Armada®
Marine Cables

QFCI Fibre Optic Cable SHF1
DNV-GL Certified No: TAE00000JG

Application

A Fire Resistant Fibre Optic Cable suitable for Indoor & outdoor applications.
Manufactured according to NEK TS 606:2016, this Armada® QFCI is DNVGL approved making it suitable for Maritime Environments & Offshore Applications. The cable exceeds the requirements of IEC60331-25 with extended testing in excess of 180mins.

General Construction

The cable contains upto 96 colour coded optical fibres contained in upto 8 colour coded loose tubes, each tube contains no more than 24 fibres. These tubes are filled with a thixotropic gel to prevent the ingress of water and a fire resistant tape is added over each tube for heat and fire protection. These tubes are SZ stranded with the necessary amount of fillers around a metallic central strength member. Fibreglass strength member yarns reinforce the cable core beneath an inner jacket of SHF-1. A layer of galvanized steel wires braid is stranded around the inner jacket and an outer jacket of SHF-1 completes the cable structure.

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Design & Materials

Central Strength Member:	Steel
Buffer Material:	PBT (Ø 2,5mm nom.)
Fibers colors:	according to EIA/TIA 598.
Total Number of Tubes:	8
Tubes color code:	1 - Red, 2 - Green, Others White
Fire Barrier	Fire resistant tape wrapped around each tube
Cabling:	SZ
Strength Elements:	E-Glass Yarns
Inner Jacket Material:	LSZH SHF-1 (black)
Overall Braid Material:	Steel wire (95 % nom. coverage)
Rip-Cord:	Yes
Outer Jacket Material:	LSZH SHF-1 (black)
Overall Diameter :	Ø 14,60 ± 1,0 mm
Weight :	305 kg/km

Standards

Applicable Standards:	DNV-GL Certified No: TAE00000JG, IEC60793-2-10, IEC60793-2-50, IEC 60092-360, ISO/IEC 11801, TIA/EIA-568
Flammability Rating:	IEC 60331-25, IEC 60332-3-22, IEC 60332-3-24, IEC 60754-1, IEC 60754-2, IEC61034-1/2
Installation:	Guidelines as per IEC 60794-1-1 Annex A

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Performance

Tensile Strength - Short Term:	3000 N max.
Tensile Strength - Long Term:	1800 N max.
Impact Resistance:	5 N • m
Impact Resistance:	3 cycles
Max. Crush Resistance:	400 N/cm
Min. Bend Radius for Installation:	20xD mm
Min. Bend Radius for Operation:	20xD mm
Repeated Bending:	25 cycles
Max. Operating Temperature:	+90 °C
Min. Operating Temperature:	-40 °C
Max. Storage Temperature:	+90 °C
Min. Storage Temperature:	-40 °C
UV resistance:	Yes

Specification

Part Number	Active Tubes	Fibres Per Tube
QFCI-02-**	1	2
QFCI-04-**	2	2
QFCI-06-**	3	2
QFCI-08-**	2	4
QFCI-12-**	3	4
QFCI-16-**	4	4
QFCI-24-**	4	6
QFCI-36-**	3	12
QFCI-48-**	4	12
QFCI-72-**	4	18
QFCI-96-**	4	24

*** = OM1 / OM2 / OM3 / OM4 / SM*

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Single Mode Fibre Characteristics *ITU-T G652D*

Nominal MFD range at 1310 nm		8,6 - 9,4	µm
Nominal MFD range at 1550 nm		9,6 - 10,6	µm
Cladding diameter		125±0,7	µm
Coating diameter		245±10	µm
Core/cladding concentricity error		≤ 0,50	µm
Cladding non-circularity		≤ 0,70	%
Attenuation	1310 nm	≤ 0,36	dB/km
Attenuation	1383 nm	≤ 0,36	dB/km
Attenuation	1550 nm	≤ 0,23	dB/km
Attenuation	1285÷1330 nm	≤ 0,40	dB/km
Attenuation	1530÷1565 nm	≤ 0,25	dB/km
Attenuation	1565÷1625 nm	≤ 0,27	dB/km
Chromatic Dispersion coefficient	1285÷1330 nm	≤ 3,0	ps/nm • km average
Chromatic Dispersion coefficient	1285÷1330 nm	≤ 3,5	ps/nm • km maximum
Chromatic Dispersion coefficient	1550 nm	≤ 18	ps/nm • km
Chromatic Dispersion coefficient	1625 nm	≤ 22	ps/nm • km
Zero chromatic dispersion wavelength		1302 ≤ ≤ 1322	nm
Cut-off wavelength		≤ 1260	nm
Individual fibre polarization mode dispersion (PMD)		≤ 0,20	

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Multi Mode Fibre Characteristics

Parameter	50/125 µm			62,5/125 µm	Units
ISO/IEC 11801 Performance Category	OM2	OM3	OM4	OM1	
Attenuation @ 850 nm	≤ 2,8			< 3,2	dB/km
Attenuation @ 1300 nm	≤ 0,9			< 1,0	dB/km
Bandwidth @ 850 nm	≥ 500	≥ 1500	≥ 3500	≥ 200	MHz • km
Bandwidth @ 1300 nm	≥ 500	≥ 500	≥ 500	≥ 500	MHz • km
Effective Model Bandwidth @ 850 nm	N/A	≥ 2000	≥ 4700	N/A	MHz • km
Supported Ethernet Link Lengths (max.)					
1 GbE @ 850 nm (1000BASE-SX)	550	970	1040	220	m
1 GbE @ 1300 nm (1000BASE-LX)	950	550	600	550	m
10 GbE @ 850 nm (10GBASE-SR)	82	300	550	33	m
10 GbE @ 1300 nm (10GBASE-LX4)	450	300	300	300	m
40/100 GbE @ 850 nm (40/100 GBASE-SR4/10)	N/A	100	150	N/A	m
Numerical Aperture	0,20 ± 0,015			0,275 ± 0,015	
Core Diameter	50 ± 2,5			62,5 ± 3	µm
Cladding Diameter	125 ± 1			125 ± 2	µm
Core Non-Circularity	≤ 4			≤ 5	%
Cladding Non-Circularity	≤ 0,7			≤ 1	%
Core/Cladding Offset	≤ 1,5			≤ 1,5	µm
Coating Diameter (Un-dyed)	245 ± 10			245 ± 10	µm
Proof-Test Level	0,7			0,7	GN/m^2
Induced Macrobend Attenuation					
100 turns on 37,5 mm radius	0,5 / 0,5			0,5 / 0,5	dB (max.) 850/1300 nm
2 turns on 15 mm radius	0,1 / 0,3			0,5 / 0,5	
2 turns on 7,5 mm radius	0,2 / 0,5			0,5 / 0,5	

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