

tML<sup>®</sup> - TP Trunk Cable Telco F/F 180° shielded 1000BaseT LSHF-F length: xx meters



## tML<sup>®</sup> - tde Modular Link

tML<sup>®</sup> 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> 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> Xtended, 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.

The tML<sup>®</sup>- TP trunk cable is intended for the connection of two tML<sup>®</sup>- TP Modules.



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## Technical Data

tML<sup>®</sup> - TP Trunk Cable is preterminated on both ends with a Telco 50pos. female connector. The cable is very slim and flexible. Each cable is marked with sequential serial number and article number.

Cable	S/FTP Round Cable 24x2xAWG 26/1, Pet-Al foil around each pair, 3 layers of screened pairs (2+8+14), LSHF-FR
Outer Diameter	13.2 mm
Weight	205 kg/km
bending radius without load	55 mm
bending radius with load	110 mm
Connectors	2 x Telco 50pos. Female 180° shielded with screws
Tests	Link Performance Tests, Elektronischer Test on short-circuit and Visual Final Inspection; all measured values are electronically archived
	QS-Managementsystem nach ISO 9001, ISO 14001 und TL 9000

xx - stands for the cable length in meters (max. length is 60m)

## TP Cable

### Construction

Type	UC FUTURE COMPACT AWG26/1 Cat.7 S/FTP 24P
Conductor	Bare copper wire, diameter 0.4 mm (AWG26)
Insulation	Foam-skin PP, diameter 1.0 mm
Twisting	2 insulated wires to the pair
Pair screening	Pet-Al foil around each pair
Stranding	6 (5+1) bundles with 4 foiled pairs blue, orange, green, brown
	Coloured tapes are around each bundle
Screen	Tinned copper braid 85% coverage
Sheath	LSHF-FR, diameter 13.9 mm

### Application

IEEE 802.3: 10Base-T; 100Base-T; 10GBase-T, ISDN; xDSL

IEEE 802.5 16 MB; ISDN; TPDDI; ATM155Mbit/s

The conductor diameter is smaller compared to the standard installation cables. This leads to an increased attenuation and therefore the

operating distance is reduced (60m instead of 90m installation cable in standard permanent link).

### Standards

IEC 61156-6 work area cable

ISO/IEC 11801 2<sup>nd</sup> ed.

EN 50173-5

EN 50288-4-2

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## Flame resistance

PVC IEC 60332-1

LSHF-FR IEC 60332-3-24; IEC 60754-2; IEC 61034 ; EN 50399 Class D<sub>ca</sub>

## Mechanical properties

Minimum bending radius	Without load	≥ 55 mm
	With load	≥ 110 mm
Temperature range	During operation	-20°C up to +60°C
	During installation	10°C up to +40°C

## Electrical properties at 20°C

Loop resistance		≤ 280 Ω/km
Resistance unbalance		≤ 2%
Test voltage	core/core	1000 V <sub>DC</sub> 1 min
	core/screen	1000 V <sub>DC</sub> 1 min
Capacitance	800 Hz	Nom. 44 nF/km
Capacitance unbalance		≤ 1600 pF/km
Impedance	100 MHz	100 Ω ± 5 Ω
Nominal velocity of propagation		ca. 76%
Insulation resistance	500 V	≥ 2000 MΩkm
Transfer impedance	at 1 MHz	≤ 5 mΩ /m
	at 10 MHz	≤ 5 mΩ /m
	at 30 MHz	≤ 10 mΩ /m

## Electrical Data (nominal) acc. to Cat.7 (at 20°C)

F	Attenuation	NEXT	PS-NEXT	ELFEXT	PS-ELFEXT	Return loss
MHZ	dB/10m	dB	dB	dB/100m	dB/100m	dB
1.0	0.3	90	87	80	77	23
4.0	0.6	90	87	80	77	24
10.0	1.0	90	87	80	77	25
16.0	1.3	90	87	76	73	25
20.0	1.4	90	87	74	71	25
31.2	1.8	90	87	70	67	25
62.5	2.6	90	87	64	61	23
100.0	3.2	87	84	60	57	21
125.0	3.6	85	82	58	55	20
155.5	4.0	84	81	56	53	19
175.0	4.3	83	80	55	52	19
200.0	4.6	82	79	54	51	18
250.0	5.1	81	78	52	49	18
300.0	5.6	80	77	50	47	17
450.0	6.9	77	74	47	44	17

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600.0	7.9	75	72	44	41	17
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## Technical Data

Designation	J-02YS(ST)CH
Type	24x2x0.4PiMF
Outer diameter	13.9 mm
Fire load	2.171 MJ/km
Fire load	0.603 kWh/m
Reaction to Fire	D <sub>ca</sub> -s2, d2, a1
Weight	230 kg/km
Copper content	115 kg/km
Tensile force	500 N

## Product variants & accessories

Art.-No.	Description
TML-TELCO-FF-Cxx	tML <sup>®</sup> - TP Trunk Cable Telco F/F 180° shielded 1000BaseT LSHF-F length: xx meters