Datasheet

External Underground Mini Loosetube OS2 single mode Optical cable

CAT. NO. **MLTOS206, MLTOS212, MLTOS224, MLTOS248**

- **IEC 60794-5**
- **Multi-loose tube construction** – Single layer 2 to 48 fibres.
- **Central strength member (CSM):** Glass fibre reinforced plastic material (GRP) with 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 filters) are SZ stranded around the central strength member.
- **Longitudinal water tightness:** Water swellable elements (dry-core)
- **Sheath:** UV stabilised polyethylene in compliance with AS 1049. Two ripcords provided beneath the sheath for easy removal.
- **Outer jacket:** UV stabilised polyamide (Nylon) in compliance with AS 1049 integrally bonded to PE sheath.

Application and Installation

This loose tube dielectric optical cable is designed for external underground installations in (micro) ducts by pulling, blowing or floating techniques or by direct burial in open-cut trenches. Polyamide provides anti-termite protection. Optimised for blowing into mini ducts of 10 mm diameter.

Cable Technical Specifications

Cat. No.	MLTOS206	MLTOS212	MLTOS224	MLTOS248
Number of fibres	6	12	24	48
Number of elements	6			
Tube/ Filler diameter	1.55 mm			
Cable Nominal diameter	6.3 mm			
Cable Nominal weight	33 kg/km			
Max. Installation tension	1.0 kN			
Max. Crush resistance	2.0 kN/100 mm			
Min. Bending Radius	At full load 130 mm or at no load 65 mm			
Temperature range	Installation -0ºC to +50ºC	Transport & Storage -20ºC to +70ºC		Operation -10ºC to +70ºC

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.

Sheath Colour

The outer sheath colour is blue.

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

LEGRAND <LEGRAND CODE> <NFIB>F <FIBRE TYPE> MINI LOOSE TUBE DUCT C/N#### MM/YY MADE IN AUSTRALIA *****M >> | << *****M

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Main mechanical characteristics

Parameter	Test method	Test conditions	Acceptance criteria*
Tensile strength	IEC 60794-1-21-E1	Load: As per cable maximum tensile strength in table above	Fiber strain ≤ 0.6%. No physical damage and no change in attenuation after 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 the test
Impact	IEC 60794-1-21-E4	Weight: 1.5 kg Height: 1.0 m Anvil radius: 12.5 mm Impacts: 1	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: 1m Rotation: a) 180°clockwise b) return to starting position c) 180° 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 radius: As per Min. bending radius at no load in technical data table above No. of turns/helix: 4 No. of cycles: 3	No attenuation change throughout test
Bend under tension	Concurrent to tensile test	Mandrel radius: As per Min. bending radius at full load in technical data table above Bend: 360º, 1 turn	After 1 minute 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: As per Operation temperature range in technical data table above	No change in attenuation between 10°C & 30°C. Max. change in attenuation ≤0.15 dB/km between Min. & Max. operation temperatures
Cable Aging	IEC 60794-1-22-F9	85°C for 168 h followed by Temperature cycling	Max. change in attenuation ≤0.10 dB/km after test
Water penetration	IEC 60794-1-22-F5C	Sample length = 3 m, Water height = 1 m	No water leakage after 24 hours

*All optical measurements for single mode fibres performed at 1550 nm.

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Fibres Technical Specifications

Standards and Norms

IEC/EN 60793-2-50 Category B-652.D	ISO / IEC 11801: Category OS2 and OS1a
EN 50 173-1: Category OS2 and OS1a	ITU-T Recommendation G.652.D
AS/CA S008	

Attenuation of cabled fiber

Attribute	Measurement method	Units	Limits
Maximum attenuation value of cable @ 1310 nm	IEC/EN 60793-1-40	dB/km	⩽ 0.35
Maximum attenuation value of cable @ 1383 nm *		dB/km	⩽ 0.35
Maximum attenuation value of cable @ 1550 nm		dB/km	⩽ 0.21
Maximum attenuation value of cable @ 1625 nm		dB/km	⩽ 0.24

* Including H2-ageing according to IEC 60793-2-50, type B.1.3, @1383 nm

Group index of refraction

Attribute	Measurement method	Values
Effective group index at 1310 nm	IEC 60793-1-22	1.467
Effective group index at 1550 nm		1.468
Effective group index at 1625 nm		1.468

Optical properties

Attribute	Measurement method	Units	Limits
Mode field diametre at 1310 nm	IEC/EN 60793-1-45	µm	9.2 ± 0.4
Mode field diametre at 1550 nm			10.4 ± 0.5
Chromatic dispersion coefficient	IEC/EN 60793-1-42	ps/km.nm	⩽ 3.5
In the interval between 1285 nm and 1330 nm			
Chromatic dispersion coefficient at 1550 nm			⩽ 18
Chromatic dispersion coefficient at 1625 nm			⩽ 22
Zero dispersion wavelength, λ0		nm	1302 to 1322
Zero dispersion slope		ps/(nm2.km)	⩽ 0.092
Cut-off wavelength	IEC/EN 60793-1-44	λcc nm	⩽ 1260**
Polarisation mode dispersion (PMD) coefficient	IEC/EN 60793-1-48	ps/√km	⩽ 0.1
PMDQ Link value (calculated with Q=0.01%;m=20)	IEC 60794-3	ps/√km	⩽ 0.06

**guaranteed value according to ITU-T (ATM G650) Method

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Please note: specifications are subject to change without prior notice.

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