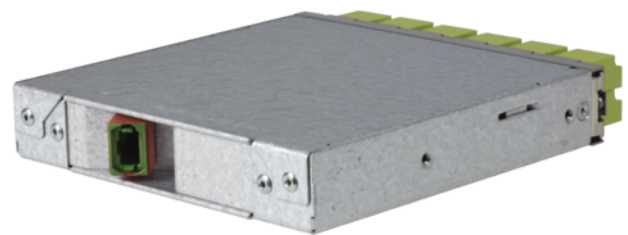


tML[®] 24 - FO Module 1x 24F MPO/MTP[®] without Pins/12x LC Duplex w. shutter 50/125 μ OM5



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. 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 utility patent protected tML[®] 24 - FO Module MPO/MTP[®] is intended for the installation in the tML[®] Rack Mount Enclosure 1U (for 8 x Modules). The module configuration guarantees an extremely easy migration from 1GbE to 100GbE because there can always be worked on both sides with uniformly configured modules and patch cables. The tML[®] 24 module can be used only in combination with the tML[®] HD patch cord.



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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 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 module is marked with sequential serial number and article number. The modules are ROHS compliant.

Entry	1 x MPO/MTP [®] Female Adapter (red) back
Exit	6 x LC Quad Adapter (limegreen) 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	Stainless steel
Dimensions	110 x 108 x 20 mm

FO Adapters

Type	MPO/MTP [®]
Application	Singlemode / Multimode
Design	without Flange
Connector style	SC Simplex
Key Orientation	Type A, Key up/down
Color	Red
Material	Plastic
Sleeve	--
Shutter	--
Standards	IEC 61754-7 TIA 604-5
Manufacturer	US Conec

FO Adapters

Type	LC Quad
Application	Multimode OM5
Design	with flange
Footprint	SC Duplex
Color	Limegreen
Material	Plastic
Sleeve	Zirkonia Straight Split
Shutter	Metall
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 - 3.5 μ . The max. adjacent fiber height difference is 0.2 μ m and for all fibers 0.3 μ m.

Connector

Type	MPO/MTP [®] Female Push Pull Locking
Ferrule	24 Fiber MM Elite [®] ferrule, PPS
Boot colour	Red
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.
50/125 μ OM5	MPO/MTP [®]	850 nm	≤ 0.16 dB	0.30 dB	30 dB

FO Connectors

Connector Type	LC Unibody Simplex
Housing	Plastic, Limegreen
Ferrule	Zirkonia Staight Split, Spring-loaded Axially
Ferrule Hole	126 μ
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.
50/125 μ OM5	LC	850 nm	≤ 0.10 dB	0.30 dB	35 dB

FO Fiber

Type	Corning ClearCurve [®] 50/125 μ OM5 multimode fiber
Design	Optical fibre G50/125 μ m (conform to IEC 60793-2-10 type A1a.4b) with optical core 50 μ m +/- 2.5 μ m diameter and optical cladding 125 μ m +/- 1 μ m diameter

Geometrical properties

Core concentricity error	< 5 %
Coating concentricity error	< 1 %

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Core coating eccentricity	< 1.5 μ m
Eccentricity of coating	< 12 μ m
Screen test	\geq 0.7 GPa (100 kpsi)

Transmission characteristics

Attenuation, maximum values 850 nm (cabled fibre)	2.5 dB/km
Attenuation, maximum values 953 nm (cabled fibre)	1.8 dB/km
Attenuation, maximum values 1300 nm (cabled fibre)	0.7 dB/km
Attenuation, maximum values 850 nm (uncabled fibre)	2.34 dB/km
Attenuation, maximum values 953 nm (uncabled fibre)	1.7 dB/km
Attenuation, maximum values 1300 nm (uncabled fibre)	0.64 dB/km
Macrobending, induced attenuation 100 turns, 37.5 mm	\leq 0.5 dB (at 850 nm)
Macrobending, induced attenuation 100 turns, 37.5 mm	\leq 0.5 dB (at 1300 nm)
Macrobending, induced attenuation 2 turns, 15 mm	\leq 0.1 dB (at 850 nm)
Macrobending, induced attenuation 2 turns, 15 mm	\leq 0.3 dB (at 1300 nm)
Macrobending, induced attenuation 2 turns, 7.5 mm	\leq 0.3 dB (at 850 nm)
Macrobending, induced attenuation 2 turns, 7.5 mm	\leq 0.5 dB (at 1300 nm)
Bandwidth (OFL), minimum values 850 nm	3500 MHz x km
Bandwidth (OFL), minimum values 953 nm	1850 MHz x km
Bandwidth (OFL), minimum values 1300 nm	500 MHz x km
Effective modal Bandwidth-length product min. 850 nm	4700 MHz x km
Effective modal Bandwidth-length product min. 953 nm	2470 MHz x km
Numerical aperture	0.200 +/- 0.015
Effective group of refraction 850 nm	1.482
Effective group of refraction 1300 nm	1.477

Product variants & accessories

Art.-No.	Description
TML-M12LCADK/M2-09E	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] without Pins/12x LC APC Duplex 9/125 μ OS2
TML-M12LCADS/M2-09E	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] /12x LC APC Duplex w. shutter 9/125 μ OS2

tML[®] 24 - FO Module 1x 24F MPO/MTP[®] without Pins/12x LC Duplex w. shutter 50/125 μ OM5

Art.-No.	Description
TML-M12LCDK/M2-09E	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] without Pins/12x LC Duplex 9/125 μ OS2
TML-M12LCDK/M2-50G3	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] without Pins/12x LC Duplex 50/125 μ OM3
TML-M12LCDK/M2-50G4	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] without Pins/12x LC Duplex 50/125 μ OM4
TML-M12LCDS/M2-09E	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] /12x LC Duplex w. shutter 9/125 μ OS2
TML-M12LCDS/M2-50G4	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] /12x LC Duplex w. shutter 50/125 μ OM4
TML-M12LCDS/M2-50G5	tML [®] 24 - FO Module 1x 24F MPO/MTP [®] without Pins/12x LC Duplex w. shutter 50/125 μ OM5