



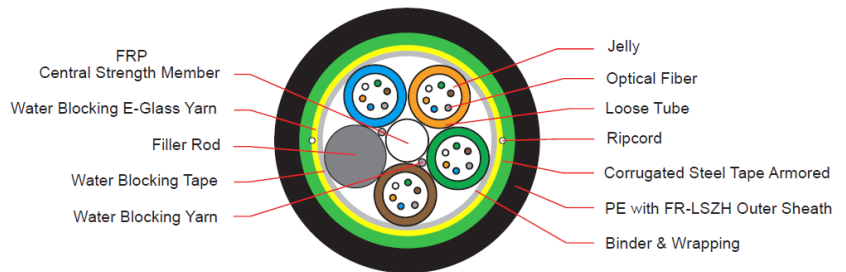
- UFC93XXMA
- UFC53XXMA
- UFC43XXMA
- UFC33XXMA
- UFC23XXMA

Scope of Application

This specification covers the general requirements for fiber optic telecommunication cables used for campus backbone, building backbone, indoor and outdoor in duct, lash aerial or direct buried installation. LINK fiber optic cable supports application such as 40/100Gbps Ethernet, IEEE802.3ae, 10G Ethernet, IEEE802.3z, Gigabit Ethernet, Fast Ethernet, Ethernet, 100BASE-F, 52/155/622Mbps and 1.2Gbps ATM, FDDI, Fiber channel and others.

LINK OUTDOOR/INDOOR, ARMORED, FR-LSZH, Multi-Tube, fiber optic cable. Singlemode and Multimode color coded fibers, multi loose tube, central strength member, filled color coded loose tube, PE Filler, SZ-Stranded around the central strength member (FRP), the interstices between the optical fiber filled with a suitable waterproof compound. The filling compound is non-hygroscopic, water-blocking tape, rip-cord, E-glass yarns for additional strength member and corrugated steel tape provide for rodent protection, black PE with FR-LSZH jacket for UV-Resistant and flame retardant.

Drawing



Technical Standard

- | | |
|--|----------------------------|
| • ANSI/TIA-568.3-E | ISO/IEC 11801:2011 |
| • ANSI/TIA-568.3-D | ISO/IEC 11801:2017 |
| • ANSI/ICEA 696, ANSI/ICEA 596, ANSI/ICEA 640 | IEC 60332-1-2, IEC 60332-3 |
| • Telcordia (Bellcore) GR-20-CORE, GR-409-CORE | IEC 61034-2, IEC60754-2 |
| • ITU-T G.652D (Singlemode) | IEC 60793, IEC 60794-1-2 |
| • ITU-T G.651 (Multimode) | EN 50173-1, TIS 2165-2561 |
| • RoHS Compliant | |





OPTICAL FIBER

Items		Specifications
Fiber Type		9/125 μm (OS2)
Max. / Typ. Attenuation	1310 nm	$\leq 0.35/0.33$ dB/km
	1383 nm	$\leq 0.35/0.31$ dB/km
	1550 nm	$\leq 0.21/0.19$ dB/km
	1625 nm	$\leq 0.23/0.20$ 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
Attenuation (Homogeneity)		Max 0.1 dB/km
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 ; 1285~1340 nm	≤ 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		$\geq 4\text{M}$
Numerical Aperture		0.130 \pm 0.010
Group refractive index	1310 nm	1.4676
	1550 nm	1.4682

Table 1 The Optical, Geometrical Performance of the Singlemode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568.3-E, IEC 60793-2B1.3, ITU-T G.652D)



OPTICAL FIBER

Items		Specifications			
		50/125 μ m (OM2)	50/125 μ m (OM3)	50/125 μ m (OM4)	50/125 μ m (OM5)
Fiber Type	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 (μ m)		50.0 ± 2.5	50.0 ± 2.5	50.0 ± 2.5	50.0 ± 2.5
Cladding Diameter (μ m)		125 ± 1	125 ± 1	125 ± 1	125 ± 1
Core Non-circularity (%)		≤ 5	≤ 5	≤ 5	≤ 5
Cladding Non-circularity (%)		≤ 1.0	≤ 1.0	≤ 1.0	≤ 1.0
Core/Cladding Concentricity error (μ m)		≤ 1.5	≤ 1.5	≤ 1.5	≤ 1.5
Coating Diameter, Primary (μ m)		242 ± 5	242 ± 5	242 ± 5	242 ± 5
Coating Diameter, Secondary (μ m)		250 ± 5	250 ± 5	250 ± 5	250 ± 5
Coating Non-Circularity (%)		≤ 5	≤ 5	≤ 5	≤ 5
Coating/Cladding Concentricity error (μ m)		≤ 12	≤ 12	≤ 12	≤ 12
Attenuation (Homogeneity)		Max 0.1 dB/km	Max 0.1 dB/km	Max 0.1 dB/km	Max 0.1 dB/km
Proof Test Stress (kpsi)		100	100	100	100
Bending Loss @ 850 & 1300 nm (100 turns,		≤ 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 ± 0.015	0.200 ± 0.015	0.200 ± 0.015	0.200 ± 0.015
Group refractive index	850 nm	1.482	1.482	1.482	1.482
	1300 nm	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-568.3-E, IEC 60793-2A1a, IEC 60793-2A1b, ITU -T G.651)



CABLE CONSTRUCTION

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

Item	Description						
Number of fibers	6-24	36-60	72	96	120	144	
Loose Tube	Material	PBT (Polybutylene Terephthalate) with color coding					
	Filling Compound	Thixotropic Jelly Compound					
	Fiber per Tube	6	12				
Filler Rod	Number	1-4	1-5	6	8	10	12
	Material	Plastic rod, natural color					
Stranding	Method	Reverse oscillating lay (ROL) technique (SZ Direction)					
Central Strength Member	Material	FRP (Fiberglass Reinforce with Plastic)					
Water Blocking Yarn	Color	Natural					
	Material	Suitable Water Swellable Materials (Dry-Core Technology)					
Binder & Wrapping	Material	Polyester yarns					
Covering	Material	Water Blocking Tape					
Ripcord	Material	Plastic thread					
	Number	2					
Additional Strength	Material	Water blocking E-glass yarn (aramid yarn is available on request)					
Armored	Material	Corrugated chrome steel tape coated with polymer on both side					
Outer Sheath	Material	UV-resistant, Black PE with FR-LSZH (Flame Retardant Low Smoke Zero Halogen)					
	Thickness (Approx.)	1.6 mm.					
Cable Diameter (Approx.)	10.3 ± 1 mm.	10.7 ± 1 mm.	11.2 ± 1 mm.	12.4 ± 1 mm.	13.7±1.0mm.	15.2±1.0mm.	
Cable Weight (Approx.)	90 ± 10kg./km.	100 ± 10kg./km.	110 ± 10kg./km.	135 ± 10kg./km.	185±10kg./km.	240±10kg./km.	

Table 3 Construction of OUTDOOR/INDOOR, ARMORED, FR-LSZH, MULTI-TUBE, FIBER OPTIC CABLE.

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

MECHANICAL SPECIFICATION

Item	Specification
Maximum Tensile load	Installation 1,800 N.
	Operation 1,000 N.
Maximum Crush resistance	3,400 N./10 cm.
Minimum bending Radius	Installation 20 x Cable Diameter
	Operation 10 x Cable Diameter

Table 4 Mechanical Specification of the cable.



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	Loose Tube color
1	Blue	Blue
2	Orange	Orange
3	Green	Green
4	Brown	Brown
5	Slate	Slate
6	White	White
7	Red	Red
8	Black	Black
9	Yellow	Yellow
10	Violet	Violet
11	Rose	Rose
12	Aqua	Aqua

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

MECHANICAL PERFORMANCE TEST

- 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

ORDER INFORMATION

OUTDOOR/INDOOR, ARMORED, FR-LSZH, MULTI-TUBE, 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
12 Core	UFC9312MA	UFC5312MA	UFC4312MA	UFC3312MA	UFC2312MA
24 Core	UFC9324MA	UFC5324MA	UFC4324MA	UFC3324MA	UFC2324MA
36 Core	UFC9336MA	UFC5336MA	UFC4336MA	UFC3336MA	UFC2336MA
48 Core	UFC9348MA	UFC5348MA	UFC4348MA	UFC3348MA	UFC2348MA
72 Core	UFC9372MA	UFC5372MA	UFC4372MA	UFC3372MA	UFC2372MA
96 Core	UFC9396MA	UFC5396MA	UFC4396MA	UFC3396MA	UFC2396MA
120 Core	UFC93120MA	UFC53120MA	UFC43120MA	UFC33120MA	UFC23120MA
144 Core	UFC93144MA	UFC53144MA	UFC43144MA	UFC33144MA	UFC23144MA

Specifications subject to change without notice.

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