FiberZone Networks

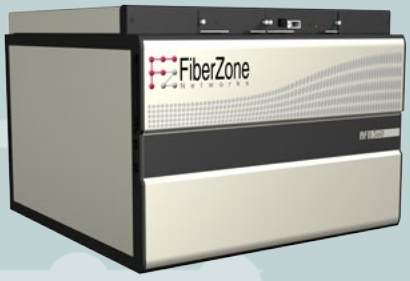
Automated Fiber Management for Datacenters and Networks

Data Sheet

FiberZone's AFM for Equipment Sharing and Test Automation

AFM Benefits

- High-density 180x180 port non-blocking optical switching
- Protocol and bit-rate agnostic
- Support for MMF and/or SMF
- Accurate simulation of fiber break scenarios
- Extremely low latency
- Low Insertion Loss
- Reliable passive connectivity
- Carrier-class availability
- Powerful management software with Graphical User Interface



Automated Fiber Management

The Automated Fiber Management (AFM) system is an all-optical physical layer fiber switch, providing transparent switching independent of protocol and bit rate, of either single mode or multimode fiber. The AFM product line utilizes FiberZone's Latched Optical Coupling (LOC™) technology that was developed specifically to address fiber management applications. The principle of LOCTM is to physically couple two optical fibers together without mirrors, lenses, or collimators. Once a physical connection is made, its optical performance is similar or better than that of a traditional patch panel.

FiberZone's AFM product line consists of best-in-class physical layer switch hardware, carrier-grade software and management modules, and a set of open interfaces for integration with 3rd party applications and management systems.

Automation Needs Evolve

Optical-Electical-Optical (OEO) Physical Layer switches have been used in enterprise environments for equipment sharing and test automation for years. Frequent upgrades of equipment interfaces to support higher bit rate and new protocols often required corresponding blade and backplane upgrades on physical layer switches used for automation, resulting in unexpectedly high total cost of ownership. Moreover, new high-speed storage and Ethernet interfaces pose new challenges for equipment sharing and automation solutions, and traditional OEO physical layer switches cannot scale to support new high-speed Fibre Channel (FC) or Ethernet interfaces, such as 16Gbps Fibre Channel, 40 Gigabit-Ethernet and 100 Gigabit-Ethernet.

FiberZone's AFM is the only solution that can support test automation at any existing or future port speed, running any protocol type, with low insertion loss and over either Singlemode or Multimode fiber.

FiberZone's AFM Benefits

FiberZone's AFM solution allows sharing of high-cost equipment among multiple disparate development and testing groups. Different groups may perform interoperability, compatibility and disaster recovery testing while using FiberZone's AFM to remotely configure the test environment, and may share equipment resources on-demand or based on time-of-day scheduling, to reduce capital cost requirements.

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Testing of storage, computing and networking equipment requires high level of automation, and FiberZone's AFM streamlines testing cycles to increase productivity, and allows offshoring of testing staff to reduce operating costs.

Compared to traditional Optical-Electrical-Optical (OEO) physical layer switches, FiberZone's AFM supports non-blocking switching independent of protocol type and bit-rate, so Ethernet, Fibre-Channel, iSCSI and FCoE are all supported natively in all bit-rates, and no blade or backplane upgrades are required.

Compared to alternative all-optical (OOO) switches, FiberZone's AFM supports non-blocking switching over any fiber type – single mode (SMF) or multimode (MMF), supports a considerably lower insertion loss and can be ordered with any standard connector type – LC or SC. In addition, FiberZone developed the Temporary Disconnect software application, to support customers simulating physical fiber cuts in disaster recovery scenarios. Since FiberZone's AFM in effect performs a physical fiber disconnect, no synchronization of laser shutdowns on inter-switch links is required, as in other solutions.

Main AFM Components

The AFM is made up of a chassis with a passive cross-connect element and five active Field Replaceable Units (FRUs). Any of the five active FRU component modules may be replaced in the field without loss of connectivity to any existing connections. The FRUs consist of a Local Control Unit (LCU) Module, a Power Supply Module, a Fan Module, and two (upper & lower) Robotic Control Unit (RCU) Modules. The lower portion of the AFM houses the passive cross-connect element and the two RCU Modules, and is a sealed enclosure protected from external dust. The upper portion of the AFM houses the LCU, Power Supply and Fan Modules.

Software Management

Local Terminal Management

Supports a CLI interface. Access via Telnet is also supported for remote servicing.

Element Management System

Enables secure remote management of the AFM system through a Web based GUI Client. Provides total network element (NE) view, automated fiber connectivity, and provisioning of overall topology.Supports general administrative functions such as management of users, unit configuration, alarms, logs and connectivity reports.

Value Add Software Applications

Software VAMs allow for OSS, third-party EMS or third-party script/lab test software integration, enable clustering of multiple AFM units, logical dual asymmetric systems, logical duplex fiber port grouping (Tx/Rx) and Temporary Disconnect of fiber connections.

AFM Interfaces

Panel Ports	Description
LAN	SNMP interface. Also supports a CLI via Telnet
Terminal	RS-232 based CLI for local installation and servicing
Alarms	Two dry contact outputs (both N.O. & N.C. states)
Power Sources	-48 and -60 VDC dual A/B power feeds
Cross Connect	180 East x 180 West optical cross-connect ports

Ordering Options:

Speak with a FiberZone representative about the following options:

AFM Fiber Type:	Single-Mode Fiber (9/125); Multi-Mode Fiber (50/125 & 62.5/125)
Fiber Termination:	Stub (standard), Spliced and Connectorized solutions via termination panels
Cable Management:	Cable Management Adapter available to route fibers to AFM termination panels
Fiber Length:	5m/17ft (Std for SMF) and 2.5m/8.5ft (Std for MMF), longer lengths available
AC Power:	AC to DC converter (power supply) unit (with redundancy option)
Rack-mount Unit:	½ height 23" rack on wheels
Mounting Bracket:	Several sliding/mounting bracket options to fit various equipment racks

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SPECIFICATIONS

	AFM-96S	AFM-192S	AFM-360
Optical Characteristics			
Minimum number of optical west x east ports	48x48 fibers	96x96 fibers	180x180 fibers
Maximum number of optical west x east ports	96x96 fibers	180x180 fibers	180x180 fibers
Expansion Increments	24x24 fibers	24x24 fibers(*)	
Wavelength Operating Range	1260 to 1625 nm for SMF, 850 to 1300 nm for MMF		
Insertion Loss (east to west)	0.3 dB (typ)		
Cross-talk	-80 dB		
Return Loss	-50 dB for SMF (Typ), and -30 dB for MMF (Typ)		
PDL	0.15 dB		
PMD	0.1 psec		
Maximum Input Power	Better than 29 dBm		
Switching time	35 sec (typ)		
Power Requirements			
Input Voltage	-48 VDC (Range: -40 VDC to -72 VDC)		
Power Consumption	55 W while in standby (normal operation) 155 W (180 peak) while switching		
Environmental Conditions			
TemperatureRange (operating)	0°C to 50°C		
TemperatureRange (storage)	-40 °C to 70 °C		
Relative Humidity (non-condensing)	5% to 95%		
Physical Characteristics			
Dimensions	444 mm (H) x 545 mm (W) x 600 mm (D) 17.5" / 10 RU x 21.4" x 23.6"		
Weight	75 Kg / 165 lb		
Regulatory Compliance			
Environmental	ETS 300 019 Class 3.1, GR-63-Core (NEBS Level 3))		
EMI/EMC	EN 61000-6-2:2001, EN 61000-6-4:2001, GR-1089-Core, FCC CFR part 15 subpart B Class A, ETSI EN 300 386 v1.3.3 (2005-04), ETSI EN 300 132-2 v2.2.1 (2007-01), AS/NZS CISPR 22:04, VCCI Technical Requirements V-3/2005.04, Industry Canada ICES-003 (CAN/CSA-CEI/IEC CISPR 22:02)		
Safety	EN/IEC 60950 (CE), GR-1089-Core, UL/IEC 60950 (cTUVus) Hazardous Substances		
Hazardous Substances & Waste	RoHS, WEEE		

** The last expansion is 12x12*

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