tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 50/125µ OM2

## tML® - tde Modular Link

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® Xtended, tML® 24 System and now tML® 32 System for extreme scalability and very easy migration to higher transmission rates such as 40G, 100G, 200G and 400G.

The tML® - FO Module 5HP MPO/MTP®is intended for the installation in the tML® Rack Mount Enclosure 3U (for 17 x Modules).

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## Technical Data

The end faces of the connectors are optimized by means of Lasercleaving and machine polish. The MPO/MTP®plug has a defined fiber hieght 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 module is marked with sequential serial number and article number. The modules are ROHS compliant.

| | |
|---|---|
| Box | Galvanized steel sheet |
| Front Panel | black |
| Entry | 1 x MPO/MTP®Male Adapter (beige) back |
| Exit | 6 x LC Duplex Adapter (beige) front |
| Tests | Interferometer, Insertion Loss, Return Loss and Visual Final Inspection; all measured values are electronically archived |
| | QS-Managementsystem ISO 9001, ISO 14001 and TL 9000 |

| | |
|---|---|
| Box | Galvanized steel sheet |
| Front Panel | black |

### FO Adapters

| | |
|---|---|
| Type | MPO/MTP® |
| Application | Multimode OM1/OM2 |
| Design | without Flange |
| Connector style | SC Simplex |
| Key Orientation | Type A, Key up/down |
| Color | Beige |
| Material | Plastic |
| Sleeve | -- |
| Shutter | -- |
| Standards | IEC 61754-7<br>TIA 604-5 |
| Manufacturer | US Conec |

### FO Adapters

| | |
|---|---|
| Type | LC Duplex |
| Application | Multimode |
| Design | One-Piece without flange |
| Connector style | SC Simplex |
| Color | Beige |
| Material | Plastic |
| Sleeve | Zirconia Straight Split |
| Shutter | - |
| Manufacturer | tde |


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

### Connector

| | |
|---|---|
| Type | MPO/MTP® Male Push Pull Locking with Elite Pins (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 | 20 dB |

## FO Connectors

| | |
|---|---|
| Connector Type | LC Unibody Simplex |
| Housing | Plastic, Beige |
| Ferrule | Zirkonia Staight Split, Spring-loaded Axially |
| Ferrule Hole | 126µ |
| Mating Cycles | 1.000 |
| Operating Temperature | -40°C up to +75°C |
| Strain Relief to | 100 N |
| Manufacturer | tde |

### Optical performance

| Fiber | Type | Wavelength | Insertion loss typ. | Insertion loss max. | Return loss min. |
|---|---|---|---|---|---|
| 50/125µ OM2 | LC | 850 nm | ≤ 0.25 dB | 0.45 dB | 30 dB |
| 62.5/125µ OM1 | LC | 850 nm | ≤ 0.25 dB | 0.45 dB | |

## FO Fiber

| | |
|---|---|
| Type | Corning 50/125µ OM2 multimode fiber |
| Manufacturer | Corning |

### Optical Specifications

| | |
|---|---|
| Bandwidth | 500 at 850 nm / 500 at 1300 nm |


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| | |
|---|---|
| Attenuation | At 850 nm max. ≤ 2.5 dB/km<br>At 1300 nm max. ≤ 0.8 dB/km |
| Numerical Aperture | 0.200 ± 0.015 |

### Dimensional Specifications

| | |
|---|---|
| Core Diameter | 50.0 ± 3.0 µm |
| Cladding Diameter | 125.0 ± 2.0 µm |
| Core-Clad Concentricity | ≤ 3.0 µm |
| Cladding Non-Circularity | < 2.0% |
| Core Non-Circularity | ≤ 5.0% |
| Coating Diameter | 245 ± 5 µm |
| Coating-Cladding Concentricity | < 12 µm |

### Environmental Specifications

| Enviromental Test | Test Condition | Induced Attenuation 850 nm and 1300 nm (dB/km) |
|---|---|---|
| Temperature Dependence | -60°C to +85°C | ≤ 0.20 |
| Temperature Humidity Cycling | -10°C to +85°C and 4% to 98% RH | ≤ 0.20 |
| Operating Temperature Range | -60°C to +85°C | |

### Mechanical Specifications

| | |
|---|---|
| Proof Test | The entire fiber length is subjected to a tensile stress ≥ 100 kpsi (0.7 GN/m²). |
| Length | Fiber lengths available up to 8.8 km/spool. |

### Performance Characterizations

| | |
|---|---|
| Refractive Index Difference | 2% |
| Effective Group Index of Refraction | 850 nm: 1.490<br>1300 nm: 1.486 |
| Fatigue Resistance Parameter (nd) | 20 |
| Coating Strip Force | Dry: 0.6 lbs (2.7N)<br>Wet: 14 days in 23°C water soak: 0.6 lbs (2.7N) |
| Cromatic Dispersion | Zero Dispersion Wavelength (λ0): 1300 nm ≤λ0 ≤ 1320 nm<br>Zero Dispersion Slope (S0): ≤ 0.101 ps/(nm²*km) |

## Product variants & accessories

| Art.-No. | Description |
|---|---|
| TML-T06LCADKH/MPP09ES | tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC APC Duplex 9/125µ OS2 |
| TML-T06LCDKH/MPP09ES | tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 9/125µ OS2 |
| TML-T06LCDKH/MPP50G3S | tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 50/125µ OM3 |
| TML-T06LCDKH/MPP50G4S | tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 50/125µ OM4 |


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# tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 50/125µ OM2

| Art.-No. | Description |
|---|---|
| TML-T06LCDKH/MPP50GS | tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 50/125µ OM2 |
| TML-T06LCDKH/MPP62GS | tML® - FO Module 5HP black MPO/MTP® with Pins/6x LC Duplex 62,5/125µ OM1 |


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