

tML[®] 24 - FO Micro Distribution trunk cable 24F MPO w. Pins/MPO w. Pins 24G50/125µ OM5 LSOH,
Type A, Length: xx in m



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. The system is characterized by highest packing density and highest flexibility during migration to higher transmission rates. Fibre optic and TP modules can be combined in one rack mount enclosure. 96x fibre optics LC Duplex or 96x MPO connectors can be used modularly on a 19-inch height unit. Thanks to its patented polarity and dark fibre modules, the tML system offers the simplest migration options to 100G and more.

The tML[®] - FO Micro Distribution trunk cable is intended for the connection of two tML[®] 24 - FO Modules.



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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 - 3.5 μ . The max. adjacent fiber height difference is 0.2 μ m and for all fibers 0.3 μ m.

Cable	Round cable 3.6 mm, loose tube, LSOH
Connectors	MPO/MTP [®] Push Pull
Pin out	Type A
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

FO Connectors

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Connector

Type	MPO/MTP [®] Male Push Pull Locking with Elite Pins
Ferrule	24 Fiber MM Elite [®] ferrule, PPS
Boot colour	Red
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.
50/125 μ OM5	MPO/MTP [®]	850 nm	≤ 0.16 dB	0.30 dB	30 dB

FO Cables

Loose tube

Loose tube	unfilled (FRNC)
Wall thickness PVC-tube	0.35 mm – 0.40 mm
Outer diameter	2.6 mm with 24 optical fibres
Tube colour	green
Colour code fibres (1-12)	red, green, blue, yellow, white, grey, brown, violet, turquoise, black, orange, pink
Colour code fibres (13-24)	red, green, blue, yellow, white, grey, brown, violet, turquoise, transparent, orange, pink (always with black ring marking, except transparent)

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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. 3.8 mm
Colour	lime green
Inkjet - marking (black)	t d e – IVH24G50–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	20.0 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	0.26 MJ/m

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

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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

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

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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
TMLM2P/M2P09I24E-Axx	tML [®] 24 - FO Micro Distribution trunk cable 24F MPO w. Pins/MPO w. Pins 24E9/125 μ OS2 LSOH, Type A, Length: xx in m
TMLM2P/M2P50I24G3Axx	tML [®] 24 - FO Micro Distribution trunk cable 24F MPO w. Pins/MPO w. Pins 24G50/125 μ OM3 LSOH, Type A, Length: xx in m
TMLM2P/M2P50I24G4Axx	tML [®] 24 - FO Micro Distribution trunk cable 24F MPO w. Pins/MPO w. Pins 24G50/125 μ OM4 LSOH, Type A, Length: xx in m
TMLM2P/M2P50I24G5Axx	tML [®] 24 - FO Micro Distribution trunk cable 24F MPO w. Pins/MPO w. Pins 24G50/125 μ OM5 LSOH, Type A, Length: xx in m