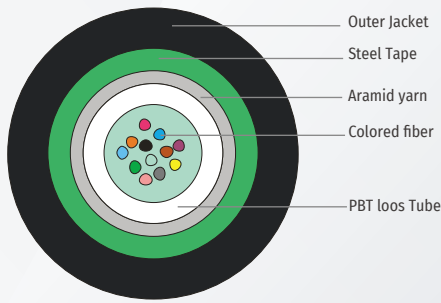


## Central Loose Tube Armored cable (w/o steel wire)



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. Up to 12 core structure, Central loose tube armored cable (w/o steel wire) is the most popular cable for outdoor installation as of the compact and flexible features. Full range of fiber type ranging from G652D, G657A1/A2, OM1 62.5/125µm, OM2 50/125µm, OM3, OM4 and OM5 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 12 core
- Aerial/Duct application
- Waterproof Layer Between the Steel Tape and Cable Core
- PE outer sheath with Corrugated Steel Tape
- Waterproofing Layer Proving Strong Water-Resistance Performance
- Flame retardant or LSZH jacket is available
- Comply to TIA/EIA568b-3 and ISO/IEC 11801
- Economy choice

### 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	-20°C to +50°C
Operation	-40°C to +70°C
Storage	-40°C to +70°C
Cable Design	2-12
Fiber Count	Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua
Fiber Colouring	White
Buffer Tube colour	Water-swellable
Tape	Smooth steel tape
Tensile Strength Elements and/or Armouring Layer	Polyethylene (PE)
Outer Jacket Material	Black

\*For LSZH model only

#### Mechanical Characteristics Cable

		Unit
Fiber Count	2-12	
Tube Diameter	2.2	mm
Tube Thickness	0.35	mm
Sheath Thickness (nominal)*	1.2	mm
Cable Diameter (nominal**)	7.0	mm
Nominal Weight	44	kg/km
Max. Tension (Short-term)	800	N
Max. Tension (Long-term)	200	N

\* The nominal sheath thickness may have a tolerance with ±0.2mm.

\*\* The nominal outer diameter may have a tolerance with ±0.4mm

## Fiber Specifications (Singlemode)

Characteristics		G652D	G657A1	G657A2
<b>Optical Characteristics</b>				
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
Max. α difference	1525-1575nm*	≤ 0.02 dB/km	≤ 0.02 dB/km	≤ 0.02 dB/km
Dispersion coefficient	1285-1340nm	≥ -3.4 ≤ 3.4 ps/(nm · km)	≥ -3.4 ≤ 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 <sup>2</sup> · km	≤ 0.092 ps/nm <sup>2</sup> · km	≤ 0.092 ps/nm <sup>2</sup> · km
Typical value		0.086 ps/nm <sup>2</sup> · km	0.086 ps/nm <sup>2</sup> · km	0.04 ps/nm <sup>2</sup> · km
<b>PMD</b>				
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 <sub>cc</sub>		≤ 1260 nm	≤ 1260 nm	≤ 1260 nm
Mode field diameter(MFD)	1310nm	8.7-9.5 μm	8.4-9.2 μm	8.4-9.2 μm
	1550nm	9.9-10.9 μm	9.3-10.3 μm	9.3-10.3 μm
Effective group index of refraction(N <sub>eff</sub> )	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
<b>Geometrical Characteristics</b>				
Fiber Core Diameter		9 +/-1 μm	9 +/-1 μm	9 +/-1 μm
Cladding diameter		125.0±0.7 μm	125.0±0.7 μm	125.0±0.7 μm
Cladding non-circularity		≤ 1.0 %	≤ 0.7 %	≤ 0.7 %
Coating diameter		245.0±7 μm	245.0±5 μm	245.0±5 μm
Coating-cladding concentricity error		≤ 12.0 μm	≤ 12.0 μm	≤ 12.0 μm
Coating non-circularity		≤ 6.0 %	≤ 6.0 %	≤ 6.0 %
Core-cladding concentricity error		≤ 0.6 μm	≤ 0.5 μm	≤ 0.5 μm
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
<b>Geometry Characteristics</b>					
Core Diameter		62.5±2.5 μm	50±2.5 μm	50±2.5 μm	50±2.5 μm
Core Non-circularity		≤ 5.0 %	≤ 5.0 %	≤ 5.0 %	≤ 5.0 %
Cladding Diameter		125.0±1.0 μm	125.0±1.0 μm	125.0±1.0 μm	125.0±1.0 μm
Cladding Non-circularity		≤ 1.0 %	≤ 1.0 %	≤ 0.6 %	≤ 0.6 %
Coating Diameter		245±7 μm	245±7 μm	245±7 μm	245±7 μm
Coating/Cladding Concentricity Error		≤ 10.0 μm	≤ 10.0 μm	≤ 10.0 μm	≤ 10.0 μm
Coating Non-circularity		≤ 6.0 %	≤ 6.0 %	≤ 6.0 %	≤ 6.0 %
Core/Cladding Concentricity Error		≤ 1.5 μm	≤ 1.5 μm	≤ 1.0 μm	≤ 1.0 μm
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
<b>Optical Characteristics</b>					
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	≥ 1500/ ≥ 3500 MHz · km	≥ 3500 MHz · km
	953nm	-	-	-	≥ 1850 MHz · km
	1300nm	≥ 500 MHz · km	≥ 500 MHz · km	≥ 500/ ≥ 500 MHz · km	≥ 500 MHz · km
Effective Modal Bandwidth	850nm	-	-	≥ 2000/ ≥ 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	-
<b>DMD Specification</b>					
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 <sub>0</sub>		1320-1365 nm	1295-1340 nm	1295-1340 nm	1297-1328 nm
Zero Dispersion Slope, S <sub>0</sub>		-	-	-	≤ 4(-103)/(840λ√840) <sup>4</sup> )
		-	-	-	ps/nm <sup>2</sup> · km
Zero Dispersion Slope, S <sub>0</sub> 1295nm ≤ λ <sub>0</sub> ≤ 1310nm		-	≤ 0.105 ps/nm <sup>2</sup> · km	≤ 0.105 ps/nm <sup>2</sup> · km	-
1310nm ≤ λ <sub>0</sub> ≤ 1340nm		-	≤ 0.000375(1590-λ <sub>0</sub> ) ps/nm <sup>2</sup> · km	-	-
1320nm ≤ λ <sub>0</sub> ≤ 1348nm		≤ 0.11 ps/nm <sup>2</sup> · km	-	≤ 0.000375(1590-λ <sub>0</sub> )ps/nm <sup>2</sup> · km	-
1348nm ≤ λ <sub>0</sub> ≤ 1365nm		≤ 0.001(1458-λ <sub>0</sub> ) ps/nm <sup>2</sup> · km	-	-	-

\*Attenuation loss of barefiber

# Ordering Information

\* Ordering Code Example

