

tML<sup>®</sup> Xtended - FO Dark Fiber Module 5HP 4x MPO/MTP<sup>®</sup> w/o Pins/6x MPO/MTP<sup>®</sup> w. Pins 50/125μ  
OM3, SR4



## tML<sup>®</sup> Xtended

tML<sup>®</sup> Xtended 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<sup>®</sup> 12 fiber 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<sup>®</sup> cabling system as a proven tML<sup>®</sup> standard system and in the highly innovative variants tML<sup>®</sup> 24 system and now tML<sup>®</sup> 32 system for extreme scalability and very easy migration to higher transmission rates such as 40G, 100G, 200G and 400G.



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## Technical Data

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

Entry	2 x MPO/MTP <sup>®</sup> Female Adapter (aqua) back
Exit	6 x MPO/MTP <sup>®</sup> Male Adapter (aqua) 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

## FO Connectors

### Connector

Type	MPO/MTP <sup>®</sup> Female Push Pull Locking (aqua)
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 OM3	MPO/MTP <sup>®</sup>	850 nm	≤ 0.14 dB	0.25 dB	35 dB

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### FO Adapters

Type	MPO/MTP <sup>®</sup>
Application	Multimode OM3
Design	without Flange
Connector style	SC Simplex
Key Orientation	Type A, Key up/down
Color	Aqua
Material	Plastic
Sleeve	--
Shutter	--
Standards	IEC 61754-7 TIA 604-5
Manufacturer	US Conec

### FO Fiber

Type	Draka OM3 50/125 $\mu$ m multimode fiber (C12)	
Standards and Norms	IEC 60793-2-10 Category A1a.2;	EN 50 173:2002 category OM3
	EN 60793-2-10: type A1a.2	ISO/IEC 11801:2002 category OM3
	ITU Recommendation G.651	IEEE 802.3 - 2002 incl. amendment 802.3ae - 2002.
	TIA/EIA-492 AAAB	

### Attenuation according to IEC 60793-1-40

Maximum value of cable at 850 nm	$\leq 3.0$ dB/km
Maximum value of cable at 1300 nm	$\leq 1.0$ dB/km
Maximum value of fiber (for reference only) at 850 nm	$\leq 2.5$ dB/km
Maximum value of fiber (for reference only) at 1300 nm	$\leq 0.8$ dB/km
Inhomogeneity of OTDR trace for any two 1000 metre fiber lengths	Max. 0.1 dB/km

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### Bandwidth according to IEC 60793-1-41

OFL value at 850 nm	1500 MHz*km
OFL value at 1300 nm	500 MHz*km
Effective Modal Bandwidth (EMB) Effective Modal Bandwidth I assured by means of differential mode delay (DMD) measurement as specified in IEC 60793-1-49	2000 MHz*km

### Group index of refraction according to IEC 60793-1-22

Group index of refraction at 850 nm	1.482
Group index of refraction at 1300 nm	1.477

### Other properties according to IEC 60793-1-xx

Attribute	Measurement method	Limits
Core diameter	IEC/EN 60793-1-20	50 $\pm$ 2.5 $\mu$ m
Cladding diameter	IEC/EN 60793-1-20	125.0 $\pm$ 1.0 $\mu$ m
Cladding non-circularity	IEC/EN 60793-1-20	$\leq$ 1.0%
Core non-circularity	IEC/EN 60793-1-20	$\leq$ 5%
Core -cladding concentricity error	IEC/EN 60793-1-20	$\leq$ 1.5 $\mu$ m
Primary coating diameter - uncoloured	IEC/EN 60793-1-21	242 $\pm$ 7 $\mu$ m
Primary coating diameter - coloured	IEC/EN 60793-1-21	250 $\pm$ 15 $\mu$ m
Primary coating non-circularity	IEC/EN 60793-1-21	$\leq$ 5%
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	$\leq$ 10 $\mu$ m
Proof stress level	IEC/EN 60793-1-30	$\geq$ 0.7 ( $\approx$ 1 %)
Typical average strip force	IEC/EN 60793-1-32	1.7 N
Strip force (peak)	IEC/EN 60793-1-32	1.3 N $\leq$ F <sub>peak.strip</sub> $\leq$ 8.9 N
Numerical aperture	IEC/EN 60793-1-43	0.200 $\pm$ 0.015

## Product variants & accessories

Art.-No.	Description
TML-T06MPP/04MP50G3X	tML <sup>®</sup> Xtended - FO Dark Fiber Module 5HP 4x MPO/MTP <sup>®</sup> w/o Pins/6x MPO/MTP <sup>®</sup> w. Pins 50/125 $\mu$ OM3, SR4
TML-T06MPP/04MP50G4X	tML <sup>®</sup> Xtended - FO Dark Fiber Module 5HP 4x MPO/MTP <sup>®</sup> w/o Pins/6x MPO/MTP <sup>®</sup> w. Pins 50/125 $\mu$ OM4, SR4
TML-T06MPP/04MP50G5X	tML <sup>®</sup> Xtended - FO Dark Fiber Module 5HP 4x MPO/MTP <sup>®</sup> w/o Pins/6x MPO/MTP <sup>®</sup> w. Pins 50/125 $\mu$ OM5, SR4