net. work. solution.

ISO 9001, TL 9000 and ISO 14001 certified

trans data elektronik GmbH

tSML tde Semi Modular Link System

Reduced to the maximum

MADE IN GERMANY tde SINCE 1991

Technical Data

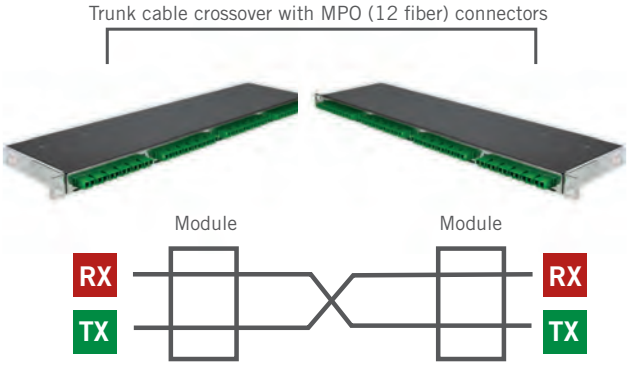
FO Connector Performance					
			insertion loss (dB)		return loss (dB)
Fiber	**Type**	**Wavelength**	**typical**	**max**	**min**
50/125µ OM3	**LC**	**850nm**	**≤ 0,20**	**0,35**	**30**
	MPO	850nm	≤ 0,20	0,35	25
50/125µ OM4	**LC**	**850nm**	**≤ 0,10**	**0,30**	**35**
	MPO	850nm	≤ 0,16	0,30	30
9/125µ	**LC**	**1550nm**	**≤ 0,10**	**0,25**	**55**
	LC APC	1550nm	≤ 0,10	0,25	75
	MPO APC	1550nm	≤ 0,10	0,25	75

All modules are tested
before delivery **(Plug & Play)**.

For all fiber optic connectors following applies:

- **> FO connector geometry according to IEC and better**
- **> 100% inspection of all MPO/MTP and SM connectors using interferometers**
- **> MPO/MTP plug has a defined fiber height of 1 - 3,5µ**
- **> Max. adjacent fiber height difference is 0,2µm and for all fibers 0,3µm**

tSML FO cabling plan



TIA/EIA-568-B.1 Method C
Method A and B on customer request

A crossover of both optical fibers is required for transmission between the transmitting and receiving diodes in any fiber-optic cabling system.

This is accomplished in a trunk cable in the tSML-system. A typical configuration therefore consists of an crossover MPO/MPO trunk cable and two standard modules.

tSML TP Link Performance

GHMT

Certificate

No. z2577o-11-E

Customer:
tde – trans data elektronik GmbH
im Defdahl 233
44141 Dortmund, Germany

Category 6A

Test sample(s):
Connector:
tBL RJ45 jack cat.6a ISO/IEC
Part-No.: TBL-RJ45KS
TBL-RJ45KSL
TBL-RJ45OC
TBL-RJ45OCL

Applied standard(s):
ISO/IEC 11801 Ed.2.2 (2011-06)
IEC 60603-7-51 Ed.1.0 (2010-03)

Results:
The sample meets the limits of the specified standards and regulations with respect to the parameters indicated above.

Connector, Category 6A

The test results which were determined in the course of the measurement refer to the submitted specimen. Any future technical modifications of the verified products are subject to the responsibility of the manufacturer.

This Certificate refers to the comprehensive test report no. P2577o-11-E and shall only be applicable in conjunction with the test report.

Bexbach, 09. August 2013

Dirk Wilhelm, engineer
(Chairman of the Managing Board)

GHMT

tSML FO Modules 19“/0.5U

4x MPO on 24x LC Duplex

Fiber	Part Number
9/125µ	**TSML-M24LCADK/MPP09E**
9/125µ	**TSML-M24LCDK/MPP09E**
50/125µ OM3	**TSML-M24LCDK/MPP50G3**
50/125µ OM4	**TSML-M24LCDK/MPP50G4**

4x MPO on 24x LC Duplex (angled)

Fiber	Part Number
9/125µ	**TSML-MS24LCAD/MPP09E**
9/125µ	**TSML-MS24LCD/MPP09E**
50/125µ OM3	**TSML-MS24LCD/MPP50G3**
50/125µ OM4	**TSML-MS24LCD/MPP50G4**

tSML HD FO Modules 19“/0.5U

8x MPO on 48x LC Duplex

Fiber	Part Number
9/125µ	**TSML-M48LCAD/MPP09E** [1]
9/125µ	**TSML-M48LCD/MPP09E** [1]
50/125µ OM3	**TSML-M48LCD/MPP50G3** [1]
50/125µ OM4	**TSML-M48LCD/MPP50G4** [1]

8x MPO on 48x LC Duplex (angled)

Fiber	Part Number
9/125µ	**TSML-MS48LCAD/MPP09E** [1]
9/125µ	**TSML-MS48LCD/MPP09E** [1]
50/125µ OM3	**TSML-MS48LCD/MPP50G3** [1]
50/125µ OM4	**TSML-MS48LCD/MPP50G4** [1]

tSML FO Trunk Cable MPO/MTP®

Patch cord (3mm)

Fiber	Part Number
50/125µ OM3	**TSMLMP/MP50I12G3-xxx** [2]
50/125µ OM4	**TSMLMP/MP50I12G4-xxx** [2]
9/125µ	**TSML-MP/MP09I12Exxx** [2]

Universal Cable

Fiber	Part Number
50/125µ OM3	**TSMLMP/MP50B yy** [3] **G3- xxx** [2]
50/125µ OM4	**TSMLMP/MP50B yy** [3] **G4- xxx** [2]
9/125µ	**TSMLMP/MP09B yy** [3] **E xxx** [2]

tSML FO/TP Breakout Modules 19“/0.5U

for 4x TP Trunks 10GbE or 4x FO partial front panels

Description	Part Number
Stainless steel	**TSML-M-19/0.5HE-KB**

for 4x TP Trunks 10GbE or 4x FO partial front panels (angled)

Description	Part Number
Stainless steel	**TSML-MS-19/0.5HE-KB**

tSML TP RJ45 10GbE solution

TP Trunk Cable Snap-In both ends 6x RJ45

Description	Part Number
both ends connected	**TSML-MS06RJ45-xx** [4]
one end connected	**TSML-MS06RJ45-xx** [4]**U**

TP Trunk Cable Snap-In both ends 6x RJ45 with LID function

Description	Part Number
both ends connected	**TSML-MS06RJ45-xx** [4]**L**
one end connected	**TSML-MS06RJ45-xx** [4]**LU**

Detector for TP Trunk Cable with LID function

Description	Part Number
incl. battery	**TBL-LID-TOOL**

SSTP Patch cord RJ45/RJ45 TM31 Cat.6A

Description	Part Number
1 : 1 configured	**SS-H6AZyy** [7]**-Nzz** [7] **xxxx** [6]

[1] Can only be used in conjunction with tSML HD LC Duplex patch cords.

[2] xxx stands for the cable length in m (any lengths available)

[3] yy stands for the fiber count: 12, 24, 48, 72, 96, 144

[4] xx stands for the cable length in m (max. length 60m)

tSML FO/TP Breakout Modules 19“/0.5U accessories

Cover for Module 19“/0.5U straight

Description	Part Number
Stainless steel	**TSML-M-19/0.5HE-CO**

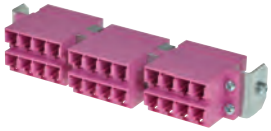
Cover for Module 19“/0.5U angled

Description	Part Number
Stainless steel	**TSML-MS-19/0.5HE-CO**

FO partial front panel Snap-In with 6x LC Duplex

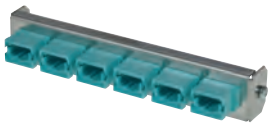
Description	Part Number
Beige	**TSML-M06LCD-BG**
Blue	**TSML-M06LCD-BL**
Green	**TSML-M06LCD-GN**
Aqua	**TSML-M06LCD-TK**
Magenta	**TSML-M06LCD-VI**

HD FO partial front panel Snap-In with 12x LC Duplex



Description	Part Number
Beige	**TSML-M12LCD-BG** [1]
Blue	**TSML-M12LCD-BL** [1]
Green	**TSML-M12LCD-GN** [1]
Aqua	**TSML-M12LCD-TK** [1]
Magenta	**TSML-M12LCD-VI** [1]

FO partial front panel Snap-In with 6x MPO Key up/down

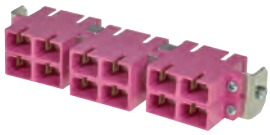


Description	Part Number
Green	**TSML-M06MP-GN**
Aqua	**TSML-M06MP-TK**
Magenta	**TSML-M06MP-VI**

FO partial front panel Snap-In with 12x MPO Key up/down

Description	Part Number
Green	**TSML-M12MP-GN**
Aqua	**TSML-M12MP-TK**
Magenta	**TSML-M12MP-VI**

FO partial front panel Snap-In with 6x SC Duplex



Description	Part Number
Beige	**TSML-M06SCD-BG**
Blue	**TSML-M06SCD-BL**
Green	**TSML-M06SCD-GN**
Aqua	**TSML-M06SCD-TK**
Magenta	**TSML-M06SCD-VI**

Blind plate Snap-In

Description	Part Number
Stainless steel	**TSML-M-BLIND**

tSML TP RJ45 1GbE solution

TP Module 19“/0.5U 4x Telco on 24x RJ45 GbE

Description	Part Number
shielded	**TSML-M24RJ45/TELCO-M**

TP Trunk Cable both ends Telco Female

Description	Part Number
shielded (Standard)	**TSML-TELCO-FF-Cxx** [5]
shielded (Industrial)	**TSML-TELCO-FF-xx** [5]

tSML HD FO Patch cord

FO Patch cord LC HD

Description	Part Number
50/125µ OM3	**L-TLC/TLC50D3Rxxxx** [6]
50/125µ OM4	**L-TLC/TLC50D4Rxxxx** [6]
9/125µ	**L-TLC/TLC09D-Rxxxx** [6]

tSML FO migration to 40GbE

FO Patch cord MPO Male/Female

Type B	Part Number
50/125µ OM3	**L-MP/MPP50I12G3B xxxx** [6]
50/125µ OM4	**L-MP/MPP50I12G4B xxxx** [6]
Type C	**Part Number**
50/125µ OM3	**L-MP/MPP50I12G3C xxxx** [6]
50/125µ OM4	**L-MP/MPP50I12G4C xxxx** [6]

[5] xx stands for the cable length in m (max. length 60m)

[6] xxxx stands for the cable length in cm

[7] yy stands for the boot and zz for the cable color. Colors: GR (grey), GN (green), BL (blue), GE (yellow), RT (red), OR (orange), SW (black)

trans data elektronik GmbH

tSML tde Semi Modular Link System

The number of network connections in a Data Center is increasing constantly, due to the ever greater demands made on technology and capacity. A very high packing density and cabling with versatile potential for expansion are fundamental requirements of both server connections and pure storage area networks.

Standard cabling entails a high outlay for any modification to the network infrastructure, as whole sections of the existing cabling frequently have to be replaced and tested. The tSML – tde Semi Modular Link System starts where traditional systems stop.

The system components, ready-fitted with connectors and tested ex works, facilitate very fast installation of both twisted pair and fiber-optic cables. Ready-made trunk cables, providing a high number of pairs or fibers, can simply be plugged together using patch panels.

At the heart of the tSML – tde Semi Modular Link Systems are MPO and Telco connectors, with which 12 or 24 optical fibers copper pairs can be connected simultaneously. Fiber-optic and twisted pair modules can be combined on one rack unit without difficulty.

This also achieves a high level of investment security whilst doing something for the environment at the same time, as individual components can be replaced and reused when the network is modified, making a contribution to green IT.

Highly compact

Telco for 6x RJ45 GbE TP Links

tML® Systemcable (right) by comparison to the standard

MPO for 6x FO duplex links 10GbE or 1x 40/100 GbE

Produktmerkmale

> Maximum packing density
> Twisted pair and fiber-optic modules can be combined on 1U
> FO/TP Breakout Panel with Snap-In
> Quick and simple „plug and play“ installation
> Up to 1152 fibers on 0.5U (2304 fibers on 1U)
> Modules with LC, MPO or SC
> MPO with 12 or 24 fibers
> Available in OS2, OM3 and OM4 configurations
> OS2/OM3/OM4 with bend optimised fibers
> 48x LC Duplex Ports on 0.5U (96 fibers)
> 24x RJ45 Ports GbE or 10GbE on 0.5U shielded
> RJ45 optional with LID (Light ID) function
> Stable, shielded Telco connectors
> Energy-efficient
> System component reusability ensures environmental friendliness
> Migration on 40/100GbE possible
> „Made in Germany“

tde® trans data elektronik GmbH

tde has been in business for more than 20 years and involved in fiber optics from the start. In the meantime, numerous in-house developments and continuous improvements to manufacturing processes have made tde one of the most up-to-date ready-made fiber-optic suppliers in Europe. tde not only stocks standard equipment such as polishing machines and interferometers, but also laser cleavers, adhesive robots and fully-automatic Machines for preparing optical fibers.

tde work active in the committee of standardization DKE/UK 412.7 (FO connection technology and passive optical components), as well as in the international committee CENELEC TC 86BXA/WG 01. tde's principal objective was and will always remain to guarantee the highest possible standard of quality for the customer. This means, for example, that the grinding geometry of every ready-fitted connector is inspected by interferometer and that no finished assembly leaves the production line without a test certificate. The tde – trans data elektronik GmbH operates a strict and systematic quality management for highest quality standards and is certified according ISO 9001 and ISO 14001. As first German company, tde get already in 2002 the TL 9000 standard (special certification for the telecommunication sector). Numerous renowned businesses have already learned to value this. It is also what led the CERN research center in Switzerland to choose tde. tde has equipped almost the entire CERN project with ready-to-use fiber-optic assemblies.

The project uses more than 8.000 MPO assemblys. Performance of the MPO connector, now standard for data center cabling, is outstanding, thanks to tde's specially optimised laser cleaving manufacturing process, which makes it even more attractive in a field in which very high availability is the top priority. By using the latest manufacturing methods and increased quality requirements, tde became one of the global leader in the multi-fiber technology.

Of course, tde is also involved in twisted pair development and solutions. One of the largest projects was the development of a Telco-based mobile cabling system for the German armed forces. Now in use for several years at various locations where German forces are deployed, such as Afghanistan, the system was also used as a basis for the development of the tML®-system and tSML®-system. It could be said that these systems are the result of years of experience and improvements to copper and fiber-optic cables. As well as other innovations made by tde, they are also protected by several patents.

The portfolio „Made in Germany" contains complete system solutions focused on Plug & Play for high-speed applications in Datacom, Telecom, Industry, Medical and Defence. With its own service department tde also offers planning and installation services from a single source and supports the „European Code of Conduct" for energy efficiency in data centers. Furthermore for the customer service there are working only competent skilled specialists in sales and manufacturing.

net. work. solution.

ISO 9001, TL 9000 and ISO 14001 certified

tde® – trans data elektronik GmbH

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