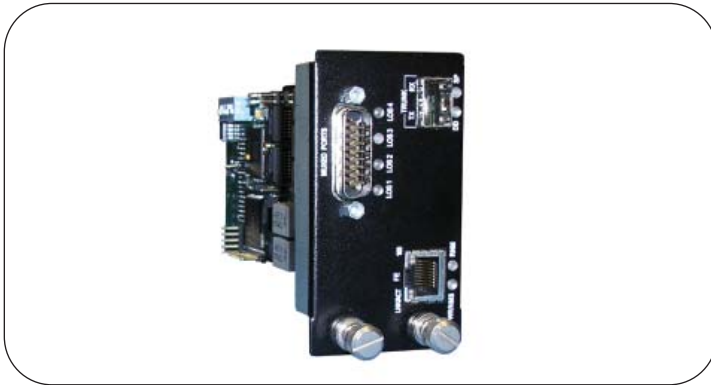




## Four E1/T1 Channels plus Fast Ethernet Multiplexers with Remote Management



### Overview

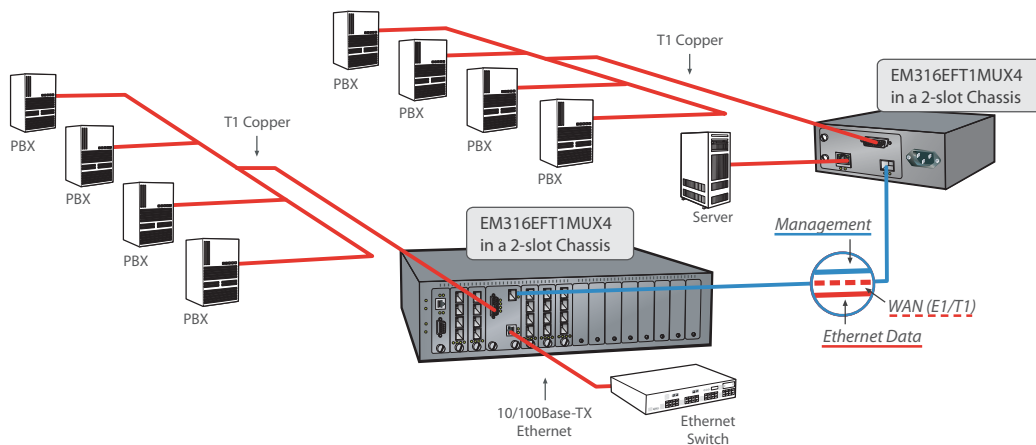
Fiber Driver® 4-port E1/T1 multiplexers from MRV Communications extend the distance and functionality of copper networks while optimizing the use of the existing fiber optic plant. Using advanced Time Division Multiplexing (TDM) technology, they combine four E1 or four T1 channels with an Ethernet link to extend the copper wire traffic across a full-duplex fiber optic trunk limited only by the trunk interface used. The modules are transparent to framing format, and they support HDB3, AMI, and B8ZS line codes.

### Remote Management

E1/T1 MUX module management features greatly simplify end-to-end network management and reduce operating expenses. The Fiber Driver 4-port E1/T1 multiplexers with Ethernet conform to the IEEE 802.3ah remote management standard by overlaying a management channel along the data path. Fiber optic links support remote link management without the complexity and cost incurred by standard IP/SNMP management.

### Features

- Four E1 or T1 channels and a Fast Ethernet link multiplexed over a full-duplex fiber optic trunk
  - E1/T1 links extended to remote locations
  - Ethernet links extended to remote locations
  - Fiber plant or wavelength optimization
- IEEE 802.3ah remote management
  - Remote monitoring and provisioning
  - Last Gasp notification for advanced status propagation and proactive network management
- SFP Digital Diagnostics (SFF-8472) for optical performance management
- Advanced performance monitoring statistics
- Flexible SFP fiber optic trunk port interface
  - Reduced inventory needs
  - Simple replacement and upgrades
  - Beyond 120 kilometers range on single-mode fiber without amplification
  - Single and double fiber transceivers
  - WDM colored optics for further fiber optimization (CWDM or DWDM)
- Plug-n-play Ethernet port
  - RJ-45 connector
  - 10 Mbps and 100 Mbps speeds with auto-negotiation
  - MDI/MDIX automatic sensing
- Managed and unmanaged loopback diagnostic modes
- Standard E1/T1 port options
  - E1: BNC or RJ-48
  - T1: RJ-48
- Hot-swap support for reduced network interruption
- 2-slot and 16-slot chassis compatibility





The benefits of the 802.3ah remote management technology include:

- Capital expense and equipment cost savings (no expensive management agent required at the remote site)
- Simplified deployment (fewer devices on the network and fewer IP addresses used)
- Reduced operating expense (fewer truck rolls needed to service remote sites)

A Fiber Driver network management module in the central office (CO) chassis manages the E1/T1 multiplexers at both the CO and customer premises equipment (CPE) sites.

The modules support Digital Diagnostics, performance monitoring statistics, Last Gasp notification, and both local and remote loopback for the most comprehensive remote management feature set available.

#### SFP Technology

The E1/T1 multiplexer modules use Small Form-factor Pluggable (SFP) trunk interfaces for ultimate deployment flexibility and ease of maintenance. The hot-swappable SFP interfaces may be quickly and easily changed as needed, and may be used again at different sites to reduce the need for parts inventory. A small number of spare SFP interfaces can support the needs of a large installation, and MSA conformance allows wide sharing of SFPs with other supporting network devices.

SFPs are extremely small, hot-swappable transceivers that insert into the access port on the E1/T1 multiplexer modules. SFP modules conform to a Multi-Source Agreement (MSA), an industry standard that specifies physical and electrical characteristics to ensure wide support for the technology.

SFP-based modules provide a wide variety of options for the multiplexed trunk link. Select from single-mode, multi-mode, coarse or dense wave division multiplexing (CWDM)

or DWDM), or single fiber options to meet the demands of any network. Depending on the SFPs used, the remotely managed trunk link can span over 120 kilometers without amplification or multiplex dozens of optical transmissions into a single fiber to maximize available fiber optic cables. The flexibility of SFPs can reduce cost, optimize traffic, support redundancy, and reduce operational costs and overhead.

#### Digital Diagnostics

Many SFPs provide powerful digital diagnostics tools for managing the interface. Fully supported by the E1/T1 multiplexers, Digital Diagnostics is a Multi-Source Agreement (SFF-8472) that includes a large number of manageable parameters.

- Optical transmit power
- Optical receive power
- Voltage & temperature measurement
- Vendor code, wavelength, serial number
- Other factory parameters
- Alarms for various parameter thresholds

#### Sales, Service, and Support

Delivering value added service and support for nearly 20 years, MRV Communications provides worldwide technical assistance through a highly trained team of dedicated corporate and field-based engineers and certified channel partners.

Whether your needs are for 24x7 dedicated support, same day replacement parts shipment, on-site support, or network design and installation services, you will enjoy a responsive and professional partnership with the MRV service and support experts.

Contact an authorized MRV representative for more information on E1/T1 multiplexers and other Fiber Driver products.



**EM316EFE1MUX4**  
with **BNC** cable attached



**EM316EFT1MUX4**  
(or **EM316E1MUXRJ**)  
with **RJ-48** cable attached



Physical Specifications	
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Relative Humidity	85% maximum, non-condensing
Physical Dimensions	50 mm x 75 mm x 175 mm deep (2" x 3" x 7" deep)
Weight	Approximately 272 g (9.6 oz)
Regulatory Compliance	FCC - PART 15, SUBPART A; IC, Class A; EMC Directive: Emission (Class A) and Immunity; WEEE Directive; RoHS Directive; China RoHS

Ordering Info							
Model	Function	Data Rates	Port Connectors*	Trunk Connector	Wavelength (nm)	Range (km)	Ethernet
EM316EFT1MUX4	4 x T1 & Ethernet/Fast Ethernet with Remote Management	T1 & Ethernet/ Fast Ethernet	(4 x) RJ-48 (T1) & RJ-45 (Ethernet)	SFP	SFP Dependent	SFP Dependent	Yes
EM316EFE1MUX4	4 x E1 & Ethernet/Fast Ethernet with Remote Management	E1 & Ethernet/ Fast Ethernet	(4 x) BNC (E1) & RJ-45 (Ethernet)	SFP	SFP Dependent	SFP Dependent	Yes
EM316EFE1MUXRJ	4 x E1 & Ethernet/Fast Ethernet with Remote Management	E1 & Ethernet/ Fast Ethernet	(4 x) RJ-48 (E1) & RJ-45 (Ethernet)	SFP	SFP Dependent	SFP Dependent	Yes

\*Cable assembly from D26 to standard T1 or E1 interface (BNC or RJ-48) is provided

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