tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 9/125µ OS2

trans data elektronik GmbH

Description

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 400G 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® 12, tML® 24, tML® 32 and now tML® 24+ System for extreme scalability and very easy migration to higher transmission rates such as 40G, 100G, 200G, 400G and 800G and more.

The tML® - FO Module MPO/MTP®is intended for the installation in the tML® Rack Mount Enclosure 1U (for 8 x Modules).

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	Stainless steel
Entry	2 x MPO/MTP®Male Adapter (black) back
Exit	3 x URM K8/K8 Adapter (metal) 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

Optical Performance

Fiber	Type	Wavelength	IL typ.	IL max.	RL min.
9/125µ OS2	MPO/MTP®APC	1550 nm	≤ 0.10 dB	0.45 dB	65 dB
9/125µ OS2	URM K8/K8	1300 nm	≤ 0.15 dB	0.29 dB	55 dB
9/125µ OS2	Module	1550 nm	≤ 0.30 dB	0.50 dB	65 dB

Box	Galvanized steel sheet
Front Panel	Stainless steel
Dimensions	110 x 108 x 20 mm

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Network components,
Cable technology and Fibre optics

ISO 9001, TL 9000
and ISO 14001 certified

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Type	Corning SMF-28e+® 09/125µ OS2 G.652.D singlemode fiber
Maximum Attenuation	At 1310 nm max. 0.33 - 0.35 dB/km At 1383 ± 3 nm max. 0.31 - 0.35 dB/km At 1490 nm max. 0.21 - 0.24 dB/km At 1550 nm max. 0.19 - 0.20 dB/km At 1625 nm max. 0.20 - 0.23 dB/km
Attenuation vs. Wavelength	Range: 1285 - 1330 mm; Ref. λ: 1310 nm; Max. Difference: 0.03 dB/km Range: 1525 - 1575 mm; Ref. λ: 1550 nm; Max. Difference: 0.02 dB/km
Macrobend Loss	Mandrel Diameter:32mm; Number of Turns: 1; Wavelength: 1550nm; Induced Attenuation: ≤0.03 dB Mandrel Diameter:50mm; Number of Turns: 100; Wavelength: 1310nm; Induced Attenuation: ≤0.03 dB Mandrel Diameter:50mm; Number of Turns: 100; Wavelength: 1550nm; Induced Attenuation: ≤0.03 dB Mandrel Diameter:60mm; Number of Turns: 100; Wavelength: 1625nm; Induced Attenuation: ≤0.03 dB
Point Discontinuity	Wavelength: 1310 nm; Point Discontinuity: ≤ 0.05 dB Wavelength: 1550 nm; Point Discontinuity: ≤ 0.05 dB
Cable Cutoff Wavelength (λccf)	λccf ≤ 1260 nm
Mode-Field Diameter	At 1310 nm = 9.2 ± 0.4 µm At 1550 nm = 10.4 ± 0.5 µm
Dispersion	At 1550 nm = ≤ 18.0 [ps/(nm*km)] At 1625 nm = ≤ 22.0 [ps/(nm*km)]
	Zero Dispersion Wavelength (λ_0): 1310 nm ≤λ_0≤ 1324 nm Zero Dispersion Slope (S_0): ≤ 0.092 ps/(nm² *km)
Polarization Mode Dispersion (PMD)	PMD Link Design Value = ≤ 0.06 ps/√km Maximum Individual Fiber = ≤ 0.1 ps/√km
Norm	ITU-T Recommendation G.652 (Tables A, B, C, and D) IEC Specifications 60793-2-50 Type B1.3 TIA/EIA 492-CAAB Telcordia Generic Requirements GR-20-CORE ISO 11801 OS2

Dimensional Specifications

Fiber Curl	≥ 4.0 m radius of curvature
Cladding Diameter	125.0 ± 0.7 µm
Core-Clad Concentricity	≤ 0.5 µm
Cladding Non-Circularity	≤ 0.7%
Coating Diameter	242 ± 5 µm
Coating-Cladding Concentricity	< 12 µm

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Environmental Specifications

Environmental Test	Test Condition	Induced Attenuation 1310 nm, 1550 nm & 1625 nm
Temperature Dependence	-60°C to +85°C	≤ 0.05
Temperature Humidity Cycling	-10°C to +85°C up to 98% RH	≤ 0.05
Water Immersion	23°C ± 2°C	≤ 0.05
Heat Aging	85°C ± 2°C	≤ 0.05
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 GPa).
Length	Fiber lengths available up to 63.0 km/spool.

Performance Characterizations

Core Diameter	8.2 µm
Numerical Aperture	0.14
Zero Dispersion Wavelength (λ_0)	1317 nm
Zero Dispersion Slope (S_0)	0.088 ps/(nm²*km)
Effective Group Index of Refraction	1310 nm: 1.4676 1550 nm: 1.4682
Fatigue Resistance Parameter (nd)	20
Coating Strip Force	Dry: 0.6 lbs (3N) Wet: 14 days room temperature: 0.6 lbs (3N)
Rayleigh Backscatter Coefficient (for 1 ns Pulse Width)	1310 nm: -77 dB 1550 nm: -82 dB

Type	MPO/MTP®
Application	Singlemode OS2 APC
Design	without Flange
Connector style	SC Simplex
Key Orientation	Type A, Key up/down
Color	Green
Material	Plastic
Sleeve	--

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Shutter	--
Standards	IEC 61754-7 TIA 604-5
Manufacturer	US Conec

Type	URM
Case	plastic, blue
	core blue– singlemode
	core green – singlemode APC
sleeves	Ceramic slotted
Mating cycles	≥ 1.000
Operating temperature	-40°C to +85°
Flap	--
Manufacturer	tde
Possible fiber types	MM G50/65,2 / 125µm OM1 – OM5 & SM E9 / 125µm OS2

Connector Type	URM

Optical performance

Fiber	Type	Wavelength	Insertion loss typ.	Insertion loss max.	Return loss min.
09/125µ OS2	URM	1300 nm	≤ 0.15 dB	0.29 dB	55 dB

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.

Type	MPO/MTP® APC Male Push Pull Locking with Elite Pins (green)
Ferrule	12 Fiber SM Elite® ferrule, PPS
Boot colour	Black
Temperature range	-40°C bis +75°C
Manufacturer	tde/US Conec

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Optical Performance

Fiber	Type	Wavelength	Insertion loss typ.	Insertion loss max.	Return loss min.
9/125µ OS2	MPO/MTP®APC	1310 / 1550 nm	≤ 0.10 dB	0.20 dB	75 dB

Art.-No.	Description
TML-M03URM8A/MPP09E	tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 APC 9/125µ OS2
TML-M03URM8/MPP09E	tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 9/125µ OS2
TML-M03URM8/MPP50G	tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 50/125µ OM2
TML-M03URM8/MPP50G3	tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 50/125µ OM3
TML-M03URM8/MPP50G4	tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 50/125µ OM4
TML-M03URM8/MPP62G	tML® - FO Module 2x MPO/MTP® with Pins/3x URM K8/K8 62,5/125µ OM1

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