



OUTDOOR/INDOOR, DUCT, ALL DIELECTRIC, FR-LSZH, FIBER OPTIC CABLE

1. APPLICATION

This specification covers the general requirements for fiber optic telecommunication cables used for campus back bone (inter-building), building backbone (intra-building), indoor and outdoor in duct or lash aerial installation. LINK fiber optic cable supports application such as 25/40/50/100/200/400Gbps Ethernet, IEEE802.3ae 10G Ethernet, IEEE802.3z Gigabit Ethernet, IEEE802.3u Fast Ethernet, 52/155/622Mbps , 1.2Gbps ATM, FDDI, Fiber channel, FTTx, CATV, CCTV and others

LINK OUTDOOR/INDOOR, Duct, All-Dielectric, FR-LSZH, fiber optic cable, Singlemode and Multimode color coded fibers, single loose tube, the interstices between the optical fibers filled with a suitable waterproof compound. The water blocking E-glass yarns provide for tensile strength, water blocking and rodent protection. The ripcord for easy to strip. The outer sheath is UV-Resistant black PE with FR-LSZH.

LINK fiber optic cable in accordance with

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|--|--------------------------------|
| ANSI/TIA/EIA-568.3-D | ISO/IEC 11801:2017, EN 50173-1 |
| ANSI/TIA-568-C.3 | IEC 60332-1-2 |
| ANSI/ICEA 696, ANSI/ICEA 596 | IEC 61034-2, IEC60754-2 |
| Telcordia(Bellcore)GR-20-CORE, GR-409-CORE | IEC 60793, IEC60794-1-2 |
| ITU-T G.651 (Multimode) | TIS 2165-2548 |
| ITU-T G.652D (Single mode) | RoHS Compliant |

2. ORDER INFORMATION

OUTDOOR/INDOOR, DUCT, ALL DIE-ELECTRIC, FR-LSZH, FIBER OPTIC CABLE

Descriptions	OS2, SM 9/125 μm	OM2, MM 50/125 μm	OM3, MM 50/125 μm	OM4, MM 50/125 μm	OM5, MM 50/125 μm
4 Core	UFC9304	UFC5304	UFC4304	UFC3304	UFC2304
6 Core	UFC9306	UFC5306	UFC4306	UFC3306	UFC2306
8 Core	UFC9308	UFC5308	UFC4308	UFC3308	UFC2308
12 Core	UFC9312	UFC5312	UFC4312	UFC3312	UFC2312

3. OPTICAL FIBER

Items		Specifications
Fiber Type		9/125 μm (OS2)
Max. / Typ. Attenuation	1310 nm	$\leq 0.35 / \leq 0.33$ dB/km
	1383 nm	$\leq 0.35 / \leq 0.31$ dB/km
	1550 nm	$\leq 0.21 / \leq 0.19$ dB/km
	1625 nm	$\leq 0.23 / \leq 0.20$ dB/km
Core	Mode Field Diameter	9.2 \pm 0.4 μm @ 1310 nm 10.4 \pm 0.5 μm @ 1550 nm
Cladding Diameter		125 \pm 0.7 μm
Coating Diameter, Primary		242 \pm 5 μm
Coating Diameter, Secondary		250 \pm 5 μm
Cladding Non-circularity		≤ 0.7 %
Core/Cladding Concentricity error		≤ 0.5 μm
Coating/Cladding Concentricity error		≤ 12 μm
Zero Dispersion Wavelength		1300 ~ 1324 nm
Zero Dispersion Slope		≤ 0.092 ps/(nm ² .km)
Cut-off Wavelength	λ_0 (Fiber)	1150 ~ 1330 nm
	λ_∞ (Cable)	≤ 1260 nm
Proof Test Stress		100 Kpsi
Chromatic Dispersion	λ ; 1285~1340nm	≤ 3.5 ps/nm.km
	$\lambda = 1550$ nm	≤ 18 ps/nm.km
	$\lambda = 1625$ nm	≤ 22 ps/nm.km
Polarization mode dispersion (PMD)		≤ 0.20 ps/ $\sqrt{\text{km}}$
Fiber Curl		≥ 4 M
Numerical Aperture		0.130 \pm 0.010
Group refractive index	1310nm	1.4676
	1550nm	1.4682

Table 1 The Optical, Geometrical Performance of the Singlemode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568-C.3, IEC 60793-2B1.3, ITU-T G.652D)

Items		Specifications			
		50/125 μm (OM2)	50/125 μm (OM3)	50/125 μm (OM4)	50/125 μm (OM5)
Max./ Typ. Attenuation (dB/km)	850 nm	$\leq 2.7 / \leq 2.5$	$\leq 2.7 / \leq 2.3$	$\leq 2.7 / \leq 2.3$	$\leq 2.7 / \leq 2.3$
	1300 nm	$\leq 0.8 / \leq 0.7$	$\leq 0.8 / \leq 0.6$	$\leq 0.8 / \leq 0.6$	$\leq 0.8 / \leq 0.6$
	953 nm	N.A	N.A	N.A	$\leq 2.3 / \leq 2.0$
Bandwidth (MHz/km)	850 nm	≥ 500	≥ 1500	≥ 3500	≥ 3500
	1300 nm	≥ 500	≥ 500	≥ 500	≥ 500
	953 nm	N.A	N.A	N.A	≥ 1850
850nm Laser Bandwidth (MHz/km)		N.A	≥ 2000	≥ 4700	≥ 4700
953nm Laser Bandwidth (MHz/km)		N.A	N.A	N.A	≥ 2470
Core Diameter (μm)		50.0 \pm 2.5	50.0 \pm 2.5	50.0 \pm 2.5	50.0 \pm 2.5
Cladding Diameter (μm)		125 \pm 1	125 \pm 1	125 \pm 1	125 \pm 1
Core Non-circularity (%)		≤ 5	≤ 5	≤ 5	≤ 5
Cladding Non-circularity (%)		≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity error (μm)		≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Coating Diameter, Primary (μm)		242 \pm 5	242 \pm 5	242 \pm 5	242 \pm 5
Coating Diameter, Secondary (μm)		250 \pm 5	250 \pm 5	250 \pm 5	250 \pm 5
Coating Non-Circularity (%)		≤ 5	≤ 5	≤ 5	≤ 5
Coating/Cladding Concentricity error (μm)		≤ 12	≤ 12	≤ 12	≤ 12
Proof Test Stress (kpsi)		100	100	100	100
Bending Loss @ 850 & 1300 nm (100 turns, D=75 mm)		≤ 0.5 dB	≤ 0.5 dB	≤ 0.5 dB	≤ 0.5 dB
Zero-Dispersion Wavelength		1295~1315nm	1295~1315nm	1295~1315nm	1295~1315nm
Zero-Dispersion Slope (ps/(nm ² .km))		≤ 0.101	≤ 0.101	≤ 0.101	≤ 0.101
Numerical Aperture		0.200 \pm 0.015	0.200 \pm 0.015	0.200 \pm 0.015	0.200 \pm 0.015
Group refractive index	850nm	1.482	1.482	1.482	1.482
	1300nm	1.477	1.477	1.477	1.477

Table 2 The optical, Geometrical Performance of the Multimode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568-C.3, IEC 60793-2A1a, IEC 60793-2A1b, ITU -T G.651)

4. CABLE CONSTRUCTION

The construction of the cable shall be in accordance with Table 3 below.

Items		Specifications	
Number of fiber		4, 6, 8	12
Loose tube	Material	PBT (Polybutylene Terephthalate)	
	Color	White	
	Filling Compound	Thixotropic jelly compound	
Additional Strength Member	Material	Water blocking E-Glass yarns (To provide the required tensile strength, water blocking and rodent protection)	
Rip Cord	Material	Plastic thread	
Outer Jacket	Material	UV-resistant, Black PE with FR-LSZH (Flame Retardant Low Smoke Zero Halogen)	
	Thickness (Approx.)	1.6 mm.	
Cable Diameter(Approx.)		7.2 ± 0.5 mm.	7.7 ± 0.5 mm.
Cable Weight (Approx.)		53 ± 5 kg. /km.	60 ± 5 kg. /km.

Table 3 Construction of OUTDOOR/INDOOR, All-Dielectric, FR-LSZH, Fiber optic cable.

5. TEMPERATURE RANGE

For the cables covered by this specification, the following temperature ranges apply.

- Operation Temperature : -40°C to +70°C
- Installation Temperature : -40°C to +70°C
- Storage/Shipping Temperature : -40°C to +75°C

6. MECHANICAL SPECIFICATION

Item		Specification
Maximum Tensile load	Installation	1,800 N.
	Operation	900 N.
Maximum Crush resistance		1,500 N./10 cm.
Minimum bending Radius	Installation	15 x Cable Diameter
	Operation	10 x Cable Diameter

Table 4 Mechanical Specification of the cable.

7. FIBER AND LOOSE TUBE IDENTIFICATION

The color code of the loose tubes and the individual fibers within each loose tube shall be in accordance with Table 5 TIA/EIA-598-C (Rev. TIA/EIA-598-A) and EIA-359-A Color Code for Fiber and Loose tube Identification.

No.	Fiber color
1	Blue
2	Orange
3	Green
4	Brown
5	Slate
6	White
7	Red
8	Black
9	Yellow
10	Violet
11	Rose
12	Aqua

Table 5 TIA/EIA-598-C Color Code for Fiber and Loose tube Identification.

8. MECHANICAL PERFORMANCE TEST

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|-------------------------------|---------------------------------------|
| • Tensile loading Test | TIA/EIA-455-33A and IEC 60794-1-2-E1A |
| • Compression Test | TIA/EIA-455-41A and IEC 60794-1-2-E3 |
| • Repeated Bending Test | TIA/EIA-455-104A and IEC 60794-1-2-E6 |
| • Impact Test | TIA/EIA-455-25B and IEC 60794-1-2-E4 |
| • Cable Bending Test | IEC 60794-1-2-E11B |
| • Cable Twist or Torsion Test | TIA/EIA-455-85A and IEC 60794-1-2-E7 |
| • Temperature Cycling Test | TIA/EIA-455-3A and IEC 60794-1-2-F1 |
| • Water Penetration Test | TIA/EIA-455-82B and IEC 60794-1-2-F5 |