

TECHNICAL DATA SHEET

for

Single Mode Optical Fiber Cable

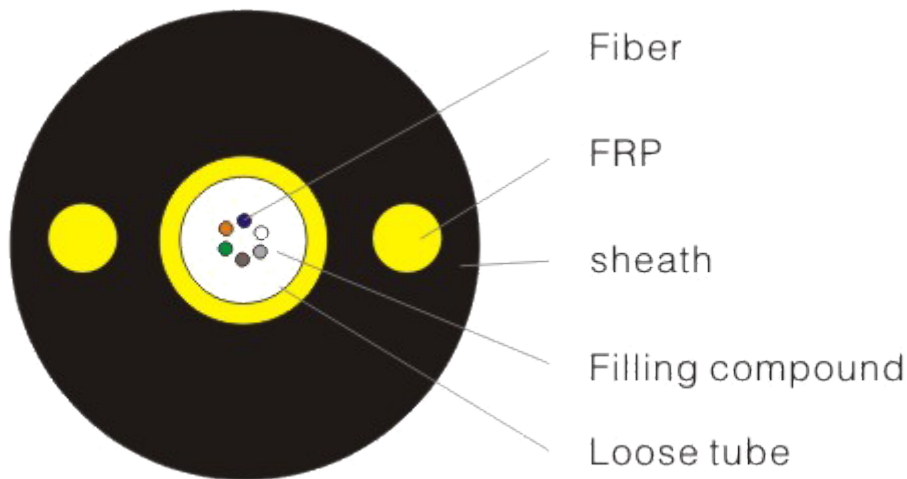
Type: Central Unitube Cable

A. Features:

- 1). Good mechanical and temperature performance.
- 2). High strength loose tube that is hydrolysis resistant.
- 3). Special tube filling compound ensure a critical protection of fiber, Specially designed compact structure is good at preventing loose form shrinking.
- 4). Two parallel FRPs ensure tensile strength.
- 5). PE sheath protects cable from ultraviolet radiation.
- 6). Small diameter, light weight and friendly installation.

B. Structure:

The fibers, are positioned in a loose tube made of a high modulus plastic. The tubes are filled with a water-resistant filling compound. Over the tube, water-blocking material is applied to keep the cable watertight. Two parallel Fiber Reinforced Plastics (FRP) are placed at the two side. The cable is completed with a Polyethylene (PE) sheath.



C. Application:

Long distance and interoffice communication.

D. Laying mode:

Duct, Aerial

E. Technical parameter:

Fiber count (Core)	4-12	
Outer diameter ($\pm 0.5\text{mm}$)	6.0	
Loose tube (mm)	2.0/2.2	
FRP (mm)	2 x 1.0	
Weight (Kg/Km)	~33	
Minimum tensile strength (N)	Short-term	1000
	Long-term	400
Crushing (Min) (N/100mm)	Short-term	1000
	Long-term	300
Bending radius	Static	10 times of diameter
	Dynamic	20 times of diameter
Temperature range	-40°C to +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 G.652D
Fiber material	Doped silica
Attenuation coefficient	
@ 1310 nm	≤ 0.36 dB/km
@ 1383 nm	≤ 0.36 dB/km
@ 1550 nm	≤ 0.22 dB/km
@ 1625 nm	≤ 0.30 dB/km
Point discontinuity	≤ 0.05 dB
Cable cut-off wavelength	≤ 1260 nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	≤ 0.093 ps/(nm ² .km)
Chromatic dispersion	
@ 1288 ~ 1339 nm	≤ 3.5 ps/(nm. km)
@ 1271 ~ 1360 nm	≤ 5.3 ps/(nm. km)
@ 1550 nm	≤ 18 ps/(nm. km)
@ 1625 nm	≤ 22 ps/(nm. km)
PMD _Q (Quadrature average*)	≤ 0.2 ps/km ^{1/2}
Mode field diameter @ 1310 nm	9.2±0.4 μm
Core/Clad concentricity error	≤ 0.5 μm
Cladding diameter	125.0 ± 0.7 μm
Cladding non-circularity	≤ 1.0%
Primary coating diameter	245 ± 10 μm
Proof test level	100 kpsi (=0.69 Gpa), 1%
Temperature dependence 0°C~ +70°C @ 1310 & 1550nm	≤ 0.1 dB/km

* PMD_Q is a link of 20 cable sections (M) and a probability level of 0.01% (Q).

Characteristic of Optical Cable

Mechanical & environmental characteristics

Cable bending radius	10 x cable diameter (during operation)
	20 x cable diameter (during installation)

Temperature range

Operating temperature range	-40°C to +60°C
Storage / Transport temperature range	-50°C to +70°C
Installation temperature range	-20°C to +50°C

Main mechanical & environmental characteristics test

NO	ITEM	TEST METHOD	ACCEPTANCE REQUIREMENTS
1	Tensile Strength IEC 794-1-E1	<ul style="list-style-type: none"> - Load: 6, 000 N - Length of cable under load: 50m 	<ul style="list-style-type: none"> - Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
2	Crush Test IEC 60794-1-E3	<ul style="list-style-type: none"> - Load: 1, 000 N/100mm - Load time: \geq1min 	<ul style="list-style-type: none"> - Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
3	Impact Test IEC 60794-1-E4	<ul style="list-style-type: none"> - Points of impact: 5 - Times of per point: 5 - Impact energy: 4.5Nm - Radius of hammer head: 12.5mm - Impact rate: 2sec/cycle 	<ul style="list-style-type: none"> - Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
4	Repeated Bending IEC 60794-1-E6	<ul style="list-style-type: none"> - Bending Dia.: 20 x OD - Load: 150N - Flexing rate: 3sec/cycle - No. of cycle: 30 	<ul style="list-style-type: none"> - Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
5	Torsion IEC 60794-1-E7	<ul style="list-style-type: none"> - Length: 1m - Load: 150N - Twist rate: 1min/cycle - Twist angle: \pm180° - No. of cycle: 10 	<ul style="list-style-type: none"> - Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
6	Water Penetration IEC 60794-1-F5B	<ul style="list-style-type: none"> - Height of water: 1m - Sample length: 3 m - Time: 24 hour 	<ul style="list-style-type: none"> - No water shall have leaked from the opposite end of cable
7	Temperature Cycling IEC 60794-1-F1	<ul style="list-style-type: none"> - Temperature step: +20°C\rightarrow-40°C\rightarrow+60°C \rightarrow+20°C - Time per each step: 24 hrs - Number of cycle: 2 	<ul style="list-style-type: none"> - Loss change \leq 0.1 dB @1550 nm - No fiber break and no sheath damage.
8	Compound Flow IEC 60794-1-E14	<ul style="list-style-type: none"> - Sample length: 30 cm - Temp: 70°C \pm 2°C - Time: 24 hours 	<ul style="list-style-type: none"> - No compound flow
9	Sheath High Voltage Test	<ul style="list-style-type: none"> - On line test - 9t KV (t-sheath thickness) 	<ul style="list-style-type: none"> - No sheath breakdown