

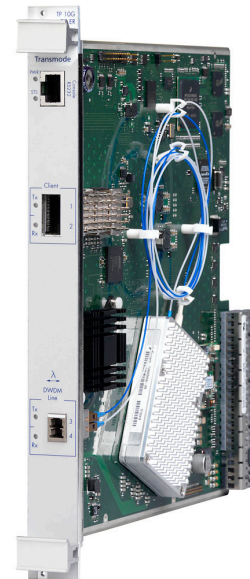
TP10G/TC-ER

A Tunable 10G Transponder with extended reach

Key benefits:

- Tunable laser covering 80 DWDM channels allowing simpler network planning and more cost efficient spare parts handling
- Features Enhanced Forward Error Correction (EFEC) enabling cost efficient long haul applications
- Multi-Service design supporting a variety of 10G services for increased flexibility and usability
- Pluggable optics on client side enhancing traffic control options
- Embedded management channel enabling easier management
- Supports standard GFEC, enabling compatibility with other Transponders within the TM-Series and extends its usability
- Low Power Design ensuring low total cost of ownership

The TP10G/TC-ER is a powerful part of Transmode's TM-Series platform enabling optimized and cost efficient capacity networks based on CWDM / DWDM technology.



Optimized for Regional to Long haul applications

The TP10G/TC-ER uses an Enhanced Forward Error Correction (EFEC) line coding that detects and corrects bit Errors. In combination with extra high OSNR (Optical Signal to Noise Ratio) tolerance this boosts the transmission reach towards long haul applications with distances up to 1000 km.

The tunable laser on the line interface can be reconfigured by software to any of the 80 DWDM wavelengths on the 50GHz ITU-T C-band grid. This enables easier commissioning and installation procedures and decreases the cost of spare part handling.

One board for all 10G services

The TP10G/TC-ER supports the different 10G standard signal formats 10GbE-LAN, 10GbE-WAN and STM-64/OC-192. In combination with the pluggable XFP interface on the client side the TP10G/TC-ER makes a very versatile, cost efficient and flexible choice for 10G transmission.

Simplified management via embedded management channel

The TP10G/TC-ER Transponder is based on standard G.709 framing, where the client signal is encapsulated into a digital frame having overhead bytes that are used to carry the management channels. The embedded management channel simplifies the management of a Transmode networks since management access is provided where ever there is a traffic connection.

Configurable FEC mode

The TP10G/TC-ER has two operating modes for the FEC coding; the enhanced version (EFEC) as well as the standard G.709 version (GFEC). Configuring the FEC mode by software enables compatibility with the 10G Transponders in the TM-series platform that use the GFEC and the same framing format (i.e. TP10GCLX/TC and TP10GCLX/zzzzz).

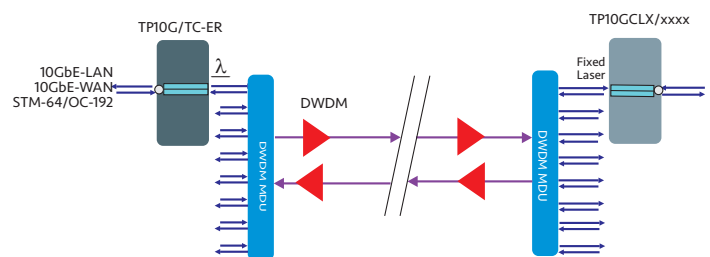


Fig.1 TP10G/TC-ER is compatible with a TP10GCLX/zzzzz thanks to the support for standard GFEC

This reduces the Operational Expenditures (OPEX) since the TP10G/TC-ER can be used as a replacement unit for several transponders.

Protected configurations

To provide high availability configurations, 1+1 protection can be applied between two separate TP10G/TC-ER units. The protection is provided via a passive optical coupler placed between the client equipment and the Transponders. The two transponders are configured into a protection group via the Embedded Node Manager (ENM) where one transponder is set to "active" and the other in "stand-by" mode. The protection switching is performed within 50ms.

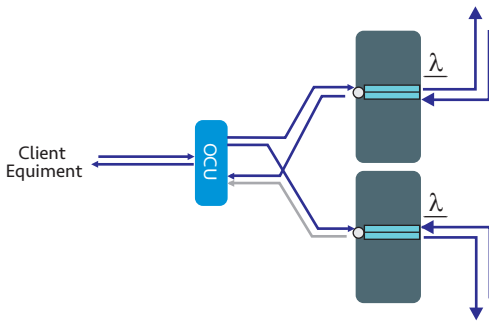


Fig. 2 Increased network availability through 1+1 equipment protection.

Tailored Network Element options

The TP10G/TC-ER can be mounted into any of the TM-Series chassis options;

- As a self-managed Network Element in a 1U TM-101/102 chassis
- As one of many traffic units in a TM-3000 (10^{1/3}U) or TM-301 (3U) chassis

Technical specifications:

Software release 12.0 or later

Supported traffic formats	10GbE-LAN, 10GbE-WAN, STM-64/OC-192
Layer-1 performance monitoring	PM on line and client interfaces collected every 15min/24h and presented according to G.826
Protection	1+1 Client/equipment protection. Non-revertive switching <50ms
Power consumption	22W (Max consumption including transceivers)
Misc line interface features	Embedded management channels on line signals. Forward Error Correction (FEC)
Operational modes	Two FEC modes (EFEC or G.709 GFEC)
Interfaces	Client interfaces: XFP MM, SM @ 1310nm/1550nm versions
Latency	<10μs (G.709 GFEC) <50μs (EFEC)

This enables a tailored setup depending on current and future capacity needs of the site.

In the TM-101/102 option, the TP10G/TC-ER initiates the complete Embedded Node Management (ENM) on the on-board micro processor. This enables local management simply by connecting any PC or work station and launching a standard internet browser. The embedded management channels enable easy remote management via the line signal. There is therefore no need to provide access to the customer DCN network if the TP10G/TC-ER is placed at a customer site.

Low Power Design

A fully equipped TP10G/TC-ER consumes less than 22W. Low power consumption in combination with a small footprint reduces site costs and enables more capacity to be handled at sites with restrictions on power consumption, cooling and space.

The specifications and information within this document are subject to change without further notice. All statements, information and recommendations are believed to be accurate but are presented without warranty of any kind. Contact Transmode for more details.