

Fire Resistant Multi-Fibre Loose Tube Armoured (GSWB) - QFCI  
**Fire Resistant • Flame Retardant • Halogen Free • NEK 606 code F1**  
 (QFCU type: oil and mud resistant LSZH (M1) compound)

## Product Specifications

### Cable construction

Central strength member CSM	steel with plastic over sheathing
Loose tube	thermoplastic material (PBT), jelly filled
Fire barrier	each tubes are protected by fire resistant mica/glass
Fibers colour-code	according to EIA/TIA 598
Tubes colour-code	red-green-other white
Filler elements	thermoplastic rods, where needed
Cable core	loose tubes (and fillers) are stranded around a steel strength member
Inner jacket	black LSZH compound
Metallic armor	galvanized steel wire braid (GSWB)
Outer jacket	LSZH compound – UV stabilized
Outer jacket color	on demand
Marking printed	QFCI - FIBER OPTIC CABLE - MLO-000-** (n)-M1-A1-FR - IEC 60331-25 YR**** + meter marking

**QFCU - Mud resistant sheath version also available**

### Cable configuration

No of Fibres	No. of Tubes + Fillers (mm)	Tube Diameter (mm)	Nominal O.D. (mm)	Cable Weight (kg/km)
4	2+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

Other fibre counts available on request

### Mechanical & Installation Characteristics

Temp. Range	(Operation)	-40°C to +70°C
Temp. Range	(Installation)	-10°C to +70°C
Temp. Range	(Storage)	-40°C to +70°C
Min. Bending radius	(Static)	10 x Ø
Min. Bending radius	(Dynamic)	20 x Ø
Max. Tensile Strength	(Installation)	(IEC 60794-1-2E1) 1500 N
Max. Tensile Strength	(Operation)	(IEC 60794-1-2E1) 500 N
Crush		(IEC 60794-1-2E3) 3000 N/10cm for 15 min.
Impact		(IEC 60794-1-2E4) 20 impacts, 5J
Torsion		(IEC 60794-1-2E7) ± 1 turns/ 1 m

### General Standards

IEC 60793 – IEC 60794 -1-2



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### Behaviour under fire conditions

Fire resistance	IEC 60331-25	750°C,3 hours	< 1.0 dB/excess loss
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		

### Fibre Characteristics

Type of Fibres			Single Mode	Single Mode Enhanced Low macrobending sensitive	Multimode 50/125	Multimode 50/125
Fibre Code (000)			009	009	050	050
IEC 11801 classification			OS1 and OS2	OS1 end OS2	OM2+	OM3
ITU-T type			G.652D	G.652D, G.657A&B	G.651	G.651
Gigabit Ethernet maximum distances						
	SX (850 nm)				750 m	900 m
	LX (1300 nm)				550 m	550 m
	LX (1310 nm)		5000 m	5000 m		
Mode Field Diameter (MFD)	at 1310 nm	µm	9.0 ± 0.4	8.3 -9.3	–	–
	at 1550 nm	µm	10.1 ± 0.5	9.4 – 10.4	–	–
Core Diameter		µm	See MFD	–	50 ± 2.5	50 ± 2.5
Cladding Diameter		µm	125.0 ± 0.7	–	125.0 ± 2.0	125.0 ± 2.0
Coating Diameter nominal		µm	242 ± 7	242 ± 7	242 ± 5	242 ± 5
Numerical Aperture			–	–	0.275 ± 0.015	0.200 ± 0.015
Attenuation	at 850 nm	dB/km (max)	–	–	≤ 3.5	≤ 2.8
	at 1300 nm	dB/km (max)	–	–	≤ 1.0	≤ 1.0
	at 1310 nm	dB/km (max)	≤ 0.35	≤ 0.35	–	–
	at 1383 nm	dB/km (max)	≤ 0.35	≤ 0.35	–	–
	at 1460 nm	dB/km (max)	≤ 0.25	≤ 0.25	–	–
	at 1550 nm	dB/km (max)	≤ 0.21	≤ 0.20	–	–
	at 1625 nm	dB/km (max)	≤ 0.23 ≤	0.21	–	–
Bandwidth	at 850 nm	MHz x km	–	–	≥ 700	≥ 1500
	at 1300 nm	MHz x km	–	–	≥ 500	≥ 500
Chromatic Dispersion	at 1285 + 1330 nm	ps/nm x km	≤ 3.0	≤ 3.0	–	–
	at 1550 nm	ps/nm x km	≤ 18	≤ 18	–	–
	at 1530 + 1565 nm	ps/nm x km	–	–	–	–
	at 1565 + 1625 nm	ps/nm x km	–	–	–	–

Type of Fibres			NZDSF	Multimode 62.5/125	Multimode 50/125
Fibre Code (000)			NZD	062	050
IEC 11801 classification			-	OM1	OM2
ITU-T type			G.655/G.656	-	G.651
Mode Field Diameter	at 1310 nm	µm	–	–	–
	at 1550 nm	µm	9.2 ± 0.5	–	–
Core Diameter		µm	–	62.5 ± 2.5	50 ± 2.5
Cladding Diameter		µm	125.0 ± 1.0	125.0 ± 2.0	125.0 ± 2.0
Coating Diameter		µm	242 ± 7.0	242 ± 7.0	242 ± 7.0
Numerical Aperture			–	0.275 ± 0.015	0.200 ± 0.015
Attenuation	at 850 nm	dB/km (max)	–	≤ 3.5	≤ 2.8
	at 1300 nm	dB/km (max)	–	≤ 1.0	≤ 1.0
	at 1310 nm	dB/km (max)	≤ 0.40	–	–
	at 1550 nm	dB/km (max)	≤ 0.25	–	–
	at 1625 nm	dB/km (max)	≤ 0.28	–	–
Bandwidth	at 850 nm	MHz x km	–	≥ 160 to ≥ 300	≥ 400 to ≥ 1000
	at 1300 nm	MHz x km	–	≥ 500 to ≥ 1000	≥ 400 to ≥ 1500
Chromatic Dispersion	at 1285 + 1330 nm	ps/nm x km	-10.0 to -3.0	–	–
	at 1550 nm	ps/nm x km	–	–	–
	at 1530 + 1565 nm	ps/nm x km	5.5 to 10.0	–	–
	at 1565 + 1625 nm	ps/nm x km	7.5 to 13.8	–	–
Minimum permanent bending diameter			50 mm	50 mm	50 mm