

# Техническа спецификация

## **GYXTW-nB1.3**

## 1. Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. XCOM ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and OHS.

Cable type	Application
GYXTW-nB1.3	Duct installation

### 1.1 Cable Description

Optical fibres are housed in one loose tube which is made of high-modulus plastic and filled with tube filling gel.

Water blocking compound is used in and over the cable core to prevent it from water ingress.

Water blocking tape wraps up the central tube. The corrugate steel tape are used over the cable core to protect it.

Two parallel steel wires are placed at the two sides of the cable.

Polyethylene sheath is applied as outer sheath.

### 1.2 Reference

The cable offered by XCOM are designed, manufactured and tested according to the standards as follows:

ITU-T G.652	Characteristics of a single-mode optical fibre
IEC 60794-1-1	Optical fibre cables-part 1-1: Generic specification-General
IEC 60794-1-2	Optical fibre cables-part 1-2: Generic specification-Basic optical cable test procedure
IEC 60794-3	Optical fibre cables-part 3: Sectional specification-Outdoor cables
IEC 60794-3-10	Optical fibre cables-part 3-10: Outdoor cables-Family specification for duct and direct buried optical communication cables
IEC 60794-3-11	Optical fibre cables-Part 3-11: Outdoor cables-Detailed specification for duct and directly buried single-mode optical fibre telecommunication cables

### 1.3 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

## 2. Optical Fibre

Optical Fibres supplied in this specification meet the requirements of ITU-T G652D

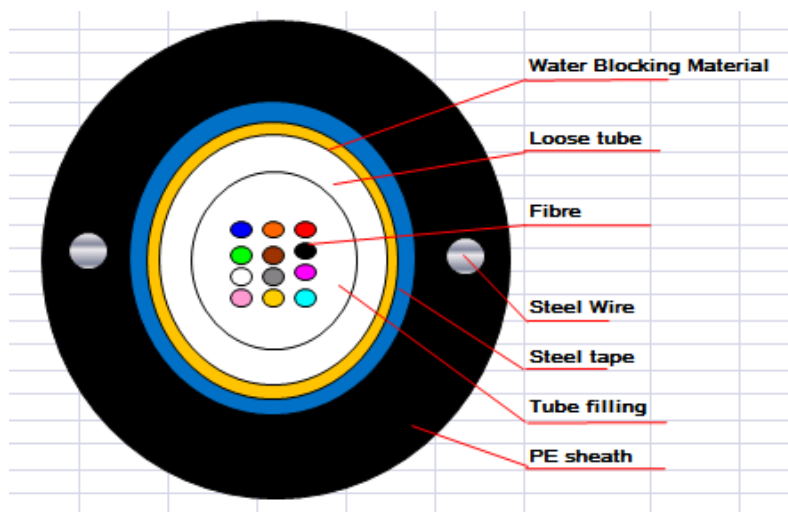
Parameters	Specification
MFD (1310nm)	9.2+/-0.4um
MFD (1550nm)	10.4+/-0.5um
Cladding diameter	125um±1.0um
Fiber diameter	245+/-7um, with UV coating, and colored to : 250+/-15um
Core/cladding concentricity error	≤ 0.6um
Coating/cladding concentricity error	≤ 12.0um
Cladding non circularity	≤ 1.0%
Cut off wavelength	$\lambda_{cc} \leq 1260\text{nm}$
Attenuation coefficient	1310nm: 0.36dB/km max after cabling
	1550nm: 0.22dB/km max after cabling
Bending-loss performance of optical fiber @ 1310nm&1550nm	≤0.05dB (100 turns around a mandrel of 50mm diameter)
Polarization mode dispersion link value	≤0.1ps/√km
Zero-dispersion wavelength	1312+/-12nm
Zero-dispersion slope	≤0.091ps/nm <sup>2</sup> .km

### 3. Optical Cable

#### 3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibres with enough space and bending endurance, which ensure good optical property of the fibres in the cable
- Accurate process control ensures good mechanical and temperature performance
- High quality raw material guarantees the long service life of cable

#### 3.2 Cross Section of Cable



**GYXTW-12B1.3**

Structure of other fibre counts refer to 3.4

#### 3.3 Fibre color code Identification

Each fibre can be identifiable throughout the length of the cable in accordance with the following color sequence. Fibre color starts from No. 1 Blue.

Fiber color code	24 fibers per tube	1	2	3	4	5	6
		Blue	Orange	Green	Brown	Grey	White
		7	8	9	10	11	12
		Red	Black	Yellow	Purple	Pink	Aqua
		13	14	15	16	17	18
		Blue with black ring	Orange with black ring	Green with black ring	Brown with black ring	Grey with black ring	White with black ring
		19	20	21	22	23	24
Red with black ring	Nature	Yellow with black ring	Purple with black ring	Pink with black ring	Aqua with black ring		

Loose tube will be identification in Natural.

### 3.4 Dimensions and Descriptions

The standard structure of GYXTW cable is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	contents	Value				
		4	8	12	16	24
Loose tube	number	1				
	Outer diameter (mm)	2.2			3.0	3.2
Fiber counts in tube	G.652D	4	8	12	16	24
Strength member	material	Steel wire				
	diameter (mm)	0.6				
	Number of strength member	2				
Core wrap	material	Water blocking material				
Armor	material	Steel tape				
sheath	Material	MDPE				
	Color	Black				
Cable diameter(mm) Approx.		7.5	7.5	7.5	8.2	8.4
Cable weight(kg/km) Approx.		55	55	55	62	64

### 3.5 Main Mechanical and Environmental Performance

Item	Value
<b>Tensile performance(N)</b>	800
<b>Crush(N/100mm)</b>	800
<b>Operation temperature:</b>	-40°C ~ +70°C
<b>Installation temperature</b>	-10°C ~ +60°C
<b>Storage temperature</b>	-40°C ~ +70°C

#### 4. Mechanical, Physical and Environmental Test Characteristics

The mechanical and environmental performance of the cable are in accordance with the following table. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

Items	Test Method	Requirements
<b>Tension</b>	<u>IEC 60794-1-2-E1</u> Load: According to 3.5 Sample length: Not less than 50m. Duration time: 1min.	Additional attenuation: $\leq 0.1$ dB after test No damage to outer jacket and inner elements
<b>Crush</b>	<u>IEC 60794-1-2-E3</u> Load: According to 3.5 Duration of load: 1min	Additional attenuation: $\leq 0.1$ dB after test No damage to outer jacket and inner elements
<b>Impact</b>	<u>IEC 60794-1-2-E4</u> Radius: 300 mm Impact energy: 10 J Impact number: 1 Impact points: 3	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Bend</b>	<u>IEC 60794-1-2-E11A</u> Mandrel radius: $10 \cdot D$ Turns:4 Cycles:3	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Repeated bending</b>	<u>IEC 60794-1-2-E6</u> Bending radius: $20 \cdot D$ Cycles: 10 Load: 150N	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Torsion</b>	<u>IEC 60794-1-2-E7</u> Cycles:10 Length under test: 1m Turns: $\pm 180^\circ$ Load: 150N	Additional attenuation: $\leq 0.1$ dB No damage to outer jacket and inner elements
<b>Water Penetration</b>	<u>IEC 60794-1-2-F5B</u> Time : 24 hours Sample length : 3m Water height : 1m	No water leakage.
<b>Temperature cycling</b>	<u>IEC 60794-1-2-F1</u> Sample length: at least 1000m Temperature range: $-40^\circ\text{C} \sim +70^\circ\text{C}$ Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.1 dB/km
<b>Other parameters</b>	According to <u>IEC 60794-1</u>	

## **5. Packaging and Drum**

### **5.1 Cable Sheath Marking**

Unless otherwise specified, the cable sheath marking shall be as follows:

- Color: white
- Contents: XCOM, the year of manufacture, the type of cable, cable number, length marking
- Interval:  $1 \pm 0.2\%$  m

Outer sheath marking legend can be changed according to user's requests.

### **5.2 Reel Length**

Standard reel length: 2/3 km/reel, other length is also available.

### **5.3 Cable Drum**

The cables are packed in plywood drums.

### **5.4 Cable Packing**

Both ends of the cable will be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage. The inner end is available for testing.