Actelis Networks™

ML680DF

All-In-One Industrial Ethernet Switch and Extender

The ML680DF Industrial Ethernet Switch and Extender from Actelis Networks® is a small, hardened, fanless fiber fed add/drop device delivering up to 1 Gbps of high-speed Ethernet where you need it.

The ML680DF is part of Actelis' ML680Dx family of access switching products designed for industrial, intelligent traffic network, surveillance, pipeline and utility applications. Complementing the ML684Dx, which supports both bonded copper and fiber, the ML680DF is a cost optimized, fiber-fed only version with east and west fiber connections that allow multiple sensors or cameras at various locations to be connected in a linear chain, RSTP/STP mesh or ERPSv2 ring configurations.

The ML680DF offers 1 Gbps of full Ethernet switching capabilities, supporting add/drop of traffic to up to six Ethernet client ports at each site while passing the remainder through to other locations. Featuring an extremely small factor, fanless design, and DIN rail mounting, the ML680DF is ideal for deployment in almost any traffic, utility, or industrial cabinet, pedestal or vault.

Environmentally hardened with redundant power inputs, and featuring a robust, field-proven design, the unit is NEMA 4 extended temperature compliant and K.20/K.21/K.45 rated for protection against over voltage and over current conditions, ensuring high reliability and trouble-free operation.

Interoperable with any standard Ethernet switch, router or hub ML680DF devices seamlessly integrate into any Ethernet network. Equipped with six 10/100Base-T Ethernet interfaces and two 100/1000Base-FX Small Form Factor (SFP) port, the ML680DF allows assignment of a service or a customer per port.

Actelis has comprehensive mechanisms that include high level authentication, advanced encryption capabilities, segmentation and scrambling of Ethernet packets as well as sophisticated filtering and access control using layer 2 processes. Actelis ML680DFTP offers an all-embracing level of security initiating from the physical layer through switching and up to the management and access layers. This gives you a significantly strong and resilient solution and enables transmissions which have the highest level of immunity with notably lower vulnerability to hacking attempts.

The ML680DF provides 802.1q VLAN-aware wire-speed bridging, double tagging (VLAN stacking) for end-user VLAN transparency, L2 (Ethernet priority), L3 (ToS/Diff-Serv) classification with four traffic classes, ERPSv2, 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 ML680DF provides 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 MetaASSIST™ View graphical craft application and the MetaASSIST EMS multi-platform Element Management System offer in- and out-of-band management of the ML680DF. Management protocols include standard TL1 command line interface and SNMP using standard MIBs for seamless integration with third-party Network Management Systems (NMS).

Highlights

- Small form factor, no fan, DIN railing
- Environmentally hardened
- Drop and Continue, RSTP/STP mesh or ERPSv2 ring
- Enhanced Security - Low vulnerability to hacking
- IEEE 802.3ah Ethernet in the First Mile
- Rapid Service Deployment
- Superior Rate, Reach & Reliability
- Low Delay and Jitter for Voice and Video Transmission
- Comprehensive OAM
- 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

High Performance Broadband Over Fiber

ML680DF

Specifications

Interfaces

Ethernet (Network/User) -
- **10/100Base-T:** 6 ports,
  Connector: RJ45, Auto-MDIX
- **100/1000Base-FX:** 2 ports
  Connector: SFP Based, MSA compliant

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:** LLDP
- **VLAN Tagging:** IEEE 802.1Q
- **Double Tagging:** Q-in-Q
- **RSTP, STP:** IEEE 802.1d
- **ERPSv2:** G.8032 ERPSv2
- **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/Diff Serv

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

Management Protocols
- **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
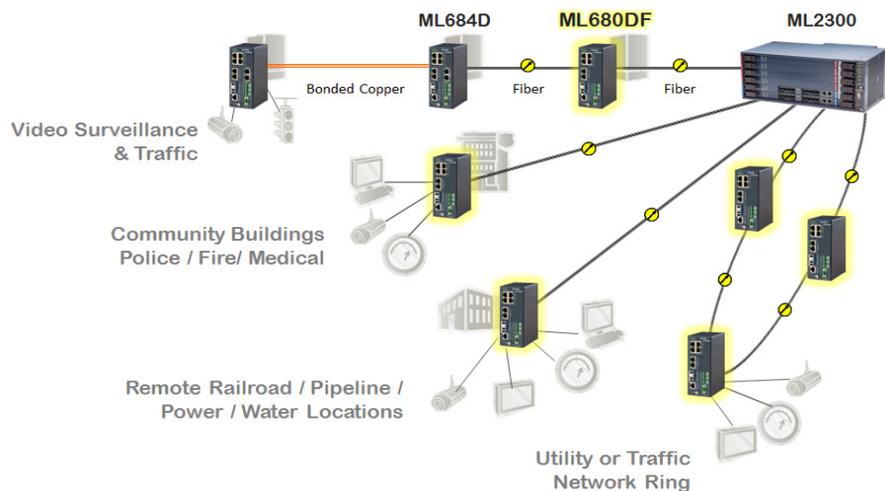
- **Web Access:** HTTP
- **File transfer:** FTP, TFTP
- **IEEE 802.3ah EFM OAM:** Dying Gasp
- **User Authentication:** RADIUS and/or local passwords

Front Panel Indicators (LEDs)
- **Status**
- **Alarm**
- **MLP per modem/pair**
- **ACT (Activity) per Ethernet port**
- **LNK (Link) per Ethernet/HSL port**
- **Power A**
- **Power B**

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 × 7.5, or 35 × 15 - type O / type Omega (Ω)

Power
- DC (integrated): -24/-48 VDC (20 to 57V), 9 Watt P/N 501RG0231 - Redundant dual inputs P/N 501RG0221 - Single input
- AC (external): 90-264 VAC (External)

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