

Gigabit Fiber Optic Multiplexer FMUX1000S



FMUX1000S is an innovated gigabit multi-service fiber optic transport system which can transmit both E1/T1 and Ethernet data streams over redundant gigabit fiber optic links. The gigabit wire-speed Ethernet traffic and a separated 16 E1/T1 transparent data are multiplexed into 1.25Gbps by using a patented physical coding method to achieve a high performance and economic broadband access solution.

The FMUX1000S can be adopted as a broadband backhaul of 3G mobile networks or private network access for campus and office building. FMUX1000S is a modular design which supports E1/T1 and combo Ethernet interface cards. There are 4 hot swappable tributary slots equipped for each FMUX1000S system. The Ethernet tributary card is equipped with two 10/100/1000 RJ45 and two Gigabit SFP fiber ports, These 4 ports are part of 4 gigabit ports in an Ethernet switch core. For E1/T1 card, the 4 E1/T1 ports can be programmed as either E1 or T1 individually. Any combination of Ethernet and E1/T1 cards can be placed in the four plug-in slots.

Features

- Wire-speed GbE traffic and separated 16E1 data are transmitted simultaneously
- 1Gbps throughput for aggregate Ethernet traffic
- Supports advanced Ethernet interface features like jumbo frame size(9K bytes), Provider Ethernet bridge by VLAN stacking (QinQ, IEEE802.1ad), QoS and traffic rate control
- Supports various loopback and BERT for system diagnosis
- 1+1 protection switch and Automatic Laser Shutdown(ALS) for aggregate fiber interfaces
- Built-in EOC channel for OAM&P
- Supports VT100, Telnet, SNMP and client server based NMS interfaces
- Loss of Power indication for power failure of the remote unit
- Remote software upgradable
- Supports order-wire for craft person's voice communication
- Supports one RS-232 Async. channel for auxiliary data communication
- AC and DC power redundancy
- Form C relay contacts for audible and visible alarm outputs
- Comply with the specifications of class A of CISPR 22 and class A of FCC Part 15 Subpart B Rules of U.S.A
- Comply with the electrostatic discharge immunity (ESD) IEC 61000-4-2 level 2
- RoHS Compliant

System

System capacity

Any combination of E1/T1 and Combo Ethernet cards for 4 x hot swappable tributary plug-in slots. E1/T1 4ch, 8 ch,12 ch Max.16ch or GbE combo ports 2ch, 4ch, 6ch Max.8ch

Aggregate Ethernet throughput

1 Gbps wire-speed

Aggregate – Gigabit Optical Interface

Number of port 2, 1+1 protection

Line rate 1.25G bps

Optical central wavelength 1310 nm nominal

Connector type LC (SFP housing)

Management

Console Port Electrical: RS232, DCE Protocol: VT-100 Connector: DB9, female

Telnet Access via SNMP Ethernet port

SNMP SNMP v1, v2c; Up to 3 Trap IPs

Management Embedded operations channel over fiber

Loss of Power Loss of power indication for remote unit

Auxiliary Data Channel 300 – 115200 bps , RS232C

Order-wire 300 – 3.4K Hz voice channel, RJ11 4 wire telephone handset interface

Alarm

Alarm History Alarm Type (i.e. RAI, AIS, LOS,RDI, LOF, AIS, CV, ES, SES, UAS, LPR, AOC)

Alarm Queue Maximum 100 alarm records which record the latest alarm type, location, and date & time

Alarm Threshold CV, ES, SES, UAS

Power

AC Module 90 to 240 VAC, 60 +/- 3Hz

48 VDC Module -42 to -56 VDC

Redundancy AC+DC, DC+DC or AC+AC

Power Consumption Max. 20W per system

Physical and Environmental

Dimensions

Standalone: 441x 445x 320 mm Rack: 430x 355x 370mm (W x H x D)

Temperature 0 - 45°C (shelf) or 0 - +65 °C @ 10 – 90 % RH,

Non condensing (Outdoor)

Mounting 19 inch standalone desktop stackable and rack mount

Certification

EMC EN55022 Class A, EN55024, FCC Part 15 Class A

Safety EN60950-1, IEC60950-1

Standards Compliance

ITU-T G.703, G.704, G.823, G.826

IEC 61000-4-5 class 3

IEEE 802.3, 802.3u, 802.3z, 802.3x, 802.1q, 802.1ad (Q-in-Q)

IETF RFC 1643, RFC 1157, RFC 1213, RFC 1406, RFC 2863

Ordering Information

FMUX1000S- Rack type
 CH : 1U 4-slot fiber multiplexer
 AC : AC power module
 DC : DC power module

Example: FMUX1000S-CH

FMUX-1000- Optional card
 ETH1G : Gigabit Ethernet combo card
 4E1/T1R : 4x E1/T1 RJ45 card
 4E1B : 4x E1 BNC card
 ETH1GF-4E1/T1 : 4E1/T1 plus 2x 1000Base-X Ethernet card
 ETH1GT-4E1/T1 : 4E1/T1 plus 2x 10/100/1000Base-T Ethernet card

Example: FMUX-1000-ETH1G

E1 Interface Specification

E1 frame PCM31,PCM31C,PCM30,PCM30C and unframed, Framed (ITU-T G.703 and G.704 standard) Line Code HDB3
 Rates 2.048Mbps+/-50ppm
 Output Signal ITU-T G.703
 Input Signal ITU-T G.703
 Impedance 75 ohm unbalanced or 120 ohm balanced, software programmable
 Jitter requirements Meet ITU-T G.823
 Connector DB25 (optional DB25 to RJ45 or BNC connector available)
 Channel 4 channels E1 per card
 Surge Protection IEC 61000-4-5 class 3

T1 Interface Specification

T1 frame SF, ESF and unframed, field selectable, Meet ITU-T G.703 and G.704 standard
 Line Code AMI / B8ZS(selectable)
 Rates 1.544M bps ± 50 ppm
 Output Signal DS1 with 0, -7.5, -15 dB LBO
 Input Signal DS1 with 0 dB to -26 dB ALBO
 Impedance 100 ohm, balanced
 Pulse Template Per AT&T TR 62411
 Connector DB25 (optional DB25 to wire-wrap connector available)
 Channel 4 channels T1 per card
 Surge Protection IEC 61000-4-5 class 3

Gigabit Ethernet specification

Standard Comply with 802.3, 802.3u, 802.3ab and 802.3z
 Data rate 10/100/1000Base-T for twisted pair GbE, 1000Base-X for optical GbE
 Connector RJ45 for twisted pair GbE and LC (SFP) for optical GbE
 No. of ports 2 x RJ45 and 2 x SFP combo / 2 x RJ45 / 2 x SFP



4Ch E1/T1 card

The 4 x E1/T1 4-Channel Port Cards for the Gigabit Fiber Multiplexer is modular PCAs which slide into the Gigabit fiber Multiplexer chassis and provide four completely independent ITU-T G.703 E1 or T1 (DS1) interfaces. The PCA module terminates with a DB25F connector that is designed to connect to a physical adapter. The adapter is available in two options, one, with 4 pairs of BNC connectors for E1 75 Ohm unbalanced connections and the other with four RJ-45 jacks for E1 120 Ohm balanced or for T1 100 Ohm balanced connections. The 4 x E1/T1 card can be programmed as either E1 or T1 individually.



2Ch Combo Gigabit Ethernet card

The Gigabit Ethernet tributary card is equipped with 2 ports 10/100/1000 Base-T and 2 ports 1000Base-X SFP slots. The complete functions included Ethernet Bridge, VLAN stacking (QinQ, IEEE802.1ad), Jumbo Frame packet, IEEE 802.1q VLAN, BPDU packet and Pause Frame transparency, Packet classification based on the 802.1P, 4 priority queues for packet classification, Strictly Priority or WRR Scheduling of the 4 priority queues and bandwidth control: 256Kbps, 512Kbps, 5Mbps and 50Mbps for different ranges of port speed.

E1/T1 plus Gigabit Ethernet Card



The E1/T1 plus Gigabit Ethernet tributary card is equipped with 2-port 10/100/1000 Base-T or 2-port Gigabit SFP slot plus E1/T1 4-Channel Port. The G.703 E1 or T1 (DS1) interfaces module terminates is available in two options, one, with 4 pairs of BNC connectors for E1 75 Ohm unbalanced connections and the other with four RJ-45 jacks for E1 120 Ohm balanced or for T1 100 Ohm balanced connections. The 4 x E1/T1 can be programmed as either E1 or T1 individually.

Managed 16E1 +GbE Fiber Optical Multiplexer

