Fiber Driver Family

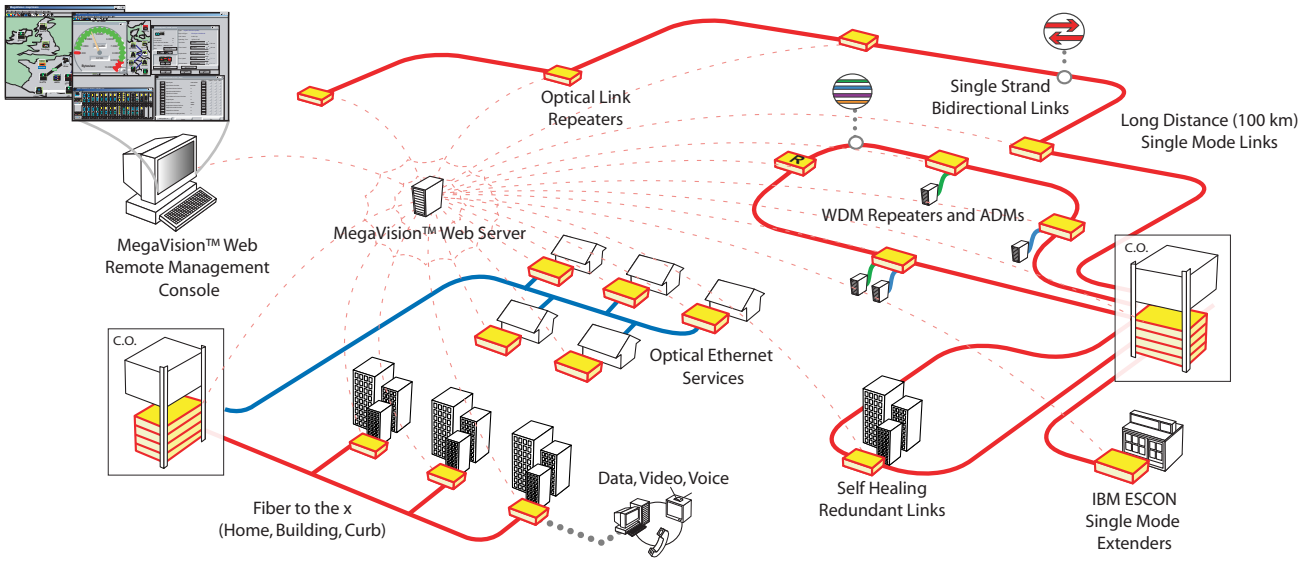
Overview

The Fiber Driver™ product line from MRV Communications, Inc., provides innovative solutions for creating cost effective fiber optic infrastructures with end-to-end management. Offered is an industry leading selection of **Wave Division Multiplexers (WDMs), Odisys™ Optical Ethernet solutions, distance extenders, media converters, media optimizers,** and **self-healing / redundant link solutions** for mission critical applications. All of these operate within the same modular and scalable chassis platform, and feature extensive management features.

Each member of the Fiber Driver product family provides a unique solution for maximizing the potential of today's expanding fiber optic infrastructure. Together they cover the full range of communication protocols and applications from the enterprise to the campus to the metro area network.

Features

- WDM systems - Up to 32 ports at 2.5 Gbps each, pre-configured and modular
- Odisys™ - Optical Ethernet solutions
- Distance Extenders - boosters, repeaters, optical amplifiers
- Media Converters - Copper-to-Fiber, Multimode-to-Singlemode
- Media Optimizers - Single Fiber, Multimode Extender (MMX) technology
- MMX enabled GBIC transceivers
- Self Healing / Redundant Link solutions
- Scalable, modular chassis-based platform
- Extensive, end-to-end management



Wave Division Multiplexers

The Fiber Driver line of WDMs employs advanced, yet affordable, Coarse Wave Division Multiplexing (CWDM) technology. Providing for up to 32 data channels to be transmitted over one link with an aggregate bandwidth of 160 Gbps at Full Duplex, the units greatly increase network capacity while eliminating the time and expense of deploying additional fiber.

Link distances of up to 65 km are possible without any distance extending devices, 35 km in Single Fiber configurations, making the Fiber Driver WDMs ideally suited for Metro, Campus, and Government/Military environments. Deployment options include Point-to-Point, Ring, Optical Add/Drop Multiplexing (OADM), and Bus (Linear OADM) topologies. 1+1 self-healing link redundancy and wavelength protection are available for mission critical Point-to-Point and Ring applications requiring maximum up time.

Fiber Driver WDM 3-R Repeaters can be used to extend link distance to hundreds of kilometers. These devices reshape, retime and regenerate the WDM signal so that multiple hops of up to 65 km each are possible. Optical amplifiers are also available for wavelength specific link extension.

Fiber Driver WDM solutions are available in pre-configured chassis-based and standalone configurations, and in chassis-based modular systems. The modular WDM offers an unprecedented level of flexibility and scalability, as customers are able to add data channels as required, mixing and matching protocols as needed. A wide range of voice and data protocols is supported, including Ethernet (10/100/1000), Fibre Channel, ATM/SONET (OC-3, OC-12, OC-48), ESCON, DS3, and more.

Odisys™

In traditional Optical Ethernet solutions, obtaining end-to-end infrastructure management requires placing equipment with an SNMP-enabled management agent at each remote termination point. Fiber Driver Odisys™ Ethernet / Fast Ethernet media modules, however, with new MicroAgent™ technology, deliver end-to-end management without the need for a remote SNMP agent.

The IP-Less™ transparent Out-of-Band management channel created by the MicroAgent provides the same Fiber Driver module monitoring and configuration capabilities as an SNMP-based solution, including remote loopback, link detect, system temperature, and more. The IP-Less management channel shares the same fiber optic link as the data channel but remains logically separate. The advantage to this approach is that no user bandwidth is consumed by management traffic, and the management channel is not effected by the data traffic. In addition, management information remains secure, as it cannot be tapped into from the data channel.

Odisys Single Fiber solutions, for fiber limited applications, are available with the exclusive Fiber Driver ReflectionDetection™ technology, which automatically detects mismatched UPC-to-APC connections.

Distance Extenders

With signal boosters, signal repeaters, and optical amplifiers, the Fiber Driver product line provides some of the longest link distances in the industry. Signal boosters take an incoming data signal and retransmit it through a high-powered optic transceiver, achieving link distances of up to 100 km or more. Protocol specific signal repeaters perform reshaping, regeneration, and retiming (3-R) of the data signal making possible multiple long-distance hops for creating links that reach hundreds of kilometers. By directly amplifying a specific wavelength, optical amplifiers - also known as *erbium doped fiber amplifiers* (EDFAs) - extend optical link distances without the optical-to-electrical-to-optical ("O2E2O") conversion performed by conventional signal repeaters.

8-Channel WDM

Mux / DeMux Module

OADM

IP-Less™ Copper to Fiber

Optical Amplifier

Media Converters

The Fiber Driver product line offers a wide range of solutions that seamlessly and cost effectively integrate existing network infrastructure with the new optical infrastructure.

Copper-to-Fiber modules convert a copper (electrical) input to a fiber optic output. Solutions are available to convert Ethernet, Fast Ethernet, Gigabit Copper Ethernet, T1, E1, or DS3 to either Multimode or Singlemode fiber.

Multimode-to-Singlemode converters area also available, transparently connecting Multimode and Singlemode fiber segments. Conversion to Singlemode fiber can extend link distances to over 100 km. Protocols covered by this group of media modules include Gigabit Ethernet, Fibre Channel, FDDI, ESCON, FICON, ATM, SONET, OC-48 and more.

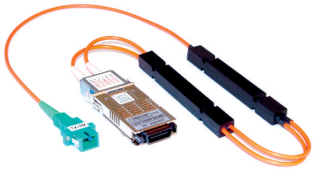
100 Base-TX to 100 Base FX

Media Optimizers

Ideal for fiber-limited installations, Fiber Driver Single Fiber modules use a unique laser technology that provides the ability to send transmit (TX) and receive (RX) signals over a single fiber strand. This technology effectively doubles the capacity of available fiber and eliminates the need to install additional cables.

The protocol transparent Fiber Driver Splitter/Combiner modules also provide the ability to propagate TX and RX signals onto a single fiber strand. They are passive optical devices that operate with minimal insertion loss.

Multimode Extender (MMX) technology, exclusive to the Fiber Driver product line, allows for long-distance transmission of Gigabit-speed protocols over Multimode fiber. MMX modules are guaranteed to reach distances of 2 km over existing FDDI-grade Multimode fiber and conditionally as far as 6 km; distances far greater than the standard 550 m limitation. MMX solutions, including MMX-enabled Wave Division Multiplexers (WDM) and GBIC-MMX transceivers, are available for Gigabit Ethernet, Fibre Channel, and FICON.



GBIC-MMX Single Fiber

Self Healing / Redundant Link

Fiber Driver self-healing redundant link and wavelength protection modules prevent service outages in applications where maximum up time is required. In the event of a optical link failure, these modules automatically switch the broken connection to a secondary data path, and send an alert to the network manager.

Occurring at the physical network layer, the switchover takes milliseconds or less to complete thereby remaining transparent to higher layer protocols such as Spanning Tree and OSPF, and virtually eliminating the loss of data. The end result is uninterrupted service to the end user.

Fast Ethernet Self Healing / Redundant Link Module

Chassis

The Fiber Driver™ product line includes various chassis sizes, which can hold from one to sixteen Fiber Driver modules. Each chassis is available with an AC or DC power supply. Modules and power supplies are hot swappable. The three-, four-, and sixteen-slot chassis can be equipped with redundant, hot-swappable power supplies. The sixteen-slot Telco chassis model is a 21" wide, reduced depth chassis, and includes brackets for mounting in a Telco 23" rack. It includes a front-mounted DC power supply, and supports redundant DC power supplies.

The Fiber Driver chassis are SNMP manageable when configured with the available management module.

4-Slot Chassis

16-Slot Chassis

End-to-End Management

FIBER ACCESS SOLUTIONS

Datasheet

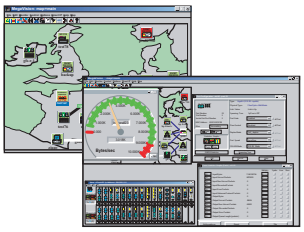
End-to-End Management

Establishing end-to-end management is the key to a reliable, low maintenance cost network, and to maintaining a high level of network performance. With the Fiber Driver Network Management Module (NMM), a Fiber Driver-based optical infrastructure can be remotely monitored and manage via SNMP from a central location. It supports an extensive array of system alerts and traps, and can be used to configure Fiber Driver chassis and media modules. When used in conjunction with the Fiber Driver Management Hub module, a single NMM can monitor and manage five fully populated chassis, up to 78 media modules.

MegaVision Web™ is a comprehensive network management system (NMS) supporting the entire Fiber Driver line of managed fiber optic infrastructure devices. It combines complete end-to-end network viewing and performance monitoring with robust configuration and fault management features. It incorporates the ability to discover and perform many management functions with virtually any SNMP or TCP/IP enabled device from any vendor. Each Fiber Driver chassis and module can be represented in full graphical detail showing every chassis slot, module port, and LED indicator.

For additional information on these and other Fiber Driver products, including availability and configuration options, contact your MRV Communications sales representative.

Network Management Module



Screen Shot

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The Power to Manage Your Fiber