

tML<sup>®</sup> - FO Trunk Cable 1x MPO Female/1x MPO Female 12G50/125 $\mu$  OM4 LSHF, Type C, Length: xxx



## tML<sup>®</sup> - tde Modular Link

tML<sup>®</sup> 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. The system is characterized by highest packing density and highest flexibility during migration to higher transmission rates. Fibre optic and TP modules can be combined in one rack mount enclosure. 96x fibre optics LC Duplex or 96x MPO connectors can be used modularly on a 19-inch height unit. Thanks to its patented polarity and dark fibre modules, the tML system offers the simplest migration options to 100G and more.

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



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## Technical Data

The tML<sup>®</sup>- FO trunk cable is preterminated with MPO/MTP<sup>®</sup>connectors on both ends. The end faces of the connectors are optimized by means of Lasercleaving and machine polish. The MPO/MTP<sup>®</sup>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<sup>®</sup> - 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<sup>®</sup> 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 <sup>®</sup> Female Push Pull Locking (Magenta)
Ferrule	12 Fiber MM Elite <sup>®</sup> ferrule, PPS
Boot colour	Black
Manufacturer	tde/US Conec

### Optical Performance

Fiber	Type	Wavelength	Insertion loss typ.	Insertion loss max.	Return loss min.
50/125μ OM4	MPO/MTP <sup>®</sup>	850 /1300 nm	≤ 0.12 dB	0.25 dB	35 dB

## FO Fan-Out

Fan-out length	50 mm
Ø Fan-out	16 mm
Ø Single unit	3.0 mm
Single unit length	78 ± 5 cm (not stepped)

## FO Cables

### Mechanical characteristics

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

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Water penetration	IEC 60794-1-22 F5
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## General characteristics

Sheath colour	green, similar to RAL 6016
Zero halogen, non 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: D <sub>ca</sub> -s2,d1,a1

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 OM4
No. of fibers	12
Loose tube	1
Sheath $\varnothing$	7.6 mm
Weight	68 kg/km
Bending radius	115 mm
Tensile load	1500 N
Crush resistance	3000 N continuous
	5000 N short term
Fire load	275 kWh/km
	990 MJ/km

## Length tolerances (prefabricated with plugs)

Tolerances for lengths up to 40m	$\pm$ 100 cm
Tolerances for lengths up to 100m	$\pm$ 100 cm
Tolerances for lengths from 100m	$\pm$ 2%

## FO Fiber

### Optical properties

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: 3500 / 1300 nm: 500 MHz x km
High-Performance EMB bandwidth as per TIA/EIA 455-220A and IEC 60793-1-49	850 nm: 4700 / 1300 nm: 4700 MHz x km
Refractive Index	850 nm: 1.480 / 1300 nm: 1.479

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## Technical properties

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

## Geometrical and mechanical characteristics

Numerical Aperture	0.200 +/- 0.015
Core $\varnothing$	50.0 +/- 2.5 $\mu$ m
Maximum Core Non-Circularity	5 %
Cladding $\varnothing$	125.0 +/- 1.0 $\mu$ m
Maximum Cladding Non-Circularity	1.0 %
Maximum Cladding/Core Concentricity Error	1.5 $\mu$ m
Maximum Coating Concentricity Error	12 $\mu$ m
Coating $\varnothing$	242 +/- 5 $\mu$ m
Test load	100 kpsi

## Product variants & accessories

Art.-No.	Description
TML-MP/MP50B12G4-xxx	tML <sup>®</sup> - FO Trunk Cable 1x MPO Female/1x MPO Female 12G50/125 $\mu$ OM4 LSHF, Type C, Length: xxx
TML-MP/MP50B24G4-xxx	tML <sup>®</sup> - FO Trunk Cable 2x MPO Female/2x MPO Female 24G50/125 $\mu$ OM4 LSHF, Type C, Length: xxx
TML-MP/MP50B48G4-xxx	tML <sup>®</sup> - FO Trunk Cable 4x MPO Female/4x MPO Female 48G50/125 $\mu$ OM4 LSHF, Type C, Length: xxx
TML-MP/MP50B72G4-xxx	tML <sup>®</sup> - FO Trunk Cable 6x MPO Female/6x MPO Female 72G50/125 $\mu$ OM4 LSHF, Type C, Length: xxx
TML-MP/MP50B96G4-xxx	tML <sup>®</sup> - FO Trunk Cable 8x MPO Female/8x MPO Female 96G50/125 $\mu$ OM4 LSHF, Type C, Length: xxx