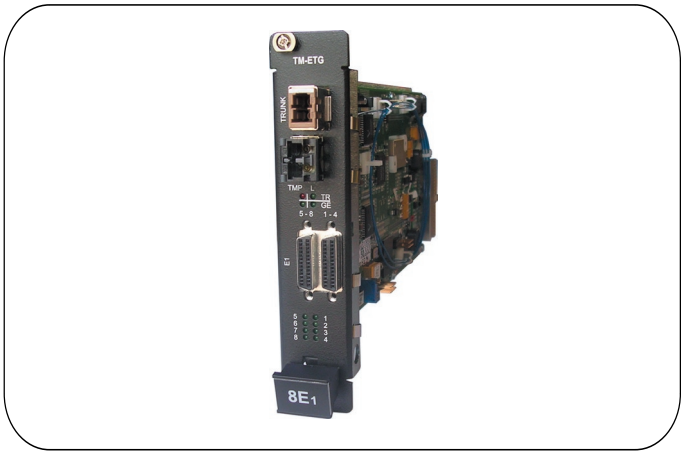
FIBER ACCESS SOLUTIONS

Datasheet

8 E1/T1 + 1GE TDM Multiplexer - LambdaDriver® Module (E8GM)



TM-E8GM

Features

- SFP based GE port
- 4 or 8 RJ48 E1/T1 connections
- RJ45 RS232 connection
- E1/T1 framing format transparent
- Built-in Elastic Buffer to Remove Jitter
- Supports Digital and Analog loopback Tests per port, locally or remotely
- Support AMI/B8ZS/HDB3 Line Codes
- SFP Digital Diagnostics monitoring
- Front panel status LEDs

Applications

- Transparent E1/T1 services over MAN WDM networks.
- LAN and PBX's extension and distribution
- Utility control environment

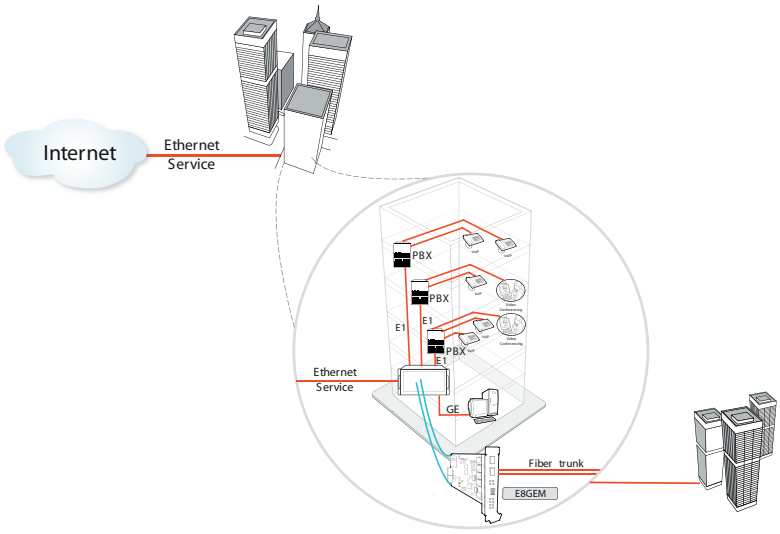
Overview

LambdaDriver® E8GM modules use advanced Time Division Multiplexing (TDM) technology for combining and simultaneously transporting 8 E1/T1 circuits and one GE port over one Full Duplex fiber optic trunk to different distances.
The modules are transparent to framing format, and support HDB3 and AMI line codes and interfaces complying with ITU-T G.703 instructions.
There are different options for aggregated trunk port:

- SFP based modules (EM2009-E8GM/ EM2009-T8GM). The aggregated trunk speed is 1Gbps and therefore this module can use regular GE SFP's that can provide distances up to 120Km without repetition or even CWDM SFP's to allow higher service aggregation over single fiber.
- Fixed CWDM/DWDM optical interface (TM-E8GMC/xx or TM-E8GMD/xx). This module allows mixing E1/T1 services with other traditional services running together over WDM network.

Optional RS232 channel is multiplexed together with 8 x E1/T1 + GE services provides excellent opportunity to pass control or even management (CLI) signal over the same wavelength. The data speed of RS232 is factory pre-configured for 9.6Kbps, but can be different per special request.

In conjunction with the LambdaDriver Element Management Module, full monitoring and configuration capabilities become available locally at a craft terminal via the RS-232 interface and remotely at a TELNET or SNMP station via an Ethernet/Fast Ethernet interface. MRV's MegaVision ® Web-based SNMP management application provides remote control reducing the costly need for many in-the-field services.
The modules fully support Digital Diagnostics provided by SFP's per Multi-Source Agreement (SFF-8472),including Optical Transmit Power, Optical Receive Power and Temperature Measurements. The modules are hot swappable and fit into any LambdaDriver chassis.



The terminal side of the module includes SFP socket for GE connection and 2 connectors with extension cables for E1/T1's and RS232 connections. 2 types of cables are available – 4 x E1/T1, 4 x E1/T1 + RS232. So for 8 x E1/T1 option, 2 cables are needed. The edge connectors on the cables for E1/T1 are RJ48 and for RS232 RJ45 connector is used.
Line code can be selected to be AMI, B8ZS or HDB3. For E1 the factory default is HDB3. For T1 the factory default is B8ZS.
Line impedance of the E1/T1 ports is 120 Ohm Balanced.
Front panel LED's per port are provided:

- E1/T1 – LOS
- GE – Link & Activity
- Trunk (SFP based) – Link & Activity
- Trunk (fixed WDM based) - Link & Laser Temperature

Local and Remote Loopback commands from management are supported for each port on the module allowing excellent tool for network maintenance. Among typical applications, we may find dedicated LAN and PBX's connection over single fiber between different buildings or usage of E1/T1 circuits for control communication together with IP connection in Ring or Linear OADM configurations.

Technical Specifications

E1/T1 Electrical Specifications

	T1	E1	Units
Transmission Rate	1544	2048	Mbps
Line Code	AMI or B8ZS	HDB3	
Line Impedance	120	120	Ohm
Standard	ANSI T1.403	ITU-T G.703	

Physical Specifications

Connectors	GE-SFP, E1/T1 -RJ48, Trunk - SFP/fixed WDM
Operating Temperature	0 to 45° C
Storage Temperature	-10 to 70° C
Relative Humidity	85% maximum, non-condensing
Dimensions (W x H x D)	26.93 mm (1.06 in) x 130.7 mm (5.145 in) x 227.5 mm (8.956 in)
Weight	0.7 kg (1.5 lb)
WDM grid	DWDM: ITU - T- G.694.1 CWDM: ITU - T- G.694.2
Minimum laser power*	+1.5 dBm
Minimum receiver power*	-32 dBm +/- 1 dBm
Dispersion penaly	DL3TYPE : 2dB at 5,400 ps/nm DL4TYPE : 2dB at 6,500 ps/nm DL6TYPE : 2dB at 12,800 ps/nm

** For SFP based (on GE/ trunk) modules, please refer to appropriate SFP datasheet.*

Order Info

EM2009-E8GM	8 E1 ports and one GE port TDM Multiplexer with SFP's
TM-E8GMC/xx	8 E1 ports and one GE port TDM transponder at ch#xx
TM-E8GMD/xx	8 E1 and one GE ports TDM transponder at DWDM ch#xx
TM-E8GMDL3/xx	8 E1 and one GE ports TDM transponder at DWDM ch#xx with dispersion limit at 300km
TM-E8GMDL4/xx	8 E1 and one GE ports TDM transponder at DWDM ch#xx with dispersion limit at 400km
EM2009-T8GM	8 T1 ports and one GE port TDM Multiplexer with SFP's
TM-T8GMC/xx	8 T1 ports and one GE port TDM transponder at CWDM ch#xx
TM-T8GMD/xx	8 T1 ports and one GE port TDM transponder at DWDM ch#xx
TM-T8GMDL3/xx	8 T1 ports and one GE port TDM transponder at DWDM ch#xx with dispersion limit at 300km
TM-T8GMDL4/xx	8 T1 ports and one GE port TDM transponder at DWDM ch#xx with dispersion limit at 400km
CA-RJ48-4	UTP cable with 4 RJ-48 connectors, Use with EM2009-E8GEM module
CA-RJ48-4-RJ45	UTP cable with 4 RJ-48 connectors and one RJ45 (Serial port), Use with EM2009-E8GEM module