3M Services GmbH

vormals Quante Netzwerke GmbH

SHDSL LT / NT Device

QuFast SHDSL 698

The QuFast SHDSL 698 platform is the newest addition to the Central Office (CO) portfolio. Supporting 8 copper pairs, this micro-CO platform supports up to four EADs, delivering symmetrical Ethernet access services.

Highlights

- *IEEE 802.3ah Ethernet in the First Mile (EFM) 2Base-TL Solution*
- *MEF Certified Carrier Ethernet Capabilities*
- *Rapid Service Deployment*
- *Superior Rate, Reach & Reliability*
- *Low Delay and Jitter for Voice and Video Transmission*
- *Worldwide Spectral Compliancy*
- *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 698 expands the central office solutions, offering a compact and cost-effective Ethernet in the First Mile (EFM) mini-aggregation solution for low-pair count locations. The QuFast SHDSL 698 operates in a Point-to-Multipoint topology, connecting to up four QuFast SHDSL 600 Ethernet Access Devices (EADs) delivering symmetrical Ethernet access services to remote subscribers over multiple voice-grade copper pairs. Each of the ML600 EADs can be connected to the QuFast SHDSL 698 via a High Speed Link (HSL) comprised of 1-8 bonded copper pairs. Any combination of copper pairs per HSL can be supported to a total of 8 pairs per unit.

The device bonds up to 8 copper pairs together to create a 2Base-TL aggregated link, implementing the standard IEEE 802.3ah-2004 (EFM) long-reach Ethernet-over-Copper specification.

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.

Interoperable with any standard Ethernet switch or router and aligned with Metro Ethernet Forum (MEF) recommendations, the QuFast SHDSL 698 allows service providers and enterprises to use existing copper infrastructure to deliver up to 100 Mbps Ethernet service per customer in G.SHDSL.bis technologies.

The QuFast SHDSL 698 is equipped with 4 10/100Base-T Ethernet interfaces and an optional 100/1000Base-FX Small Form Factor (SFP). The SFP ports can accept any standard 100Base-FX, 1000Base-FX, 1000Base-T and T3/E3 modules, providing redundant aggregation uplinks to Ethernet and SONET/SDH networks.

The mini-aggregator 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, RSTP/STP, link aggregation, bandwidth monitoring, multicast/broadcast limiting, LLCF (Link Loss Carry Forward), as well as IGMP snooping for video distribution applications and advanced OAM capabilities. It supports full Intra-switching between the HSLs connected to it.

Advanced loop diagnostics capabilities are integrated as part of the device, including a Time-Domain Reflectometer (TDR), enabling an effective troubleshooting tool to locate most DSL-affecting copper problems. The information gathered includes accurate end-to-end loop length measurement, as well as identification of various fault types impacting signal continuity between loop spans.

The QuFast SHDSL 698 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 device 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 (CLI), Cisco like CLI 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
  - Connector: 1 port (option) SFP Based MSA compliant

High Speed Link (Bonded Copper Pairs)

- Max HSLs: 4
- Protocol: IEEE 802.3ah 2Base-TL
- Line code: ITU-T G.991.2 rev. 2
- Bandwidth per HSL: 1 - 100 Mbps (symmetrical)
- Copper Pairs per HSL: 1-8
  - 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/4mA nominal

TDR

- Loop length measurement: Fault types identifications (presence & location)

Management (Out-of-Band)

- 10/100Base-T
  - Connector: RJ45, Auto-MDIX
- Craft: EIA RS-232 (DCE)
  - Connector: DB9
- PFU management

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
  IEEE 802.1ag
  ITU Y.1731

Management

Protocols

- SNMP: SNMP v1 and v2c
- 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

Metro Ethernet Forum – 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

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

Alarm Contacts

- Terminal Block: 2 Input, 1 Output

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
    17 Watt
  - AC: 90-264 VAC, 47-63 Hz
    21 Watt

Environmental

- Operating Temp.: -40° to +65°C
- Storage Temp.: -40° to +70°C
- Relative humidity: Up to 95%, non-cond.

Regulatory Approval/Certifications

Metro Ethernet Forum

- 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
- 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

QF690 2011-01