



Indoor/Outdoor Cable

Lightem offers a board variety of fiber optic cable for different outdoor condition, such as central loose tube armored cable, duct armored cable, direct buried cable, steel wire armored cable, non metallic outdoor cable, ADSS cable and figure 8 cable. This non-metallic In/Outdoor cable is specially designed for premises to premises cabling via ducting. This cable can directly access the indoor destination without additional splicing for linking to indoor cable.

Full range of fiber type ranging from G652D, G657A1/A2, OM1 62.5/125µm, OM2 50/125µm, OM3 and OM4 are available. Lightem also provides the customization service on the fiber, colours and construction of the cables for catering different cases.

Features

- Fiber count up to 24 core
- Non-metallic structure, Aramid yarns armored
- Small diameter and light weight for easy installation
- Suitable for both indoor/outdoor application
- UV resistant jacket
- Comply to TIA/EIA568b-3 and ISO/IEC 11801

Fire Performances

General	
Flame Retardant	IEC 60332-1, IEC 60332-2, IEC 60332-3, BS EN 50265, BS EN 50266
Fire Retardant	BS EN ISO 4589-3 Annex A (FT >= 280°C)
Low Smoke Capacity	IEC 61034 1/2, BS EN 50268-2 Annex B (>=60% Light Transmittance)
The Values for The Light Transmittance	BS EN 50268-2
Oxygen Index Testing Method	BS EN ISO 4589-2, ASTM D-2863
Halogen Free	IEC 60754-1/2, BS EN 50267-2-3 Annex A (pH >=4.3)

Specifications

General	
Flame Rating	LSZH / FRNC*
Fiber Category	Singlemode / Multimode
Temperature Range	
Installation	-5°C to +50°C
Operation	-30°C to +70°C
Storage	-40°C to +70°C
Cable Design	
Fiber Count	2-24
Fiber Colouring	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua
Buffer Tube colour	white
Tensile Strength Elements and/or Armouring Layer	Aramid yarn
Outer Jacket Material	Polyethylene (PE)
Outer Jacket Colour	Black

*For LSZH model only

**Customized colour available upon request

Mechanical Characteristics		
Fiber Count	2-24	
Outer Diameter	6.5-9.5	mm
Max. Tension (Short-term)	1500	kg/km
Max. Tension (Long-term)	800	N
Max. Crushing Resistance (Short-term)	2000	N
Max. Crushing Resistance (Long-term)	1000	N/100mm ²
Bending Radius (Loading)	20	D
Bending Radius (Without Loading)	10	D

Fiber Specifications (Singlemode)

Characteristics		G652D	G657A1	G657A2
Optical Characteristics				
Attenuation	1310nm	≤ 0.40 dB/km	≤ 0.40 dB/km	≤ 0.40 dB/km
	1383nm*	≤ 0.34 dB/km	≤ 0.35 dB/km	≤ 0.35 dB/km
	1460nm*	-	≤ 0.25 dB/km	≤ 0.25 dB/km
	1490nm*	-	-	≤ 0.23 dB/km
	1550nm	≤ 0.30 dB/km	≤ 0.30 dB/km	≤ 0.30 dB/km
	1625nm*	≤ 0.23 dB/km	≤ 0.23 dB/km	≤ 0.23 dB/km
Attenuation vs. Wavelength	1285-1330nm*	≤ 0.03 dB/km	≤ 0.03 dB/km	≤ 0.03 dB/km
Max. α difference	1525-1575nm*	≤ 0.02 dB/km	≤ 0.02 dB/km	≤ 0.02 dB/km
Dispersion coefficient	1285-1340nm	$\geq -3.4 \leq 3.4$ ps/(nm · km)	$\geq -3.4 \leq 3.4$ ps/(nm · km)	-
	1550nm	≤ 18 ps/(nm · km)	≤ 18 ps/(nm · km)	-
	1625nm	≤ 22 ps/(nm · km)	≤ 22 ps/(nm · km)	-
Zero dispersion wavelength		1312±12 nm	1300-1324 nm	1300-1324 nm
Zero dispersion slope		≤ 0.091 ps/nm ² · km	≤ 0.092 ps/nm ² · km	≤ 0.092 ps/nm ² · km
Typical value		0.086 ps/nm ² · km	0.086 ps/nm ² · km	0.04 ps/nm ² · km
PMD				
Maximum Individual Fibre		≤ 0.1 ps/√km	≤ 0.1 ps/√km	≤ 0.1 ps/√km
Link Design Value(M=20,Q=0.01%)		≤ 0.06 ps/√km	≤ 0.06 ps/√km	≤ 0.06 ps/√km
Typical value		0.04 ps/√km	0.04 ps/√km	0.04 ps/√km
Cable cutoff wavelength λ_{cc}		≤ 1260 nm	≤ 1260 nm	≤ 1260 nm
Mode field diameter(MFD)	1310nm	8.7-9.5 μ m	8.4-9.2 μ m	8.4-9.2 μ m
	1550nm	9.9-10.9 μ m	9.3-10.3 μ m	9.3-10.3 μ m
Effective group index of refraction(Neff)	1310nm	1.466	1.466	1.466
	1550nm	1.467	1.467	1.467
Point discontinuities	1310nm	≤ 0.05 dB	≤ 0.05 dB	≤ 0.05 dB
	1550nm	≤ 0.05 dB	≤ 0.05 dB	≤ 0.05 dB
Geometrical Characteristics				
Fiber Core Diameter		9 +/-1 μ m	9 +/-1 μ m	9 +/-1 μ m
Cladding diameter		125.0±0.7 μ m	125.0±0.7 μ m	125.0±0.7 μ m
Cladding non-circularity		≤ 1.0 %	≤ 0.7 %	≤ 0.7 %
Coating diameter		245.0±7 μ m	245.0±5 μ m	245.0±5 μ m
Coating-cladding concentricity error		≤ 12.0 μ m	≤ 12.0 μ m	≤ 12.0 μ m
Coating non-circularity		≤ 6.0 %	≤ 6.0 %	≤ 6.0 %
Core-cladding concentricity error		≤ 0.6 μ m	≤ 0.5 μ m	≤ 0.5 μ m
Curl(radius)		≥ 4 m	≥ 4 m	≥ 4 m
Delivery length		2.1 to 50.4 km/reel	2.1 to 50.4 km/reel	2.1 to 50.4 km/reel

*Attenuation loss of barefiber

Fiber Specifications (Multimode)

Characteristics		62.5/125 (OM1)	50/125 (OM2)	OM3/OM4	OM5
Geometry Characteristics					
Core Diameter		62.5±2.5 μ m	50±2.5 μ m	50±2.5 μ m	50±2.5 μ m
Core Non-circularity		≤ 5.0 %	≤ 5.0 %	≤ 5.0 %	≤ 5.0 %
Cladding Diameter		125.0±1.0 μ m	125.0±1.0 μ m	125.0±1.0 μ m	125.0±1.0 μ m
Cladding Non-circularity		≤ 1.0 %	≤ 1.0 %	≤ 0.6 %	≤ 0.6 %
Coating Diameter		245±7 μ m	245±7 μ m	245±7 μ m	245±7 μ m
Coating/Cladding Concentricity Error		≤ 10.0 μ m	≤ 10.0 μ m	≤ 10.0 μ m	≤ 10.0 μ m
Coating Non-circularity		≤ 6.0 %	≤ 6.0 %	≤ 6.0 %	≤ 6.0 %
Core/Cladding Concentricity Error		≤ 1.5 μ m	≤ 1.5 μ m	≤ 1.0 μ m	≤ 1.0 μ m
Delivery Length		up to 17.6 km/reel	up to 17.6 km/reel	up to 8.8 km/reel	up to 8.8 km/ reel
Optical Characteristics					
Attenuation	850nm	≤ 3.5 dB/km	≤ 3.5 dB/km	≤ 3.5 dB/km	≤ 3.5 dB/km
	953nm*	-	-	-	≤ 1.7 dB/km
	1300nm	≤ 1.5 dB/km	≤ 1.5 dB/km	≤ 1.5 dB/km	≤ 1.5 dB/km
Overfilled Modal Bandwidth	850nm	≥ 200 MHz · km	≥ 500 MHz · km	$\geq 1500/ \geq 3500$ MHz · km	≥ 3500 MHz · km
	953nm	-	-	-	≥ 1850 MHz · km
	1300nm	≥ 500 MHz · km	≥ 500 MHz · km	$\geq 500/ \geq 500$ MHz · km	≥ 500 MHz · km
Effective Modal Bandwidth	850nm	-	-	$\geq 2000/ \geq 4700$ MHz · km	≥ 4700 MHz · km
	953nm	-	-	-	≥ 2470 MHz · km
10Gb/sWDM		-	-	-100/150 m	150 m
40Gb/sWDM		-	-	300/500 m	440 m
40GBASE-SR4 / 100GBASE SR10	850nm	-	-	1000/1100 m	200 m
10GBASE-SR	850nm	-	150 m	300/550 m	-
1000BASE-SR	850nm	-	750 m	1000/1100 m	-
DMD Specification					
Numerical Aperture		0.275±0.015	0.200±0.015	0.200±0.015	0.200±0.015
Group Refractive index		1,496	1,482	1,482	1,482
		1,491	1,477	1,477	1,477
Zero Dispersion Wavelength, λ_0		1320-1365 nm	1295-1340 nm	1295-1340 nm	1297-1328 nm
Zero Dispersion Slope, S_0		-	-	-	$\leq 4(-103)/(840\lambda\sqrt{840})^4$
		-	-	-	ps/nm ² · km
Zero Dispersion Slope, S_0	1295nm $\leq \lambda_0 \leq 1310$ nm	-	≤ 0.105 ps/nm ² · km	≤ 0.105 ps/nm ² · km	-
	1310nm $\leq \lambda_0 \leq 1340$ nm	-	$\leq 0.000375(1590-\lambda_0)$ ps/nm ² · km	-	-
	1320nm $\leq \lambda_0 \leq 1348$ nm	≤ 0.11 ps/nm ² · km	-	$\leq 0.000375(1590-\lambda_0)$ ps/nm ² · km	-
	1348nm $\leq \lambda_0 \leq 1365$ nm	$\leq 0.001(1458-\lambda_0)$ ps/nm ² · km	-	-	-

*Attenuation loss of barefiber

Ordering Information

* Ordering Code Example

