

tML[®] 12/Xtended - FO Micro Distribution Trunk Cable both sides 8x MPO/MTP[®] w. Pins 96E9/125 μ OS2 LSHF, Type B, Length: xx in m



tML[®] Xtended

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 200G 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[®] Xtended - module will be installed in the link on one side rotated 180 degrees. The associated tML[®] 12/Xtended trunk cable has a type B pin out. The complete link corresponds to EIA / TIA "Method B". The advantage is that before and after migration uniformly configured patch cables and modules are used.



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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 - 3.5 μ . The max. adjacent fiber height difference is 0.2 μ m and for all fibers 0.3 μ m. 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.

FO Connectors

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 - 3.5 μ . The max. adjacent fiber height difference is 0.2 μ m and for all fibers 0.3 μ m.

Connector

| | |
|-------------------|---|
| Type | MPO/MTP [®] APC Male Push Pull Locking with Elite Pins (green) |
| Ferrule | 12 Fiber SM Elite [®] ferrule, PPS |
| Boot colour | Black |
| Temperature range | -40°C bis +75°C |
| Manufacturer | tde/US Conec |

Optical Performance

| Fiber | Type | Wavelength | Insertion loss typ. | Insertion loss max. | Return loss min. |
|-----------------|--------------------------|----------------|---------------------|---------------------|------------------|
| 9/125 μ OS2 | MPO/MTP [®] APC | 1310 / 1550 nm | ≤ 0.10 dB | 0.20 dB | 75 dB |

FO Fan-Out

| | |
|---------------------|-------|
| Length Fan-Out | 50 mm |
| Max. Ø Fan-Out | 20 mm |
| Parallel connectors | 8 |

FO Cables

| | |
|--------------------------------|--|
| Standards | Environmental and mechanical tests according to EN 187000 and IEC 60794-1-2. |
| Flame retardant | IEC 60332-3 |
| Halogen free | IEC 60754-1 |
| Low smoke emission | IEC 61034-1/2 |
| Reaction to fire (Euroclasses) | D _{ca} |

| | |
|------|---------------------------------|
| Type | Micro Distribution Indoor Cable |
|------|---------------------------------|

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| | |
|---------------------|--------------------------|
| Fibers | 96 (8 x 12) |
| Strength members | Aramid Yarns |
| Outer jacket | LSZH |
| Color | Gelb (RAL1021) |
| Weight | 96 kg/km |
| Outer \varnothing | 9.5 \pm 0.5 mm |
| Tensile Load | 1500 N |
| Crush | 700 N |
| Temperature range | -20°C to +70°C |
| Min. bending radius | 10 x \varnothing Outer |

FO Fiber

| | |
|---|--|
| Type | Corning Ultra SMF-28 [®] 09/125 μ OS2 singlemode fiber |
| Maximum Attenuation | At 1310 nm max. 0.32 dB/km At 1383 nm max. 0.32 dB/km At 1490 nm max. 0.21 dB/km At 1550 nm max. 0.18 dB/km At 1625 nm max. 0.20 dB/km |
| Attenuation vs. Wavelength | Range: 1285 - 1330 nm; Ref. λ : 1310 nm; Max. Difference: 0.03 dB/km Range: 1525 - 1575 nm; Ref. λ : 1550 nm; Max. Difference: 0.02 dB/km |
| Macrobend Loss | Mandrel Radius: 10mm; Number of Turns: 1; Wavelength: 1550nm; Induced Attenuation: \leq 0.50 dB Mandrel Radius: 10mm; Number of Turns: 1; Wavelength: 1625nm; Induced Attenuation: \leq 1.5 dB Mandrel Radius: 15mm; Number of Turns: 10; Wavelength: 1550nm; Induced Attenuation: \leq 0.05 dB Mandrel Radius: 15mm; Number of Turns: 10; Wavelength: 1625nm; Induced Attenuation: \leq 0.30 dB Mandrel Radius: 25mm; Number of Turns: 100; Wavelength: 1310nm, 1550nm, 1625nm; Induced Attenuation: \leq 0.01 dB |
| Point Discontinuity | Wavelength: 1310 nm; Point Discontinuity: \leq 0.05 dB Wavelength: 1550 nm; Point Discontinuity: \leq 0.05 dB |
| Cable Cutoff Wavelength (λ_{ccf}) | $\lambda_{ccf} \leq$ 1260 nm |
| Mode-Field Diameter | At 1310 nm = 9.2 \pm 0.4 μ m At 1550 nm = 10.4 \pm 0.5 μ m |
| Dispersion | At 1550 nm = \leq 18.0 [ps/(nm*km)] At 1625 nm = \leq 22.0 [ps/(nm*km)] Zero Dispersion Wavelength (λ_0): 1304 nm \leq $\lambda_0 \leq$ 1324 nm Zero Dispersion Slope (S_0): \leq 0.092 ps/(nm ² *km) |
| Polarization Mode Dispersion (PMD) | PMD Link Design Value = \leq 0.04 ps/ \sqrt km Maximum Individual Fiber = \leq 0.1 ps/ \sqrt km |

Dimensional Specifications

| | |
|--------------------------------|----------------------------------|
| Fiber Curl | \geq 4.0 m radius of curvature |
| Cladding Diameter | 125.0 \pm 0.7 μ m |
| Core-Clad Concentricity | \leq 0.5 μ m |
| Cladding Non-Circularity | \leq 0.7% |
| Coating Diameter | 242 \pm 5 μ m |
| Coating-Cladding Concentricity | $<$ 12 μ m |

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Environmental Specifications

| Environmental Test | Test Condition | Induced Attenuation 1310 nm, 1550 nm & 1625 nm |
|------------------------------|-----------------------------|--|
| Temperature Dependence | -60°C to +85°C | ≤ 0.05 |
| Temperature Humidity Cycling | -10°C to +85°C up to 98% RH | ≤ 0.05 |
| Water Immersion | 23°C ± 2°C | ≤ 0.05 |
| Heat Aging | 85°C ± 2°C | ≤ 0.05 |
| Operating Temperature Range | -60°C to +85°C | |

Mechanical Specifications

| | |
|------------|---|
| Proof Test | The entire fiber length is subjected to a tensile stress ≥ 100 kpsi (0.69 GPa). |
| Length | Fiber lengths available up to 63.0 km/spool. |

Performance Characterizations

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|---|--|
| Core Diameter | 8.2 μ m |
| Numerical Aperture | 0.14 |
| Effective Group Index of Refraction | 1310 nm: 1.4676 1550 nm: 1.4682 |
| Fatigue Resistance Parameter (nd) | 20 |
| Coating Strip Force | Dry: 0.6 lbs (3N) Wet: 14 days room temperature: 0.6 lbs (3N) |
| Rayleigh Backscatter Coefficient (for 1 ns Pulse Width) | 1310 nm: -77 dB 1550 nm: -82 dB |

Product variants & accessories

| Art.-No. | Description |
|-----------------------|---|
| TML-MPP/MPP09I96E-Bxx | tML [®] 12/Xtended - FO Micro Distribution Trunk Cable both sides 8x MPO/MTP [®] w. Pins 96E9/125 μ OS2 LSHF, Type B, Length: xx in m |
| TML-MPP/MPP50I96G4Bxx | tML [®] 12/Xtended - FO Micro Distribution Trunk Cable both sides 8xMPO/MTP [®] w. Pins 96G50/125 μ OM4 LSHF, Type B, Length: xx in m |