

# TECHNICAL DATA SHEET

## FOR

### Single Mode Optical Fiber Cable With Messenger

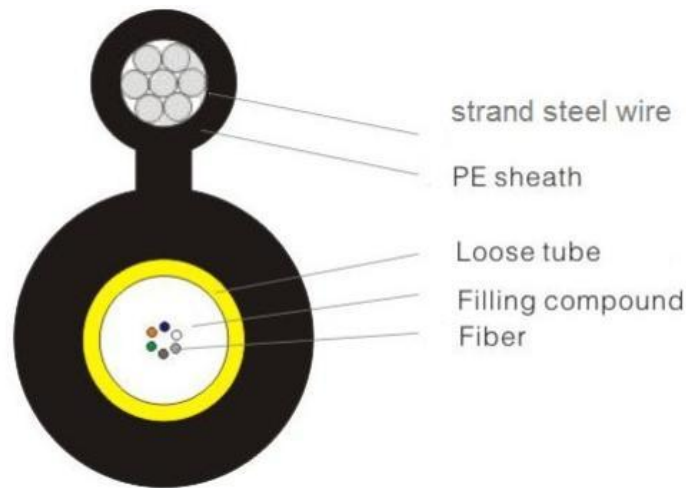
#### Type: Central Core Tube

#### A . Features:

- 1). Accurate fiber excess length ensures good mechanical and temperature performance, High strength loose tube that is hydrolysis resistant and special tube filling compound ensure a critical protection of fiber. Specially designed compact structure is good at preventing loose tubes from shrinking.
- 2). Specially designed compact structure is good at preventing loose tubes from shrinking.
- 3). Crush resistance and flexibility.

#### B. Structure:

This cable is a small "Figure 8" cable, the cable consists of the loose tube and steel wire or stranded steel wire as the messenger wire, which are formed like "Figure 8" then it is completed with a PE sheath.



#### C. Application:

Long distance and interoffice communication

#### D. Laying mode:

Aerial

#### E. Technical parameter:

Fiber count (core)	4-24	
Outer diameter ( $\pm 0.5\text{mm}$ )	(4.9x11.1)-(5.6x11.8)	
Loose tube (mm)	2.0/3.0	
Steel wire (mm)	1.5-3.0	
Weight (Kg/Km)	60-100	
Maximum tensile strength (N)	3000	
Crushing (Min) (N/100mm)	1500	
Bending radius	Static	10 times of diameter
	Dynamic	20 times of diameter
Temperature range (0°C)	-40°C — +60°C	

### Fiber Color Identification

Unit S.N.	1	2	3	4	5
Fiber S.N.	Blue Tube	Orange Tube	Green Tube	Brown Tube	Natural Filler
1	Blue	Blue	Blue	Blue	N/A
2	Orange	Orange	Orange	Orange	N/A
3	Green	Green	Green	Green	N/A
4	Brown	Brown	Brown	Brown	N/A
5	Slate	Slate	Slate	Slate	N/A
6	White	White	White	White	N/A

### The properties of single mode optical fiber (ITU-T Rec. G.652D)

Parameter	Specification
Fiber type	Single mode
Fiber material	Doped silica
Attenuation coefficient	
@ 1310 nm	$\leq 0.36$ dB/km
@ 1383 nm	$\leq 0.36$ dB/km
@ 1550 nm	$\leq 0.22$ dB/km
@ 1625 nm	$\leq 0.30$ dB/km
Point discontinuity	$\leq 0.05$ dB
Cable cut-off wavelength	$\leq 1260$ nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	$\leq 0.093$ ps/(nm <sup>2</sup> .km)
Chromatic dispersion	
@ 1288 ~ 1339 nm	$\leq 3.5$ ps/(nm. km)
@ 1271 ~ 1360 nm	$\leq 5.3$ ps/(nm. km)
@ 1550 nm	$\leq 18$ ps/(nm. km)
@ 1625 nm	$\leq 22$ ps/(nm. km)
PMD <sub>Q</sub> (Quadrature average*)	$\leq 0.2$ ps/km <sup>1/2</sup>
Mode field diameter @ 1310 nm	9.2±0.4 μm
Core/Clad concentricity error	$\leq 0.5$ μm
Cladding diameter	125.0 ± 0.7 μm
Cladding non-circularity	$\leq 1.0\%$
Primary coating diameter	245 ± 10 μm
Proof test level	<b>100 kpsi (=0.69 Gpa), 1%</b>
Temperature dependence 0°C~ +70°C @ 1310 & 1550nm	$\leq 0.1$ dB/km

\* PMD<sub>Q</sub> is a link of 20 cable sections (M) and a probability level of 0.01% (Q).

### Main mechanical & environmental characteristics test

NO	ITEM	TEST METHOD	ACCEPTANCE REQUIREMENTS
1	Tensile Strength IEC 794-1-E1	- Load: 6, 000 N - Length of cable under load: 50m	- Loss change $\leq 0.1$ dB @1550 nm - No fiber break and no sheath damage.
2	Crush Test IEC 60794-1-E3	- Load: 1, 000 N/100mm - Load time: $\geq 1$ min	- Loss change $\leq 0.1$ dB @1550 nm - No fiber break and no sheath damage.
3	Impact Test IEC 60794-1-E4	- Points of impact: 5 - Times of per point: 5 - Impact energy: 4.5Nm - Radius of hammer head: 12.5mm - Impact rate: 2sec/cycle	- Loss change $\leq 0.1$ dB @1550 nm - No fiber break and no sheath damage.
4	Repeated Bending IEC 60794-1-E6	- Bending Dia.: 20 x OD - Load: 150N - Flexing rate: 3sec/cycle - No. of cycle: 30	- Loss change $\leq 0.1$ dB @1550 nm - No fiber break and no sheath damage.
5	Torsion IEC 60794-1-E7	- Length: 1m - Load: 150N - Twist rate: 1min/cycle - Twist angle: $\pm 180^\circ$ - No. of cycle: 10	- Loss change $\leq 0.1$ dB @1550 nm - No fiber break and no sheath damage.
6	Water Penetration IEC 60794-1-F5B	- Height of water: 1m - Sample length: 3 m - Time: 24 hour	- No water shall have leaked from the opposite end of cable
7	Temperature Cycling IEC 60794-1-F1	- Temperature step: +20°C $\rightarrow$ -40°C $\rightarrow$ +60°C $\rightarrow$ +20°C - Time per each step: 24 hrs - Number of cycle: 2	- Loss change $\leq 0.1$ dB @1550 nm - No fiber break and no sheath damage.
8	Compound Flow IEC 60794-1-E14	- Sample length: 30 cm - Temp: 70°C $\pm$ 2°C - Time: 24 hours	- No compound flow
9	Sheath High Voltage Test	- On line test - 9t KV (t-sheath thickness)	- No sheath breakdown