

## SHDSL LT / NT Device QuFast SHDSL 640

The QuFast SHDSL 640 series lets service providers create an intelligent Ethernet access edge with advanced bandwidth control and traffic management features.



### Highlights

- ◆ *IEEE 802.3ah Ethernet in the First Mile (EFM) 2Base-TL transport*
- ◆ *MEF CE 2.0 and CE 1.0 – MEF 9, 14 Certified*
- ◆ *Rapid Service Deployment*
- ◆ *Superior Rate, Reach & Reliability*
- ◆ *Low Delay and Jitter for Voice and Video Transmission*
- ◆ *Carrier Class OAM, including Y.1731, CFM, Y.1564, and EFM OAM*
- ◆ *Worldwide Spectral Compliance*
- ◆ *Environmentally Hardened*

### Applications

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

The QuFast SHDSL 640 Ethernet Access Device (EAD) from Actelis® is the most intelligent Ethernet service delivery on the market. Using the existing copper network, the QuFast SHDSL 640 can deliver up to 240 Mbps of symmetrical Ethernet traffic at fiber quality over existing voice-grade copper. The QuFast SHDSL 640 comes in three models capable of supporting 4, 8 or 16 copper pairs, and has 2 optional SFP interfaces supporting 100/1000Base-FX optical connections.

The QuFast SHDSL 640 EAD can be deployed back-to-back in a Point-to-Point topology or in Multi-Point topologies with Actelis' Ethernet aggregation switches. With its superior performance, extensive functionality and low cost, the QuFast SHDSL 640 EAD offers rapid service delivery and allows for complete utilization of the existing network infrastructure.

The QuFast SHDSL 640 EAD is interoperable with any standard Ethernet switch, router or hub. Compliant with Metro Ethernet Forum (MEF) specifications, QuFast SHDSL 640 EADs seamlessly integrate into carrier Ethernet networks. Equipped with four 10/100Base-T Ethernet interfaces and 2 optional 100/1000Base-FX Small Form Factor (SFP) ports, the QuFast SHDSL 640 EAD allows assignment of a service or a customer per port. DS3/E3 uplinks can be used to connect to legacy networks instead of the 100/1000Base-FX SFPs.

The QuFast SHDSL 640 EAD models let service providers create an intelligent Ethernet access edge with advanced bandwidth control and traffic management features, they are compliant and certified per CE 2.0, CE 1.0 - MEF 9 and 14 specifications. The QuFast SHDSL 640 enables flexible service provisioning using Ethernet Virtual Connections (EVCs) with flexible mapping and Quality of Service (QoS) capabilities that maximize the efficiency of access bandwidth. The QuFast SHDSL 640 enforces Service Level Agreements (SLAs) for each subscriber and Class of Service based on the MEF 10 traffic management model, allow-

ing service providers to safely aggregate multiple services or multiple subscribers on the same Ethernet access uplink. All QuFast SHDSL 640 EAD models 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, Multicast/Broadcast limiting, as well as IGMP snooping for video distribution applications.

Powered by Actelis' award-winning, patented EFMplus™ technology, the rate, reach and reliability are increased significantly using advanced Dynamic Spectrum Management (DSM) and Dynamic Rate Boost (DRB) techniques. This technology provides the best rate/reach performance and most resilient fiber-quality transmission, ensuring carrier-class reliability, and can double the rate/reach in real-world deployments. When combined with Actelis' industry-leading XR239 EFM Repeaters, the reach can be extended even further.

The QuFast SHDSL 640 EADs provide proactive and dynamic tools for enhanced troubleshooting and monitoring capabilities. Advanced Carrierclass EFM OAM, including 802.3ah, CFM (802.1ag), Y.1731 (ITU), Y.1564 embedded traffic generator and Ethernet Loopback with MAC swapping capabilities are supported by the product offering both physical link as well as service level end-to-end advanced troubleshooting mechanisms.

The QuFast SHDSL 640 EADs can be managed In- and Out-of-Band by the MetaASSIST™ View graphical craft application and via the multiplatform 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).



## Specifications

### Interfaces

#### Ethernet (Network/User)

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

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

- **Protocol:** IEEE 802.3ah 2Base-TL
- **Line code:** ITU-T G.991.2 rev. 2
- **Bandwidth:** 1-100 Mbps (symmetrical)
- **Number of Copper Pairs:** 4, 8, 16  
**Connector:** RJ45 (per modem/pair with ML644/8, 2 modems/pairs per connector with ML6416)
- **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) (16 pairs - ready, future support)
- **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, Y.1564 traffic generator, Ethernet loopback with MAC swap

### 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
- **IEEE 802.3ah EFM OAM:** Dying Gasp
- **User Authentication:** RADIUS and/or local passwords

#### Applications

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

### Advanced Service Provisioning and Traffic Management

- **EVCs:** 8
- **Mapping Rules:** 32 ingress rules (Port/VLAN/L2 L3/L4 Flexible)
- **BW profiling:** CIR, CBS, EIR, EBS per EVC
- **Frame Marking:** 2 rate, 3 color traffic management (green, yellow, red) ingress policing
- **CoS Marking:** Per EVC L2/L3 marking

#### Quality of Service

- **Classes of Service:** 8
- **Scheduler:** WFQ, SP, Hybrid
- **Classification:** L2 802.1p/Q priorities L3 ToS/Diff Serv Applications

### Front Panel Indicators (LEDs)

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

### Alarm Contacts

- **Terminal Block:** 2 Input, 1 Output Physical

### Physical

- **Dimensions Height:** 1.6" / 40mm (1U)  
**Depth:** 11.0" / 280mm, **Width:** 8.4" / 213mm
- **Weight:** 3.75 lbs / 1.7 Kg
- **Mounting Rack:** 2 units in 19", 23" or ETSI racks Desktop, Wall Mount
- **Power**  
**DC:** -48/-60 VDC nominal, 9-22 Watt (per model)  
**AC:** 90-264 VAC, 47-63 Hz, 15-30 Watt (per model)

### Environmental

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

\*Tested in accordance with NEMA temperature requirements

### Regulatory Certifications/Compliance

Metro Ethernet Forum

- CE 2.0, CE 1.0 - MEF 9, 14

Safety

- UL 60950, CSA C22.2 60950
- EN 60950-1, IEC 60950-1

EMC

- FCC Part 15 Class B
- ICES-003 Class B
- ETSI EN 300 386 Class B
- ETSI ETS 300 132-2
- ITU-T K.20, K.21

NEBS

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

CE

- EMC and Safety

Environmental

- GR-63-CORE
- ETSI ETS 300 019



3M Services GmbH  
Zweigniederlassung QNG  
Ahrensburger Straße 8  
30659 Hannover Germany

Tel.: (+49)0511/740192-0  
Fax: (+49)0511/740192-100  
Internet: www.3M-Services.de

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