

Automate Your Fiber With FiberZone

Automated Fiber Management

The FiberZone Automated Fiber Management (AFM) family of automated connectivity solutions enables facility operators to deliver new fiber-based services, design and operate networks efficiently and flexibly, and improve customer service and network performance. FiberZone's flagship product, the AFM-360 is the first of its kind to deliver the attributes and reliability of a manual connectivity product while offering the benefits of remote control and automation.

Based on FiberZone's Latched Optical Coupling (LOC™) technology, the AFM-360 delivers very low optical loss and complete traffic protection in a carrier-class platform. The AFM-360 can be deployed globally in fiber-rich environments and is completely transparent to transport protocol, wavelength, signal speed and fiber type.

AFM transforms the manual fiber infrastructure into a fully automated and managed layer, enabling network operators to remotely provision optical connections while automatically maintaining accurate inventory records. Operators can perform remote testing, monitoring and troubleshooting of any fiber with AFM value-added modules (VAMs), which support Remote Fiber Test System (RFTS), Optical Time Domain Reflectometer (OTDR) and Bit Error Rate (BER) test access.



Product Brief - AFM-360

AFM-360 Features

High-Density Switching - Supporting a non-blocking arrangement of 180x180 optical cross-connect ports, switched at the physical layer. The AFM-360 requires only 10 RU in a standard 23" rack.

Scalability - The AFM technology is flexible and scalable, allowing for larger systems in both symmetric and asymmetric architectures. Software module options allow for a degree of flexibility supporting clustering of multiple AFM units as a means of creating larger systems, logical splitting of an existing symmetrical unit to create asymmetric systems and logical duplex fiber port grouping.

Superb Optical Performance - The AFM-360 supports an insertion loss of 0.5 dB, return loss of -45 dB and maximum signal input power of 27 dBm.

Reliable Connectivity - A proprietary latching mechanism maintains connectivity without power or any active components and enables service and upgrades to be carried out in the field without interrupting traffic. Connectors and connections are protected in a sealed environment, eliminating traditional problems associated with dirty connectors. AFM supports multi-hop arrangements across a large number of nodes in high speed backbone applications.

Carrier-Class System - Designed to meet telecom standards. The system utilizes highly reliable field-proven components, a latching mechanism to maintain connections, redundant A/B power feeds and an element management system (EMS) / network management system (NMS) supporting the Telecommunications Management Network (TMN) structure.

Flexible Connectivity - Fiber may be terminated via splices and/or connectors depending on application requirements. Supports multi-mode and single-mode fiber, as well as dark-fiber switching.

Downloadable AFM Software - The AFM embedded software is remotely downloadable and may be upgraded as required. The system stores both a current (active) version and a backup version locally.

Powerful Management Software - The EMS/NMS provides a Web based GUI for AFM unit management and network wide management capability via SNMP. It supports a secure environment with authentication to manage users, fiber provisioning, unit configuration, alarm notification, logs and connectivity reports. Craft port access is available locally or via Telnet through a Command Line Interface (CLI).

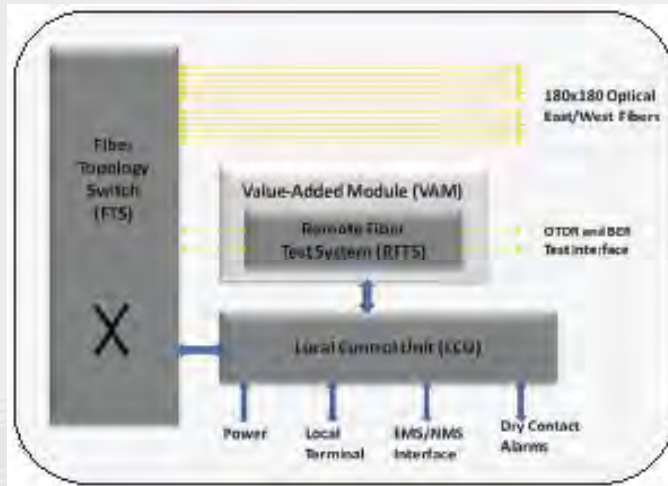
Synchronized Database and Auto-Discovery - FiberZone's EMS/NMS updates connectivity database records immediately following each provisioning operation and can automatically recover connection data in case of data base loss. Thus connectivity data is always up to date and available when needed.

Value-Added Module - Connect OTDR or BER test equipment through the optional Remote Fiber Test System (RFTS) Test Access Bus to any east or west port to perform monitoring or to quickly identify and isolate fiber faults.



Product Brief — AFM-360

AFM-360 Product Architecture



Main AFM Components

The AFM consists of two main components, the Fiber Topology Switch (FTS) and the Local Control Unit (LCU).

Fiber Topology Switch - The FTS includes an active switching layer and a passive connectivity layer with latching mechanism. This combination enables automated remote provisioning and configuration, yet does not require power to maintain connections. The active switching layer is also field-replaceable without affecting traffic.

Local Control Unit - The LCU controls all switching elements, reflects real-time status of cross-connections and network configurations, provides control over the VAM for test and monitoring capability and transmits data and alarms to a central network management system. In addition, the LCU includes standard interfaces to existing operational support systems (OSS) and FiberZone's EMS/NMS.

AFM-360 Interfaces

Panel Ports	Description
LAN	SNMP interface into FiberZone's or Third Party EMS/NMS systems, CLI via Telnet interface for remote servicing operations.
Terminal	RS-232 based CLI for local installation and servicing operations.
Alarms	Two dry contact outputs (supporting both N.O. & N.C. states).
VAM 1 - 4*	VAM optical interfaces for RFTS, including OTDR and BER test access capability supporting look-in, look-out, monitoring, loopback and test port chaining to the next AFM.
Power Sources	-48 and -60 VDC dual A/B power feeds, for main Central Office & backup power sources.
Cross-Connect Fibers	180 East x 180 West optical cross-connect ports (provided as two 5-meter pigtails).

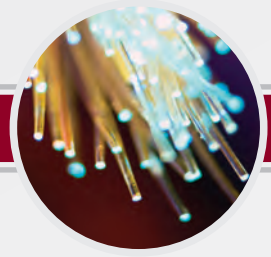
* Configured from available East & West fibers

Management

Local Terminal Management - Supports a CLI interface used by technicians primarily during installation and servicing of the AFM system. Access via Telnet is also supported for remote servicing.

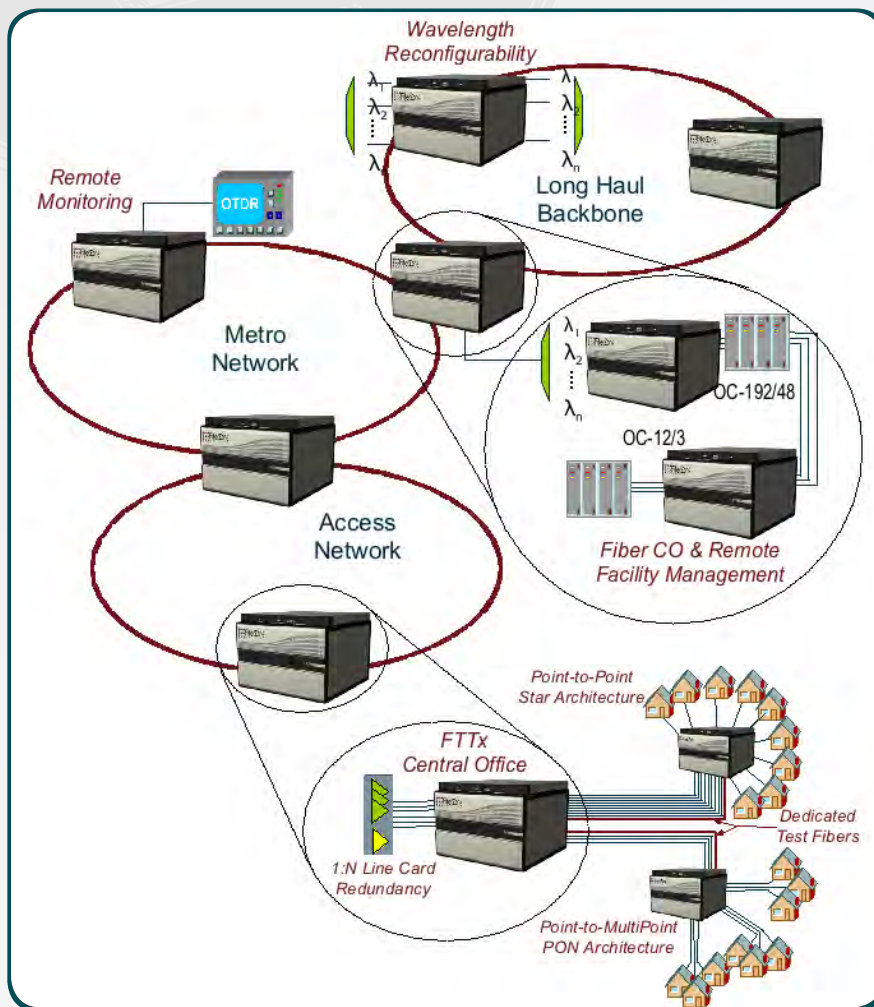
Element Management System - Enables secure remote management of the AFM system through a Web based GUI. Provides total network element (NE) view, automated fiber connectivity, and provisioning of overall topology. Integrated database maintains accurate connectivity records at all times. Supports general administrative functions such as management of users, unit configuration, alarms, logs and connectivity reports.

Network Management System - Provides full network view supporting end-to-end connectivity operation and maintenance. Software modules allow for OSS or third-party EMS integration and enable clustering of multiple AFM units, logical dual asymmetric systems, and logical duplex fiber port grouping.



Applications

- FTTx - Remote provisioning, testing, troubleshooting and grooming
- Central Office management
- Remote Site management
- MDU Distribution
- End-to-end network management
- ROADM-complement – WDM client management and wavelength reconfiguration
- Dynamic Data Center and Enterprise Office management – Remote management and security
- Co-location / Carrier Hotel management
- Meet-Me Room and Internet Exchange – Premium connectivity services
- Remote Fiber Test System and Monitoring



Rapid Return-On-Investment with AFM-360

- Rapid provisioning of services to customers in seconds, on a port-by-port basis or in batch
- Reconfiguration of fiber ports for efficient use of expensive optical resources
- Reclamation of disconnected equipment ports resulting from churn
- Load balancing of networks to maintain optimal performance
- Grooming of optical ports to optimize service allocation
- Periodic monitoring and testing of fiber quality for early warning of signal degradation
- Remote testing of any fiber to characterize it during installation, or for rapid troubleshooting / fault isolation
- Synchronized inventory management to provide authoritative data base of record
- Remote switching from main to spare fiber paths/equipment ports to bypass problem fibers/ports
- Improved network uptime through automated disaster recovery and 1:N equipment port redundancy



Specifications

Optical Characteristics	
Number of optical east ports	180
Number of optical west ports	180
Wavelength Operating Range	1260 nm to 1630 nm
Insertion Loss (east to west)	0.5 dB
Insertion Loss (repeatability)	0.2 dB
Cross-talk	-80 dB
Return Loss	-45 dB
PDL	0.15 dB
PMD	0.1 psec
Maximum Input Power	27 dBm
Switching time	30 sec
Power Requirements	
Input Voltage	-48, -60 VDC (Range: -40 VDC to -72 VDC)
Power Consumption	55 W, ready mode 80 W (120 peak), switching mode
Environmental Conditions	
Temperature Range (operating)	0° C to 45° C
Temperature Range (storage/transport)	-40° C to 70° C
Relative Humidity (non-condensing)	5% to 95%
Physical Characteristics	
Dimensions	445 mm (H) x 544 mm (W) x 582 mm (D)
Weight	75 Kg



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 and Waste:	RoHS, WEEE



Ordering Options

Fiber Type	Single-Mode Fiber (9/125); Multi-Mode Fiber (50/125 & 62.5/125)
Fiber Termination (East / West)	Stub/Stub (standard), Spliced and Connectorized solutions available using third-party products.
Fiber Length Options	5 meters (standard), longer lengths available.

