

Fiber Optic Cable, Steel Wire Armored 4-144 fibers

Features and Benefits

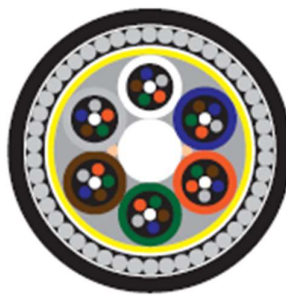
- UV Stabilized, Multi loose-tube design
- LSZH/PE jacket for Indoor/Outdoor applications
- Galvanized Steel Wire Armored
- OS2, OM3 and OM4 performance types
- Color-coded fibers for easy identification
- Compact design for limited conduit space
- Rodent resistant



Product Description

Single jacket Steel Wire-armored multi loose tube cable is a UV-stabilized, fully water blocked cable for outdoor duct or direct burial applications (UV resistant PE/LSZH outer jacket) for Indoor/Outdoor applications. Optical Fiber containing elements laid up around central strength member, jell filled loose tube design and WS tape as core wrapping, Water Blocking tape for better protection duly protected with Inner PE Sheath and outer HDPE provides stable and highly reliable transmission parameters for a variety of LAN, Telemetry, O&G SCADA links.

Cross Section



Environmental Data

Temperature range	Value
Storage	- 40°C to +70° C
Service	- 40°C to +70° C
Installation	- 40°C to +70° C

Cable Construction

Construction of single unit cables

Number of fibers		12 - 576
Number of fibers per tube		Max. 12 or 24
Filling Compound in Loose Buffer Tube		Thixotropic Jelly Compound
Loose buffer tube		PBT (Polybutylene Terephthalate) SZ stranded around FRP
Filler		Polyethylene rod (if necessary)
Central Strength Member		FRP (with PE over-coating if necessary)
Water blocking material		Water blocking yarn or tape around CSM
Core wrapping tape		Water swell-able tape
Outer strength member		Glass yarns
Ripcord		One ripcord
Armor		Corrugated Steel Tape with Plastic Coating on Both Sides Thickness: Nom. 0.15mm (Steel Tape) Nom. 0.05mm (Plastic Coating)
Outer Jacket Material	Material	UV Black PE/LSZH
	Thickness	Nominal 1.5mm PE/1.8mm LSZH

Mechanical Specifications

Tensile Load / Strength	IEC 60794-1-2-E1	2700N
Crush Resistance	IEC 60794-1-2-E3	2200N/10cm
Impact Resistance	IEC 60794-1-2-E4	1 impacts @ 3 points, 5Nm /5J
Torsion Test	IEC 60794-1-2-E7	± 180°, ± 1 turn/2m
Cable Bend	IEC 60794-1-2-E11	20 D for 4 turns, 10 Cycles
Drip test	IEC-60794-1-E14	30 cm, 70°C, 24 hours
Temperature Cycling	IEC 60794-1-2-F1	23°C → -25°C → 70°C → 25°C → -70°C → 23°
Water penetration	IEC 60794-1-2-F5	1 meter head, 3 meter / 24 hours

Technical Specifications

Optical Characteristics: Single mode- 9 μm OS2 - G.652D, G.655D, G.657A/B

Fiber Type		Unit	OS2 G.652D		G.655D		G.657A		G.657B	
Wavelength		nm	1310	1550	1310	1550	1310	1550	1310	1550
Attenuation		dB/km	≤ 0.40	≤ 0.30	≤ 0.24	≤ 0.26	≤ 0.35	≤ 0.21	≤ 0.35	≤ 0.21
Chromatic dispersion		Ps/nm.km	≤ 3.5	≤ 18	2.0 - 6.0	4.5 - 11.2	≤ 3.5	≤ 18	≤ 3.5	≤ 18
Zero dispersion wavelength		nm	1300 ~ 1324		-		1300 ~ 1324		1300 ~ 1324	
Zero dispersion slope		ps/nm ² .km	≤ 0.092		-		≤ 0.092		≤ 0.092	
PMD		ps/ $\sqrt{\text{km}}$	≤ 0.2		≤ 0.2		≤ 0.2		≤ 0.2	
Cut-off wavelength		nm	≤ 1260		≤ 1450		≤ 1260		≤ 1260	
Mode-field diameter		μm	9.2 $\pm$ 0.4	10.4 $\pm$ 0.5	9.6 $\pm$ 0.5	-	8.6 $\pm$ 0.4	10.4 $\pm$ 0.5	8.6 $\pm$ 0.4	10.4 $\pm$ 0.5
Macro Bend Loss	30mm radius x 100 turns	dB	-	≤ 0.05	-	≤ 0.10	-	-	-	-
	15mm radius x 100 turns		-	-	-	-	$\leq 0.25/0.03$	-	$\leq 0.03/0.03$	-
	10mm radius x 100 turns		-	-	-	-	$\leq 0.75/0.1$	-	$\leq 0.1/0.08$	-
	7.5mm radius x 100 turns		-	-	-	-	-	-	$\leq 0.5/0.15$	-
Core/Clad Concentricity Error		μm	≤ 0.6		≤ 0.6		≤ 0.6		≤ 0.6	
Cladding Diameter		μm	125 $\pm$ 1		125 $\pm$ 1		125 $\pm$ 1		125 $\pm$ 1	
Cladding Non-circularity		%	≤ 1.0		≤ 1.0		≤ 1.0		≤ 1.0	
Coating Diameter		%	245 $\pm$ 15		245 $\pm$ 15		245 $\pm$ 15		245 $\pm$ 15	
Proof Test Level		Kpsi	≥ 100		≥ 100		≥ 100		≥ 100	
Fiber curl		m	≥ 4		≥ 4		≥ 4		≥ 4	

Optical Characteristics: Multimode - 62.5 μm (OM1), 50 μm (OM2, OM3, OM4)

Fiber Type		OM1		OM2		OM3		OM4	
Wavelength	nm	850	1300	850	1300	850	1300	850	1300
Attenuation	dB/km	≤ 3.5	≤ 1.0	≤ 3.0	≤ 1.0	≤ 3.0	≤ 1.0	≤ 3.0	≤ 1.0
Over filled Launch Bandwidth (LED based sources)	MHz.km	≤ 200	≤ 500	≤ 500	≤ 500	≤ 1500	≤ 500	≤ 3500	≤ 500
Effective Modal Bandwidth (850 nm Laser based sources)	MHz.km	-	-	-	-	≤ 2000	-	≤ 4700	-
Numerical aperture	-	0.275 ± 0.015		0.20 ± 0.015		0.20 ± 0.015		0.20 ± 0.015	
Core diameter	μm	62.5 ± 3.0		50 ± 3.0		50 ± 3.0		50 ± 3.0	
Core Non-Circularity	%	≤ 6.0		≤ 6.0		≤ 6.0		≤ 6.0	
Cladding diameter	μm	125 ± 2.0		125 ± 2.0		125 ± 2.0		125 ± 2.0	
Cladding Non-Circularity	%	≤ 2.0		≤ 2.0		≤ 2.0		≤ 2.0	
Core / Cladding Concentricity Error	μm	≤ 3.0		≤ 3.0		≤ 3.0		≤ 3.0	
Coating diameter	μm	245 ± 5.0		245 ± 5.0		245 ± 5.0		245 ± 5.0	
Proof test level	Kpsi	≤ 100		≤ 100		≤ 100		≤ 100	

Physical Specifications

Fiber Count	No. of Tubes	No. of Fibers per Tubes	Nom. Wt/Km (kg)	Diameter (Nominal)* mm
4	1	4	350	14.0
6	1	6	350	14.0
12	1	12	350	14.0
24	2	12	350	14.0
36	3	12	350	14.0
48	4	12	350	14.0
72	6	12	350	14.0
96	8	12	400	15.5
144	12	12	450	18.0

*Denotes nominal value for PE / LSZH Jacketed Cable

Transmission Performance

Application	OS1/OS2 Single mode (1310/1383/ 1550)	OM1 Multimode (850/1300)	OM2 Multimode (850/1300)	OM3 Multimode (850/1300)	OM4 Multimode (850/1300)
100Base-FX, Ethernet, @ 1300nm	-	2000m	2000m	2000m	2000m
100Base-LX, @ 1310nm	10000m	-	-	-	-
1000Base-SX, Gigabit, Ethernet @ 850nm	-	275m	550m	550m	550m
100Base-LX, Gigabit Ethernet, @ 1310nm	1000m	550m	550m	550m	550m

10GBase-SR, 10Gbps @ 850nm	-	33m	82m	300m	550m
10GBase-LR, 10Gbps @ 1310nm	1000m	-	-	-	-
40GBase-SR, 40Gbps @ 850nm	-	-	-	100m	150m
40GBase-LR4, 40Gbps @ 1310nm	1000m	-	-	-	-
100GBase-SR10, 100Gbps @ 850nm	-	-	-	100m	150m
100Base-LR4, 100Gbps, @ 1310nm	1000m				
100Base-ER4, 100Gbps, @ 1550nm	30000m	-	-	-	-

Ordering Information

Part Number	Description
FOCLSWP52D004	Fiber Optic Multi Loose Tube Cable, 4F, Steel Wire Armor, SM, G652D, PE Jacket
FOCLSWP52D012	Fiber Optic Multi Loose Tube Cable, 12F, Steel Wire Armor, SM, G652D, PE Jacket
FOCLSWP52D012	Fiber Optic Multi Loose Tube Cable, 24, Steel Wire Armor, SM, G652D, PE Jacket
FOCLSWP52D096	Fiber Optic Multi Loose Tube Cable, 96, Steel Wire Armor, SM, G652D, PE Jacket
FOCLSWP52D144	Fiber Optic Multi Loose Tube Cable, 144, Steel Wire Armor, SM, G652D, PE Jacket

XXX = 52D – G652D, 7A1 – G657A1, 7A2 – G657A2, OM2 – OM2, OM3 – OM3, OM4 – OM4

YYY = 006 – 6 Fibers, 024 – 24 Fibers, 144 – 144 Fibers