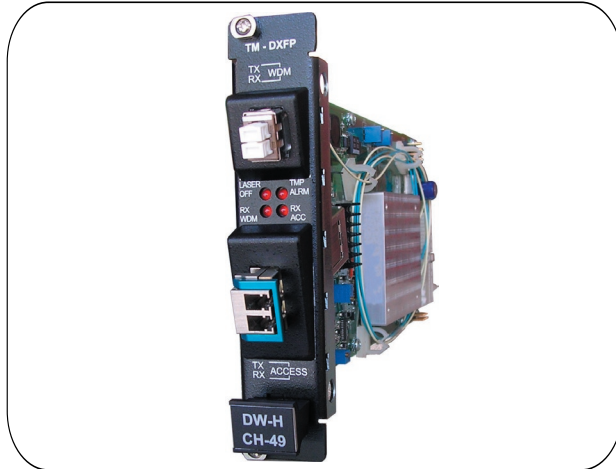


Datasheet

10 Gbps transponder - LambdaDriver® Module (TM-DXFP)



10Gbps transponder

Overview

The TM-DXFP transponder is part of the LambdaDriver® product line and can be hosted by the LD400, LD800 and LD1600 chassis. The transponders are single slot modules that interface between the CWDM or DWDM multiplexers and 10 Gbps terminal equipment. These modules provide transparent light paths at ITU-T grid DWDM wavelength, which carry 10 Gbps traffic.

The TM-DXFP modules support OC-192/STM64 (9.95 Gbps) and 10 GbE (10.3Gbps) protocols.

Field upgrade of existing CWDM or DWDM networks to 10 Gbps speeds is easy: just add this module to a LambdaDriver chassis at the appropriate wavelength.

The terminal equipment interface possesses an XFP (10 Gbps Small Form Factor Pluggable) receptacle, thus providing the highest flexibility in the terminal equipment interface selection. Using XFP transceivers enables the customer to easily change the type of optical interface according to the different needs of the terminal equipment. XFP transceivers are pluggable, and can easily be reused at different locations for different applications, thus maximizing the return on investment in optics and equipment, and reducing the on-hand parts inventory.

Transponders are operated completely independently of the other parts of the system and can be hot swapped without having to interrupt other

Features

- 10 Gbps LAN or WAN transport
- Full 3R support
- Remote and Local Loop-back tests
- ITU-T grid (G.694.1) wavelengths on 50 GHz grid
- Tunable wavelength optional
- Dispersion tolerance up to 350 km
- Power monitoring
- XFP digital diagnostics
- Link Integrity notification (LIN)
- Y-Cable protection support
- Automatic Laser Shutdown (ALS)
- Hot swappable module

Applications

- 10 GE or SDH/SONET distance extension and repeaters
- 10Gbps signal regeneration and optical wavelength conversion
- Data rate upgrade of existing CWDM/DWDM networks to 10 Gbps

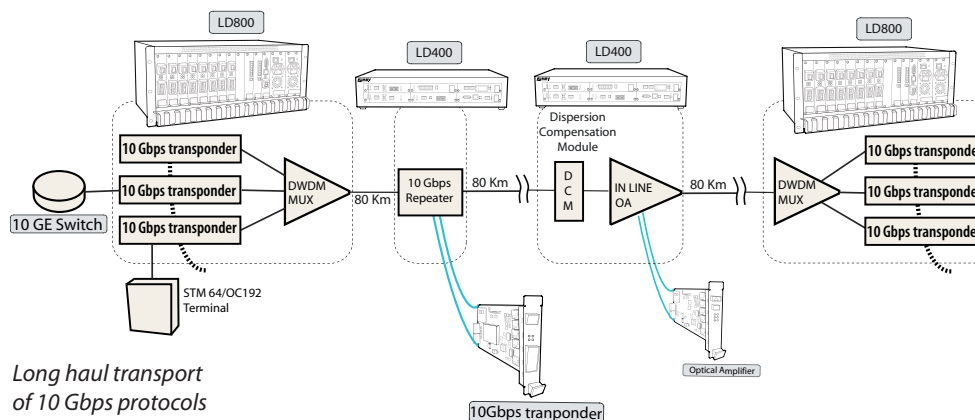
services running through the same system.

Transponders perform the 3R functionality in order to maintain the signal's best quality. For laser safety requirements, all transponders are equipped with the Automatic Laser Shutdown (ALS) feature, which reduces the optical power of the transmitters automatically in case of a broken link. The ALS feature is implemented on both ports of the transponders (DWDM side and Terminal equipment side).

The loop-back as well as the Remote Laser Shutdown functions assist in troubleshooting the network and providing a cost effective way of pinpointing a problem.

The Link Integrity Notification 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, by disabling the transmission immediately upon failure detection at the opposite port of the transponder.

The TM-DXFP transponders provide power monitoring on the DWDM port in addition to Digital Diagnostics supplied from the XFP port. This function provides a dB value of transmitting and receiving optical signal at each transponder, giving the network manager an additional tool for analyzing the quality of the fiber optic network.



The TM-DXFP transponders support the Y-Cable protection protocol, used in cases of full hardware protection of the transport equipment with only one terminal port for every service. In this protection mode, each two adjacent transponders in a LambdaDriver® chassis run proprietary protocols in order to maintain "operational" and "standby" transponders operation.

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

There are two types of modules: fixed transponders and the tunable transponders. All are differentiated by maximum transmission distance based on dispersion limits.

The two types of fixed wavelength transponders are:

TM-DXFP4 – DWDM link for distances up to 40 km

TM-DXFP8 – DWDM link for distances up to 80 km

The three types of tunable transponders are:

TM-DXFP8T – XFP Access port, 10GE DWDM transponder up 80Km distance with tunable laser

TM-DXFP12T – XFP Access port, 10GE DWDM transponder up 120Km distance with tunable laser (*)

TM-DXFP16T – XFP Access port, 10GE DWDM transponder up 160Km distance with tunable laser (*)

TM-DXFP20T – XFP Access port, 10GE DWDM transponder up 200Km distance with tunable laser and dispersion (*)

TM-DXFP35T – XFP Access port, 10GE DWDM transponder up 350Km distance with tunable laser and dispersion (*)

For longer distances dispersion compensation modules are required dispersion compensation modules

(*) Note: Distances can be reached by using LambdaDriver Optical Amplifier modules.

Technical Specifications

	Fixed wavelength	Tunable wavelength
Minimum WDM TX power (dBm)	0	4.5
Minimum receiver sensitivity (dBm)	-23	-24
Overload (dBm)	-6	-7
DWDM wavelengths range	Any on ITU-T G694.1 100Ghz grid	1528 - 1561nm on ITU-T G694.1 50Ghz grid
Dispersion penalty at limit (db)	2	
Wavelengths Accuracy	+/-10pm	
Wavelengths Tuning Time - cold star (sec)	30	
Wavelengths Tuning Time - warmed - up (sec)	0.5	
Chromatic Dispersion tolerance at 1525nm - 1570nm		
TM-DXFP4/xx	800 ps/nm	
TM-DXFP8/xx	1600 ps/nm	
TM-DXFP8T	1600 ps/nm	
TM-DXFP12T	2400 ps/nm	
TM-DXFP16T	3000 ps/nm	
TM-DXFP20T	3500 ps/nm	
TM-DXFP35T	6000 ps/nm	

Environmental

Physical dimensions	W:26.93 x 130.7 x 227.5mm 1.06 x 5.145 x 8.956 In
Weight	0.55 kg 1.21 lb
Optical connector	MiniSC (MU) - WDM port; XFP - Terminal equipment port
Operating Temperature	-5C - +45 C
Storage	-40C - +85 C

Order info

Product	Description
TM-DXFP4/xx	XFP Access port, 10Gbps DWDM ch #xx transponder up 40 Km distance
TM-DXFP8/xx	XFP Access port, 10Gbps DWDM ch #xx transponder up 80 Km distance
TM-DXFP8T	XFP Access port, 10Gbps DWDM tunable wavelength transponder up 80 Km distance
TM-DXFP12T	XFP Access port, 10Gbps DWDM tunable wavelength transponder up 120 Km distance
TM-DXFP16T	XFP Access port, 10Gbps DWDM tunable wavelength transponder up 160 Km distance
TM-DXFP20T	XFP Access port, 10GE DWDM transponder up 200Km distance with tunable laser and dispersion
TM-DXFP35T	XFP Access port, 10GE DWDM transponder up 350Km distance with tunable laser and dispersion
XFP modules	
XFP-10GD-LR	XFP OC192/STM-64, 10GE or 10G FC, SM, 1310nm, 10km, with digital diagnostics
XFP-10GD-SX	XFP 10-GbE, or 10GFC, MM, 850nm, 300m with digital diagnostics

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