Optical Fibre Cable Technical Specification

Duct Cable

LTC-RP 2,5KN – nB1.3/G652D

NextraCom Optical Fibre Cable

1. Scope

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

Cable type	Application
LTC-RP 2,5KN – nB1.3/G652D	Duct installation

1.1 Cable Description

Optical fibres are housed in loose tubes that are made of high-modulus plastic and filled with waterproof compounds.

FRP is applied as central strength member.

Loose tubes are SZ stranded around the central strength member.

Water blocking tape and yarns are used in and over the cable core to prevent it from water ingress.

Glass yarns are used as peripheral strength member.

Polyethylene sheath are applied as outer sheath.

1.2 Reference

The cable offered by NextraCom 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 thirty (30) years without detriment to the operation characteristics of the cable.

2. Optical Fibre

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

2.2 Optical fibre specifications

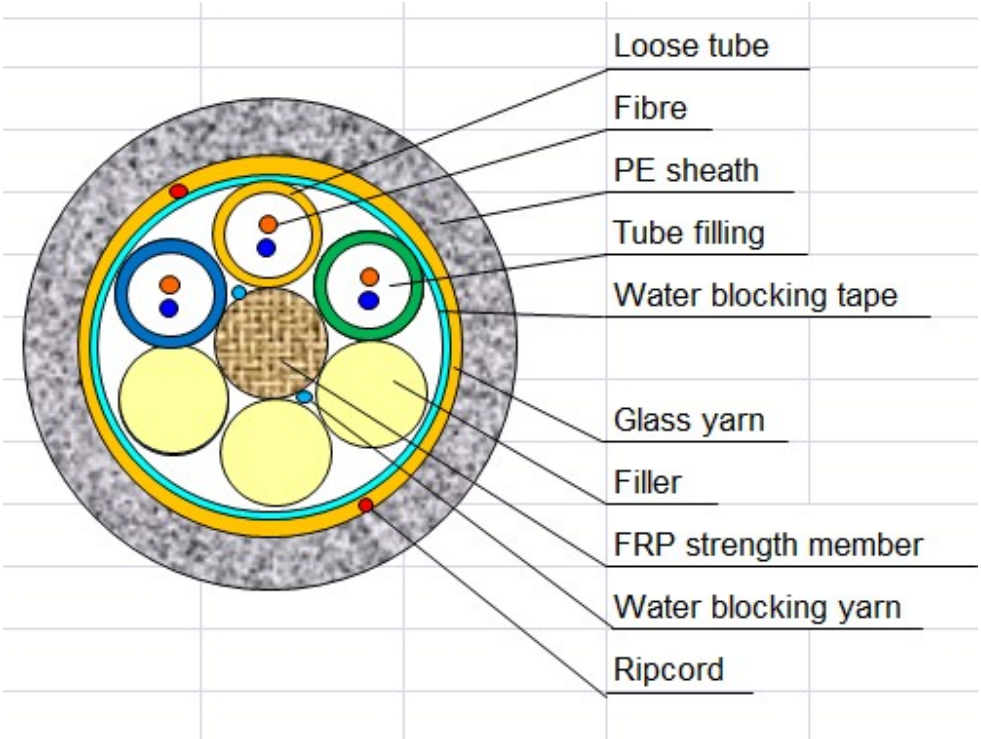
Parameters	Specification
MFD（1310nm）	9.2+/-0.4um
MFD（1550nm）	10.4+/-0.5um
Cladding diameter	125μm±1.0μm
Fiber diameter	245+/-7um, with UV coating, and colored to : 250+/-15um
Core/cladding concentricity error	≤ 0.6um
Coating/cladding concentricity error	≤ 12.0um
Cladding non circularity	≤ 1.0%
Cut off wavelength	λcc ≤1260nm
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^2.km

3. Optical Cable

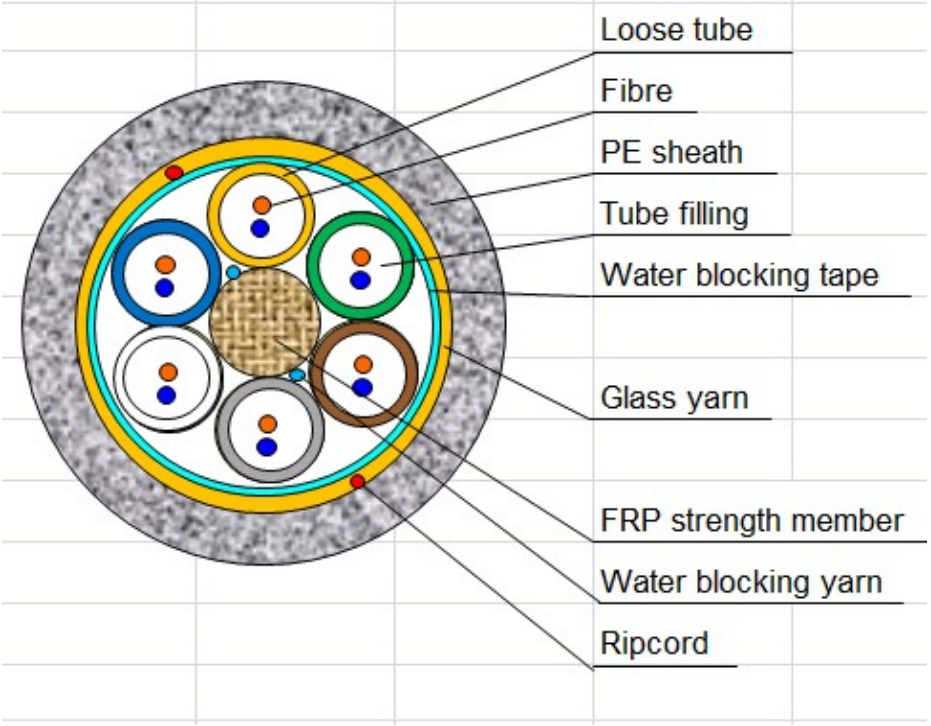
3.1 Technical Characteristics

- 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
- Capacity of rodent protection and UV resistance

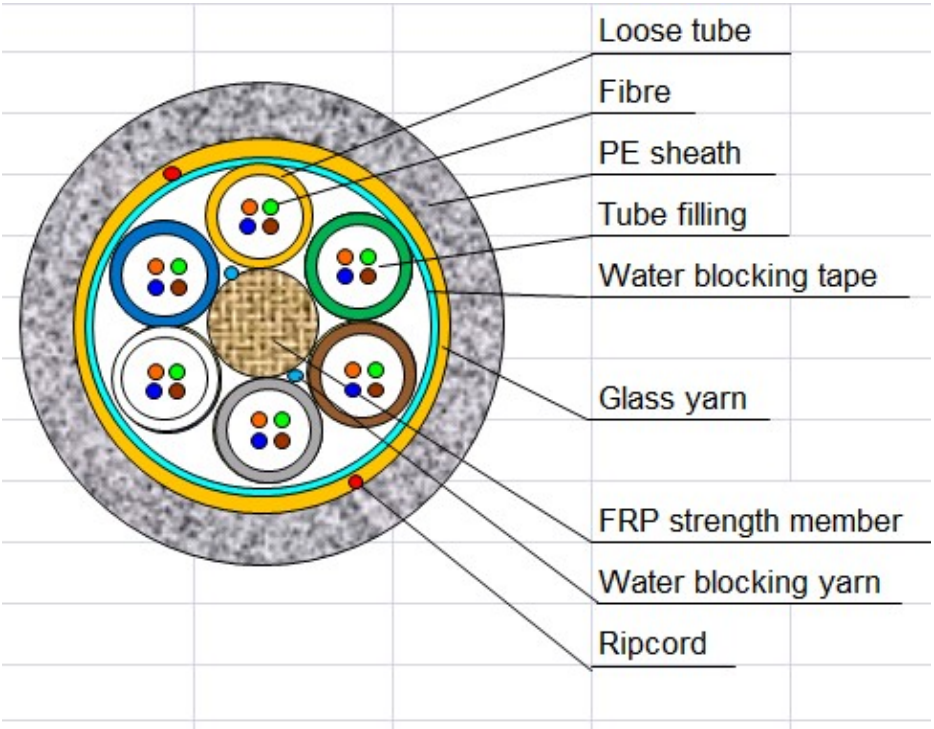
3.2 Cross Section of Cable



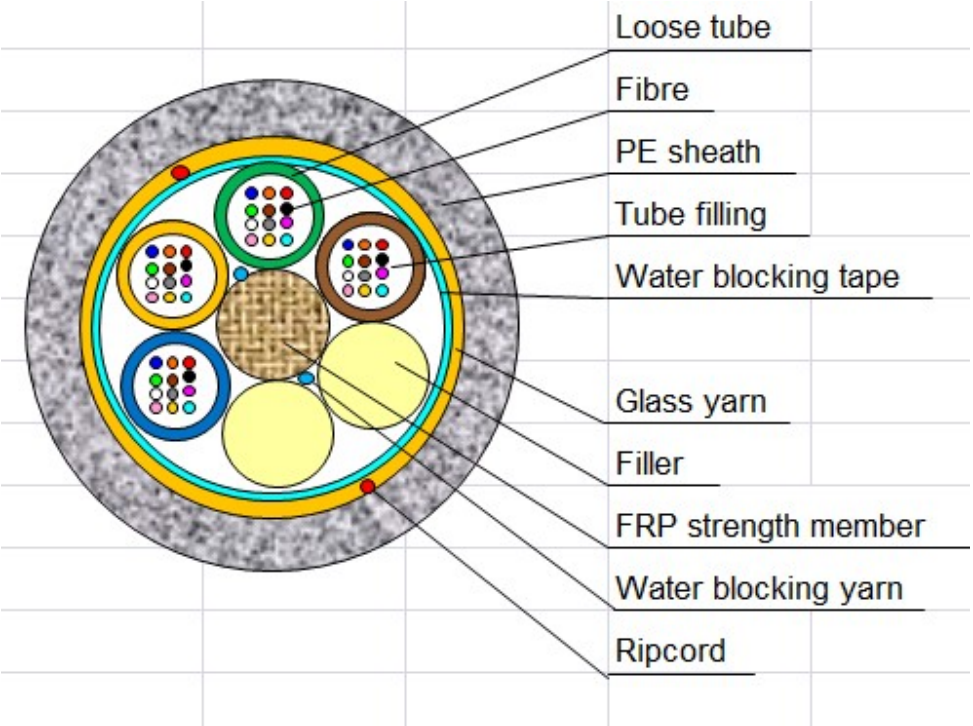
LTC-RP 2,5KN -6B1.3/G652D



LTC-RP 2,5KN – 12B1.3/G652D



LTC-RP 2,5KN – 24B1.3/G652D



LTC-RP 2,5KN -48B1.3/G652D
Structure of other fibre counts refer to 3.4
Schematic for reference only

3.3 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence, other sequence also is available.

Color Code	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Grey	White
	7	8	9	10	11	12
	Red	Black	Yellow	Violet	Pink	Aqua

The color of the fillers will be natural.

3.4 Dimensions and Descriptions

The standard structure of LTC-RP 2,5KN cable is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	contents	Value			
		6	**12**	**24**	**48**
Loose tube	number	3	6	6	4
	Outer diameter (mm)	1.8			2.1
Filler	number	3	-	-	2
Max. fiber counts per tube	G.652D	2		4	12
Central strength member	material	FRP			
	diameter (mm)	2.0			2.25
	PE layer diameter (mm)	-			
Water Blocking Material	Material	Water Blocking Tape & Yarn			
Peripheral strength member	Material	Glass yarn			
sheath	Material	MDPE			
	Color	Black			
	Thickness (mm)	1.5			
Ripcord	number	2			
Cable diameter(mm) Approx.		9.4			10.2
Cable weight(kg/km) Approx.		70			85

3.5 Main Mechanical and Environmental Performance

Item	Value			
	16	24	48	96
Tensile performance(N)	2500			
Crush(N/100mm)	1000			
Operation temperature:	-40°C～+70°C			
Installation temperature	-10°C～+70°C			
Storage temperature	-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
Tension	**IEC 60794-1-2-E1** Load: According to 3.5 Sample length: Not less than 50m. Duration time: 1min.	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Crush	**IEC 60794-1-2-E3** Load: According to 3.5 Duration of load: 1min	Additional attenuation: ≤0.1dB after test No damage to outer jacket and inner elements
Impact	**IEC 60794-1-2-E4** Radius: 300 mm Impact energy: 10 J Impact number: 1 Impact points: 3	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Bend	**IEC 60794-1-2-E11A** Mandrel radius: 10*D Turns:4 Cycles:3	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Repeated bending	**IEC 60794-1-2-E6** Bending radius: 20*D Cycles: 25 Load: 150N	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Torsion	**IEC 60794-1-2-E7** Cycles:10 Length under test: 1m Turns: ± 180° Load: 150N	Additional attenuation: ≤0.1dB No damage to outer jacket and inner elements
Water Penetration	**IEC 60794-1-2-F5B** Time : 24 hours Sample length : 3m Water height : 1m	No water leakage.
Temperature cycling	**IEC 60794-1-2-F1** Sample length: at least 1000m Temperature range: -40℃~+70℃ Cycles: 2 Temperature cycling test dwell time: 12 hours	The change in attenuation coefficient shall be less than 0.05 dB/km at 1550nm.
Other parameters	According to **IEC 60794-1**	

5 Packaging and Drum

5.1 Cable Sheath Marking

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

□Color: white

□Contents: NEXTRA OPTICAL CABLE, the type of cable, the year of manufacture, length marking

□Interval: 1±0.2% m

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

5.2 Reel Length

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

5.3 Cable Drum

The cables are packed in fumigated wooden 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.