

Outdoor HDPE Unarmoured Multitube Cable

Multimode OM3/OM4/OM5 | Multitube (Dry-Core) (MT) | Unarmoured | UV-Stabilised HDPE Outer Sheath | Variants: 6F + 12F + 24F + 48F + 96F

1. Product Description

Multimode 50/125 μm OM3/OM4/OM5 fibres are housed in gel-filled, colour-coded PBT loose tubes SZ-stranded around a central FRP strength member. The all-dielectric, dry-core design (water swellable yarns and tape) enables fast mid-span access and is immune to EMI and lightning — ideal for duct installation, blowing into micro-ducts, or sub-duct application in high-voltage environments.

- Duct and sub-duct installation; air-blown micro-duct deployment
- High-voltage corridor and power utility right-of-way (all-dielectric)
- Lightning-prone areas where non-metallic construction is mandatory
- Indoor–outdoor transition cable in riser-to-campus topologies
- High fibre-count, low-weight, cost-efficient backbone deployment

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.

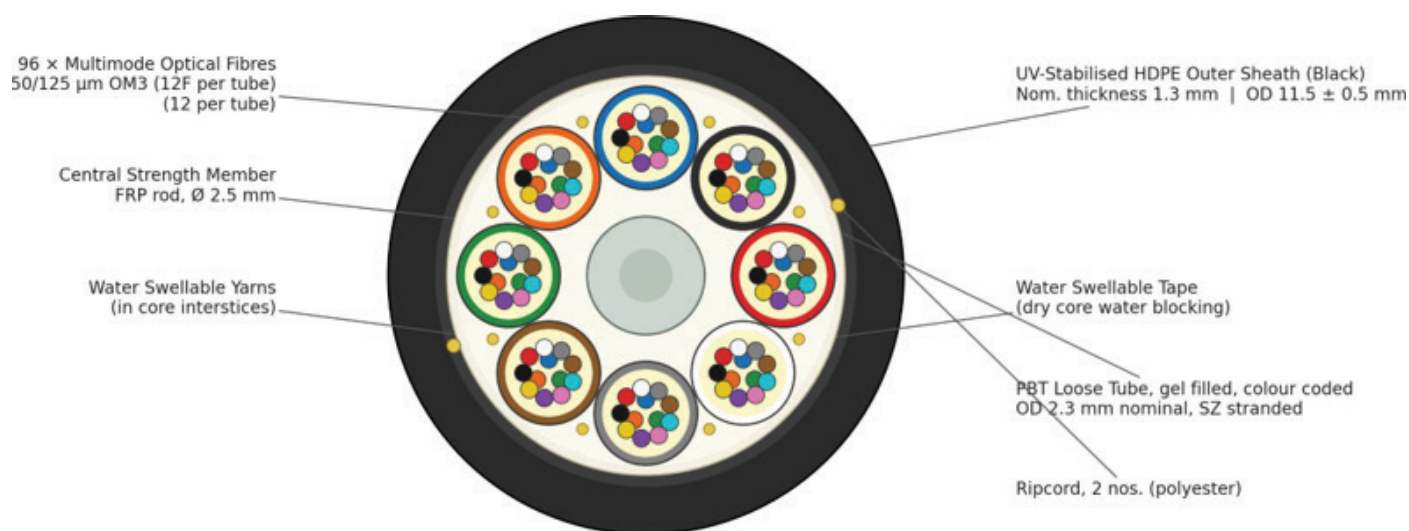


Figure — 96F Multitube Unarmoured Cross-Section (OD 11.5 $\pm$ 0.5 mm, 8 tubes $\times$ 12F + 0 filler rods)

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, IEC 60793-2-10 type A1a.2 (laser-optimised); 250 μm dual-layer UV-curable acrylate coating; colour coded per TIA-598-D; 12-colour scheme	6 fibres $\times$ 250 μm
2	Central strength member	Fibre reinforced plastic (FRP) rod	$\varnothing$ 2.0 mm
3	Loose tubes	PBT, gel filled, colour coded, SZ stranded (6F per tube)	1 nos. $\times$ OD 2.0 mm
4	Filler rods	Solid polyethylene	4 nos.
5	Core water blocking	Water swellable yarns + tape (dry core)	—
6	Ripcords	Polyester	2 nos.
7	Outer sheath	UV-stabilised HDPE, black (carbon black $\geq$ 2.3%), sequentially marked	1.2 mm thick
8	Cable OD	Overall	8.5 ± 0.3 mm
9	Cable weight	Approximate	58 kg/km

3.2 Variant-Specific Physical Dimensions

Parameter	6F	12F	24F	48F	96F
Fibre count	6	12	24	48	96
Tubes (active)	1	2	4	4	8
Fibres per tube	6	6	6	12	12
Filler rods	4	3	1	1	0
Element count	5	5	5	5	8
Cable OD (nominal)	8.5 ± 0.3 mm	8.5 ± 0.3 mm	8.5 ± 0.3 mm	8.5 ± 0.3 mm	11.5 ± 0.5 mm
Cable weight (approx.)	58 kg/km	60 kg/km	62 kg/km	68 kg/km	105 kg/km
Tensile load S/T	1500 N	1500 N	1500 N	1500 N	2000 N
Tensile load L/T	600 N	600 N	600 N	600 N	800 N
Min. bend radius — dynamic	20 $\times$ OD (170 mm)	20 $\times$ OD (170 mm)	20 $\times$ OD (170 mm)	20 $\times$ OD (170 mm)	20 $\times$ OD (230 mm)
Min. bend radius — static	10 $\times$ OD (85 mm)	10 $\times$ OD (85 mm)	10 $\times$ OD (85 mm)	10 $\times$ OD (85 mm)	10 $\times$ OD (115 mm)



OPTICAL FIBER CABLE OM3/OM4/OM5

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 (laser-optimised) IEC 60793-2-10 A1a.2 / ISO/IEC 11801	Wideband Multimode 50/125 µm, OM5 (laser-optimised) IEC 60793-2-10 A1a.4 / ISO/IEC 11801-1
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 ≤ 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	≥ 1500 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	≥ 2000 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	10GBASE-SR @ 850 nm 40/100GBASE-SR4 @ 850 nm 100G-SWDM4 (New Multi-λ)	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

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)	$\Delta\alpha \leq 0.05$ 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 $\geq 2.3\%$, 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 ($\pm 5\%$) 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	MTD - Muti tube, Die electric	006
	M4OD		012
	M5OD		024
			048
			096

EXAMPLE:

TF-M3OD-MTD-006	DHRUVA Connect – TVARA FIBER, Multi-mode Out door, Multitube Unarmored, 6 Fiber optic cable.
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