Техническа спецификация

Оптични кабели GYXTW - бронирани

(SM GYXTW-4,8,12 Fibers)

Product: Single Mode Optical Fiber Cable
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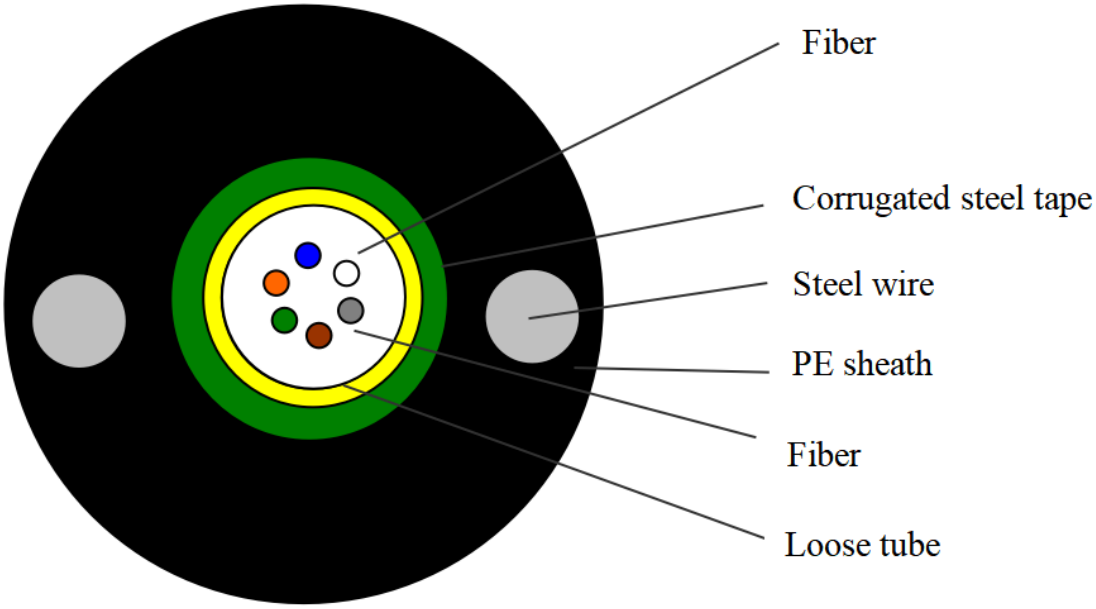
1. Cable Construction

1.1 Cable cross-section



2. Cable Specification

2.1 Sheath marking

XCIN 2021 GYXTW XXB1.3 (G.652D) XXXXm	
XCOM	: Manufacturer's brand
2021	: Manufacture year
GYXTW	: Cable type
XXB1.3 (G.652D)	: XX cores single-mode optical fiber (ITU-T Rec. G.652D)
XXXXm	: Mark of meters
**The marking is printed every 1 meter;*	
***"G.652D" means ITU-T Rec. Low Water Peak (LWP) G.652 Single Mode Optical Fiber.*	

2.2 The color of marking is white.

2.3 An occasional unclear of length marking is permitted if both of the neighboring markings are clear;

2.4 The both cable ends are sealed with heat shrinkable end caps to prevent water ingress.

2.5 Fiber color code

No.	1	2	3	4	5	6
Color	Blue	Orange	Green	Brown	Gray	White
No.	7	8	9	10	11	12
Color	Red	Black	Yellow	Violet	Pink	Aqua

2.6 Color Code for Loose Tube (LT) & Filler Rod (FR)

Fiber count	Element no., name & color code					
	1	2	3	4	5	6
12	**LT**	/	/	/	/	/

* “LT” means “Loose tube”;

** “FR” means “Filler rod”;

2.7 Cable structure and parameter

Fiber count	Max. fiber count per tube	Total unit count (LT + FR)	Loose tube*	Steel strength member	O.D**
			mm	mm	mm
12	12	1(1LT + 0FR)	2.0	2x0.6	7.5

* The nominal loose tube dameter may vary by ±0.1mm.

** The nominal outer diameter and height may vary by ±0.3mm.

3. Fiber Properties

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

Item	Specification
Fiber type	Single mode
Fiber material	Doped silica
Attenuation coefficient @ 1310 nm @ 1383 nm @ 1550 nm @ 1625 nm	 ≤ 0.36 dB/km ≤ 0.32 dB/km ≤ 0.22 dB/km ≤ 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 @ 1271 ~ 1360 nm @ 1550 nm @ 1625 nm	 ≤3.5 ps/(nm. km) ≤5.3 ps/(nm. km) ≤18 ps/(nm. km) ≤22 ps/(nm. km)

PMD_Q (Quadrature average*)	≤0.2 ps/km$^{1/2}$
Mode field diameter @ 1310 nm	9.2±0.4 um
Core / Clad concentricity error	≤ 0.5 um
Cladding diameter	125.0 ± 0.7 um
Cladding non-circularity	≤1.0%
Primary coating diameter	245 ± 10 um
Proof test level	100 kpsi (=0.69 Gpa), 1%
Temperature dependence 0ºC~ +70ºC @ 1310 & 1550nm	≤ 0.1 dB/km

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

4. Characteristic of Optical Cable

4.1 Mechanical & environmental characteristics

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

4.1.2 Temperature range and humidity

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

4.2 Main mechanical & environmental characteristics test

NO	ITEM	TEST METHOD	ACCEPTANCE REQUIREMENTS
1	Tensile Strength IEC 794-1-E1	- Load: 1,500 N - Length of cable under load: 50m - Load time: 5 min.	- Loss change ≤ 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: ≥1min	- Loss change ≤ 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: 4.5 Nm - Radius of hammer head: 12.5mm - Impact rate: 2sec/cycle	- Loss change ≤ 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 ≤ 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: ±180° - No. of cycle: 10	- Loss change ≤ 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: +20ºC→-10ºC→+70ºC →+20ºC - Time per each step: 12 hrs - Number of cycle: 2	- Loss change ≤ 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 ± 2°C - Time: 24 hours	- No compound flow

5. Packing and Marking

5.1 Packing

5.1.1 Each single length of cable shall be reeled on **Non-fumigated wooden Drum** suitable for long distance shipment.

5.1.2 Covered by plastic buffer sheet.

5.1.3 Sealed by strong wooden battens.

5.1.4 At least 1 m of inside end of cable will be reserved for testing.

5.1.5 Drum length

5.1.5.1 Standard drum length is **3000m±5%**;

5.1.5.2 Single length not less than 90% of standard length per drum shall be permitted for quantity not exceeding 10% of the total supply;

5.1.5.3 Total quantity is at least the ordered quantity.

5.2 Marking

5.2.1 Cable drum

- Manufacturer brand;
- Roll-direction arrow;
- Cable outer end position indicating arrow;
- The word “**OPTICAL FIBER CABLE**”;
- Origin, The word “**MADE IN CHINA**”;

- Caution plate indicating the correct method for loading, unloading and convey the cable;
- *Other customer information such as contract no., project no., and delivery destination. (if needed)*

5.2.2 Marking plate

- Product name;
- Cable type and size;
- Drum length;
- Gross / Net weight in kilograms;
- Drum number in meters;
- Manufacturer's name;
- Manufacturing year and month;
- *Project number, contract number or purchasing order number (if needed).*

5.3 Cable identification documents

- Test report.

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