

## SFP Multi-Rate Transponder



### Overview

With software selectable data rates and Small Form Factor Pluggable (SFP) transceivers, the highly flexible Fiber Driver SFP Multi-Rate Transponder (EM316MR) from MRV Communications enables the implementation of optical infrastructure solutions ranging from media conversion and signal repeating to lambda conversion, Wave Division Multiplexing (WDM), and Optical Add/Drop Multiplexing (OADM).

Deployment of the SFP Multi-Rate Transponder is quick and easy. The module is placed into a Fiber Driver chassis, the selected SFP transceivers are inserted, and the ports set to the corresponding data rate. Changing the connection type at a later time only requires changing the SFP transceivers and setting the module to the new data rate.

Because SFP transceivers can be easily swapped out and reused again at different locations for different applications, they maximize the investment in equipment and optics while reducing the need for on-hand parts inventory. In addition, the industry's non-proprietary SFP MultiSource Agreement (MSA) ensures that a large selection of system compatible SFP optics is available through MRV Communications and other sources.

The single channel Fiber Driver SFP Multi-Rate Transponder performs full 3R signal regeneration - retransmission, reshaping, and retiming - at any selected data rate from 100 Mbps to 2.7 Gbps (100 MHz to 2.7 GHz). This range covers Fast and Gigabit Ethernet, FDDI, ESCON, SONET (OC-3, OC-12, OC-48 and OC-48 with FEC), Fibre Channel (1 Gbps & 2 Gbps), Serial Digital Video Interface (SDI) SMPTE-269 and SMPTE-292, DVB, and HDTV (1.5 Gbps). If desired, the signal retiming function can be bypassed to create a protocol transparent, 2R connection.

The connection data rate can be set through one of several management interfaces available via the Fiber Driver Network Management Module - SNMP, Telnet, or the local CLI - or by jumpers located on the module itself. The data rates that can be selected using the onboard jumpers are Fast and Gigabit Ethernet, Fibre Channel (1 Gbps & 2 Gbps), and SONET (OC-3 - OC-48).

### Features

- Supports any data rate from 100 Mbps to 2.7 Gbps, from Fast Ethernet to OC-48
- Utilizes SFP transceivers
- Performs 3R signal regeneration
- Supports SFP digital diagnostics as per SFF-8472
- SNMP manageable, MegaVision Web supported
- Wide range of applications: media conversion, signal repeating, lambda conversion, WDM, and OADM

### Benefits

- Ultimate flexibility and scalability
  - Add/Change optics and adjust data rates as needed
  - Maintain single item inventory
- SFP MSA (MultiSource Agreement)
  - Choose the best of the breed optics from MRV Communications or vendor of choice
  - Solutions for multiple standard wavelength (850 nm, 1310 nm, 1550 nm)
  - Solutions for CWDM wavelength (ITU-T G.694.2 (2002)): 1470 nm-1610 nm with 20 nm distance)
  - Future solutions for DWDM (ITU-T G.694.1 (2002))
- End-to-End network management

The application of the SFP Multi-Rate Transponder varies by the type of SFPs employed. The module can be used as a media converter to connect network segments of different media types, or even as a lambda converter to connect network elements operating at different wavelengths. For example, using the required SFPs, a Multimode link operating at 850 nm can be connected to a Singlemode link operating at 1550 nm. In addition, with its 3R functionality the EM316MR can be configured with long-haul optics and be deployed as a repeater in a link spanning hundreds of kilometers.

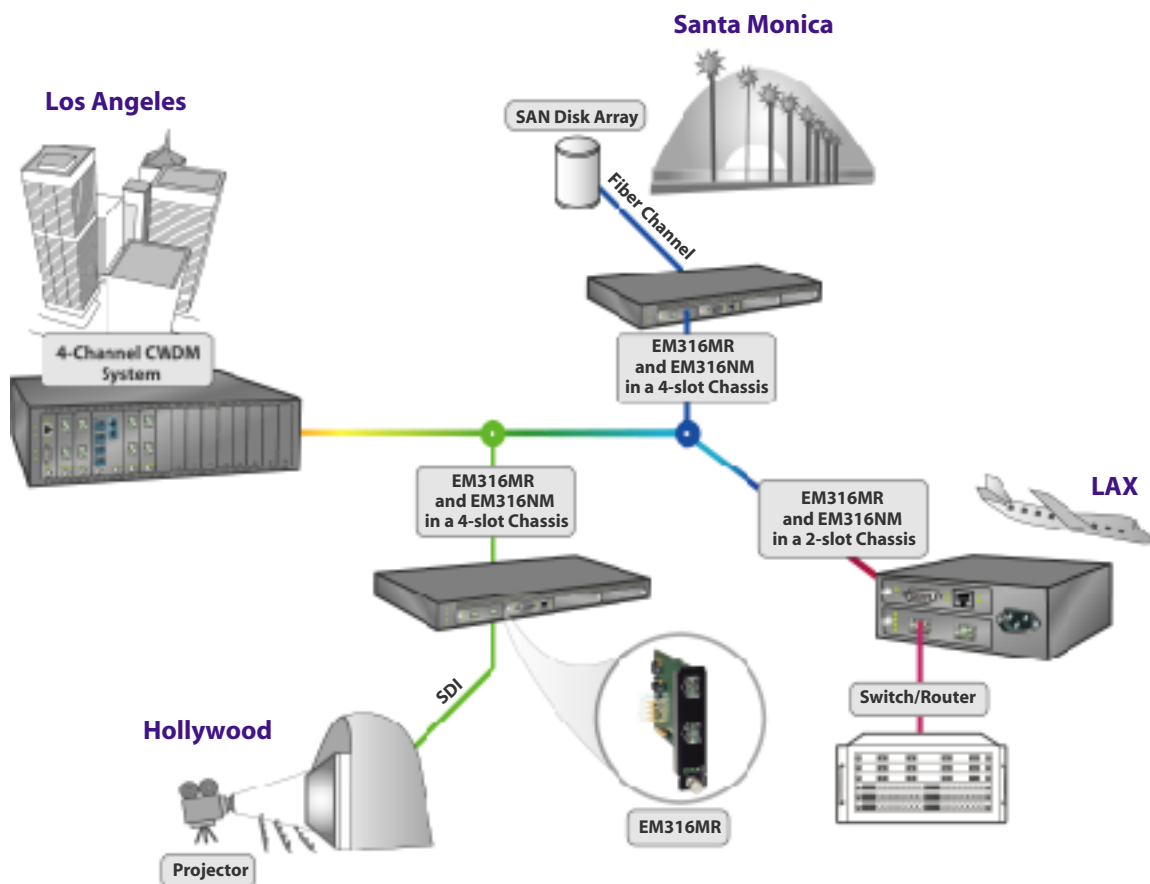
In conjunction with an externally connected Mux/Demux unit such as the 4- or 8-channel Fiber Driver CWDM Passive Mux/Demux (EM316PA4N / EM316PA8N), the SFP Multi-Rate Transponder can be made part of a sophisticated, SFP-based WDM solution, including a WDM repeater with or without lambda conversion. Deployed along a WDM trunk at customer service points using MRV Communications' passive OADM technology, the EM316MR can even be used to create a sophisticated Add/Drop topology.

The Fiber Driver SFP Multi-Rate Transponder is a hot-swappable, single-slot module that is compatible with any powered Fiber Driver chassis. Through the Fiber Driver Network Management Module, the EM316RM is SNMP manageable and fully supported through the GUI of MegaVision Web, MRV Communications' comprehensive Network Management System (NMS).

It supports the SFP standard including digital diagnostics as per SFF-8472. Together with the Network Management Module it provides real-time access to information such as transceiver type (protocol, range, vendor, etc.), transceiver temperature, TX/RX optical power, and transceiver supply voltage.

For additional information on this or any of the full line of MRV Communications products, including pricing and availability, contact your MRV Communication sales representative.

For specifications and ordering information, see the last page of this document.



**Physical Specifications: SFP Multi-Rate Transponder**

<b>Operating Temperature Range:</b>	0°C to 50°C (32°F to 122°F)
<b>Storage Temperature:</b>	-10°C to 60°C (-14°F to 140°F)
<b>Relative Humidity:</b>	85% maximum, non-condensing
<b>Physical Dimensions:</b>	25 mm x 75 mm x 175 mm deep (1" x 3" x 7" deep)
<b>Weight:</b>	Approximately 213 g (7.5 oz)
<b>Emission Compliance:</b>	FCC - PART 15, SUBPART B, 1999, CLASS A; CE MARK - EN 50081-1:1992;
	EN 50082:1997; EN 55024:1998; EN 55022:1998; AS/NZS 3548:1995

Ordering Info	Part Number	Function	Protocol	Connectors	Wavelength	Budget (dB)	Range
	EM316MR-3R	Multi-Rate SFP Converter up to OC-48 speeds with Quad CDR	Selectable from 100 Mbps - 2.7 Gbps	SFP (x 2)	N/A (SFP dependent)	N/A (SFP dependent)	N/A (SFP dependent)

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