Actelis Networks™

GLOBAL SUPPLIER OF
EFM OVER COPPER

INFONETICS RESEARCH

No. **1** 2009 2010 2011 2012 2013

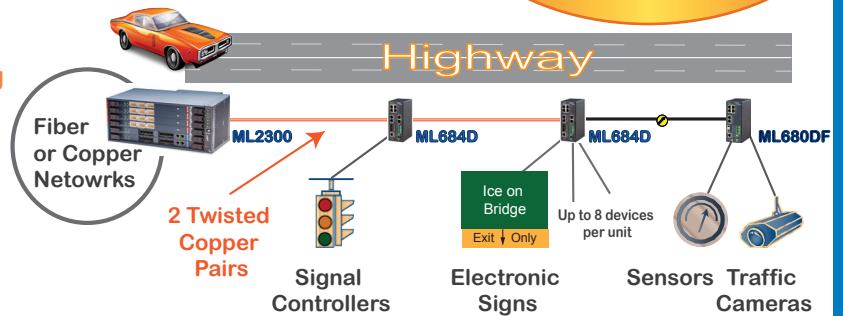# Reliable, Cost Effective Transport For ITS Networks Using Copper or Fiber

Applications
Legacy and IP-based Traffic Controllers
Dynamic Message Signs
HD Video Cameras & Streaming
Vehicle Detection
Emergency Response
Smart Parking
Complements Wi-Fi Access

Actelis offers a reliable flexible, and cost effective high speed Ethernet transport solution that is designed to get all the bandwidth you need wherever you need it, while seamlessly integrating into the ITS networks of State, Federal, and Municipal DOTs.

Leveraging fiber where you have it or a mere two copper pairs where you do not, the Actelis solution provides compact, hardened and fanless Layer-2 switch with low power draw, provides up to 30 mbps over 2 pairs or 60 mbps over 4 pairs, and supports multiple Ethernet and legacy interfaces at each node in a ring or daisy chain architecture.

Highway

Fiber or Copper Netowrks

ML2300   ML684D   ML684D   ML680DF

2 Twisted Copper Pairs

Signal Controllers

Ice on Bridge Exit ↓ Only
Electronic Signs

Up to 8 devices per unit

Sensors Traffic Cameras

Quickly and cost effectively accommodate the bandwidth requirements of new HD cameras, advanced sensors, electronic signs, legacy and new controllers, surveillance devices and WiFi as well as enabling higher speed communication and information streaming across the network.

The Main Challenges	The Actelis Solution
• Leverage the existing fiber or copper network • Cost optimize the network	• Hybrid fiber and copper Ethernet switch • Cost optimizes with copper » Leverages fiber when and where you have it
• Get more bandwidth to more locations • Support HD cameras, controllers, sensors • Support network specific devices - kiosks, electronic signs • Future proof the network	• Uses ubiquitous copper using G.SHDSL EFM - high bandwidth transport • Extended reach for remote locations • Offers 30 Mbps over 2 pairs, 60 Mbps over 4 pairs and up to 100 Mbps over 8 pairs
• Implement ultra-reliable low maintenance solutions • Survive environmentally challenging installations	• Hardened solution: -40^0C to $+75^0$C or -40^0F to $+165^0$F • Highest link and equipment reliability • Best in class transmission over copper
• Minimize field maintenance costs	• Fanless, field proven performance • Full Remote management Advanced trouble shooting • Easy and quick to install • Automated provisioning and management
• Fit into space constrained cabinets or vaults	• Extremely compact, fanless • Full front access (ML680D) • Easy DIN[1] rail mounting that can easily fit within existing locations
• Support various network topologies and interfaces • Integrate existing and legacy devices • Support Ethernet or serial interfaces	• Ring, Daisy Chain architecture with Drop and Continue • Repeaters for extra distance where needed • Fiber, Copper or hybrid solutions • Multiple Ethernet interfaces • Serial Interface[2] to support legacy equipment

(1) DIN connector is supported by ML684D/ML680DF   (2) Serial Interface - Future support

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Type	Platform	Description	High Level Details
Ethernet Aggregation Switch	**ML2300**	**Point-to-Multipoint** scenarios over using bonded copper (G.SHDSL) as well as fiber.	Large aggregation platform, Modular, plug in cards Up to 256 pairs and 128 links Equipment Redundancy for high availability
	ML230		Medium aggregation platform, Modular, plug in cards Up to 128 pairs and 128 links Equipment Redundancy for high availability
Ethernet Switches with Drop and Continue	**ML680D ML680DF (fiber only)**	**Drop-and-continue** over bonded copper (G.SHDSL) or fiber. Rings over copper ERPSv2 ring over fiber (ML680D/ML680DF)	**ML684D:** drop and continue over copper (2+2) or fiber **ML680DF:** fiber only Very compact, Fanless DIN railing unit. 24/48V or AC 6x Ethernet 10/100BaseT; 2x Fiber SFPs 100/1000BaseFX 1x Serial interface RS232/485[1]
	ML680		½ 19", 1U high unit. 48 VDC or AC ML688: 4+4 drop and continue ML684: 2+2 drop and continue 5x Ethernet 10/100BaseT; 1x Fiber SFPs 100/1000BaseFX
	ML690	**Small Aggregation.** PTMP or drop-and-continue over copper (G.SHDSL) or fiber	½ 19", 1U high unit. 48 VDC or AC ML698: 8 pairs, up to 4 links 5x Ethernet 10/100BaseT; 1x Fiber SFPs 100/1000BaseFX
Ethernet Switch - Termination Unit	**ML620**	**Copper** (G.SHDSL) **and fiber switch**	½ 19", 1U high unit. 48 VDC or AC ML628/ML624/ML622: 2-4-8 pair variants, Single Link 5x Ethernet 10/100BaseT; 1x Fiber SFPs 100/1000BaseFX (some models)
	ML620i	**Copper** (G.SHDSL) **switch**	½ 19", 1U high unit. 12/24 VDC or AC ML624i/ML622i: 2-4 pair variants , Single Link 5x Ethernet 10/100BaseT
Extended Reach	**XR-239**	**Repeater** (G.SHDSL)	Up to 9 hops; 2 pair in-2 pair out Remotely powered
Management	**MetaASSIST EMS**	**Full set of management and OAM capabilities** allowing full remote access and easy integration into other management systems.	Scalable EMS. Core management capabilities, including fault, configuration, performance, and security Management
	MetaASSIST View (MAV)		An intuitive Graphical User Interface (GUI) for complete Operation, Administration, Maintenance and Provisioning (OAM&P) of Actelis systems

(1) Serial Interface - supported by future product versions

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