

# ML740 Ethernet Access Device

**The ML740 Ethernet Access Devices (EADs) from Actelis® deliver up to 500/250 Mbps of bandwidth (downstream/upstream), with extended reach, using standard EFM bonding over 2, 4 or 8 copper pairs by utilizing DMT (ADSL2/2+ and VDSL2) technology.**

The ML740 family of EADs delivers the longest reach with the greatest reliability and the most cost-effective solution for high-bandwidth DSLAM and next-generation mobile backhaul (HSPA+ and LTE, Small Cell) applications.

In addition to best-in-class rate and reach capabilities, ML740 EADs offer the highest link resilience and best-in-class customer Quality of Experience (QoE) through its unique implementation of SRA (Seamless Rate Adaptation) and Impulse Noise Protection (INP), and complying with G.inp for unsurpassed bonded link reliability. All ML740 EADs are hardened and compact devices.

ML740 models include:

- 4 X 10/100BaseT ports and
- 2 SFPs 100/1000BaseFX ports

The ML740 can be deployed back-to-back in a Point-to-Point topology. It offers a fully standards compliant multimode DMT (ADSL2+/VDSL2) chipset and supports various profiles for VDSL2 and a variety of PSDs, ensuring country specific spectral regulations.

All ML740 EADs provide 802.1q VLAN-aware wire-speed bridging, double tagging (VLAN stacking) for end-user VLAN transparency, L2, L3 and L4 classification with eight traffic classes, RSTP/STP, bandwidth monitoring, and Multicast/Broadcast limiting.

The ML740 line of EADs is fully compliant with the CE 1.0 and CE 2.0 specifications. The ML740 enables flexible service provisioning using Ethernet Virtual Connections (EVCs) with flexible mapping and Quality of Service (QoS) capabilities to maximize the efficiency of access bandwidth. The ML740 complies with IEEE Y.1731 for monitoring and

enforcing Service Level Agreements (SLAs). When multiple services are offered on the same link, SLAs can be monitored and enforced for each service, in compliance with MEF 10 standard, allowing reliable aggregation of multiple services on the same Ethernet access link.

Actelis' award-winning EFMplus™ technology, combined with multi-standard auto selecting DMT scheme (ADSL2/2+/VDSL2), provide the industry's best rate, reach and reliability. Actelis' fast, resilient calibration coordinates all modems and balances SNR margins across all modems in the High Speed Link (HSL) to ensure optimal performance and highest reliability. The Actelis Broadband Amplifiers (BBAs) can be used to further extend the reach and rate of the ML740 link\*.

The ML740 EADs provide proactive and dynamic tools for enhanced trouble shooting and monitoring capabilities. Advanced Carrier-class EFM OAM, including 802.3ah, CFM (802.1ag) and Y.1731 (ITU), are incorporated, offering both physical link as well as service level end-to-end advanced troubleshooting mechanisms. The ML740 EADs can be managed In and Out-of-Band by the Actelis' MetaASSIST™ View and via the multi-platform Element Management System, MetaASSIST EMS. The management protocols include standard command line interface and SNMP using standard MIBs for seamless integration with third-party Network Management Systems (NMS).



## Highlights

- Best-in-class Rate Reach & Reliability
- Best-in-Class Link Resilience, Implementing G.inp
- CE 2.0, CE 1.0
- IEEE 802.3ah EFM, ITU-T G.998.2 G.bond, G.993.5 Vectoring
- Advanced SLA Monitoring
- Environmentally Hardened
- VBA for rate and reach extension
- IGMP Snooping

## Applications

- Mobile: WiFi, WiMax, LTE, HSPA+, 2G, 3G, and Small, Pico, Micro, and Metro Cell Backhaul
- DSLAM Backhaul
- Metro Ethernet Extension
- Business Services

## Markets Served

- ILECs, CLECs, IOCs, PTTs, Alternative Carriers, and Mobile Operators
- Federal, State and Local Government Agencies
- Education, Health Care, Utilities, and Private Campuses

\* Coming soon



## Specifications

### Interfaces

#### Ethernet (Network/User)

- **10/100Base-T:** 4 ports  
Connector: RJ45, Auto-MDIX
- **100/1000Base-FX:** 2 ports  
Connector: SFP based, MSA compliant

#### High Speed Link (Bonded Copper Pairs)

- **Protocol:** IEEE 802.3ah, ITU-T G.998.2 G.bond, G.993.5 Vectoring
- **DMT Multimode:** ITU-T G.992.3 (ADSL2), G.992.5 (ADSL2+), G.993.2 (VDSL2) supporting multiple VDSL profiles with auto line code selection
- **Impulse Noise Protection:** G.INP (ITU-T G.998.4) and Interleaved modes for bonded links
- **Bandwidth:** Up to 750 Mbps - aggregated. 500 Mbps downstream / 250 Mbps upstream
- **Number of Copper Pairs:** 2, 4 or 8  
Connector: RJ45 (per modem/pair)
- **End-to-end Delay:** 2-4 ms (Fast mode)
- **Sealing Current:** 48VDC/1.5mA nominal

#### Management (Out-of-Band)

- **10/100Base-T: Connector:** RJ45, Auto-MDIX
- **Craft:** EIA RS-232 (DCE)
- **Connector:** DB9

### LAN Protocols

- **Dynamic Bridging:** IEEE 802.1, 8K MAC addresses
- **Discovery Mechanisms:** LLDP
- **VLAN Tagging:** IEEE 802.1Q
- **Double Tagging:** Q-in-Q, TPID settable
- **RSTP, STP:** IEEE 802.1d
- **Link Aggregation:** IEEE 802.3ad
- **Provider Bridge:** IEEE 802.1ad
- **IGMP snooping:** IGMP V1/V2
- **OAM:** IEEE 802.3ah clause 57 (EFM OAM) IEEE 802.1ag, ITU Y.1731

### Management

#### Protocols

- **SNMP:** SNMP v1 and v2c
- **Command Line Interface:** TL1, CLI
- **Remote Access:** Telnet
- **Secure Access (option):** SSH v2
- **Time Synchronization:** SNTP v3
- **Web Access:** HTTP
- **File transfer:** FTP, TFTP
- **User Authentication:** RADIUS and/or local passwords

### Metro Ethernet Forum – Advanced Service Provisioning and Traffic Management

- **EVCs:** 8
- **Classifications Rules:** 32 ingress rules (Port/VLAN/L2/L3/L4 Flexible)
- **Bandwidth Profiles:** 32
- **Ingress Policer:** 2 rate/3 color metering CIR/CBS EIR/EBS
- **COS Marking:** Preservation, Propagation, Overwrite

#### Quality of Service toward HSL

- **Classes of Service:** 8
- **Scheduler:** WFQ, SP, Hybrid
- **Classification:** 74 bytes flexible filter including Pbit/COS and DSCP/ToS

#### Management Applications

- **EMS:** MetaASSIST EMS
- **Craft GUI:** MetaASSIST View

### Physical

- **Dimensions:**  
**Height:** 1.6" / 40 mm (1U); **Depth:** 11.0" / 280 mm  
**Width:** 8.4" / 213 mm
- **Weight:** 3.75 lbs / 1.7 kg
- **Mounting Rack:** 2 units in 19", 23" or ETSI racks  
Desktop, Wall Mount

### Power

- **DC:** -40/-60 VDC (-48V nominal), 21-25W (per model)
- **AC:** 90-264 VAC, 47-63 Hz, 31W (worst case) (External)

### Environmental

- **Operating Temp:** -40° to +65°C
- **Storage Temp:** -40° to +85°C
- **Relative humidity:** Up to 95%, non-cond.

### Regulatory Compliance/Certifications

#### Metro Ethernet Forum

- CE 2.0, CE 1.0 Compliant

#### Safety

- UL 60950, CSA C22.2 60950
- EN 60950, IEC 60950

#### EMC

- FCC Part 15 Class A
- ICES-003 Class A
- ETSI EN 300 386 Class A
- VCCI Class A
- ETSI ETS 300 132-2

#### NEBS

- Level III (GR-1089-CORE, GR-63-CORE) (pending)

#### CE

- EMC and Safety

#### Telecom

- ITU-T K20, K.21

#### Environmental

- GR-63-CORE, ETSI ETS 300 019



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