

ES-23-DSTBAYLZ-Rev.0



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Specification

Distribution Optic Cable

Compact and Easy-to-Locate Fiber Optic Cable for the Last Link in Your FTTx Network

1. SCOPE

1.1 Application

When it is necessary to run a large number of fibers through a building, distribution cable is often used. Distribution cable consists of multiple tight-buffered fibers bundled in a jacket with a strength member. Typically, these cables may also form sub cables within a larger distribution cable.

1.2 Cable Description

Tight buffered fibers, Aramid Strength Member and LSZH Compound with ripcords.

2. OPTICAL FIBER

The optical, geometrical, mechanical and environmental performance of the optical fiber shall be in accordance with below.

Table 1. Performance of The Single Mode Fiber after cabling (ITU-T G. 652D)

Parameter	Specification
Optical Characteristics	
Attenuation coefficient (After cable) @ 1310 nm @ 1550 nm	≤ 0.40 dB/km ≤ 0.30dB/km
Dispersion coefficient @ 1285 ~ 1330 nm @ 1550 nm	≤ 3.4 ps/(nm ² .km) ≤ 18.0 ps/(nm ² .km)
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	≤ 0.091 ps/(nm ² .km)
PMD Maximum Individual Fiber	≤ 0.2 ps/km ^{1/2}
Cable cut-off wavelength	≤ 1260 nm
Mode field diameter @ 1310 nm	9.2 ± 0.4 um
Geometrical Characteristics	
Cladding diameter	125.0 ± 1.0 um
Cladding non-circularity	≤ 1.0 %
Coating diameter	245 ± 7 um
Coating-Cladding concentricity error	≤ 12.0 um
Coating Non-circularity error	≤ 6.0 %
Core-Clad concentricity error	≤ 0.6 um
Curl (Radius)	≥4m
Mechanical Specification	

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Proof test level	≥100 kpsi
Micro-bend induced attenuation 1 turn around a mandrel of 32mm diameter 100 turns around a mandrel of 50mm diameter 100 turns around a mandrel of 50mm diameter	≤0,05 dB at 1550 nm ≤0,05 dB at 1310 nm & 1550 nm ≤0,05 dB at 1625 nm
Coating strip force Average force	1,7 N

Table 2. Performance of The Single Mode Fiber after cabling (ITU-T G. 657 A2)

Parameter	Specification
Optical Characteristics	
Attenuation coefficient (After cable) @ 1310 nm @ 1550 nm	≤ 0,40 dB/km ≤ 0,30 dB/km
Attenuation vs. Wavelength Max. α difference	≤ 0,03dB/km at 1285 ~ 1330 nm ≤ 0,02dB/km at 1525 ~ 1575 nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	≤ 0,092 ps/(nm ² .km)
PMD Maximum Individual Fiber	≤ 0,2 ps/km ^{1/2}
Cable cut-off wavelength	≤ 1260 nm
Mode field diameter @ 1310 nm	8,8 ± 0,4 μ m
Geometrical Characteristics	
Cladding diameter	125,0 ± 0,7 μ m
Cladding non-circularity	≤ 0,7 %
Coating diameter	245 ± 5 μ m
Coating-Cladding concentricity error	≤ 12,0 μ m
Coating Non-circularity error	≤ 6,0 %
Core-Clad concentricity error	≤ 0,5 μ m
Curl (Radius)	≥4m
Mechanical Specification	
Proof test level	≥100 kpsi
Micro-bend induced attenuation 10 turns around a mandrel of 30mm diameter 1 turn around a mandrel of 20mm diameter 1 turn around a mandrel of 15mm diameter	≤0,03 dB at 1550 nm, ≤0,1 dB at 1625 nm ≤0,1 dB at 1550 nm, ≤0,2 dB at 1625 nm ≤0,2 dB at 1550 nm, ≤0,5 dB at 1625 nm

3. CABLE CONSTRUCTION

The construction of the cable shall be in accordance below.

Table 3. Construction of The Cable

ITEMS		DESCRIPTION						
Number of Fibers		1	2	4	6	8	12	24
Tight Buffered	Material : LSZH / Diameter : 0,9mm ± 0,05mm							
Strength Member	Aramid Yarns							
Ripcords	-	1 ea						
Outer Jacket	TPU(Thermoplastic Polyurethane)							
Outer diameter		3.0 ±0,2mm	4.5 ±0,3mm	5.3 ±0,3mm	5.7 ±0,3mm	6.0 ±0,3mm	6.7 ±0,3mm	9.8 ±0,3mm
Weight (kg/km)		8.1	20.0	25.0	30.0	35.0	40.0	90.0
Tensile Strength	Short	900N	1100N				1250N	1400N
	Long	480N	600N				700N	780N
Max. Crush (N/100mm)		500N	2000N					
Min. Bending radius	20 x Outer diameter							
Temperature range	- 40°C to + 70°C							

4. IDENTIFICATION

4.1 The Color Code of the individual fibers

Table 4. The Color Code of the tight buffered

No	1	2	3	4	5	6	7	8	9	10	11	12
24F	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Pink	Aqua
	13	14	15	16	17	18	19	20	21	22	23	24
	Blue	Orange	Green	Brown	Slate	White	Red	Natural	Yellow	Violet	Pink	Aqua
												

*  : Black dot marking

*  : White dot marking

4.2 Outer jacket color : Black or other colors

5. PHYSICAL / MECHANICAL / ENVIRONMENTAL PERFORMANCE AND TESTS

5.1 Temperature Range

- Storage/Shipping temperature range : - 10°C to + 70°C

- Operating temperature range : - 20°C to + 70°C

- Installation temperature: - 10 °C to + 60°C

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5.2 Mechanical and Environmental Performance of the Cable

The mechanical and environmental performance of the cable shall be in accordance with Table 4 below. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

Table 5. The Mechanical and Environmental Performance of the Cable

ITEMS	TEST METHOD AND ACCEPTANCE CRITERIA
Tensile Loading Test	# Test method: IEC 60794-1-2 Method E1A or E1B - Mandrel diameter : 30D (D = cable diameter) - Tensile load : Follow table 3. # Acceptance Criteria - Attenuation increment: ≤ 0.10 dB
Crush resistance	# Test method: IEC 60794-1-2 Method E3 - Applied load : Follow table 3. - Duration of loading : 5 minutes # Acceptance Criteria - Attenuation increment : ≤ 0.10 dB
Torsion test	# Test method: IEC 60794-1-E7 - Test length: 2m - Applied load: 100N - Twist angle: ± 180 degrees - Twist cycles : 10 # Acceptance Criteria - Attenuation Increment: ≤ 0.10 dB
Impact Test	# Test method: IEC 60794-1-2 Method E4 - Height of impact: 300mm - Drop hammer mass: 0.3J - No. of impact : 3 point # Acceptance Criteria - Attenuation Increment: ≤ 0.10 dB
Resistance to Repeated Bending	# Test method: IEC 60794-1-2 Method E6 - Sheave diameter: 20D (D = cable diameter) - Applied load: 40N - No. of flexing cycles: 25 cycles - Cycle duration: 2 seconds # Acceptance Criteria - No visible damage to the coating
Temperature Cycling Test	# Test method: IEC 60794-1-2 Method F1 - Temperature cycling schedule $25^{\circ}\text{C} \rightarrow -40^{\circ}\text{C} \rightarrow +70^{\circ}\text{C} \rightarrow -40^{\circ}\text{C} \rightarrow +70^{\circ}\text{C} \rightarrow 25^{\circ}\text{C}$ - Soak time at each temperature: 12 hours # Acceptance Criteria - Attenuation Increment: ≤ 0.10 dB/km

6. PACKING AND MARKING

6.1 Cable Marking

6.1.1 Standard length of cable shall be 2,000m. Other cable length is also available if requested by customer.

6.1.2 Each length of the cable shall be wound on a separate wooden reels.

6.1.3 Both ends of the cable shall be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage.

6.1.4 The cable ends shall be securely fastened to the reel to prevent the cable from becoming loose in transit or during placing operations.

7. QUALITY CONTROL

7.1 Incoming Inspection

All the raw materials that are used for optical fiber cable shall be inspected by the raw material testing methods that are specified by the manufacturer and that are based on 'Korea Standard' or 'ASTM'.

In some cases, suppliers' test report shall substitute for the raw material manufacturer's test.

Any materials that do not meet the manufacturer's raw material specification shall be rejected or scrapped, and the passed materials only shall be used in the process. Some raw material specifications and subsequent raw material test method may be changed without notice, if and only if the new specification and the new test method do not affect the quality of optical fiber cable.

7.2 In-Process Inspection

Semi-final goods shall be inspected in accordance with specified manufacturer's testing method. The testing method may be changed without notice, if it does not affect quality of optical fiber cable.

7.3 Final Cable Inspection

Following quality properties of finished cable shall be tested to assure the field performances.

✓ Construction / Material

✓ Mechanical

✓ Optical characteristics

7.4 Quality System

International Industrial Certification (IIC) applied ISO 9001 and ISO 14001 to assure the conformance to specified requirements during our production.

8. SAFETY

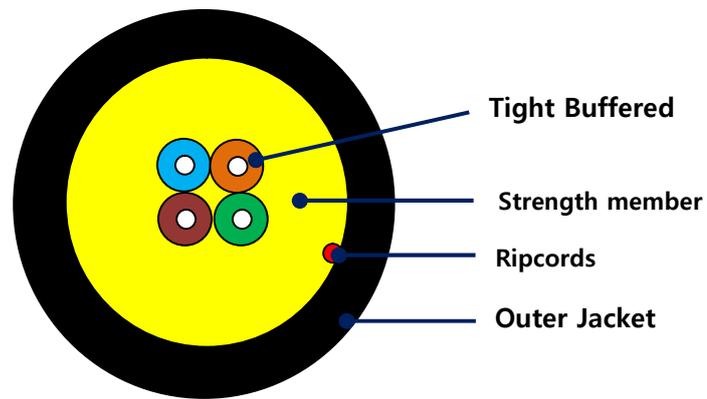
8.1 ROHS Directive

All cables and any associated packing and labeling materials shall meet RoHS (Restriction of the Use of certain Hazardous Substances) regulations as appropriate.

8.2 ISPM 15 Directive

All wooden packing materials shall meet ISPM (International Standards for Phytosanitary Measures) regulations as appropriate.

Cross-Sectional Drawing



= End of Specification =