DHRUVA CONNECT

tvara

OPTICAL FIBER CABLE OM3/OM4/OM5

Outdoor HDPE Armoured Unitube Cable

Multimode OM3/OM4/OM5 | Unitube (UT) | Armoured | UV-Stabilised HDPE Outer Sheath | Variants: 6F + 12F

1. Product Description

Multimode 50/125 µm OM3/OM4/OM5 fibres housed in a single gel-filled PBT loose tube, protected by a water swellable tape, a corrugated ECCS steel tape armour, two diametrically embedded galvanised steel wire strength members, and a UV-stabilised black HDPE outer sheath. The cable is fully water-blocked and all-dielectric (excluding the steel elements) — designed for duct, sub-duct, and direct-buried installation in access networks, FTTx backhaul, campus backbones and last-mile links.

- Aerial, duct and direct-buried last-mile and access network links
- FTTx backhaul, GPON/XGS-PON feeder cables
- Campus backbone and inter-building links
- Underground conduit — single micro-duct or sub-duct installation

2. Product Cross-Sections

All variants share the same material build; only fibre count, tube/ring arrangement and cable OD differ. Cross-sections shown below to a common scale.

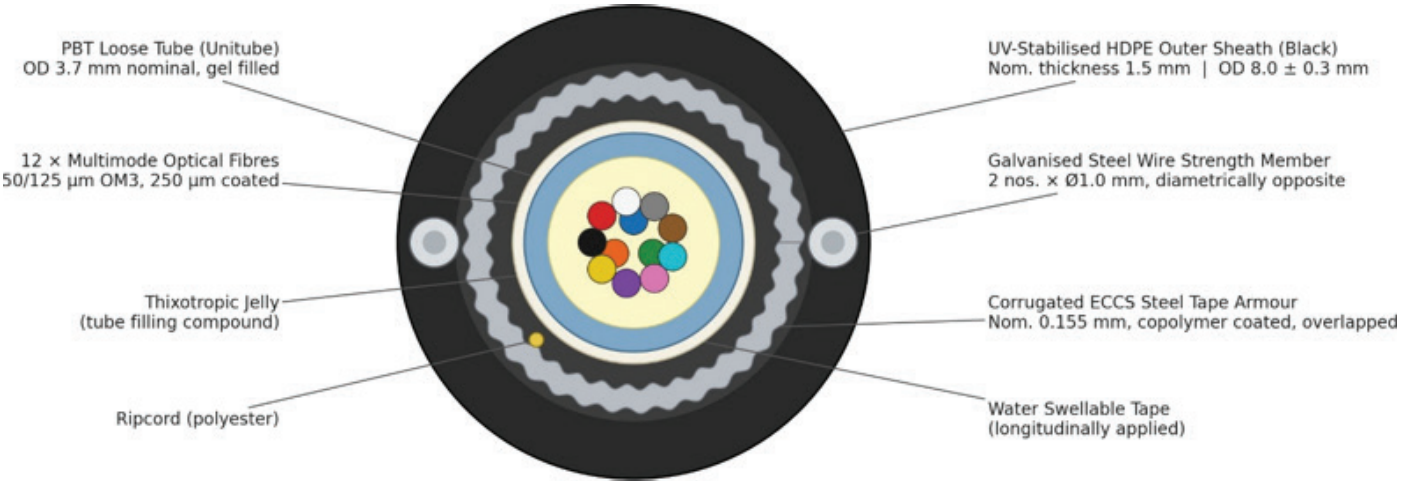

Figure — 12F Uni tube Armoured Cross-Section (OD 8.0 ± 0.3 mm, single loose tube, 2-wire SM)

3. Cable Construction Details

All variants share the same material specification. Construction tables below are representative of the series; variant-specific dimensions are in Section 3.2.

3.1 Common Construction — All Variants

S. No.	Element	Material / Description	Nominal Value
1	Optical fiber	Multimode 50/125 µm OM3/OM4/OM5, IEC 60793-2-10 type A1a.2 (laser-optimised); 250 µm dual-layer UV-curable acrylate coating; colour coded per TIA-598-D (Blue, Orange, Green, Brown, Slate, White)	6 fibres × 250 µm
2	Tube filling compound	Thixotropic jelly, hydrogen-scavenging, non-dripping	100% void fill
3	Loose tube (unitube)	Polybutylene terephthalate (PBT)	OD 3.7 mm / ID 2.7 mm
4	Water blocking	Water swellable tape, longitudinally applied with overlap	0.25 mm
5	Armour	ECCS steel tape, corrugated, copolymer coated both sides, overlapped	0.155 mm
6	Strength member	Galvanised steel wire, 2 nos., diametrically opposite, embedded in sheath	Ø 1.0 mm each
7	Ripcord	Polyester, placed under armour	1 no.
8	Outer sheath	UV-stabilised HDPE, black (carbon black ≥ 2.3%), sequentially marked	1.5 mm thick
9	Cable OD	Overall	8.0 ± 0.3 mm
10	Cable weight	Approximate	75 kg/km

3.2 Variant-Specific Physical Dimensions

Parameter	6F	12F
Fibre count	6	12
Loose tube lay-up	Single unitube	Single unitube
Fibre count per tube	6	12
Cable OD (nominal)	8.0 ± 0.3 mm	8.0 ± 0.3 mm
Cable weight (approx.)	75 kg/km	75 kg/km
Tensile load S/T	1500 N	1500 N
Tensile load L/T	600 N	600 N
Min. bend radius — dynamic	20 × OD (160 mm)	20 × OD (160 mm)
Min. bend radius — static	10 × OD (80 mm)	10 × OD (80 mm)

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Fibre Type	Sheath Colour	Standard
OM3	Aqua	IEC A1a.2 / ISO/IEC 11801
OM4	Erika Violet	IEC A1a.3 / ISO/IEC 11801
OM5	Lime Green	IEC A1a.4 / TIA-492AAAE

4. Optical Characteristics — 50/125 µm OM3/OM4/OM5 (Common to All Variants)

Optical performance is identical across all variants; only the construction changes.

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 A1a.4 / ISO/IEC 11801
Attenuation (cabled fibre)	@ 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 ≤ 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 ≥ 500 MHz·km
Effective modal bandwidth (EMB)	@ 850 nm	@ 850 nm	@ 850 nm @ 953 nm	≥ 2000 MHz·km	≥ 4700 MHz·km	≥ 4700 MHz·km ≥ 2470 MHz·km
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
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 @ 850–953 nm 100GBASE-SWDM4 @ 850–953 nm	300 m 100 m	550 m 150 m 150 m (OM4 drops to 100m here)	550 m 150 m 150 m (OM4 drops to 100m here)
Proof test level	-	-	-	≥ 0.69 GPa (1% strain)	≥ 0.69 GPa (≥ 1% train)	≥ 0.69 GPa (≥ 1% strain)

5. Mechanical Characteristics

Values vary by fibre count and cable OD — see Section 3.2 for per-variant tensile and bend radius figures. Crush and impact values are common.

Parameter	Test Method (IEC 60794-1-21)	Value
Crush resistance	Method E3	2000 N / 100 mm
Impact resistance	Method E4	3 Nm, 3 impacts

Acceptance criteria: fibre attenuation change ≤ 0.05 dB at test wavelength during and after each test; no fibre breakage; no sheath cracking.

6. Environmental Characteristics

Common to all variants.

Parameter	Test Method	Specified Value
Operating temperature	IEC 60794-1-22, F1	−40 °C to +70 °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 @ 850 nm and 1300 nm
Water penetration	IEC 60794-1-22, F5B	No leakage, 3 m / 1 m head / 24 h
Compound flow (tube jelly)	IEC 60794-1-21, E14	No drip @ +70 °C, 24 h
UV resistance (HDPE sheath)	Carbon black ≥ 2.3%, ASTM D1603	Well dispersed
Environmental stress cracking	ASTM D1693	No cracking
RoHS compliance	EU Directive 2011/65/EU	Fully compliant

7. Packing and Delivery

Standard delivery: 2,000 m / 4,000 m (± 5%) on returnable wooden drums. Both cable ends sealed with end caps. Drum flange marked with product code, fibre type, variant (fibre count), length, gross weight, drum number, direction of rotation and traceability code. Non-standard lengths available on request.

8. ORDERING DETAILS

TVARA FIBER CONNECTOR HOUSING - LIU PANNEL ORDERING DETAILS

AA	BBBBB	CCC	DDD
TVARA FIBER	Out Door (OD) Type Multi mode	Cable Type	Fiber count
TF	M3OD	UTE - Unit tube, ECCS	006
	M4OD		012
	M5OD		

EXAMPLE:

TF-M3OD-UTE-006	**DHRUVA Connect** – TVARA FIBER, Multi-mode outdoor, Unitube Armored, 6 Fiber optic cable.

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