DHRUVA CONNECT

tvara

OPTICAL FIBER CABLE OS2

Indoor Distribution Tight Buffer Optical Fibre Cable — Riser Series

ITU-T G.652.D Single-Mode (OS2) | 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) single-mode optical fibre cable series, designated OS2 per ISO/IEC 11801 and rated for riser (vertical) installations in accordance with UL 1666 / OFNR. The cable carries ITU-T G.652.D single-mode fibres, each 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 yellow (standard TIA-598-D colour for single-mode cables). The all-dielectric, dry-core, jelly-free construction supports direct termination at any standard SC or LC connector family without a breakout kit. With attenuation as low as 0.2 dB/km at 1550 nm and full compatibility with CWDM, DWDM, and coherent transmission systems, this cable serves backbone, inter-floor, and campus distribution cabling in enterprise, data centre, healthcare, and high-security environments.

- Riser-rated vertical runs between floors in commercial and enterprise buildings (OFNR / UL 1666)
- Inter-building / campus backbone where single-mode reach and low loss are required
- Data centre structured cabling — spine, leaf, and inter-row backbone interconnects
- Healthcare, government, and high-security facilities requiring all-dielectric, EMI-immune cabling
- Direct termination at SC/UPC, SC/APC, LC/UPC, LC/APC connectors — no breakout kit required
- CWDM / DWDM systems; WDM-PON; coherent 100G/400G transport over structured in-building links

2. Product Cross-Sections

All three variants share the same material build and the same 8.0 mm OD. Only the fibre count and ring arrangement differ. The light-blue dot at the centre of each fibre element represents the ~9 µm single-mode silica core.

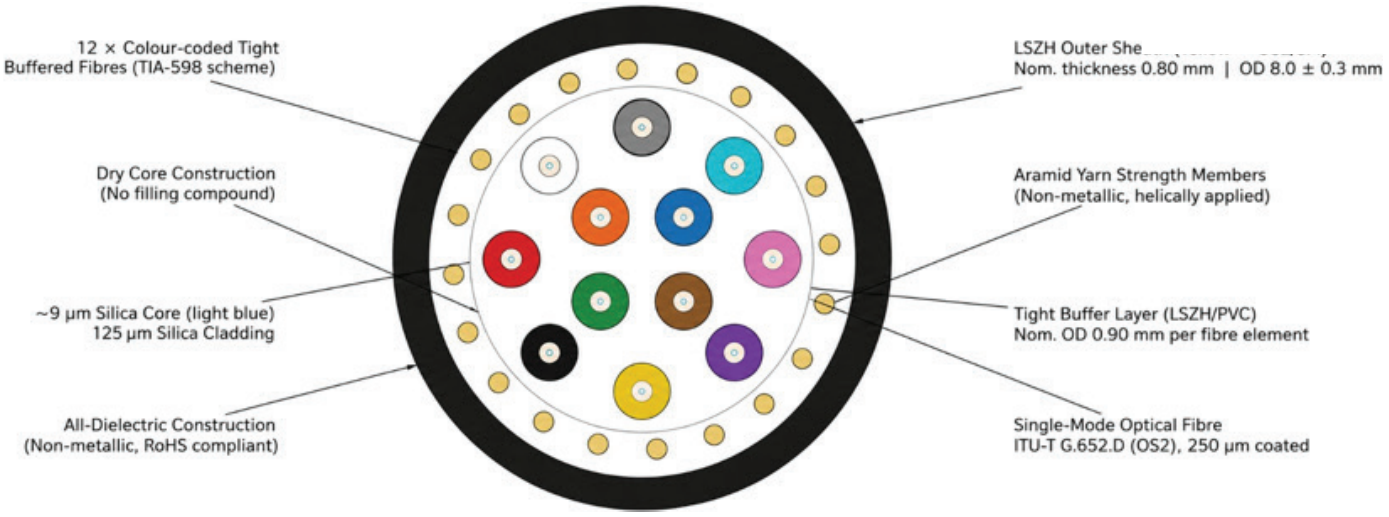

Figure — 12F Cross-Section (OD 8.0 mm, inner 4F + outer 8F ring)

3. Cable Construction Details

All variants share the same material specification; only fibre count, ring lay-up, and 24F sheath thickness differ (see Section 3.2).

3.1 Common Construction — All Variants

S. No.	Element	Material / Description	Value (All Variants)
1	Optical fibre	Single-mode, ITU-T G.652.D / IEC 60793-2-50 B-652.D (OS2 per ISO/IEC 11801); dual-layer UV-curable acrylate primary coating; colour-coded per TIA-598-D; mode field diameter 9.2 ± 0.4 µm @ 1310 nm; cladding 125.0 ± 0.7 µm	250 µm coated
2	Tight buffer layer	Low-smoke zero-halogen (LSZH) / colour-coded per TIA-598-D / GB13993.3-2001; extruded directly over 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 performance	Min. 1000 N S/T
4	Outer sheath	LSZH compound, Yellow (standard TIA-598-D colour for single-mode / OS2); flame-retardant, low-smoke, halogen-free; meets IEC 60332-3-24 (bunched), IEC 61034-2, IEC 60754-2, UL 1666 (OFNR)	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)	Fibres 1–12 (solid)	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.)	36 kg/km	52 kg/km	82 kg/km

4. Optical Characteristics — ITU-T G.652.D / OS2

Parameter	Condition	Specified Value
Fibre type	-	Single-mode, ITU-T G.652.D / IEC 60793-2-50 B-652.D OS2 per ISO/IEC 11801 and TIA-568-C.3
Attenuation (cabled)	@ 1310 nm @ 1383 nm (water-peak) @ 1550 nm @ 1625 nm	≤ 0.36 dB/km ≤ 0.40 dB/km ≤ 0.22 dB/km ≤ 0.25 dB/km
Mode field diameter (MFD)	@ 1310 nm @ 1550 nm	9.2 ± 0.4 µm 10.4 ± 0.8 µm
Cladding diameter	-	125.0 ± 0.7 µm
Core/cladding concentricity error	-	≤ 0.5 µm
Cladding non-circularity	-	≤ 0.7%
Cable cut-off wavelength (λcc)	-	≤ 1260 nm
Zero dispersion wavelength (λ0)	-	1300 – 1324 nm
Zero dispersion slope (S0)	-	≤ 0.092 ps/(nm²·km)
Chromatic dispersion	1285 – 1330 nm @ 1550 nm @ 1625 nm	≤ 3.5 ps/(nm·km) ≤ 18 ps/(nm·km) ≤ 22 ps/(nm·km)
Polarisation mode dispersion (PMD)	Link design value (PMDQ)	≤ 0.20 ps/√km
Macrobend loss	100 turns, Ø 60 mm @ 1550 nm 100 turns, Ø 60 mm @ 1625 nm	≤ 0.10 dB ≤ 0.20 dB

5. Mechanical Characteristics

Tensile and crush values are common to 6F and 12F.

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	Short Term (S)	Long Term (L)	Test Method
Tensile load	Max. applied	1500 N	600 N	IEC 60794-1-21 E1
Crush load	Per 100 mm	1000 N	300 N	IEC 60794-1-21 E3

S/T = short-term (installation load); L/T = long-term (permanent installed load). D = nominal OD (8.0 mm, all variants). Acceptance criterion: fibre attenuation change ≤ 0.05 dB @ 1550 nm during and after each test.

6. Environmental and Fire Characteristics

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)	Δα ≤ 0.05 dB/km @ 1310 nm and 1550 nm
Humidity (damp heat)	IEC 60794-1-22 F2	Δα ≤ 0.05 dB/km @ 1550 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 ≥ 60%
Halogen content (sheath & buffer)	IEC 60754-1 / IEC 60754-2	Cl < 0.1%, Br < 0.1%; HCl/HBr ≤ 0.5%
Acid gas emission	IEC 60754-2	pH ≥ 4.3; conductivity ≤ 10 µS/mm
UV resistance	IEC 62153-4-12 / ASTM D1603	Meets standard
RoHS compliance	EU Directive 2011/65/EU	Fully compliant

7. Packing and Delivery

Standard delivery lengths: 500 m, 1000 m, 2000 m (± 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, cable type (OS2), sheath colour (Yellow), length, manufacturing date code and traceability number. Fibres and drum labelled with sequential fibre numbers per TIA-598. Non-standard lengths and custom reel configurations available on request.

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ORDERING DETAILS

TVARA FIBER CONNECTOR HOUSING - LIU PANNEL ORDERING DETAILS			
AA	BBBBB	CCC	DDD
TVARA FIBER	Tight Buffer (TB) Type Single mode	Cable Type	Fiber count
TF	S2TB	LNR - LSZH, OFNR	006F
			012F
			024F

EXAMPLE:

TF-S2TB-LNR-006F	**DHRUVA Connect** – TVARA FIBER, Single mode Tight buffer, LSZH Riser-Rated (OFNR), 6 Fiber optic cable.

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