

Indoor Distribution Tight Buffer Optical Fibre Cable — Riser Series

OM3/OM4/OM5 Multimode | Tight Buffer (TB) | LSZH Riser-Rated (OFNR) | Variants: 6F · 12F · 24F

1. Product Description

This datasheet covers the 6-fibre, 12-fibre, and 24-fibre variants of the indoor distribution tight-buffer (DTB) optical fibre cable series, rated for riser (vertical) installations in accordance with UL 1666 / OFNR. All three variants share the same construction principle: each fibre is individually over-coated with a 900 µm LSZH tight buffer, assembled in a single core group, surrounded by non-metallic aramid yarn strength members, and finished with an LSZH outer sheath in Aqua, violet, lime green (per TIA-598-D OM3/OM4/OM5 designation). The all-dielectric, dry-core construction eliminates jelly compound and supports direct termination at connectors. The fibre used is laser-optimised 50/125 µm OM3/OM4/OM5 multimode (IEC 60793-2-10 A1a.2), offering high bandwidth for 10GBASE-SR up to 300 m, 40G/100G-SR4 up to 100 m.

- Riser-rated vertical runs between floors in commercial, enterprise and data centre buildings (OFNR / UL 1666)
- Structured cabling backbone: TOR, EDA, core/aggregation interconnects and cross-connects
- Enterprise LAN, FTTH IDF/MDF distribution frames and patch panels
- Direct termination at connectors — no breakout kit required for any variant
- Short-reach high-speed links: 10GBASE-SR up to 300 m, 40G/100G-SR4 up to 100 m

2. Product Cross-Sections

The three variants share the same material build; only fibre count, ring arrangement, and cable OD differ. Cross-sections below are shown to a common scale for comparison.

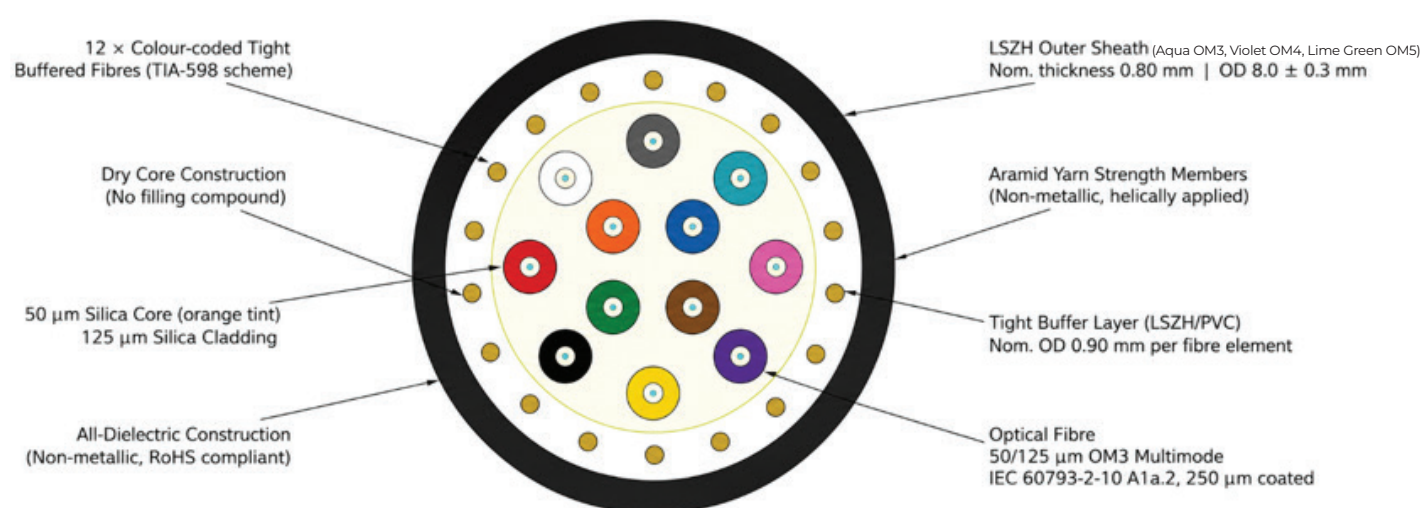


Figure 1 — 12F Cross-Section (OD 8.0 mm, inner 4F + outer 8F ring)

3. Cable Construction Details

Common construction elements (same material specification for all variants); variant-specific physical dimensions are shown in Section 3.2.

3.1 Common Construction — All Variants

S. No.	Element	Material / Description	Value (All Variants)
1	Optical fibre	Multimode 50/125 µm OM3/OM4/OM5, IEC 60793-2-10 type A1a.2; 250 µm dual-layer UV-curable acrylate coating; colour coded per TIA-598	250 µm coated
2	Tight buffer layer	Low-smoke zero-halogen (LSZH) / PVC compound; colour-coded per TIA-598 / GB13993.3-2001; over-coated directly on 250 µm primary coated fibre	OD 0.90 mm nom.
3	Strength members	Aramid yarn (Kevlar® or equivalent), helically applied, non-metallic; provides tensile strength and anti-kink rigidity	Min. 1000 N S/T
4	Outer sheath	LSZH compound, Aqua (per TIA-598-D OM3/OM4/OM5 designation); flame-retardant, low-smoke, halogen-free; meets IEC 60332-3-24 (bunched), IEC 61034-2, IEC 60754-2	Per variant OD

3.2 Variant-Specific Dimensions

Parameter	6F Variant	12F Variant	24F Variant
Fibre count	6	12	24
Fibre lay-up	Single ring, 6F	Inner 4F + outer 8F	3-ring: 6F+9F+9F
Tight buffered elements	6 × OD 0.90 mm	12 × OD 0.90 mm	24 × OD 0.90 mm
Colour scheme	Fibres 1–6 (solid colours)	Fibres 1–12 (solid colours)	Fibres 1–12 solid Fibres 13–24 with black stripe
Cable OD (nominal)	8.0 mm	8.0 mm	8.0 mm
OD tolerance	± 0.3 mm	± 0.3 mm	± 0.3 mm
Sheath thickness (nom.)	~0.80 mm	~0.80 mm	~0.60 mm ¹
Cable weight (approx.)	38 kg/km	55 kg/km	85 kg/km

The 24F variant achieves OD 8.0 mm through an optimised compact lay-up: 3-ring arrangement (6+9+9) keeps the core envelope at 6.30 mm OD, leaving 0.85 mm radial budget. Aramid yarn weight is optimised to ~0.20 mm radial thickness with increased yarn density, and LSZH sheath is specified at 0.60 mm (minimum for indoor distribution cable in conduit/tray installation). This matches the industry-standard 24F DTB construction (ref: TIA-568-C.3). For exposed/direct-routed runs requiring full 0.7 mm sheath, specify the 9.5 mm OD variant.

4. Optical Characteristics — 50/125 µm OM3/OM4/OM5 (Common to 6F / 12F / 24F)

Optical characteristics are identical across all three variants; the fibre specification does not change with cable count.

Parameter	Condition for OM3	Condition for OM4	Condition for OM5	Specified Value for OM3	Specified Value for OM4	Specified Value for OM5
Fibre type	-	-	-	Multimode 50/125 µm, OM3 (laser-optimised) IEC 60793-2-10 A1a.2/ ISO/IEC 11801	Multimode 50/125 µm, OM4 (wideband laser-optimised) IEC 60793-2-10 A1a.3 / ISO/IEC 11801	Multimode 50/125 µm, OM5 (Wideband laser-optimised) IEC 60793-2-10 Type A1-OM5 / ISO/IEC 11801
Attenuation (cabled)	@ 850 nm @ 1300 nm	@ 850 nm @ 1300 nm	@ 850 nm @ 953 nm @ 1300 nm	≤ 3.0 dB/km ≤ 1.0 dB/km	≤ 3.0 dB/km ≤ 1.0 dB/km	≤ 3.0 dB/km ≤ 2.3 dB/km (New SWDM wavelength) ≤ 1.0 dB/km
Overfilled launch (OFL) bandwidth	@ 850 nm @ 1300 nm	@ 850 nm @ 1300 nm	@ 850 nm @ 953 nm @ 1300 nm	≥ 1500 MHz·km ≥ 500 MHz·km	≥ 3500 MHz·km ≥ 500 MHz·km	≥ 3500 MHz·km ≥ 1850 MHz·km (New) ≥ 500 MHz·km
Effective modal bandwidth (EMB)	@ 850 nm	@ 850 nm	@ 850 nm @ 953 nm	≥ 2000 MHz·km	≥ 4700 MHz·km	≥ 4700 MHz·km (Matches OM4) ≥ 2470 MHz·km (New)
Core diameter	-	-	-	50.0 ± 2.5 µm	50.0 ± 2.5 µm	50.0 ± 2.5 µm
Cladding diameter	-	-	-	125.0 ± 1.0 µm	125.0 ± 1.0 µm	125.0 ± 1.0 µm
Core/cladding concentricity error	-	-	-	≤ 1.5 µm	≤ 1.5 µm	≤ 1.5 µm (Often improves to ≤ 1.0 µm in premium OM5)
Numerical aperture	-	-	-	0.200 ± 0.015	0.200 ± 0.015	0.200 ± 0.015
Supported link length (informative)	10GBASE-SR @ 850 nm 40/100GBASE-SR4 @ 850 nm	10GBASE-SR @ 850 nm 40/100GBASE-SR4 @ 850 nm 100GBASE-SR10 @ 850 nm	10GBASE-SR @ 850 nm 40/100GBASE-SR4 @ 850 nm 40GBASE-SWDM4 (WDM) 100GBASE-SWDM 4 (WDM)	300 m 100 m	550 m 150 m 150 m	550 m 150 m 440 m (Up from 350m on OM4) 150 m (Up from 100m on OM4)
Proof test level	-	-	-	≥ 0.69 GPa (1% strain)	≥ 0.69 GPa (1% strain)	≥ 0.69 GPa (1% strain)
Compatible connectors	-	-	-	SC/UPC, LC/UPC, SC-APC, LC-APC, FC/UPC, ST; direct termination	SC/UPC, LC/UPC, SC-APC, LC-APC, FC/UPC, ST; direct termination	SC/UPC, LC/UPC, SC-APC, LC-APC, FC/UPC, ST; direct termination MPO/MTP (Commonly used for high-density SWDM breakouts)



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OPTICAL FIBER CABLE OM3/OM4/OM5

5. Mechanical Characteristics

Tensile and crush values are common to 6F and 12F. The 24F variant has a proportionally larger bend radius owing to its increased OD.

S/T = short-term (installation load); L/T = long-term (permanent installed load). D = cable nominal OD (8.0 mm for 6F/12F; 9.5 mm for 24F).

Parameter	Condition	6F & 12F	24F	Test Method
Tensile load — S/T	Max. applied	1500 N	1500 N	IEC 60794-1-21 E1
Tensile load — L/T	Max. applied	600 N	600 N	IEC 60794-1-21 E1
Crush load — S/T	Per 100 mm	1000 N	1000 N	IEC 60794-1-21 E3
Crush load — L/T	Per 100 mm	300 N	300 N	IEC 60794-1-21 E3

Acceptance: Δ attenuation ≤ 0.05 dB @ 850 nm during and after test.

6. Environmental and Fire Characteristics

Common to all variants.

Parameter	Test Method / Standard	Specified Value
Operating temperature	IEC 60794-1-22 F1	-40 °C to +60 °C
Installation temperature	—	-10 °C to +50 °C
Storage / transport temperature	—	-40 °C to +70 °C
Temperature cycling	IEC 60794-1-22 F1 (2 cycles)	$\Delta\alpha \leq 0.05$ dB/km @ 850 nm
Flame spread (riser rating)	UL 1666 / OFNR; IEC 60332-3-24 Cat. C	Passes — self-extinguishing, no flame propagation
Smoke density	IEC 61034-2 (3 m cube test)	Light transmittance $\geq 60\%$
Halogen content (sheath & buffer)	IEC 60754-1 / IEC 60754-2	Cl < 0.1%, Br < 0.1%; HCl/HBr $\leq 0.5\%$
Acid gas emission	IEC 60754-2	pH ≥ 4.3 ; conductivity ≤ 10 μ S/mm
UV resistance	IEC 62153-4-12	Meets standard
RoHS compliance	EU Directive 2011/65/EU	Fully compliant

7. Packing and Delivery

Standard delivery lengths: 500 m, 1000 m, 2000 m ($\pm 5\%$) on plastic or wooden reels / cardboard spools. Both cable ends sealed and protected with end caps. Reel/spool flange marked with product code, part number, fibre count, fibre type, sheath colour, length, manufacturing date code and traceability number. Non-standard lengths and custom reel configurations available on request.

ORDERING DETAILS

TVARA FIBER CONNECTOR HOUSING - LIU PANNEL ORDERING DETAILS			
AA	BBBBB	CCC	DDD
↓	↓	↓	↓
TVARA FIBER	Tight Buffer (TB) Type Multi mode	Cable Type	Fiber count
TF	M3TB	LNR - LSZH, OFNR	006F
	M4TB		012F
	M5TB		024F

EXAMPLE:

TF-M3TB-LNR-006F	DHRUVA Connect – TVARA FIBER, Multi-mode Tight buffer, LSZH Riser-Rated (OFNR), 6 Fiber optic cable.
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