

ML540M/ML560M



The ML540M/ML560M products are integrated, compact, high performance, and cost-effective Ethernet Over Fiber Devices. The ML540M/ML560M complement Actelis' EoC portfolio offerings by delivering advanced MEF Carrier Ethernet 2.0 compliant business class Ethernet services over fiber infrastructure. ML540M/ML560M are flexible devices that can be effectively used as Ethernet Demarcation Devices (EDD), Network Interface Devices (NID), Ethernet Access Devices (EAD) as well as a Network Termination Units (NTU).

The ML540M/ML560M are interoperable with any standard Ethernet switch, router or hub. Compliant with Metro Ethernet Forum (MEF) CE 2.0 specifications, ML540M/ML560M seamlessly integrate into carrier Ethernet networks. The ML562M is equipped with two 10 GE SFP ports and two 2.5GE SFP ports, and the ML540M is equipped with 6 GE SFP ports. In addition, both products support four 1000 BaseT (RJ45) ports as well as a management and craft port.

Service providers utilizing the ML540M/ML560M intelligent carrier Ethernet demarcation devices can offer CE 2.0 based services EPL, EVPL, E-LAN with higher throughput advanced bandwidth, highly granular SLA and comprehensive monitoring and management capabilities.

The ML540M/ML560M's flexible service provisioning using Ethernet Virtual Connections (EVCs) with advanced mapping allows carriers to maximize the efficiency of the access bandwidth on all their ports and configurations. Service Level Agreements (SLAs) can be easily enforced per each subscriber enabling service providers to safely aggregate multiple services or multiple subscribers, on the same Ethernet access uplink.

The ML540M/ML560M families provide 802.1q VLAN-aware wire-speed bridging, double tagging (VLAN stacking) for end-user VLAN transparency, VLAN translation, L2/L3/L4 classification with eight traffic classes, rate limiting, and shaping per port, queue, and service, Multicast/Broadcast limiting, as well as IGMP snooping for video distribution applications.

Flows can be further protected through use of high performance mechanisms, based on G.8031 and G.8032v2, for link, path, and ring resilience Link, Link aggregation offering both static as well as LACP (802.3ad) as well as STP, RSTP and MSTP.

The ML540M/ML560M provide proactive and dynamic tools for enhanced trouble shooting and monitoring capabilities. Advanced Carrier class EFM OAM, including 802.3ah, CFM (802.1ag), Y.1731 (ITU) and RFC 2544 embedded traffic generator. Moreover, throughput metering, SFP diagnostics are supported as well as port and flow mirroring offering both physical link as well as service level end to-end advanced troubleshooting mechanisms.

The ML540M/ML560M can be managed In- and Out-of-Band by the CLI on a craft port or integrated Web server application on Ethernet ports and via the multiplatform Element Management System, MetaASSIST EMS*. The management protocols include standard command line interface, Telnet and SNMP for seamless integration with third-party Network Management Systems (NMS).

*Future Option



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Specifications

Interfaces

Ethernet

- 4 x 1000 BaseT; 4 x RJ45, Auto MDIX
- 2 x 2500 baseFX (ML562M), 6 x 1000 baseFX (ML540M)
- 2 x 10GE (ML562M)

Management (Out-of-Band)

- **1000Base-T Connector:** RJ45, Auto-MDIX
- **Console port Connector:** RJ45, Auto-MDIX

Bridging and Routing

- **Dynamic Bridging:** IEEE 802.1
- **VLAN Tagging:** IEEE 802.1Q
- **VLAN Translation**
- **Port Isolation**
- **MAC-based and Protocol-based VLAN**
- **IEEE 802.1ad Provider Bridge**
- **IEEE 802.3ad Link Aggregation (Static and LACP)**
- **Port and Flow Mirroring**
- **Protocol-Based and IP subnet-based VLAN**
- **Classification of L3 flow**
- **IGMP snooping:** IGMP V2/V3
- **DHCP Option 82 Relay**
- **Universal plug-and-play (UPnP)**
- **IPv4 Unicast Static Routing**
- **OAM:** IEEE 802.3ah clause 57 (EFM OAM)
IEEE 802.1ag, ITU Y.1731, ITU-T Y.1564, RFC 2544

Quality Of Service Features

- Classes of Service: 8
- Scheduler: WFQ, SP, Hybrid
- Per-EVC QoS, Policing and shaping for service isolation and traffic isolation
- Classification: Per Port/VLAN/L2/L3/L4
- Rate Limiting: Per Port/VLAN/L2/Flow

Physical

- **Dimensions (HxDxW):**
1.6" / 40 mm (1U) x 9.05" / 230 mm x 8.66" / 220 mm
- **Racks:** 19", 23" or ETSI racks, Desktop, Wall Mount

Security

- Network Access Server: Port based IEEE 802.1x, MAC-based authentication, VLAN and QoS assignment
- RADIUS Accounting
- TACACS+
- Web and CLI Authentication
- Authentication (15 user levels)
- ACLs for filtering, policing and port copy
- IP Source guard
- IP MAC Binding

Management

- **Device Configuration,** Management and Update
- **Web Interface:** based GUI
- **Command Line Interface** via console port, telnet
- Universal Plug and Play (UPnP)
- SSHv2
- Management Access Filtering
- IPv6 Management
- System Syslog
- Software upgrade through Web
- SNMP V1, V2c, V3
- Multiple SNMP trap Destinations

Power

- 90-264 VAC, 50/60 Hz; (Power adapter) -48V DC

Environmental

- **Operating Temp:** -40° to +65°C (-40° to 149°F)
- **Storage Temp:** -40° to +75°C (-40° to 167°F)
- **Relative Humidity:** 5% to 95%, non-condensing

Regulatory Compliance/Certifications

Safety

- UL 60950, EN 60950

EMC

- FCC Part 15, ETSI EN 300 386

CE

- EMC and Safety

ROHS

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