

Description

tML® is a patented, modular cabling system consisting of the three key components module, trunk cable and rack mount enclosure. The system components are 100 percent manufactured, pre-assembled and tested in Germany. They enable plug-and-play installation on site – especially in data centres, but also in industrial environments – within the shortest possible time. Heart of the system are the rear MPO/MTP® and Telco connectors, which can be used to connect at least six or twelve ports at a time. Depending on the module configuration, transfer rates of up to 400G are currently possible with SR4. The fibre optic and TP modules can be used together in a module carrier with a very high port density. The tde offers its tML® cabling system as a proven tML® standard system and in the highly innovative variants tML® 12, tML® 24, tML® 32 and now tML® 24+ System for extreme scalability and very easy migration to higher transmission rates such as 40G, 100G, 200G, 400G and 800G and more.

The tML® - FO trunk cable is intended for the connection of two tML®- FO Modules.

Technical Data

The tML®- FO trunk cable is preterminated with MPO/MTP®connectors on both ends. The end faces of the connectors are optimized by means of Lasercleaving and machine polish. The MPO/MTP®plug has a defined fiber height of 1 - 3.5µ. The max. adjacent fiber height difference is 0.2µm and for all fibers 0.3µm. All system components (modules, trunk cables and patch cords) are co-ordinated for the reaching of the performance particularly. The fan-out unit is optimized for tML® - Cable Mounting Bracket for Fan-out Units. The module is marked with sequential serial number and article number.

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FO Connectors

| | |
|-------------------|---|
| Type | MPO/MTP® Female Push Pull Locking (Beige) |
| Ferrule | 12 Fiber MM Elite® ferrule, PPS |
| Boot colour | Black |
| Temperature range | -40°C to +75°C |
| Manufacturer | tde/US Conec |

Optical Performance

| Fiber | Type | Wavelength | Insertion loss typ. | Insertion loss max. | Return loss min. |
|---------------|----------|------------|---------------------|---------------------|------------------|
| 50/125µ OM2 | MPO/MTP® | 850 nm | ≤ 0.25 dB | 0.45 dB | 20 dB |
| 62.5/125µ OM1 | MPO/MTP® | 850 nm | ≤ 0.25 dB | 0.45 dB | |

FO Fan-Out

| | |
|----------------|-------|
| Fan-out length | 50 mm |
| ∅ Fan-out | 16 mm |

tML® - FO Trunk Cable 2x MPO Female/2x MPO Female 24G50/125µ OM2 LSHF, Type C, Length: xxx

| | |
|--------------------|-------------------------|
| Ø Single unit | 3.8 mm |
| Single unit length | 78 ± 5 cm (not stepped) |

FO Cables

| | |
|---------------------|---|
| Temperature range | Storage -25 to +70°C, IEC 60794-1-22 F1 |
| | Pulling in -10 to +50°C |
| | Operation -25 to +60°C |
| Tensile performance | IEC 60794-1-21 E1 |
| Crush resistance | IEC 60794-1-21 E3 |
| Impact | IEC 60794-1-21 E4 |
| Repeated bending | IEC 60794-1-21 E6 |
| Torsion | IEC 60794-1-21 E7 |
| Bend | IEC 60794-1-21 E11 |
| Water penetration | IEC 60794-1-22 F5 |

General characteristics

| | |
|----------------------------------|---|
| Sheath colour | green, similar to RAL 6016 |
| Zero halogen, no corrosive gases | IEC 60754-1/-2, EN 60754-1/-2, VDE 0482-754-1/-2 |
| Flame propagation | IEC 60332-1-2, EN 60332-1-2, VDE 0482-332-1-2 |
| Flame spread | IEC 60332-3-24, EN 50266-2-4, VDE 0482-266-2-4 |
| Smoke density | IEC 61034-1/-2, EN 61034-1/-2, VDE 0482-1034-1/-2 |
| Reaction to fire (Euroclasses) | EN 13501-6: E _{ca} |

| | |
|----------------|---|
| Cabletype | Universal U-DQ(ZN)BH for indoor and outdoor use |
| | non metallic, dry interstices, rodent protection, flame retardant, in accordance with IEC 60332.1 and IEC 60332.3 C |
| Fibertype | Corning G50/125 OM2 |
| No. of fibers | 24 |
| Loose tube | 2 |
| Sheath ø | 9.5 mm |
| Weight | 96 kg/km |
| Bending radius | 140 mm |
| Tensile load | 2800 N |

tML® - FO Trunk Cable 2x MPO Female/2x MPO Female 24G50/125µ OM2 LSHF, Type C, Length: xxx

| | |
|------------------|-------------------|
| Crush resistance | 3000 N continuous |
| | 5000 N short term |
| Fire load | 430 kWh/km |
| | 1548 MJ/km |

Length tolerances (prefabricated with plugs)

| | |
|-----------------------------------|----------|
| Tolerances for lengths up to 40m | ± 100 cm |
| Tolerances for lengths up to 100m | ± 100 cm |
| Tolerances for lengths from 100m | ± 2% |

FO Fiber

| | |
|---|-------------------------------------|
| Attenuation typical (cabled) | 850 nm: 2.5 / 1300 nm: 0.5 dB/km |
| Attenuation maximum (cabled) | 850 nm: 2.7 / 1300 nm: 0.7 dB/km |
| OFL bandwidth as per TIA/EIA 455-204 and IEC 60793-1-41 | 850 nm: 700 / 1300 nm: 500 MHz x km |
| High-Performance EMB bandwidth as per TIA/EIA 455-220A and IEC 60793-1-49 | 850 nm: 850 MHz x km |
| Refractive Index | 850 nm: 1.480 / 1300 nm: 1.479 |

Technical properties

| Bending radius | No. of windings (turns) | Max. induced attenuation |
|----------------|-------------------------|--|
| 37.5 mm | 100 | 850 nm: ≤ 0.05 / 1300 nm: ≤ 0.15 dB/km |
| 15 mm | 2 | 850 nm: ≤ 0.1 / 1300 nm: ≤ 0.3 dB/km |
| 7.5 mm | 2 | 850 nm: ≤ 0.2 / 1300 nm: ≤ 0.5 dB/km |

Geometrical and mechanical characteristics

| | |
|--------------------|-----------------|
| Numerical Aperture | 0.200 +/- 0.015 |
| Core Ø | 50.0 +/- 2.5 µm |

tML® - FO Trunk Cable 2x MPO Female/2x MPO Female 24G50/125µ OM2 LSHF, Type C, Length: xxx

| | |
|---|------------------|
| Maximum Core Non-Circularity | 5 % |
| Cladding Ø | 125.0 +/- 1.0 µm |
| Maximum Cladding Non-Circularity | 1.0 % |
| Maximum Cladding/Core Concentricity Error | 1.5 µm |
| Maximum Coating Concentricity Error | 12 µm |
| Coating Ø | 242 +/- 5 µm |
| Test load | 100 kpsi |

| Art.-No. | Description |
|--------------------|--|
| TML-MP/MP50B12Gxxx | tML® - FO Trunk Cable 1x MPO Female/1x MPO Female 12G50/125µ OM2 LSHF, Type C, Length: xxx |
| TML-MP/MP50B24Gxxx | tML® - FO Trunk Cable 2x MPO Female/2x MPO Female 24G50/125µ OM2 LSHF, Type C, Length: xxx |
| TML-MP/MP50B48Gxxx | tML® - FO Trunk Cable 4x MPO Female/4x MPO Female 48G50/125µ OM2 LSHF, Type C, Length: xxx |