

# EFM-10/20/40

## 4-Port EFM G.SHDSL.bis LAN Extender



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EFM LAN extender

EFM is an Ethernet Network Extender designed to provide bonded high-speed Ethernet First Mile services over SHDSL on existing copper infrastructure. It is a bridge mode modem that delivers Ethernet services with symmetrical bandwidth at rates up to 22.8 Mbps (4 Pairs, Standard mode with TC-PAM 32) and 61 Mbps (4Pairs, Enhanced mode with TC-PAM 128). Implemented on IEEE 802.3ah EFM standards for advanced performance and management features. EFM ensures high reliability, low expense and maximum throughput. The introduction of EFM copper bonding technology allows delivery of higher bandwidth to longer distances over multiple copper pairs, enabling a good alternative in place where fiber is not economical to deploy. This Ethernet-pure solution provides a seamless integration into today and tomorrows networks. Designed with standard-based EFM technology (2BASE-TL), deployment of Ethernet services with EFM is quick and simple on the existing copper plant.

### Features

- Extending Ethernet Services to sites with existing copper infrastructure
- Supports TC-PAM 32 for 5.7 Mbps over single pair copper
- EFM Bonding up to 61 Mbps (4 pairs, TC-PAM 128)
- Flexible and Rapid Service Deployment
- Flexible configuration as CPE or CO
- Supports EFM OAM complying IEEE 802.3ah
- Low Delay, Jitter and packet loss for delay sensitive applications
- Comprehensive and easy OAM & P functions in provisioning and management
- QoS feature for guaranteed Ethernet service
- Future-proof Ethernet traffic management and QoS features

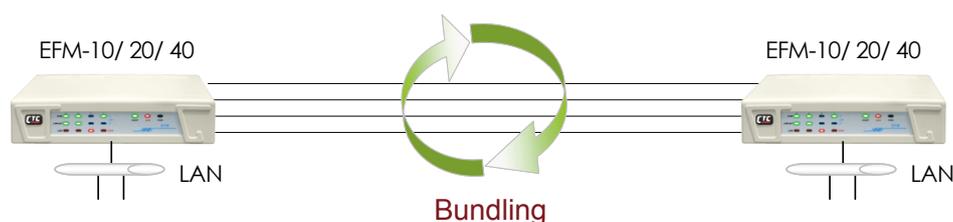
### Specifications

<b>Standards</b>	LAN	4-Port switching hub 10/100Base-T auto-negotiation & sensing Auto MDI/MDI-X
	WAN	ITU-T G.991.2.(2004) EFM bonding (IEEE 802.3ah OAM) 2BASE-TL Data Rate: • N x 64 Kpbs (N=3~89) using TC-PAM 16/32 • Max. 5.696Mbps (1-Pair) • Max. 11.392Mbps (2-Pair) • Max. 22.784Mbps (4-Pair) • N x 64 Kpbs (N=3~239) using TC-PAM 64/128 • Max. 15.296 Mbps (1-Pair) • Max. 30.592 Mbps (2-Pair) • Max. 61.184 Mbps (4-Pair) • Supports of Annex A, Annex B, Annex AF & Annex BG
<b>LAN Protocols</b>	802.1d Transparent Bridging Up to 2K MAC Address learning bridge	
<b>Hardware Interface</b>	DSL : RJ-45 x 1, LAN : RJ45 x 4, Console Port x 1 MGMT : RJ45 x1, DC Power Jack x 1 Reset Button : Load Factory Default	
<b>Indicator</b>	LAN : Link/Act, 10/100 per port System : Power, Alarm, MGMT WAN : Link per loop	

<b>Management Interface</b>	Easy to use web-based GUI for quick setup, configuration and management Menu-driven interface for local console and telnet access Password protected management and access control list for administration SNMP v1/v2 (RFC1157/1901/1905) agent and MIB II (RFC1213/1493) EFM OAM (IEEE 802.3ah) Software upgrade via web-browser / TFTP
<b>VLAN Support</b>	IEEE 802.1Q VLAN Tagging Up to 8k 802.1q VLANS (ID Range 1~4094) Port Based VLAN, VLAN Stacking (Q-in-Q)
<b>QoS Support</b>	Rate limiting by rule-based/port-based Traffic classification based on port/802.1p/ DSCP WRR (Weighted Round Robin) / SPQ (Strict Priority Queuing) scheduling algorithm, IPv6 (RFC 5430) pass through
<b>Environment</b>	Operating Temperature : 0 ~ 50°C Storage Temperature : -40 ~ 85°C Relative Humidity : 98%, non-condensing
<b>Regulatory</b>	ISO 9001 Quality Management, CE Approval
<b>Physical / Electrical</b>	Dimension : 195 x 48 x 168mm (D x W x H) AC Power Adapter (100 ~ 240VAC) Weight : 1.3kg
<b>Memory</b>	2MB Flash Memory, 8MB SDRAM

### Application

#### Bandwidth Aggregation up to 22.8Mbps Over 4 pair of Copper wires



### Ordering Information

Model Name	Description
EFM-10	2W, 2Base-TL EFM LAN Extender with 4x10/100Base-TX
EFM-20	4W, 2Base-TL EFM LAN Extender with 4x10/100Base-TX
EFM-40	8W, 2Base-TL EFM LAN Extender with 4x10/100Base-TX

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Example: EFM - 10