

# ML620i Ethernet Access Device

**The ML620i Ethernet Access Devices (EADs) from Actelis® enable delivery of high-speed carrier Ethernet services over the existing copper infrastructure. The ML620i is an intelligent, compact EAD that delivers up to 60 Mbps of symmetrical Ethernet traffic with fiber quality over existing copper pairs.**

Available with either 4, 2, or 1 copper pairs, the ML620i EAD can be deployed as the CPE in a Point-to-Multi-Point configuration with Actelis' EFM switches or in a Point-to-Point configuration. Designed as a green, energy-efficient, and cost-effective CPE, the ML620i EAD offers superior performance, extensive functionality and quiet, fanless operation. The ML620i EAD offers rapid service delivery and allows for complete utilization of the existing network infrastructure.

The ML620i EAD is Metro Ethernet Forum (MEF) certified and seamlessly integrates into carrier Ethernet networks. The ML620i EAD is fully compliant with the MEF 9 and 14 specifications.

Equipped with four 10/100Base-T Ethernet interfaces, the ML620i EAD platform is interoperable with any standard Ethernet switch, router or hub, and allows assignment of a service or a customer per port. The ML620i EAD models let service providers create an intelligent Ethernet access edge with bandwidth limiting per ingress port and traffic shaping on the Ethernet Access uplink (HSL).

Powered by Actelis Networks' award-winning EFMplus™ technology, the rate, reach and reliability are increased significantly using advanced Dynamic Spectrum Management (DSM) and Dynamic Rate Boost (DRB) techniques. This technology doubles the rate/reach in real-world field deployments. Combined with Actelis industry-leading XR239 EFM Repeaters, the reach can be extended even further. All ML620i EAD models provide 802.1q VLAN-aware wire-speed bridging, double tagging (VLAN stacking) for end-user VLAN transparency, L2 (Ethernet priority) and L3 (ToS/Diff-Serv) classification with four traffic classes, RSTP/STP, bandwidth monitoring, Multicast/Broadcast limiting, as well as IGMP snooping for video distribution applications.

The ML620i 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 ML620i EAD platform can be managed In- and Out-of-Band by the MetaASSIST™ View graphical craft application 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).

The ML620i EADs provides full Carrier Ethernet over Copper access functionality, including traffic management and QoS application at the edge, making the most efficient use of the bandwidth in the copper access network.



## Highlights

- IEEE 802.3ah Ethernet in the First Mile (EFM) 2Base-TL Solution
- CE 1.0 - MEF 9, 14
- Rapid Service Deployment
- Superior Rate, Reach & Reliability
- Low Delay and Jitter for Voice and Video Transmission
- Carrier-Class OAM
- Worldwide Spectral Compliance
- FCC, UL, CE
- Environmentally Hardened
- Quiet, Fanless Operation
- Green, Energy-efficient Design

## Applications

- Transparent LAN Service
- Leased Lines Replacement
- Fast Internet Access
- Metro Ethernet Extension
- Private Campus Network Intra-Connection
- MDU/MTU Backhaul
- DSLAM Backhaul
- WiFi and Cellular Backhaul (Radio Access Network)

## Markets Served

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



## Specifications

### Interfaces

#### Ethernet (Network/User)

- **10/100Base-T:** 4 ports, Connector: RJ45, Auto-MDI

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

- **Protocol:** IEEE 802.3ah 2Base-TL
- **Line code:** ITU-T G.991.2 rev. 2
- **Bandwidth:** Up to 60 Mbps (symmetrical)
- **Number of Copper Pairs:** 1-2-4 **Connector:** RJ45 (per modem/pair)
- **End-to-end Delay:** 2-4 ms (typical)
- **Spectral Compliance:** ITU-T G.991.2 (Annex A, B, F, G), ETSI TS 101 524 (Annex E), ANSI T1.417, T1.426, Per-country regulatory, compliant spectral modes
- **Spectral Friendliness:** Dynamic Spectral Shaping (DSS)
- **Cross-talk Cancellation:** Dynamic Rate Boost (DRB)
- **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
- **RSTP, STP:** IEEE 802.1d
- **Link Aggregation:** IEEE 802.3ad
- **Provider Bridges:** IEEE 802.1ad
- **IGMP snooping:** IGMP V1/V2
- **OAM:** IEEE 802.3ah clause 57 (EFM OAM), IEEE 802.1ag, ITU Y.1731, Ethernet loopback with MAC swap

### Advanced Service Provisioning and Traffic Management

#### Quality of Service

- **Classes of Service:** 4
- **Scheduler:** WFQ, SP
- **Classification:** L2 802.1p/Q priorities L3 ToS/DiffServ

### Management

#### Protocols

- **SNMP:** SNMP V3, V2C, V1
- **IP addresses:** IPV4 and IPV6
- **Command Line Interface:** TL1, Industry Standard CLI
- **Remote Access:** Telnet
- **Secure Access (option):** SSH v2
- **Time Synchronization:** SNTP v3
- **Web Access:** HTTP
- **File transfer:** FTP, TFTP
- **IEEE 802.3ah EFM OAM:** Dying Gasp
- **User Authentication:** RADIUS and/or local passwords

#### Applications

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

### Front Panel Indicators (LEDs)

- Power
- Status
- Alarm
- MLP per modem/pair
- ACT (Activity)
- LNK (Link) per Ethernet/HSL port

### Physical

- **Dimensions:** Height: 1.6" / 40mm (1U), Depth: 11.0" / 280mm, Width: 8.4" / 213mm
- **Weight:** 3 lbs / 1.35 Kg
- **Mounting Rack:** 2 units in 19", 23" or ETSI racks Desktop, Wall Mount
- **Power DC:** 12/24/48 VDC nominal, 5W (ML622i/ML621i), 7W (ML624i) **AC:** 90-264 VAC, 47-63 Hz, up to 10W

### Environmental

- **Operating Temp:** -20° to +65°C
- **Storage Temp:** -40° to +75°C
- **Relative humidity:** Up to 95%, non-cond.

### Regulatory Compliance/Certifications

- Metro Ethernet Forum
- CE 1.0 - MEF 9, 14

#### Safety

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

#### EMC

- FCC Part 15 Class B
- ICES-003 Class B
- ETSI EN 300 386 Class B
- ETSI ETS 300 132-2
- AS/NZS CISPR 22:2006

#### CE

- CE mark
- ITU-T K.21
- JATE

#### Environmental

- ETSI ETS 300 019



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