

tML[®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12G62,5/125μ OM1 LSHF, Type C, Length xxx



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[®] - FO trunk cable is intended for the connection of two tML[®]- FO Modules.



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Technical Data

The tML[®]- FO trunk cable is preterminated with MPO/MTP[®]connectors on both ends. 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 fan-out unit is optimized for tML[®] - Cable Mounting Bracket for Fan-out Units. The module is marked with sequential serial number and article number.

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 [®] Female Push Pull Locking (Beige)
Ferrule	12 Fiber MM Elite [®] ferrule, PPS
Boot colour	Black
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.
50/125μ OM2	MPO/MTP [®]	850 nm	≤ 0.25 dB	0.45 dB	20 dB
62.5/125μ OM1	MPO/MTP [®]	850 nm	≤ 0.25 dB	0.45 dB	

FO Fan-Out

Fan-out length	50 mm
Ø Fan-out	16 mm
Ø Single unit	3.0 mm
Single unit length	78 ± 5 cm (not stepped)

FO Cables

Standards

ISO 11801 2nd edition
EN 50173-1:2002
IEC 60794-1

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Construction

Cabletype	Universal U-DQ(ZN)BH for indoor and outdoor use
Lose tube	ø2.8 mm jelly filled loose tube
Strength Member	Waterblocked E-Glass fiber elements
Sheath	1.5 mm blue FireBur [®] sheath, UV stabilised, IEC 50290-2-27

Fire rating

IEC 60332-1-2	Single vertical wire test
IEC 60754-1	No halogens
IEC 60754-2	No acid matters
IEC 61034-2	No dense smoke

Heat of combustion

Fiber count	MJ/km	KWh/m
2-16	1100	0.31

Mechanical properties

Maximum installation tensile strength	E1	1500 N (fiber strain less than 1/2 of proof test level)
Short term tensile strength	E1	1000 N (fiber strain less than 1/3 of proof test level)
Permanent tensile strength	E1	700 N (no attenuation change, fiber strain less than 1/4 of proof test level)
Compressive strength (crush)	E3	2000N
Impact	E4	20 Nm (no attenuation change, no broken cable elements)
Torsion	E7	5 cycles ± 1 turn
Kink	E10	The cables do not form a kink when a loop is drawn together to a diameter of 200 mm
Min. Bending radius, unloaded	E11	R = 60 mm
Min. Bending radius, loaded	-	R = 100 mm
Temperature range	F1	Storage: -40°C to +60°C (short term up to 70 °C) Installation: -15°C to +40°C Operation: -30°C to +70°C
Water penetration	F5B	No water on free end
Nominal outer diameter	-	2 - 16 fibers: 7.5 mm
Nominal weight	-	2 - 16 fibers: 55 kg/km

FO Fiber

Type	Draka OM1 62.5/125μm multimode fiber (C02)
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Standards and Norms	IEC 60793-2-10 Category A1b	ISO/IEC 11801 category OM1.
	EN 60793-2-10: type A1b	IEEE 802.3 - 2002. with amendment 802.3ae - 2002.
	TIA/EIA-492 AAAB	ANSI/TIA/EIA-568.B.3 – 2000
	EN 50173-1:2007 category OM1	IBM™ Fiber Optic Channel Links; ESCON™

Attenuation (of cable with fibers) according to IEC 60793-1-40

850 nm	≤ 3.2 dB/km
1300 nm	≤ 1.0 dB/km
Inhomogeneity of OTDR trace for any two 1000 metre fiber lengths	Max. 0.2 dB/km

Bandwidth according to IEC 60793-1-41

850 nm	200 MHz*km
1300 nm	600 MHz*km

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

Group index of refraction at 850 nm	1.496
Group index of refraction at 1300 nm	1.491

Other properties according to IEC 60793-1-xx

Attribute	Measurement method	Limits
Core diameter	IEC/EN 60793-1-20	62.5 ± 2.5 µm
Cladding diameter	IEC/EN 60793-1-20	125.0 ± 1.0 µm
Cladding non-circularity	IEC/EN 60793-1-20	≤ 1.0%
Core non-circularity	IEC/EN 60793-1-20	≤ 5%
Core -cladding concentricity error	IEC/EN 60793-1-20	≤ 1.5 µm
Primary coating diameter - uncoloured	IEC/EN 60793-1-21	242 ± 7 µm
Primary coating diameter - coloured	IEC/EN 60793-1-21	250 ± 15 µm
Primary coating non-circularity	IEC/EN 60793-1-21	≤ 5%
Primary coating-cladding concentricity error	IEC/EN 60793-1-21	≤ 10 µm
Proof stress level	IEC/EN 60793-1-30	≥ 0.7 (≈ 1 %)
Typical average strip force	IEC/EN 60793-1-32	1.7 N
Strip force (peak)	IEC/EN 60793-1-32	1.3 N ≤ F _{peak.strip} ≤ 8.9 N
Numerical aperture	IEC/EN 60793-1-43	0.200 ± 0.015

Product variants & accessories

tML[®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12G62,5/125μ OM1 LSHF, Type C, Length xxx

Art.-No.	Description
TML-MP/MP09B12Exxx	tML [®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12E9/125μ OS2 LSHF, Type C, Length: xxx
TML-MP/MP50B12G3-xxx	tML [®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12G50/125μ OM3 LSHF, Type C, Length: xxx
TML-MP/MP50B12G4-xxx	tML [®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12G50/125μ OM4 LSHF, Type C, Length: xxx
TML-MP/MP50B12Gxxx	tML [®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12G50/125μ OM2 LSHF, Type C, Length: xxx
TML-MP/MP62B12Gxxx	tML [®] - FO Trunk Cable 1x MPO Female/1x MPO Female 12G62,5/125μ OM1 LSHF, Type C, Length xxx