

Datasheet
**LambdaDriver® – 10Gbps Transponder Module with FEC
 (TM-6DXFPF)**

Forward Error Correction for distance extension

Features

- 10 Gbps OC192/STM-64 or 10GE data rates
- Full 3R support
- G.709 performance monitoring
- Line and Diagnostics Loop-back tests
- 100GHz ITU-T grid (G.694.1) wavelengths for DWDM
- Dispersion tolerance up to 200Km
- Power monitoring
- XFP digital diagnostics
- Link Integrity Notification (LIN)
- Hot swappable

Applications

- 10 GE or SDH/SONET signal regeneration and optical wavelength conversion
- DWDM networks with end-to-end performance monitoring
- Distance extension of existing 10 Gbps DWDM networks

Overview

The TM-6DXFPF 10Gbps with Forward Error Correction (FEC) transponders is a single slot module, that converts the “gray” wavelength of a 10 Gbps terminal equipment interface to ITU-T grid DWDM wavelength enabling its transport via the LambdaDriver® Optical Transport System (DWDM multiplexer, OADM etc.).

The module supports OC-192/STM-64 and 10 GE protocols with 3R signal conditioning.

A key feature of the module is the support of the G.709 FEC standard protocol as well as Enhanced FEC (EFEC) protocol with better error correction performance. The FEC/EFEC mode is user selectable via management and set to EFEC by default. The error-correction performance significantly extends the overall distance reach of the link for very low BER performance.

For 10GE and OC192/STM-64 the G.709 digital wrapper technology is used to transparently pass any type of payload.

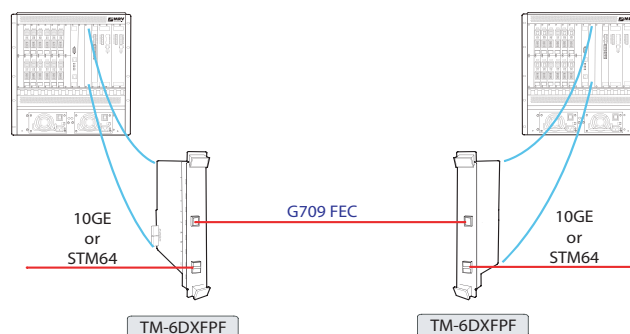
Standard performance monitoring is supported for end-to-end SONET/SDH terminated signals providing at each receive side the relevant conditions and alarms as per ITU G.783, GR-474 standard definitions. Statistics for current 15 minutes interval and up to 96 previous intervals can be viewed.

For 10GE traffic, performance parameters as defined by the RFC 2819 (RMON), MIB2 and IfMib extensions are supported. In addition, the extensive information provided by the G.709 monitoring allows for detailed performance analysis such as BER, statistics, etc.

The TM-6DXFPF20T incorporates tunable dispersion compensation capability.

When running long distances over fiber, each wavelength aggregates different dispersion, therefore compensating all wavelengths causes different dispersion residual for each wavelength. Having an on-transponder, built-in Tunable dispersion compensator allows fine tuning of dispersion on a per wavelength basis.

Line and Diagnostic Loop-back functionality is supported and provides an essential tool for troubleshooting and maintenance operations in a live network. The Diagnostic loop-back function checks the integrity of the internal ports circuitry while the Line loop-back is used to check the fiber connections integrity. The Line Loop-back and the Diagnostic Loop-back are available for Access (Client) ports.



The Link Integrity Notification (LIN) function allows the terminal equipment to detect the link failure in the path between the two terminal equipment units regardless of the location of the failure. The link failure is propagated throughout the network until it reaches the terminal equipment, resulting in disabling the transmission immediately, at the opposite access port.

The link failure is propagated throughout the network until it reaches the terminal equipment, resulting in disabling the transmission immediately, at the opposite access port.

The LIN function is turned off by the management interface (for the case of SONET/SDH signals etc.).

The access (terminal equipment) interface is a XFP (10 Gbps Small Form Factor Pluggable) receptacle, while the trunk (DWDM) port is an ITU-T grid integrated interface that provides tunable interface with MU connectors.

The transponder provide power monitoring of the trunk

(DWDM) port in addition to Digital Diagnostics provided by the XFP of the access port.

The module can be managed either through the LambdaDriver® management module by local craft terminal (CLI) or remotely by SNMP with MRV's web-based NMS MegaVision® or any other SNMP management platform.

Optionally it is possible to enable in-band communication channel (GCC - General Communication Channel) per ITU-T G.709 standard that will allow remote management of this module without the need for OSC.

Environmental

Operating Temperature	-5 °C to +45 °C (23 °F to 113 °F)
Storage Temperature	-10 °C to +70 °C (14 °F to 158 °F)
Relative Humidity	85% max, non-condensing
Dimensions (W x H x D)	TM-6DXFPF: 26.93 mm (1.06 in) x 263.4 mm (10.37 in) x 227 mm (8.936 in)
Weight	TM-6DXFPF: 1.389 kg (3.62 lb)

Technical Specifications

WDM TX power (dBm)	4 -7
Maximum receiver sensitivity (dBm)	-30
Overload (dBm)	- 8
DWDM wavelengths range	1528 - 1561nm on ITU-T G694.1 50Ghz grid
Wavelengths Accuracy	+/-10pm
Wavelengths Tuning Time - cold start (sec)	30
Wavelengths Tuning Time - warmed - up (sec)	0.5
Chromatic Dispersion tolerance at 1525nm - 1570nm	
TM-6DXFPF8T	1600 ps/nm
TM-6DXFPF20T	3600 ps/nm
Dispersion penalty at limit (db)	2
Power Consumption:	
TM-6DXFPF8T	17 W
TM-6DXFPF20T	18.5 W

Order Info

Product	Description
TM-6DXFPF8T	XFP Access port, 10GE/OC192 FEC DWDM tunable wave transponder up 80 Km distance, "long" slot size.
TM-6DXFPF20T	XFP Access port, 10GE/OC192 FEC DWDM tunable wave transponder up 200 Km distance, "long" slot size.

All statements, technical information and recommendations related to the products herein are based upon information believed to be reliable or accurate. However, the accuracy or completeness thereof is not guaranteed, and no responsibility is assumed for any inaccuracies. Please contact MRV Communications for more information. MRV Communications and the MRV Communications logo are trademarks of MRV Communications, Inc. Other trademarks are the property of their respective holders.