

ML62xD

All in one - Industrial Ethernet Switch and Extender

The ML62xD Industrial Ethernet Switches and Extenders from Actelis® are a small form factor Add-Drop units extending the delivery of up to 20 Mbps of symmetrical high-speed Ethernet services over existing copper infrastructure.

Designed for Industrial, utility and traffic applications, The ML62xD family includes ML622D and ML624D. ML624D takes in four copper pairs and allows them to be split into two directions, (2+2) east and west, thereby allowing multiple nodes to be connected over copper in a linear chain, RSTP/STP mesh or ring configuration. Each node has full switching capabilities and can drop and add Ethernet traffic at each location while transferring the rest of the traffic through. ML622D offers similar capabilities with two copper pairs split into two HSLs east/west (1+1) or can support a single HSL - two pairs enabling up to 20 Mbps.

The ML62xD similar to the ML684D offers extremely small factor and DIN rail mounting for flexible deployment within utilities, traffic and industrial cabinets. With its superior performance, extensive functionality, high robustness and reliability, the ML62xD Ethernet switch offers rapid service delivery and allows for better utilization of the existing network infrastructure.

Interoperable with any standard Ethernet switch, router or hub ML62xD devices seamlessly integrate into any Ethernet network. Equipped with two 10/100Base-T interfaces the ML62xD enables connectivity to up to two Ethernet devices such as controllers, sensors or cameras.

The ML62xD is a hardened and robust Ethernet switch with redundant power inputs, designed for deployment in harsh environments. It complies with NEMA 4 extended temperature requirements and K.20/K.21/K.45 for extended protection against overvoltages and over-currents.

Powered by Actelis Networks' award-winning, patented EFM^{plus}™ technology, the rate, reach and reliability are increased significantly using advanced Dynamic Spectrum Management (DSM) techniques. This technology provides the best rate/reach performance, most resilient fiber-quality transmission while ensuring high reliability.

Actelis ML62xD solutions offer a comprehensive level of security initiating from the physical layer to the switching and up to the management and access layer. Actelis comprehensive mechanisms include high level authentication and advanced encryption capabilities, segmented and scrambled Ethernet packets disseminated over multiple transmission conduits as well as sophisticated filtering and access control using layer 2 process. All of this enables a significantly strong and resilient solutions and transmission that offers a higher level of immunity with notably lower vulnerability hacking attempts.

The ML62xD provides 802.1q VLAN-aware wire-speed bridging, double tagging (VLAN stacking) , L2 (Ethernet priority), L3 (ToS/Diff-Serv) classification with four traffic classes, RSTP/STP, Link Aggregation, LLCF (Link Loss Carrier Forward), bandwidth monitoring, Multicast/Broadcast limiting, as well as IGMP bandwidth snooping for video distribution applications.

The ML62xD provides proactive and dynamic tools for enhanced trouble shooting and monitoring of the transmission layer including loopbacks, bandwidth monitoring and restoration, modem tone injection as well as additional algorithms to optimize throughput and reliability.

The MetaASSIST™ View graphical craft application and the MetaASSIST EMS multi-platform Element Management System offer in- and out-of-band management of the ML62xD. Management protocols include standard TL1 command line interface and SNMP using standard MIBs for seamless integration with third-party Network Management Systems (NMS).



Highlights

- Support for two High Speed Copper Links
- Small form factor, no fan, DIN raiing
- Environmentally hardened
- Enhanced Security - Low vulnerability to hacking
- IEEE 802.3ah Ethernet in the First Mile (EFM) 2Base-TL Solution
- Rapid Service Deployment
- Superior Rate, Reach & Reliability
- Low Delay and Jitter for Voice and Video Transmission
- Worldwide Spectral Compliancy
- FCC, UL, CE, NEMA 4

Applications

- Telemetry
- IP-based Traffic Controllers
- Smart Grid Sensors
- Dynamic Message Signs
- HD Video Cameras & Streaming
- Vehicle Detection
- Smart Parking
- Emergency Response
- Supports & Complements City Wi-Fi Access

Specifications

Interfaces

Ethernet (Network/User) - 2 port switch

- 10/100Base-T: 2 ports, Connector: RJ45, Auto-MDIX

High Speed Link (HSL) - Bonded copper pairs

- Protocol: IEEE 802.3ah 2Base-TL
- Line code: ITU-T G.991.2 rev. 2
- Number of copper pairs: ML624D - 4, Connector: RJ45 x 2 ML622D - 2, Connector: RJ45 x 2
- Number of HSLs: ML624D - 2 HSLs - east/west, 2 pair each ML622D - 2 HSLs - east/west, 1 pair each or 1 HSL - 2 pairs
- Bandwidth per HSL: Up to 20 Mbps (2 pairs) Up to 15 Mbps (1 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
- Sealing Current: 48 VDC/1.5mA nominal (sink)

Management (Out-of-Band)

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

Alarm Contacts

- Terminal Block, 2 Input, 1 Output

LAN Protocols

- Dynamic Bridging: IEEE 802.1, 8K MAC addresses
- Discovery Mechanisms: LLDAP
- VLAN Tagging: IEEE 802.1Q
- Double Tagging: Q-in-Q
- RSTP, STP: IEEE 802.1d
- Link Aggregation: IEEE 802.3ad
- Provider Bridge: IEEE 802.1ad
- IGMP snooping: IGMP V1/V2

Advanced Service Provisioning and Traffic Management

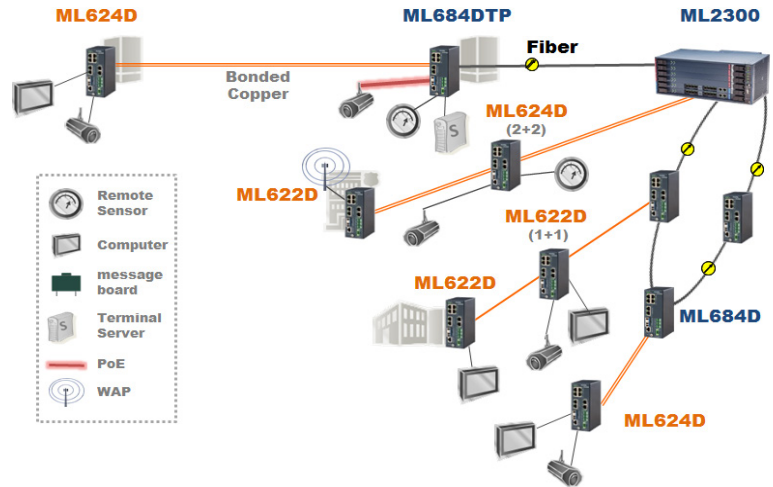
Quality of Service

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

Management

Management Applications

- EMS: MetaASSIST EMS
- Craft GUI: MetaASSIST View



Management Protocols

- SNMP: SNMP V3, V2C, V1
- IP addresses: IPV4 and IPV6
- 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: local passwords

Advanced L1 troubleshooting

- IEEE 802.3ah EFM OAM: Dying Gasp
- Loopback
- HSL bandwidth Restoration
- MLP Quarantine
- Enhanced Monitoring and alarm capabilities
- Repeaters troubleshooting - Hop by hop
- Modem Tone Injection

Front Panel Indicators (LEDs)

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

Physical

- Dimensions: Height: 5.95" / 151 mm, Depth: 5.1" / 130 mm, Width: 2.3" / 58 mm
- Weight: 1.76 lbs / 0.8 kg
- Mounting: Din Rails, Wall Mount Design for top hat rail EN 50022 - 35 x 7.5, or 35 x 15 - type O / type Omega (Ω)

Power DC: -24/-48 VDC nominal, 9 Watt

AC: 90-264 VAC

Environmental

- Operating Temp. -40° to +74°C
- Storage Temp. -40° to +74°C
- Relative humidity: Up to 95%, non condensing

Regulatory Compliance/Certifications

Metro Ethernet Forum

- CE 1.0 - MEF 9, 14

Safety

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

EMI (Emission):

- FCC Part 15 Class A
- ICES-003 Class A
- ETSI EN 300 386 Class A
- ETSI ETS 300 132-2
- EN 55022 Class A
- EN50155 (48 VDC), IEC60571 (48 VDC)

EMS (Immunity):

- EN 300 386 level 3 ESD, Surge, EFT level 2 or 3
- EN 61000 - Level 3: 4-2 (ESD), 4-3 (RS), 4-4 (EFT), 4-5 (Surge), 4-6 (CS)
- EN 61000-4-8
- ITU-T K.20, K.21, K.45

CE

- EMC and Safety

Environmental

- ETSI ETS 300 019
- NEMA 4 Thermal



Corporate Headquarters
Actelis Networks, Inc.
47800 Westinghouse Drive
Fremont, CA 94539
t. +1 510-545-1045 or toll-free in U.S. 1-866-ACTELIS

Company and General Information: info@actelis.com

Asia Pacific Sales: apacsales@actelis.com

Central and Latin America Sales: calasales@actelis.com

Europe, Middle East and Africa Sales: emeasales@actelis.com

North America Sales: nasales@actelis.com