

tML[®] - FO patch cord both sides 1x MPO/MTP[®] Female 12G50/125µ OM5 LSOH, Type B, Length: xxx



tML[®] Xtended

tML[®] 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[®] 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[®] cabling system as a proven tML[®] standard system and in the highly innovative variants 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.



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Technical Data

The tML[®]- FO patch cord is preterminated with MPO/MTP[®]connectors on both ends. The Cable is very slim and flexible. 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.

Cable	Round cable, 3 mm, loose tube, LSOH, limegreen
Option	unsensitive ClearCurve [®] Corning fiber
Connectors	MPO/MTP [®] Female Push Pull (limegreen)
Pin out	Type B
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

xxx - stands for the cable length in meters (every length available)

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 [®] Female Push Pull Locking
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 Cables

Loose tube

Loose tube	unfilled (FRNC)
Wall thickness PVC-tube	0.20 mm – 0.25 mm
Outer diameter	1.8 mm with 12 optical fibres
Tube colour	green
Colour code fibres (1-12)	red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink

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Strain relief elements

Strain relief elements	Aramid
Strength members	Fiberglass-reinforced plastic (FRP)

Outer jacket

Outer jacket	Halogen-free and flame-retardant material (FRNC)
Wall thickness	approx. 0.4 mm
Outer diameter	approx. 3.0 mm
Colour	lime green
Inkjet - marking (black)	t d e – IVH12G50–MPO-OM5 LSZH (F.RoHS)

Mechanical characteristics

Min. bending radius fixed (static) acc. IEC 60794-1-2 E11A	10 x outside diameter
Min. bending radius during assembly (dynamic), with additional tensile strain acc. IEC 60794-1-2 E6	15 x outside diameter
Max. tensile force acc. IEC 60794-1-2 E1, short term	300 N
Max. crush resistance acc. IEC 60794-1-2 E3, long term	150 N/dm
Max. crush resistance acc. IEC 60794-1-2 E3, short term	1500 N/dm
Cable weight	15.0 kg/km

Thermal characteristics

Transport and storage	-40°C to +80°C
Verlegung	-20°C to +50°C
In use acc. IEC 60794-1-2 F1	-40°C to +80°C

Fire performance

Cable is flame-retardant	acc. to IEC 60332-1-2
Smoke density	acc. to IEC 61034
Halogen-free	acc. to IEC 60754-1
Acidity of the combustion gases	acc. to IEC 60754-2
Fire load	0.17 MJ/m
Reaction to fire (Euroclasses)	Dca

Chemical characteristics	No resistance to oil, petrol, acid and leach
Standardisation	IEC 60794-2

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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

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

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Effective group of refraction 850 nm	1.482
Effective group of refraction 1300 nm	1.477

Product variants & accessories

Art.-No.	Description
TML-MP/MP09I12E-Bxxx	tML [®] - FO patch cord both sides 1x MPO/MTP [®] Female 12E9/125 μ OS2 LSOH, Type B, Length: xxx
TML-MP/MP50I12G3Bxxx	tML [®] - FO patch cord both sides 1x MPO/MTP [®] Female 12G50/125 μ OM3 LSOH, Type B, Length: xxx
TML-MP/MP50I12G4Bxxx	tML [®] - FO patch cord both sides 1x MPO/MTP [®] Female 12G50/125 μ OM4 LSOH, Type B, Length: xxx
TML-MP/MP50I12G5Bxxx	tML [®] - FO patch cord both sides 1x MPO/MTP [®] Female 12G50/125 μ OM5 LSOH, Type B, Length: xxx