



QFCI-I/O/RM-JM

Armoured SHF1

Indoor and outdoor, loose tube

4, 8, 12, 24 or 48 fibers

Application:

Optical cable for indoor and outdoor use in vital communication and emergency systems that need to be operational during fire. The cable is designed to ensure operation for more than 3 hours in fires up to 1000°C. The cable is halogen free and flame retardant to protect against secondary damage to electronic equipment during and after fire. Outer sheath is made from black UV-stabilized and weather resistant material and may be exposed for shorter periods to fluids such as diesel, petrol, glycol, ethanol, white spirit and ASTM oil 2. The resistance to these fluids is according to DOD-STD-1678, method 8030. The cable is reinforced with a steel wire braiding. The fibres are protected in jelly filled loose tubes stranded around a central strength member to ensure optimum performance and long life. Each fiber and loose tube is color coded for easy identification during splicing and termination. The outer sheath is marked to show fibre type and cable type.

Specifications:

Temperature installed:	-40 to +70 [°C]
Temperature @ installation:	-10 to +60 [°C]
Tensile installed (IEC 60794-1-2E1):	500 [N]
Tensile @ installation:	1500 [N]
Crush (IEC 60794-1-2E3):	3000 [N/10cm]
Impact (IEC 60794-1-2E4):	30 [J]
Torsion (IEC 60794-1-2E7):	±1 [turn/m]
Min. bending diam. fixed:	15 x outer diam
Min. bending diam. flexible:	20 x outer diam

Norms:

Chemical resistance:	IEC 60811-2-1 (Mineral oils)
Fire and smoke:	IEC 60331-25, BP-236, IEC 61034 IEC 60332-3 catA and C, IEC 60754-1, IEC 60754/2

MUD resistant acc. to: NEK TS 606

Construction:

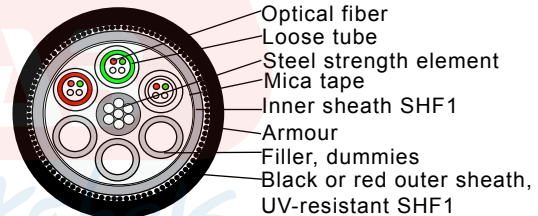
No. of fiber:			
2	1-Red (with 2-OF) 2-Filler 3-Filler	4-Filler 5-Filler 6-Filler	
4	1-Red (with 2-OF) 2-Green (with 2-OF) 3-Filler	4-Filler 5-Filler 6-Filler	
8	1-Red (with 4-OF) 2-Green (with 4-OF) 3-Filler	4-Filler 5-Filler 6-Filler	
12	1-Red (with 4-OF) 2-Green (with 4-OF) 3-Natural (with 4-OF)	4-Filler 5-Filler 6-Filler	
24	1-Red (with 6-OF) 2-Green (with 6-OF) 3-Natural (with 6-OF)	4-Nat. (with 6-OF) 5-Filler 6-Filler	
48	1-Red (with 12-OF) 2-Green (with 12-OF) 3-Natural (with 12-OF)	4-Nat. (with 12-OF) 5-Filler 6-Filler	

Loose tube diam.: 2.2mm

Color of fiber

1-white	4-green	7-brown	10-turquoise
2-red	5-blue	8-black	11-orange
3-yellow	6-grey	9-violet	12-pink

Inner Jacket:	Black SHF1 Ø=10,1mm
Armour alt. 1:	Galvanised steel wire braid
Armour alt. 2:	Tinned copper wire braid
Armour alt. 3:	Bronze wire braid
Outer Jacket:	Black SHF1 Ø=13.5mm
Weight:	260 kg/km



Approval: DNV CERTIFICATE NO. E-11775



Date	Rev.	
16.03.2015	1	Armour

Multimode fibres			MM 62.5 IEC 60793-2-10 Type A1b Telecordia GR-20-core	MM50 ITU-T G651.1 IEC 60793-2-10 Type A1a.1 Telecordia GR-20-core	MM50-OM3 ISO/IEC 11801 IEC 60793-2-10 Type A1a.2 Telecordia GR-20-core	MM50-OM4 ISO/IEC 11801 IEC 60793-2-10 Type A1a.2 Telecordia GR-20-core
ITU-T type			-	G 651	-	-
Core Diameter		μm	62.5 ± 2	50 ± 2	50 ± 2	50 ± 2
Core non-circularity		%	≤ 5	≤ 5	≤ 5	≤ 5
Cladding Diameter		μm	125 ± 1,0	125 ± 1,0	125 ± 1,0	125 ± 1,0
Coating Diameter		μm	245 ± 5	242 ± 5	242 ± 5	242 ± 5
Cladding non-circularity		%	0,7	0,7	0,7	0,7
Core/cladding concentricity error		μm	≤ 1,0	≤ 1,0	≤ 1,0	≤ 1,0
Coating/cladding concentricity error		μm	≤ 10	≤ 6	≤ 6	≤ 6
Numerical Aperture		μm	0.275 ± 0.015	0.200 ± 0.015	0.200 ± 0.015	0.200 ± 0.015
Proof test		kpsi	≥ 100	≥ 100	≥ 100	≥ 100
Attenuation	at 850 nm	db/km (max)	≤ 3,5	≤ 2,8	≤ 2,8	≤ 2,8
	at 1300 nm	db/km (max)	≤ 1,0	≤ 0,8	≤ 0,8	≤ 0,8
Bandwidth	at 850 nm	MHz x km	≥ 200	≥ 500	≥ 1500	≥ 3500
	at 1300 nm	MHz x km	≥ 500	≥ 500	≥ 500	≥ 500

Single mode fibres			Single mode SMR 9/125/250	Single mode SMR LWP 9/125/250	Non-zero Dispersion
ITU-T type			G652.B	G652.D	G655
Mode Field diameter (MDF)	at 1310 nm	μm	9.2 ± 0.4	9.2 ± 0.4	-
	at 1550 nm	μm	-	-	9.2 ± 0.5
Cladding Diameter		μm	125 ± 1	125 ± 0.7	125 ± 1
Coating Diameter		μm	245 ± 10	245 ± 5	245 ± 10
Attenuation	at 1310 nm	db/km (max)	≤ 0.38	≤ 0.35	-
	at 1383 nm	db/km (max)	-	≤ 0.33	-
	at 1550 nm	db/km (max)	≤ 0.25	≤ 0.25	≤ 0.25
	at 1625 nm	db/km (max)	-	≤ 0.28	≤ 0.28
Zero dispersion wavelength		λ ₀	1302 - 1322	1302 - 1322	-
Chromatic Dispersion	at 1285 - 1330nm	ps/nm x km	≤ 0.35	≤ 0.35	-
	at 1550 nm	ps/nm x km	≤ 18.0	≤ 18.0	-
	at 1530 - 1565 nm	ps/nm x km	-	-	5.5 to 10.0
	at 1565 - 1625 nm	ps/nm x km	-	-	7.5 to 13.0
PDM	at 1550 nm	ps/vkm	-	-	≤ 0.20