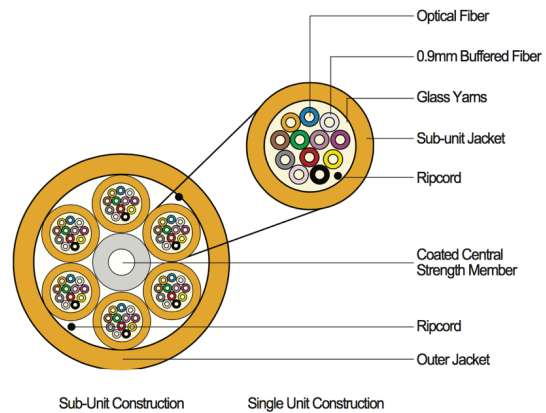


## Fiber Optic, Breakout cable, tight buffered, 900 microns

### Features and benefits

- Fiber-count 2-144 fibers
- 900 microns buffered design for easy termination
- Tight buffered construction
- Plenum (OFNP / FT6), LSZH Riser OFNR (FT-4-ST1)
- OS2, OM3 and OM4 performance types
- Color-coded fibers for easy identification
- Compact design for limited conduit space
- RoHS compliant



### Description

Opterna fiber optic tight buffered cables are rugged, high performance optical communication cables suitable for inside plant installations. These cables are ideally used in backbone or computer room / datacenter cabling.

The fiber optic tight buffered cable contains 2 to 144 fibers individually buffered to 900µm in a tight buffer construction and color coded as per Telcordia requirements.

The cable structure depends on the number of fibers and is available as an individual and subunit construction. The 2 to 24 fiber cables contain individual 900µm fibers without sub-units, the individual fibers are protected by glass yarn, contains a rip cord and an overall jacket. In the 18 to 36 fiber cables, the fibers are grouped into sub-units which are laid helically along the cable axis. Each sub-unit contains 6 fibers surrounded by glass yarn, ripcord and an overall jacket. The 48 ~ 144 fiber cable consists of twelve fibers in each sub-unit.

The cable is available in a wide range of jacket such as LSZH, riser grade and plenum. A ripcord is located under the sub-unit and outer jacket to facilitate jacket removal.

Specifications

Optical Characteristics: Singlemode-9μmOS2-G.652D, G.657A/B

Fiber Type		Unit	OS2 G.652D		G.657A		G.657B	
Wavelength		nm	1310	1550	1310	1550	1310	1550
Attenuation		dB/km	≤ 0.35	≤ 0.21	≤ 0.35	≤ 0.21	≤ 0.35	≤ 0.21
Chromatic dispersion		Ps/nm.km	≤ 3.5	≤ 18	≤ 3.5	≤ 18	≤ 3.5	≤ 18
Zero dispersion wavelength		nm	1300 ~ 1324		1300 ~ 1324		1300 ~ 1324	
Zero dispersion slope		ps/nm <sup>2</sup> .km	≤ 0.092		≤ 0.092		≤ 0.092	
PMD		ps/√km	≤ 0.2		≤ 0.2		≤ 0.2	
Cut-off wavelength		nm	≤ 1260		≤ 1260		≤ 1260	
Mode-field diameter		μm	9.2 ± 0.4	10.4 ± 0.5	8.6 ± 0.4	10.4 ± 0.5	8.6 ± 0.4	10.4 ± 0.5
Macro Bend Loss	30mm radius x 100 turns	dB	-	≤ 0.05	-	-	-	-
	15mm radius x 100 turns		-	-	-	≤ 0.25/0.03	-	≤ 0.03/0.03
	10mm radius x 100 turns		-	-	-	≤ 0.75/0.1	-	≤ 0.1/0.08
	7.5mm radius x 100 turns		-	-	-	-	-	≤ 0.5/0.15
Core/Clad Concentricity Error		μm	≤ 0.8		≤ 0.6		≤ 0.6	
Cladding Diameter		μm	125 ± 1		125 ± 1		125 ± 1	
Cladding Non-circularity		%	≤ 1.0		≤ 1.0		≤ 1.0	
Coating Diameter		%	245 ± 15		245 ± 15		245 ± 15	
Proof Test Level		Kpsi	≥ 100		≥ 100		≥ 100	

Specifications

Optical Characteristics: Multimode - 62.5 μm (OM1), 50μm (OM2, OM3, OM4)

Fiber Type		OM1		OM2		OM3		OM4	
Wavelength	nm	850	1300	850	1300	850	1300	850	1300
Attenuation	dB/km	≤ 3.5	≤ 1.0	≤ 3.0	≤ 1.0	≤ 3.0	≤ 1.0	≤ 3.0	≤ 1.0
Over filled Launch Bandwidth (LED based sources)	MHz.km	≤ 200	≤ 500	≤ 500	≤ 500	≤ 1500	≤ 500	≤ 3500	≤ 500
Effective Modal Bandwidth (850 nm Laser based sources)	MHz.km	-		-		≤ 2000		≤ 4700	
Numerical aperture	-	0.275 ± 0.015		0.20 ± 0.015		0.20 ± 0.015		0.20 ± 0.015	
Core diameter	μm	62.5 ± 3.0		50 ± 3.0		50 ± 3.0		50 ± 3.0	
Core Non-Circularity	%	≤ 6.0		≤ 6.0		≤ 6.0		≤ 6.0	
Cladding diameter	μm	125 ± 2.0		125 ± 2.0		125 ± 2.0		125 ± 2.0	
Cladding Non-Circularity	%	≤ 2.0		≤ 2.0		≤ 2.0		≤ 2.0	
Core / Cladding Concentricity Error	μm	≤ 3.0		≤ 3.0		≤ 3.0		≤ 3.0	
Coating diameter	μm	245 ± 5.0		245 ± 5.0		245 ± 5.0		245 ± 5.0	
Proof test level	Kpsi	≤ 100		≤ 100		≤ 100		≤ 100	

Cable construction

Construction of single unit cables		
Number of fibers		2-24
Type of fiber		Singlemode – 9/125 μm (OS2 G.652D), G.657A1/A2, B1, B2 Multimode – 62.5/125 μm (OM1), 50/125 μm (OM2, OM3, OM4)
Tight Buffer Coating		Outer diameter: 900 ± 50 μm
Dielectric Strength Member		Glass yarn
Ripcord		One ripcord (for 6 - 24 fiber cable)
Outer Jacket Material	Material	LSZH Compound
	Thickness	Nominal 1mm

Cable construction

Construction of multi-unit cables		
Number of fibers	36-144	
Type of fiber	Singlemode – 9/125 μm (OS2 G.652D), G.657A1/A2, B1, B2 Multimode – 62.5/125 μm (OM1), 50/125 μm (OM2, OM3, OM4)	
Tight Buffer Coating	Outer diameter: 900 ± 50 μm	
Sub-unit	No. of tight buffers	6 Fiber: For 18 ~ 36 Fiber Cable 12 Fiber: For 48 ~ 144 Fiber Cables
	Dielectric strength member	Glass yarn
	Sub-unit jacket	LSZH compound
Dielectric strength member	FRP or FRP with LSZH coating	
Ripcord	One ripcord	
Outer Jacket Material	Material	LSZH Compound
	Thickness	Nominal 1.5mm

Color of buffer

01 – Blue	07 – Red	13 – Blue/Black dash	19 – Red/Black d
02 – Orange	08 – Black	14 – Orange/Black dash	20 – Black/White dash
03 – Green	09 – Yellow	15 – Green/Black dash	21 – Yellow/Black dash
04 – Brown	10 – Violet	16 – Brown/Black dash	22 – Violet/Black dash
05 – Grey	11 – Pink	17 – Grey/Black dash	23 – Pink/Black dash
06 – White	12 – Aqua	18 – White/Black dash	24 – Aqua/black dash

Transmission performance

Application	OS1/OS2 Singlemode (1310/1383/1550)	OM1 Multimode (850/1300)	OM2 Multimode (850/1300)	OM3 Multimode (850/1300)	OM4 Multimode (850/1300)
100Base-FX, Ethernet, @ 1300nm	-	2000m	2000m	2000m	2000m
100Base-LX, @ 1310nm	10000m	-	-	-	-
1000Base-SX, Gigabit, Ethernet @ 850nm	-	275m	550m	550m	550m
100Base-LX, Gigabit Ethernet, @ 1310nm	1000m	550m	550m	550m	550m
10GBase-SR, 10Gbps @ 850nm	-	33m	82m	300m	550m
10GBase-LR, 10Gbps @ 1310nm	1000m	-	-	-	-
40GBase-SR, 40Gbps @ 850nm	-	-	-	100m	150m
40GBase-LR4, 40Gbps @ 1310nm	1000m	-	-	-	-
100GBase-SR10, 100Gbps @ 850nm	-	-	-	100m	150m
100Base-LR4, 100Gbps, @ 1310nm	1000m				
100Base-ER4, 100Gbps, @ 1550nm	30000m	-	-	-	-

Environmental data

Temperature range	Value
Storage	- 20° C to +70° C
Operation	- 10° C to +60° C

**Mechanical specifications**

Tensile Load / Strength	IEC 60794-1-2-E1	Single unit: 2~12F 400N for 5 mins 18~24F 400N for 5 mins Multi-unit: 18~144F 400N for 5 mins
Crush Resistance	IEC 60794-1-2-E3	Single unit: 2 ~ 18F 500N/10 cm for 10 minutes 24F 1000N/10cm for 10 minutes Multi-unit: 24~ 144F 1000N/10 cm for 10 minutes
Impact Resistance	IEC 60794-1-2-E4	1 impacts @ 3 points IJ, Radius of impact mass 12.5mm
Torsion Test	IEC 60794-1-2-E7	± 180°, ± 1 turn/2m
Cable Bend	IEC 60794-1-2-E11	20 D for 4 turns, 2 Cycles
Temperature Cycling	IEC 60794-1-2-F1	25°C → -20°C → 60°C → -20°C → 60°C

**Physical specifications**

Construction	No. of fibers	Nominal cable diameter	Nominal weight	Maximum tensile load		Crush load		Maximum bend radius	
				Short term	Long term	Short term	Long term	Under load	No load
				mm	Kg/km	N	N	N/cm	N/cm
Single-Unit	2	4.5	20	400	165	500	200	20 x Ø	10 x Ø
	4	5.3	25	400	165	500	200	20 x Ø	10 x Ø
	6	5.7	30	400	165	500	200	20 x Ø	10 x Ø
	8	6.0	35	400	165	500	200	20 x Ø	10 x Ø
	12	6.4	40	400	165	500	200	20 x Ø	10 x Ø
	16	8.5	70	400	330	500	200	20 x Ø	10 x Ø
Multi-Unit	24	9.8	90	400	330	500	200	20 x Ø	10 x Ø
	36	14.8	185	400	375	500	200	20 x Ø	10 x Ø
	48	17.1	250	400	330	500	200	20 x Ø	10 x Ø
	72	18.7	270	400	330	500	200	20 x Ø	10 x Ø
	96	22.5	425	400	330	500	200	20 x Ø	10 x Ø
	144	26.2	565	400	330	500	200	20 x Ø	10 x Ø

**Part numbers**

Description	Part code
Breakout cable Low Smoke Zero Halogen	FC-XXX-TBC-NA-YYY-FRLZ

XXX = OS1, OS2, 7A1, 7A2, 7B2, 7B3, 655, OM1, OM2, OM3, OM4  
YYY = Number of Cores

Standard reel length 4000m