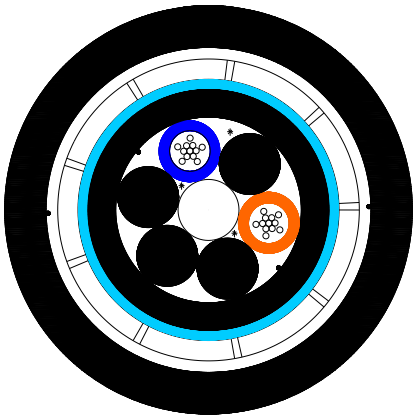
noR@T™

External Underground Loosetube All Dielectric Rodent Proof Optical Cable

IEC 60794-3-11
ACMA - AS/CA S008

Cable Design



- Drawing not to scale -

- **Multi-loose tube construction** – Single layer 2 to 144 fibres
- **Central strength member (CSM):** Glass fibre reinforced plastic material (GRP) with or without over-sheathing
- **Tube:** Thermoplastic material, containing up to 12 optical fibres filled with a low viscosity, thixotropic, non-melting gel fully compatible with fibre coating and tube material
- **Stranding:** The required numbers of elements (tubes and fillers) are SZ stranded around the central strength member
- **Longitudinal water tightness:** Water swellable elements (dry-core)
- **Inner sheath:** Polyethylene in compliance with AS 1049
- **Hard Jacket:** UV stabilised polyamide (Nylon) in compliance with AS 1049 integrally bonded to PE inner sheath
- **Armour:** Flat GRP Rods
- **Outer sheath:** UV stabilised polyethylene in compliance with AS 1049. Two ripcords provided beneath the sheath for easy removal

This loose tube dielectric optical cable is designed for external underground installations in ducts or by direct burial. GRP armour provides rodent protection and polyamide provides anti-termite protection.

Technical data

Number of Fibres		2 to 72	84 – 96	108 – 120	132 – 144
Number of elements		6	8	10	12
Tube / Filler diameter	mm	2.1			
Cable nominal diameter	mm	13.8	15.5	17.4	18.4
Cable nominal weight	kg/km	165	210	265	300
Max. installation tension	kN	4.0			
Max. crush resistance	kN/100mm	4.0 (Short term) / 2.0 (Long term)			
Min. bending radius	mm	At full load 30 x Cable OD At no load 15 x Cable OD			
Temperature range	°C	Installation -0 -> +50	Transport & Storage -20 -> +70		Operation -10 -> +70

Optical Characteristics

See the attached cabled optical fibre data sheet.

Identification

Fibre and Buffer Tube Colours

No.	1	2	3	4	5	6	7	8	9	10	11	12
Colour	blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua

Fillers are either natural (opaque) or black, jelly filled tubes (with no fibres) are also used.

Sheath Colour:

The outer sheath colour is black. Other colours are available upon request.

Sheath Marking:

The outer sheath is marked in 1 metre intervals as follows:

PRYSMIAN DW NOR@T Part Number T/N #### MM/YY MADE IN AUSTRALIA *****M >> | << *****M

Main mechanical characteristics

Parameter	Test method	Test conditions	Acceptance criteria*
Tensile strength	IEC 60794-1-21-E1 Figure 2	Load: As per cable maximum tensile strength in table above.	After 30 minutes the maximum strain on the fibre should not exceed 0.6% and no attenuation change throughout test
Crush	IEC 60794-1-21-E3	Short time: 10 min Long time: 120 min Load: As per maximum crush resistance in table above Number of positions: 3 adjacent sections (ensuring one over tube and one over lay reversal)	No damage to the sheath or to the core structure and no attenuation change throughout test
Impact	IEC 60794-1-21-E4	Weight: 1.5 kg Height: 1.0 m Anvil radius: 300 mm Impacts: 3	After 5 minutes no fibre breaks, no damage to the sheath or to the core structure and no attenuation change throughout test
Torsion	IEC 60794-1-21-E7	Sample length: 1 m Rotation: a) 180º clockwise, b) return to starting position, c) 180º anticlockwise, d) return to starting position. Four movements constitute one cycle. Complete 10 cycles (a to d) in one minute maximum	During the final tenth cycle at a), c) and after completion (no rotation) check transmitting fibres. No fibre breaks, no damage to the sheath or to the core structure and no attenuation change throughout test
Bend	IEC 60794-1-21-E11	Mandrel diameter: 30 x Cable OD Bend: 360º (1turn)	No attenuation change throughout test
Bend under tension	Concurrent to tensile test IEC 60794-1-21-E18A	Mandrel diameter: 60 x Cable OD Bend: 360º (1turn)	After 1minute no fibre breaks, no damage to the sheath or to the core structure and no attenuation change throughout test
Temperature cycling	IEC 60794-1-22-F1	Sample length: 1000 m (minimum) Temperature range: – 10 °C to +70 °C	There should be no average attenuation increase at the temperature extremes when compared to the attenuation at ambient temperature. No individual fibre should measure an attenuation greater than 0.15 dB/km
Water penetration	IEC 60794-1-22-F5C	Sample length=3m, Water height=1m	No water leakage after 24 hour

** All optical measurements for singlemode fibres performed at 1550 nm.*

Logistic

Packing:

Timber drums to AS/NZS 2857 with NOLCO-FLEX protection. Steel drums are also provided upon request.

Delivery Lengths:

Standard delivery length is 4 km with a tolerance of - 1% / + 3%