tde

trans data elektronik GmbH

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tML® - FO Breakout Module MPO/MTP® with Pins/4x LC Duplex 50/125µ OM5, SR4

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® Breakout Moduleis intended for the installation in the tML® Rack Mount Enclosure 1U (for 8 x Modules). A special cleaning tool is required to clean the adapters with shutter.

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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 - 3.5µ. 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.

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

Optical performance

Fiber	Type	Wavelength	Insertion loss typ.	Insertion loss max.	Return loss min.
50/125µ OM5	LC	850 nm	≤ 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 - 3.5µ. 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
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.
50/125µ OM5	MPO/MTP®	850 nm	≤ 0.11 dB	0.25 dB	35 dB

FO Fiber

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

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Geometrical properties

Core concentricity error	< 5 %
Coating concentricity error	< 1 %
Core coating eccentricity	< 1.5 μm
Eccentricity of coating	< 12 μm
Screen test	≥ 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	≤ 0.5 dB (at 850 nm)
Macrobending, induced attenuation 100 turns, 37.5 mm	≤ 0.5 dB (at 1300 nm)
Macrobending, induced attenuation 2 turns, 15 mm	≤ 0.1 dB (at 850 nm)
Macrobending, induced attenuation 2 turns, 15 mm	≤ 0.3 dB (at 1300 nm)
Macrobending, induced attenuation 2 turns, 7.5 mm	≤ 0.3 dB (at 850 nm)
Macrobending, induced attenuation 2 turns, 7.5 mm	≤ 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
L-CLEAN-SMART1.25-R	FO Replacement Cartridges for Cleaning Tool 1,25mm for LC Duplex Adapter with self-closing shutter
L-CLEAN-SMART-CS1.25	FO Cleaning Tool 1,25mm for CS and LC Duplex Adapter with self-closing shutter
TML-M04LCAD/MPP09E	tML® - FO Breakout Module MPO/MTP® with Pins/4x LC APC Duplex 9/125µ OS2, LR4
TML-M04LCADS/MPP09E	tML® - FO Breakout Module MPO/MTP® with Pins/4x LC APC Duplex w. shutter 9/125µ OS2, LR4
TML-M04LCD/MPP50G3	tML® - FO Breakout Module MPO/MTP® with Pins/4x LC Duplex 50/125µ OM3, SR4
TML-M04LCD/MPP50G4	tML® - FO Breakout Module MPO/MTP® with Pins/4x LC Duplex 50/125µ OM4, SR4
TML-M04LCDS/MPP50G4	tML® - FO Breakout Module MPO/MTP® with Pins/4x LC Duplex w. shutter 50/125µ OM4, SR4
TML-M04LCDS/MPP50G5	tML® - FO Breakout Module MPO/MTP® with Pins/4x LC Duplex 50/125µ OM5, SR4