installation	-15° C up to +50° C
Fire load	515 MJ/km	
Maximum Tensile load	during operation	No load
	during installation	100 N

Electrical Characteristics at 20° C		
DC Loop resistance	≤ 158 Ω/km	
Resistance unbalance	≤ 2 %	
Insulation resistance (500V)	≥ 5000 MΩ x km	
Capacitance at 800 Hz	Nom. 43 nF/km	
Capacitance unbalance (pair to ground)	≤ 1500 pF/km	
Mean Characteristic impedance at 100 MHz	100 ± 5 Ω	
Nominal velocity of propagation	0.75c	
Propagation delay	≤ 450 ns/100m	
Delay skew	≤ 15 ns/100m	
Transfer impedance	1 MHz	< 10 mΩ/m
	10 MHz	< 8 mΩ/m
	30 MHz	< 10 mΩ/m
Coupling attenuation	≥ 85 dB	
Chemical resistance		
Mineral oils IRM 902 (IEC60811-2-1)	7 days/23° C - 4 hours/70° C	
Diesel IRM 903 (IEC60811-2-1)	7 days/23° C - 4 hours/70° C	

Part Number	No. of Pairs	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
1000745	4	1.4	7.7	Grey RAL7035

Frequency (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/)
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	18	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
62.5	16.5	86	70	30	83	67	63	60
100	21.3	83	62	30	80	59	59	56
155	24.2	81	57	26	78	54	57	54
200	31.5	78	47	25	75	44	53	50
250	35.8	77	41	25	74	38	51	48
300	47.1	73	26	23	70	23	47	44
600	60.1	71	11	20	68	8	44	41

Armada™ ToughCat 7 SU/FTP

SHF-1 • DNV approved • ABS approved

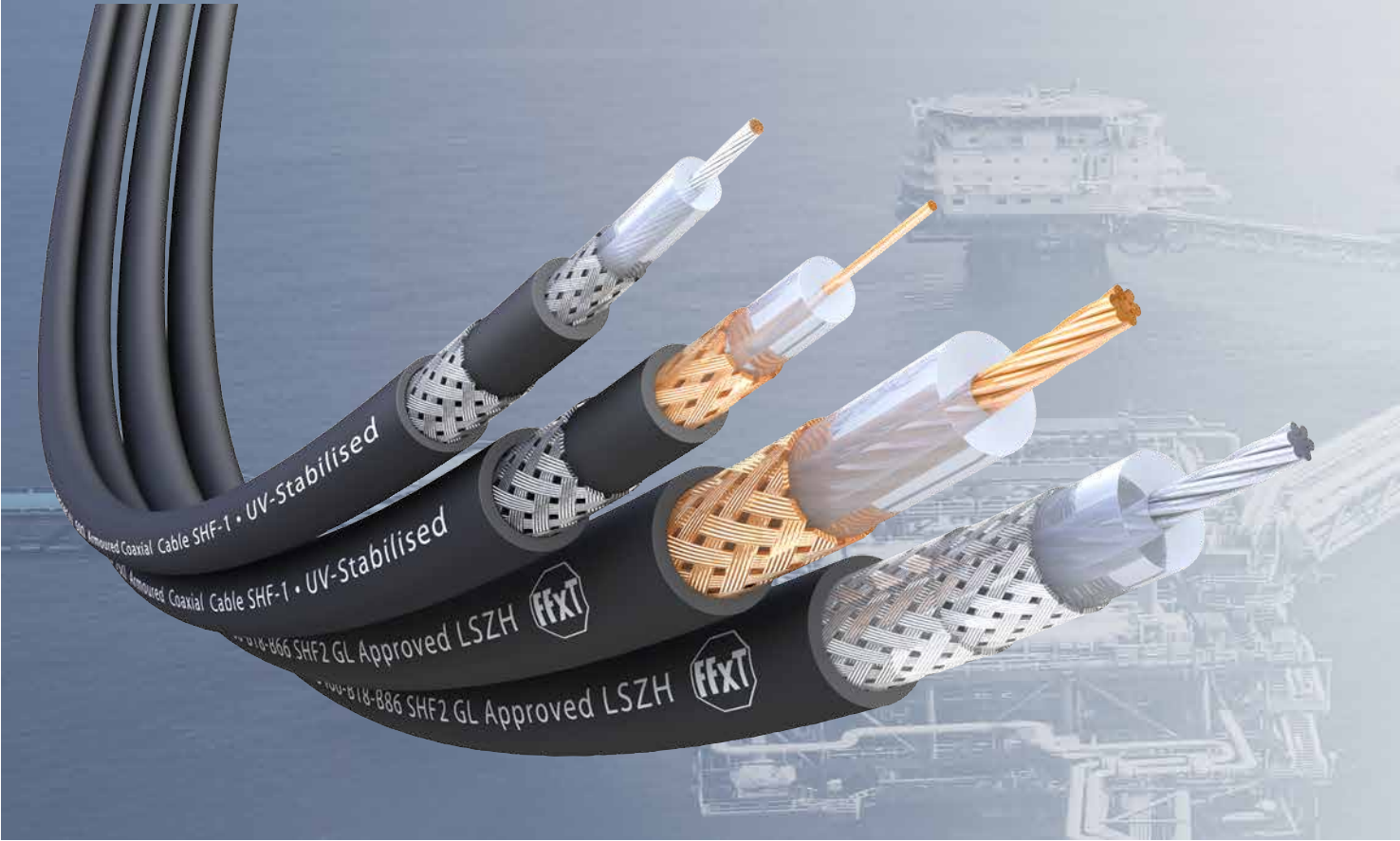


Cable Construction		Electrical Characteristics at 20° C	
Conductor	Stranded bare copper wire (Ø 0.27mm ²)	DC Loop resistance	≤ 138 Ω/km
Insulation	PE	Resistance unbalance	≤ 2 %
No. of Pairs	4	Insulation resistance (500V)	≥ 5000 MΩ x km
Screen	Individual plastic Al-laminated foil	Capacitance at 800 Hz	Nom. 43 nF/km
Shield	Tinned copper wire braid	Capacitance unbalance (pair to ground)	≤ 1500 pF/km
Outer Jacket	LSZH FireFighter™ SHF-1, HFFR, Oil resistant	Mean Characteristic impedance at 100 MHz	100 ± 5 Ω
Standards		Nominal velocity of propagation	0.76c
EN 50173-1; EN50288-4-1, ISO/IEC 11801; IEC 61156-5, IEC60754-2; IEC61034; IEC60332-3-24		Propagation delay	≤ 450 ns/100m
Approved By Det Norske Veritas (DNV) specification No. 6-827.50-2		Delay skew	≤ 15 ns/100m
Mechanical & Thermal Characteristics		Transfer impedance	1 MHz < 10 mΩ/m
Bending Radius	without load		8 x Ø
	with load		4 x Ø
Temperature range	during operation	-40° C up to +85° C	
	during installation	-15° C up to +50° C	
Fire load		670 MJ/km	
Maximum Tensile load	during operation	No load	
	during installation	100 N	
		Coupling attenuation	≥ 85 dB
		Chemical resistance	
		Mineral oils IRM 902 (IEC60811-2-1)	7 days/23° C - 4 hours/70° C
		Diesel IRM 903 (IEC60811-2-1)	7 days/23° C - 4 hours/70° C

Part Number	No. of Pairs	Dimensions (mm)		Colour
		Core - Ø (nom.)	Outer Jacket - Ø (nom.)	
1016274	4	1.6	8.1	Grey RAL7035

Frequency (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
62.5	14.0	86	72	30	83	69	63	60
100	17.9	83	65	30	80	62	59	56
155	22.4	81	59	26	78	55	57	54
200	25.6	78	52	25	75	49	53	50
250	28.8	77	48	25	74	45	51	48
300	31.6	73	41	23	70	38	47	44
600	45.7	71	25	20	68	22	44	41

Coaxial 50 & 75 Ω Cable



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RG58C/U 50Ω Armoured SHF-1
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RG58C/U 50Ω Marine Grade
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RG59B/U 75Ω Armoured SHF-1
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RG59B/U 75Ω Marine Grade
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RG11A/U 75Ω Armoured SHF-1
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RG11A/U 75Ω Marine Grade
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RG213/U 50Ω Armoured SHF-1
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RG213/U 50Ω Marine Grade
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RG214/U 50Ω Armoured SHF-1
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RG214/U 50Ω Marine Grade
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URM67 50Ω Armoured SHF-1
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Low loss Coaxial
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Characteristics :

- SHF-1
- SHF-2
- 50 Ohm & 75 Ohm
- Armoured protection

Areas of Installation :

- Offshore platforms
- Commercial ships

Armada™ RG58C/U 50Ω Armoured Coaxial Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics		
Inner Conductor	Stranded Tinned copper, 19x0.18mm	Impedance	50 ± 3 Ohm	
Dielectric	Polyethylene (PE)	Capacitance	100 pF/m	
Braid	Tinned copper, appr. 93% coverage	Velocity Ratio	66%	
Inner Jacket	LSZH FireFighter™ SHF-1	Inner Conductor Resistance	36.5 Ohm/km	
Armour	DataGuard™ Galvanised steel wire braid	Braid Resistance	17 Ohm/km	
Outer Jacket	LSZH FireFighter™ SHF-1, UV-Stabilised	Tension Sheath Spark Testing	4.0 kV	
Standards		Attenuation	50 MHz	9.7 dB/100m
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			100 MHz	13.9 dB/100m
			200 MHz	20.4 dB/100m
			300 MHz	25.3 dB/100m
			500 MHz	34.2 dB/100m
			1000 MHz	51.8 dB/100m
			1500 MHz	65.6 dB/100m
			1750 MHz	71.6 dB/100m

Part Number	RG Type	Dimensions (mm)				
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)
24525771	58C/U	0.93	2.95	3.40	5.0	7.96 ± 0.2

Armada™ RG58C/U 50Ω Coaxial Cable Marine grade

Halogen Free • Flame Retardant • UV-Resistant • Low Temperature



Cable Construction	
Inner Conductor	Stranded Tinned copper, 19x0.19 (21awg)
Dielectric	Polyethylene (PE)
Braid	Tinned copper, 0.13mm, appr. 95% coverage
Outer Jacket	a) LSZH FireFighter™ SHF-1, 0.75mm RT b) SHF-2 / FFxT, 0.75mm RT

Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359	
Approved By Germanischer Lloyd	

Mechanical & Thermal Characteristics	
Permissible Temperature Range:	a) -25° C up to +80° C b) -40° C up to +80° C
Min. Bending radius allowed:	10 x Ø repeated, 5 x Ø single
Weight:	39 kg/km

Electrical Characteristics		
Conductor Resistance	≤ 37 Ohm/km	
Insulation Resistance	≥ 10 GOhm*km	
Capacitance 800 Hz	≈ 105 nF/m	
Characteristic Impedance	50 ± 2 Ohm	
Operating Voltage (peak)	≤ 300 V	
Test Voltage (wire/screen)	= 2000V rms 50 Hz 1min.	
Re. Velocity of Propagation	66%	
Attenuation	50 MHz	12 dB/100m
	100 MHz	17 dB/100m
	200 MHz	27 dB/100m
	300 MHz	34 dB/100m
	500 MHz	41 dB/100m
	1000 MHz	65 dB/100m
	2000 MHz	95 dB/100m
2500 MHz	110 dB/100m	

Part Number	RG Type	Dimensions (mm)			
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Outer Jacket - Ø (nom.)
a) L45466-B13-B266	58C/U	0.93	2.85	3.40	4.95 ± 0.15
b) L45466-B13-B276	58C/U	0.93	2.85	3.40	4.95 ± 0.15

Armada™ RG59B/U 75Ω Armoured Coaxial Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Inner Conductor	Copperweld	Impedance	75 ± 3 Ohm
Dielectric	Polyethylene (PE)	Capacitance	67 pF/m
Braid	Bare copper, appr. 94% coverage	Velocity Ratio	66%
Inner Jacket	LSZH FireFighter™ SHF-1	Inner Conductor Resistance	154 Ohm/km
Armour	DataGuard™ Galvanised steel wire braid	Braid Resistance	11 Ohm/km
Outer Jacket	LSZH FireFighter™ SHF-1, UV-Stabilised	Tension Sheath Spark Testing	5.0 kV
Standards IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092		Attenuation	50 MHz 7.4 dB/100m
		Attenuation	100 MHz 10.7 dB/100m
		Attenuation	200 MHz 15.7 dB/100m
		Attenuation	300 MHz 19.4 dB/100m
		Attenuation	500 MHz 25.7 dB/100m
		Attenuation	1000 MHz 38 dB/100m
		Attenuation	1500 MHz 48.5 dB/100m
		Attenuation	2500 MHz 66.8 dB/100m

Part Number	RG Type	Dimensions (mm)				
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)
24525820	59B/U	0.58	3.7	4.1	6.2	9.16 ± 0.2

Armada™ RG59B/U 75Ω Coaxial Cable Marine grade

Halogen Free • Flame Retardant • UV-Resistant • Low Temperature



Cable Construction	
Inner Conductor	Solid Bare copper (23awg)
Dielectric	Polyethylene (PE)
Braid	Bare copper, 0.15mm, appr. 90% coverage
Outer Jacket	a) LSZH FireFighter™ SHF-1, 0.85mm RT b) SHF-2 / FFxT, 0.85mm RT
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359	
Approved By Germanischer Lloyd	
Mechanical & Thermal Characteristics	
Permissible Temperature Range:	a) -25° C up to +80° C b) -40° C up to +80° C
Min. Bending radius allowed:	10 x Ø repeated, 5 x Ø single
Weight:	52 kg/km

Electrical Characteristics		
Conductor Resistance	≤ 64 Ohm/km	
Insulation Resistance	≥ 10 GOhm*km	
Capacitance (1 kHz wire/screen)	≈ 67 nF/m	
Characteristic Impedance	75 ± 3 Ohm	
Operating Voltage (peak)	≤ 100 V	
Test Voltage (wire/screen)	2000V rms 50 Hz 1min.	
Attenuation	50 MHz	7.8 dB/100m
	100 MHz	11.2 dB/100m
	200 MHz	16.3 dB/100m
	300 MHz	20.5 dB/100m
	500 MHz	26.7 dB/100m
	1000 MHz	39.5 dB/100m
	2000 MHz	59.4 dB/100m
2500 MHz	67.3 dB/100m	

Part Number	RG Type	Dimensions (mm)			
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Outer Jacket - Ø (nom.)
a) L45466-D14-B136	59B/U	0.60	3.70	4.30	6.0 ± 0.2
b) L45466-D14-B146	59B/U	0.60	3.70	4.30	6.0 ± 0.2

Armada™ RG11A/U 75Ω Armoured Coaxial Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics		
Inner Conductor	Stranded Tinned copper, 7x0.4 (18awg)	Impedance	75 ± 3 Ohm	
Dielectric	Polyethylene (PE)	Capacitance	67 pF/m	
Braid	Bare copper, appr. 96% coverage	Velocity Ratio	66%	
Inner Jacket	LSZH FireFighter™ SHF-1	Inner Conductor Resistance	20.5 Ohm/km	
Armour	DataGuard™ Galvanised steel wire braid	Braid Resistance	4 Ohm/km	
Outer Jacket	LSZH FireFighter™ SHF-1, UV-Stabilised	Tension Sheath Spark Testing	6.0 kV	
Standards		Attenuation	5 MHz	1.2 dB/100m
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			10 MHz	1.7 dB/100m
			50 MHz	4.2 dB/100m
			100 MHz	6.2 dB/100m
			200 MHz	9.3 dB/100m
			300 MHz	11.4 dB/100m
			500 MHz	15.5 dB/100m
			1000 MHz	23.4 dB/100m
			1750 MHz	36.6 dB/100m
			2500 MHz	45.8 dB/100m

Part Number	RG Type	Dimensions (mm)				
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)
245181854	11A/U	1.20	7.25	7.9	10.3	13.26 ± 0.4

Armada™ RG11A/U 75Ω Coaxial Cable Marine grade

Halogen Free • Flame Retardant • UV-Resistant • Low Temperature



Cable Construction	
Inner Conductor	Stranded Tinned copper, 7x0.4 (18awg)
Dielectric	Polyethylene (PE)
Braid	Bare copper, 0.18mm, appr. 95% coverage
Outer Jacket	a) LSZH FireFighter™ SHF-1, 1.1mm RT b) SHF-2 / FFxT, 1.1mm RT
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359	
Approved By Germanischer Lloyd	
Mechanical & Thermal Characteristics	
Permissible Temperature Range:	a) -25° C up to +80° C b) -40° C up to +80° C
Min. Bending radius allowed:	8 x Ø repeated, 4 x Ø single
Weight:	144 kg/km

Electrical Characteristics		
Conductor Resistance	≤ 22 Ohm/km	
Insulation Resistance	≥ 10 GOhm*km	
Capacitance 1 kHz	≈ 68 nF/m	
Characteristic Impedance	75 ± 3 Ohm	
Operating Voltage (peak)	≤ 300 V	
Test Voltage (wire/screen)	= 2000V rms 50 Hz 1min.	
Re. Velocity of Propagation	66%	
Attenuation	5 MHz	1.3 dB/100m
	10 MHz	1.8 dB/100m
	50 MHz	4.1 dB/100m
	100 MHz	6.1 dB/100m
	200 MHz	9 dB/100m
	300 MHz	11.4 dB/100m
	500 MHz	15.5 dB/100m
	1000 MHz	24 dB/100m
2000 MHz	39.5 dB/100m	
2500 MHz	47.5 dB/100m	

Part Number	RG Type	Dimensions (mm)			
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Outer Jacket - Ø (nom.)
a) L45466-D18-B156	11A/U	1.20	7.3	8.0	10.3 ± 0.3
b) L45466-D18-B166	11A/U	1.20	7.3	8.0	10.3 ± 0.3

Armada™ RG213/U 50Ω Armoured Coaxial Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Inner Conductor	Stranded Bare copper, 7x0.75 (13awg)	Impedance	50 ± 2 Ohm
Dielectric	Polyethylene (PE)	Capacitance	100 pF/m
Braid	Bare copper, 0.18mm, appr. 97% coverage	Velocity Ratio	66%
Inner Jacket	LSZH FireFighter™ SHF-1	Inner Conductor Resistance	6 Ohm/km
Armour	DataGuard™ Galvanised steel wire braid	Braid Resistance	4 Ohm/km
Outer Jacket	LSZH FireFighter™ SHF-1, UV-Stabilised	Tension Sheath Spark Testing	5.5 kV
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			
		100 MHz	6.4 dB/100m
		200 MHz	9.5 dB/100m
		300 MHz	11.5 dB/100m
		500 MHz	15.3 dB/100m
		1000 MHz	23.2 dB/100m
		1350 MHz	28.4 dB/100m
		2150 MHz	38.9 dB/100m
		2500 MHz	42.7 dB/100m
		3000 MHz	48.9 dB/100m

Part Number	RG Type	Dimensions (mm)				
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)
245181224	213/U	2.25	7.25	8.0	10.3	13.26 ± 0.4

Armada™ RG213/U 50Ω Coaxial Cable Marine grade

Halogen Free • Flame Retardant • UV-Resistant • Low Temperature



Cable Construction	
Inner Conductor	Stranded Bare copper, 7x0.75 (13awg)
Dielectric	Polyethylene (PE)
Braid	Bare copper, 0.18mm, appr. 95% coverage
Outer Jacket	a) LSZH FireFighter™ SHF-1, 1.5mm RT b) SHF-2 / FFxT, 1.5mm RT
Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359	
Approved By Germanischer Lloyd	
Mechanical & Thermal Characteristics	
Permissible Temperature Range:	a) -25° C up to +80° C b) -40° C up to +80° C
Min. Bending radius allowed:	10 x Ø repeated, 5 x Ø single
Weight:	159 kg/km

Electrical Characteristics		
Conductor Resistance	≤ 6.2 Ohm/km	
Insulation Resistance	≥ 10 GOhm*km	
Capacitance 1 kHz	≈ 101 nF/m	
Characteristic Impedance	50 ± 2 Ohm	
Operating Voltage (peak)	≤ 250 V	
Test Voltage (wire/screen)	= 1500V rms 50 Hz 1min.	
Attenuation	100 MHz	7.7 dB/100m
	200 MHz	11.1 dB/100m
	300 MHz	13.8 dB/100m
	400 MHz	16.1 dB/100m
	500 MHz	18.2 dB/100m
	1000 MHz	27 dB/100m
	1300 MHz	31 dB/100m
	2000 MHz	40 dB/100m
	2500 MHz	46 dB/100m

Part Number	RG Type	Dimensions (mm)			
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Outer Jacket - Ø (nom.)
a) L45466-B18-B56	213/U	2.25	7.25	8.0	10.3 ± 0.2
b) L45466-B18-B66	213/U	2.25	7.25	8.0	10.3 ± 0.2

Armada™ RG214/U 50Ω Armoured Coaxial Cable

SHF-1 • UV-Stabilised



Cable Construction		Electrical Characteristics	
Inner Conductor	Stranded Silvered copper, 7x0.75 (13awg)	Impedance	50 ± 2 Ohm
Dielectric	Polyethylene (PE)	Capacitance	100 pF/m
Braid 1)	Silvered copper, 0.16mm, appr. 96% coverage	Velocity Ratio	66%
Braid 2)	Silvered copper, 0.16mm, appr. 98% coverage	Inner Conductor Resistance	6 Ohm/km
Inner Jacket	LSZH FireFighter™ SHF-1	Braid Resistance	3.1 Ohm/km
Armour	DataGuard™ Galvanised steel wire braid	Tension Sheath Spark Testing	5.5 kV
Outer Jacket	LSZH FireFighter™ SHF-1, UV-Stabilised		
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			
		100 MHz	6.7 dB/100m
		200 MHz	9.9 dB/100m
		300 MHz	12.1 dB/100m
		500 MHz	16.1 dB/100m
		1000 MHz	24.3 dB/100m
		1350 MHz	29.7 dB/100m
		2150 MHz	40.5 dB/100m
		2500 MHz	44.7 dB/100m
		3000 MHz	51.3 dB/100m

Part Number	RG Type	Dimensions (mm)				
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)
245161324	214/U	2.25	7.25	7.9 / 8.6	10.8	13.76 ± 0.4

Armada™ RG214/U 50Ω Coaxial Cable Marine grade

Halogen Free • Flame Retardant • UV-Resistant • Low Temperature



Cable Construction	
Inner Conductor	Stranded Silvered copper, 7x0.75 (13awg)
Dielectric	Polyethylene (PE)
Braid 1)	Silvered copper, 0.15mm, appr. 90% coverage
Braid 2)	Silvered copper, 0.15mm, appr. 95% coverage
Outer Jacket	a) LSZH FireFighter™ SHF-1, 1.5mm RT b) SHF-2 / FFxT, 1.5mm RT

Standards	
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092-359	
Approved By Germanischer Lloyd	

Mechanical & Thermal Characteristics	
Permissible Temperature Range:	a) -25° C up to +80° C b) -40° C up to +80° C
Min. Bending radius allowed:	10 x Ø repeated, 5 x Ø single
Weight:	192 kg/km

Electrical Characteristics	
Conductor Resistance	≤ 6.5 Ohm/km
Insulation Resistance	≥ 10 GOhm*km
Characteristic Impedance	50 ± 2 Ohm
Capacitance (1 kHz wire/screen)	≈ 101 nF/m
Operating Voltage (peak)	≤ 300 V
Test Voltage (wire/screen)	2000V rms 50 Hz 1min.

Attenuation	100 MHz	6.9 dB/100m
	200 MHz	10 dB/100m
	300 MHz	12.5 dB/100m
	400 MHz	15 dB/100m
	500 MHz	16.8 dB/100m
	1000 MHz	25 dB/100m
	1300 MHz	29.8 dB/100m
	2000 MHz	41.6 dB/100m
2500 MHz	49.6 dB/100m	

Part Number	RG Type	Dimensions (mm)			
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Outer Jacket - Ø (nom.)
a) L45466-B18-B76	214/U	2.25	7.25	7.9 / 8.5	10.8 ± 0.3
b) L45466-B18-B86	214/U	2.25	7.25	7.9 / 8.5	10.8 ± 0.3

Armada™ URM67 50Ω Armoured Coaxial Cable

SHF-1 • UV-Stabilised

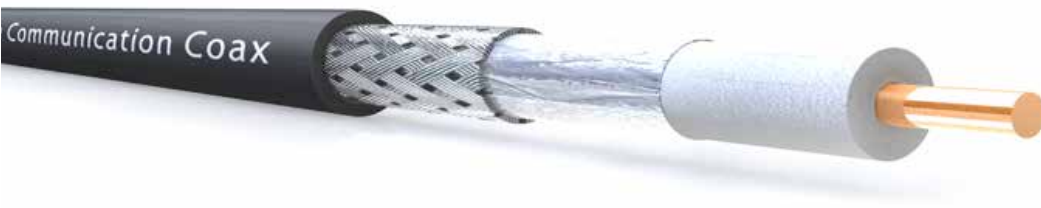


Cable Construction		Electrical Characteristics	
Inner Conductor	Stranded Bare copper, 7x0.77	Impedance	50 ± 2 Ohm
Dielectric	Polyethylene (PE)	Capacitance	100 pF/m
Braid	Bare copper, 0.18mm, appr. 97% coverage	Velocity Ratio	66%
Inner Jacket	LSZH FireFighter™ SHF-1	Inner Conductor Resistance	6 Ohm/km
Armour	DataGuard™ Galvanised steel wire braid	Braid Resistance	4 Ohm/km
Outer Jacket	LSZH FireFighter™ SHF-1, UV-Stabilised	Tension Sheath Spark Testing	5.5 kV
Standards			
IEC60332-1, IEC60332-3, IEC61034, IEC60754-1, IEC60092			
		100 MHz	6.4 dB/100m
		200 MHz	9.5 dB/100m
		300 MHz	11.5 dB/100m
		500 MHz	15.3 dB/100m
		1000 MHz	23.2 dB/100m
		1350 MHz	28.4 dB/100m
		2150 MHz	38.9 dB/100m
		2500 MHz	42.7 dB/100m
		3000 MHz	48.9 dB/100m

Part Number	URM Type	Dimensions (mm)				
		Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Braid - Ø (nom.)	Inner Jacket - Ø (nom.)	Outer Jacket - Ø (nom.)
245181224	67	2.25	7.25	8.0	10.3	13.26 ± 0.4

Armada™ 50Ω Low Loss Coaxial Cable

SHF-1 • UV-Stabilised

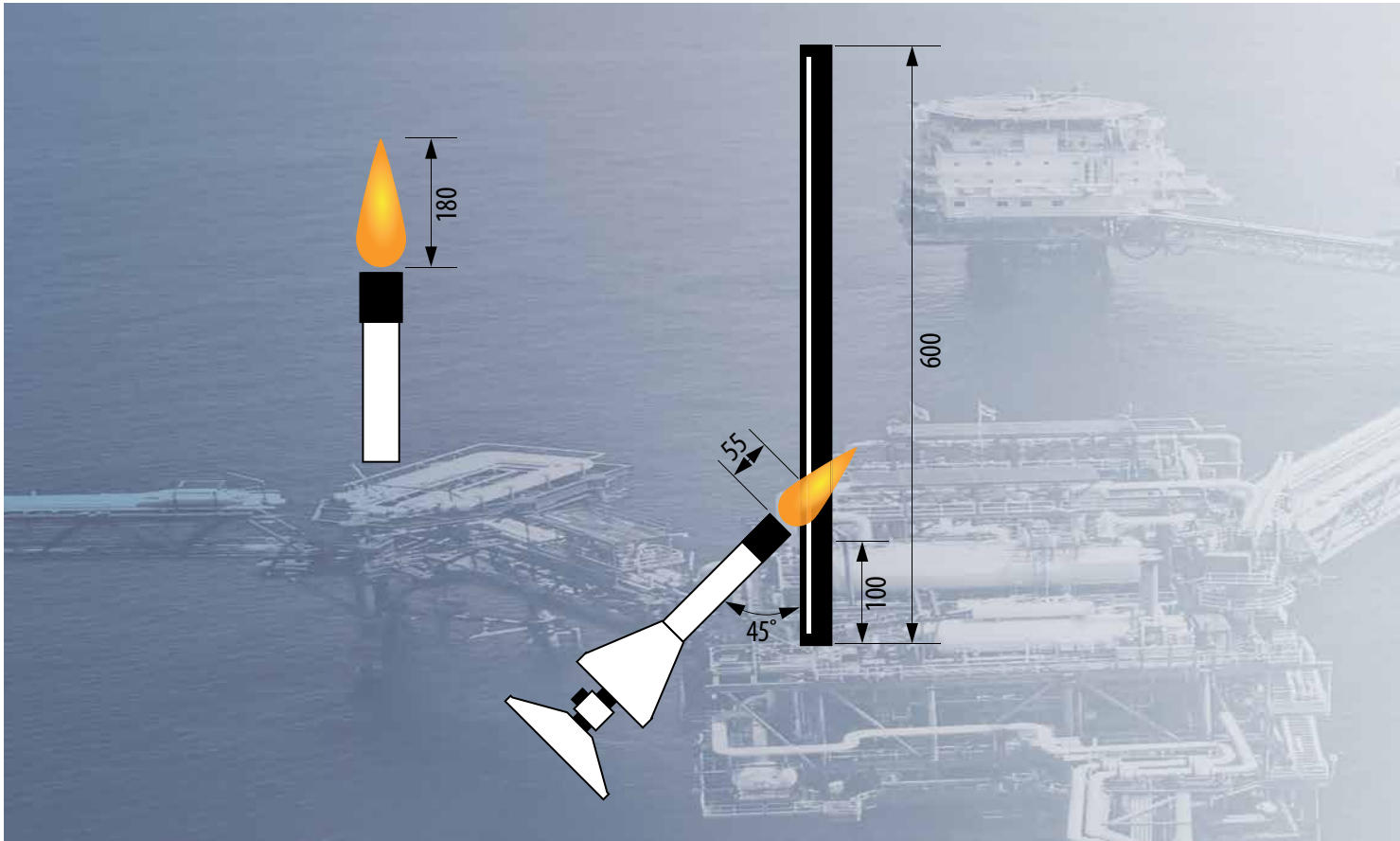


Cable Construction 195					
Inner Conductor	Solid bare copper				
Dielectric:	Foam Polyethylene				
Outer Conductor	Aluminium tape				
Braid	Overall tinned copper braid				
Outer Jacket	LSZH FireFighter™ SHF-1				
Mechanical & Thermal Characteristics					
	195 240 400 600				
Bending radius (mm)	Installed	12.7	19.1	25.4	38.1
	repeated	50.8	63.5	101.6	152.4
Bending moment (N/m)		0.27	0.34	0.68	3.73
Weight (kg/km)		30	50	100	200
Tensile strength (kg)		18.2	36.3	72.6	158.9
Flat plate crush (kg/mm)		0.27	0.36	0.71	1.07
Temperature Range	Installation	-40° C up to +85° C			
	Storage	-70° C up to +85° C			
	Operating	-40° C up to +85° C			

Electrical Characteristics	195	240	400	600
Velocity of propagation (%)	76	84	85	87
Dielectric constant	1.56	1.42	1.38	1.32
Time delay (ns/m)	4.17	3.97	9.32	3.83
Impedance (Ω)	50	50	50	50
Capacitance (pF/m)	83.3	79.4	78.4	76.6
Inductance (μH/m)	0.21	0.20	0.20	0.19
Shielding effectiveness (dB)	>90	>90	>90	>90
DC Resistance Inner Conductor (Ω/km)	24.9	10.5	4.6	1.7
DC Resistance Outer Conductor (Ω/km)	16.1	12.8	5.4	3.9
Voltage withstand (V)	1000	1500	2500	4000
Jacket spark (V rms)	3000	5000	8000	8000
Peak power (kW)	2.5	5.6	16	40

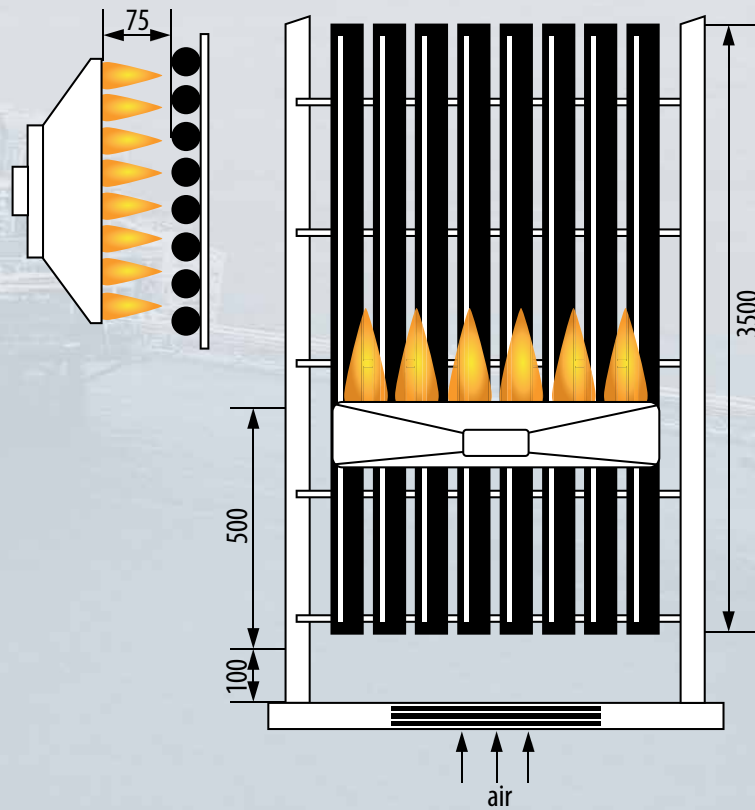
Part Number	Type	Conductor	Dimensions (mm)				
			Conductor - Ø (nom.)	Dielectric - Ø (nom.)	Outer Conductor - Ø (nom.)	Braid - Ø (nom.)	Outer Jacket - Ø (nom.)
541C19554	195	Solid BC	0.94	2.79	2.95	3.53	4.95
541C24054	240	Solid BC	1.42	3.81	3.94	4.52	6.10
541C40054	400	Solid CCA	2.74	7.24	7.39	8.13	10.29
541C60054	600	Solid CCA	4.47	11.56	11.71	12.45	14.99

IEC Single and large scale flame tests



IEC 60332-1-2 / EN 60332-1-2 / VG 95218-2 Method 1 / BS 4066 Part 1

Test set-up :	The single cable to be tested is fixed vertically and exposed to a Bunsen burner flame at a 45° angle to the vertical. Test apparatus according to IEC/EN 60332-1-1
Flame temperature :	Determined by the specified setting of the Bunsen burner flame.
Test duration :	Cable with a diameter of ≤ 25 mm: 60 sec Cable with a diameter of $25 < D \leq 50$ mm: 120 sec
Compliance criteria :	The fire damage must end at least 50 mm below the upper fixing clamp. The cable must be self-extinguishing.



IEC 60332-3/EN 50266-2

Test set-up :

The cables are fixed to a ladder, close together or at a distance depending on the type of fire. The cables may be fixed in several layers.

Test apparatus acc. to IEC/EN 60332-3-10

Flame temperature :

Determined by the specified volume of propane and air.

Test duration :

Part 21: Category A F/R only for special applications

Part 22: Category A (7 l flammable material/m): 40min

Part 23: Category B (3.5 l flammable material/m): 40 min

Part 24: Category C (1.5 l flammable material/m): 20 min

Part 25: Category D (0.5 l flammable material/m): 20 min

Compliance criteria :

Fire damage to the cable may be visible for a maximum of 2.5 m from the bottom of the burner to the top.

SHF-1 versus SHF-2

The table below addresses only some main characteristic differences. For complete information see IEC60092-359

	SHF-1	SHF-2
Type of material	Halogen-free Thermoplastic	Halogen-free Elastomeric or thermosetting material
Some main Characteristics		
Mechanical characteristics after immersion in hot oil (IEC 60811-2-1, clause 10)* *If oil resistance is required for a halogen-free compound, SHF-2 compound is recommended	No requirements	100° C for 24 hours: • ±40% maximum variation in tensile strength • ±40% maximum variation in elongation at break
Hot set test (IEC 60811-2-1, clause 9)	No requirements	200° C, 15 min time under load with (N/mm ²) mechanical stress : • 175% maximum elongation under load. • 25% maximum permanent elongation after cooling
Pressure test at high temperature (IEC 60811-3-1, subclause 8.2)	80° C, 4-6 min under load depending on cable diameter: • 50% maximum permissible deformation	No requirements
Heat shock test (IEC 60811-3-1, subclause 9.2)	150° C 1h duration:	No requirements
Ozone resistance test IEC 60811-2-1, clause 8 (Alternative test method may be used in some countries for legal reasons)	No requirements	25 ± 2° C for 24h: • Max 0,025 to 0,030% ozone concentration (in volume)

Material resistance guide

	SHF-1	SHF-2
Mechanical properties	2 - 3	3 - 4
Weathering (O ₂ -O ₃)	4 - 3	5
Heat resistance	4	4
Low temperature	3	3
Hydrocarbons general	0	3 - 4
Hydrocarbons high aromatic (MUD)	0	3 - 4
Sea-water	3	3
Fire resistant	4	4
Oxygen Index	4(35)	4(35)
Smoke generation	5	5
Halogens	No	No

5 - Excellent,
 4 - Very good,
 3 - Good,
 2 - Medium,
 1 - Poor,
 0 - Not recommended

MUD requirements

Mud resistant cables shall be designed with sheathing compounds suitable for installation and operation in contact with MUD unless otherwise specified. Type SHF Mud.

The variation in the tensile strength and elongation at break values from those values obtained on the unaged sample shall not exceed 25%.

The volume swell and weight increase shall not exceed 20% and 15% respectively.

IRM 903 requirements

The variation in the tensile strength and elongation at break values from those values obtained on the unaged sample shall not exceed 30%.

The volume swell and weight increase shall not exceed 30%

as described in NEK TS 606 c NEK:2009 Fourth edition

Test fluid	Temperature	Duration
Mineral oil type - IRM 903	100°C	7 d
Calcium Bromide Brine (Waterbased)	70°C	56 d
Carbo Sea (oil based)	70°C	56 d

Armada™ | Marine Cables

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