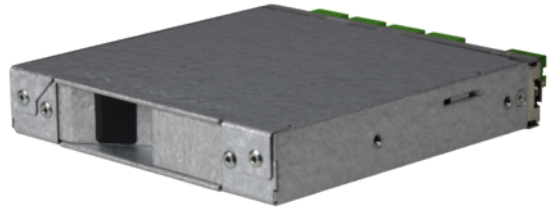


tML[®] - FO Breakout Module MPO/MTP[®] with Pins/4x LC Duplex 50/125 μ OM5 40GbE



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 tML[®] Breakout Module is intended for the installation in the tML[®] Rack Mount Enclosure 1U (for 8 x Modules).



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tML[®] - FO Breakout Module MPO/MTP[®] with Pins/4x LC Duplex 50/125 μ OM5 40GbE

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 [®] Male Adapter (limegreen) front
Exit	4 x LC Duplex 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

When the connector is inserted into the adapter it compress the springs, opening the internal shutter. The internal shutter opens, and due to the special design of the shutter, it will not touch the ferrule end face. As the connector is removed from the adapter, the shutter spring automatically returns the internal shutter to the closed position.

Type	LC Duplex
Application	Multimode OM5
Design	One-Piece without flange
Connector style	SC simplex
Color	Limegreen
Housing material	Plastic
Sleeve	Zirkonia Staight Split
Self-closing shutter material	Metal
Self-closing shutter protection	Dust an laser light
Manufacturer	tde

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

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Manufacturer	tde
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Optical performance

Fiber	Type	Wavelength	Insertion loss typ.	Insertion loss max.	Return loss min.
50/125 μ OM5	LC	850 nm	\leq 0.10 dB	0.30 dB	35 dB

FO Adapters

Type	MPO/MTP [®]
Application	Multimode OM5
Design	without Flange
Connector style	SC Simplex
Key Orientation	Type A, Key up/down
Color	Limegreen
Material	Plastic
Sleeve	--
Shutter	--
Standards	IEC 61754-7 TIA 604-5
Manufacturer	US Conec

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 [®] Male Push Pull Locking with Elite Pins
Ferrule	12 Fiber MM Elite [®] ferrule, PPS
Boot colour	Black
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	\leq 0.16 dB	0.30 dB	30 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

tML[®] - FO Breakout Module MPO/MTP[®] with Pins/4x LC Duplex 50/125 μ OM5 40GbE

Geometrical properties

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

tML[®] - FO Breakout Module MPO/MTP[®] with Pins/4x LC Duplex 50/125 μ OM5 40GbE

Product variants & accessories

Art.-No.	Description
TML-MO4LCAD/MPP09E	tML [®] - FO Breakout Module MPO/MTP [®] with Pins/4x LC APC Duplex 9/125 μ OS2 40GbE
TML-MO4LCADS/MPP09E	tML [®] - FO Breakout Module MPO/MTP [®] with Pins/4x LC APC Duplex w. shutter 9/125 μ OS2 40GbE
TML-MO4LCD/MPP50G3	tML [®] - FO Breakout Module MPO/MTP [®] with Pins/4x LC Duplex 50/125 μ OM3 40GbE
TML-MO4LCD/MPP50G4	tML [®] - FO Breakout Module MPO/MTP [®] with Pins/4x LC Duplex 50/125 μ OM4 40GbE
TML-MO4LCDS/MPP50G4	tML [®] - FO Breakout Module MPO/MTP [®] with Pins/4x LC Duplex w. shutter 50/125 μ OM4 40GbE
TML-MO4LCDS/MPP50G5	tML [®] - FO Breakout Module MPO/MTP [®] with Pins/4x LC Duplex 50/125 μ OM5 40GbE