

## Optical Fibre Cable Specification

# DUCT Cable

**CTC LSZH 1,6KN n x B1.3/G652D**

NextraCom Optical Fibre Cable

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## 1. General

This specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. It also includes NextrCom premium designed cable with optical, mechanical and geometrical characteristics.

Cable type	Application
CTC LSZH 1,6KN n x B1.3/G652D n represent the number of fibres in the cable.	Suitable for duct installation

### 1.1 Cable Description

NextraCom cable has excellent optical transmission and physical performance, to meet customer requirements.

### 1.2 Quality

NextraCom ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and OHS.

### 1.3 Reliability

Initial and periodic qualification tests for raw material and cable product are performed to assure the cable's performance and durability in the field environment.

### 1.4 Reference

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 60794-2	Optical fibre cables- part2- Indoor cables-Sectional specification
IEC 60794-3	Optical fibre cables- part3-Sectional specification- Outdoor cables
IEC 60794-3-10	Optical fibre cables- part3-10- 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

#### Other properties :

Halogen free IEC 60754-1/2

Euro fire class according to EN 13501-6 Eca

Vertical Flame Propagation (for Single Cable) IEC 60332-1-2 / EN 50265-2-1

### 1.5 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of thirty (30) years without detriment to the operation characteristics of the cable.

## 2. Optical Fibre (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

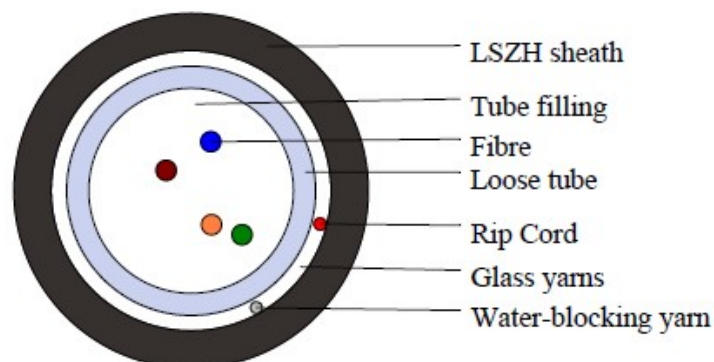
## 3. Optical Cable

### 3.1 General Design

- Optical fibers are housed in loose tubes that are made of high-modulus plastic and filled with waterproof compounds.
- Loose tubes is in the central of the cable .
- Glass yarns are applied as peripheral strength element.
- LSZH sheath is applied over the cable core and it does not contain halogen.
- Capacity of rodent protection and UV resistance.

### 3.2 Construction

#### 3.2.1 Cross Section of Cable



CTC LSZH 1,6KN -4xB1.3/G652D  
Structure of other fibre counts referto 3.2.2

**3.2.2 Dimensions and Descriptions of Cable Constructions**

Item	contents	Value	
		1~12	13~24
Loose tube diameter(mm)	Material	PBT	
	Diameter(mm)	3.0	3.2
Strength member	Material	Glass yarns	
Water blocking	Material	Water blocking yarn	
Ripcord	Number	1	
Outer sheath	Material	LSZH	
	Color	BLACK	
	Thickness(mm)	1.2	
Cable diameter(mm) Approx.		6.4±0.2	6.6±0.2
Cable weight(kg/km) Approx.		55±5	57±5

**3.2.3 Mechanical Performance of Cable**

Tensile performance(N)		Crush(N/100mm)		Bending Radius(mm)	
Short term	Long term	Short term	Long term	Static	Dynamic
1600	500	1000	300	10D	20D

Transportation and storage temperature: -40℃~+70℃

Installation temperature:-5℃~+60℃

Operation temperature: -40℃~+70℃

**3.2.4 Color Code of the Fibre and the Loose tube**

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. The color of the loose tube is natural .

		1	2	3	4	5	6
Fiber color code	24 fibers per tube	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		

### 3.3 Mechanical, Electrical 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 3.2.3 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 3.2.3 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: 3J 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*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*D Cycles: 25 Load: 20N	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>	

## **4. Packaging and Drum**

### **4.1 Cable Sheath Marking**

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

- Contents: : NEXTRA OPTICAL CABLE, the type of cable, the year of manufacture, length marking
- Interval:  $1 \pm 0.2\%$  m

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

### **4.2 Reel Length**

Standard reel length: 2/4 km/reel, other length is also available.

### **4.3 Cable Drum**

The cables are packed in fumigated wooden drums.

### **4.4 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.