SDH-1000

NG SDH GbE/STM1 Terminal Multiplexer

NEW

SDH-1000 is 1U 19" rack type GbE/STM-1 terminal multiplexer which delivers Gigabit Ethernet services over SDH networks. The product complies with SDH standards and interfaces with existing SDH backbones through a single or 1+1 protection STM-1 interface. SDH-1000 supports a variety of management access over console, Telnet and SNMP. SDH-1000 provides two Gigabit Combo ports (2-port 10/100/1000Base-T + 2-port 1000Base-X SFP slot) over STM-1 fiber. The two GbE combo ports support Link aggregation, port based VLAN and 802.1Q VLAN function.

Features

- Provides 2-port STM-1 fiber with 1+1 protection.
- Supports HDLC/GFP bridge operation
- Supports 2x GbE Combo ports
- Supports IEEE 802.1Q VLAN and QinQ, Link aggregation
- Fiber port support ALS (Auto Laser Shutdown) function
- Supports Console, GUI, Telnet and SNMP management
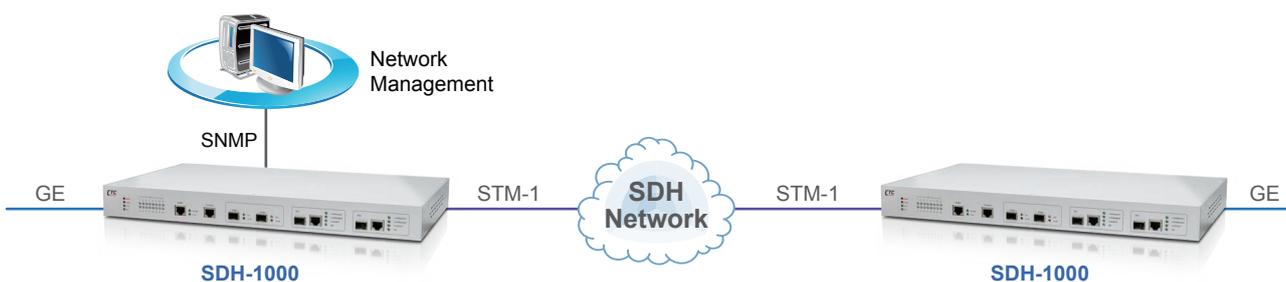- Supports local and remote FTP/TFTP f/w upgrade

Specifications

Ethernet Interface	Supports 2x GE combo ports
	Auto Negotiation, AUTO-MIDX, 10M/100M/1000M, Full/Half Duplex
	Connector : RJ45
	Supports 802.3x flow control
Optical Interface	1000FX, SFP
	Connector : LC
	Supports 802.3x flow conrol
STM-1 Interface	Supports 2x STM-1 optical fiber port with SFP slot
	Supports 1+1 optical fiber protection
Management Port	One console port with RJ45 connector One SNMP Ethernet port with RJ45 connector
LED Indicators	SYS, PWR, PWR1, PWR2, GE (LNK/ACT, SD, ALM)

Standards	IEEE802.3 Ethernet, IEEE802.3u, IEEE802.3z, IEEE802.3x, IEEE802.1Q, IEEE802.1ad, SNMPv1/v2c/v3
Dimensions	310 x 440 x 44mm (D x W x H)
Power	AC: 90-265V, DC: -48V, Supports AC+DC
Power Consumption	<24W
Temperature	Operating: -5 ~ 50°C Humidity : ≤90% non-condensing

Application

GbE over STM-1 Application

Ordering Information

Model Name	Description
SDH-1000-AD	2x GbE Combo over STM1, P to P, 1U 19" Rack, AC+DC power

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

SDH04A

NG SDH STM4/1 Add-Drop Multiplexer
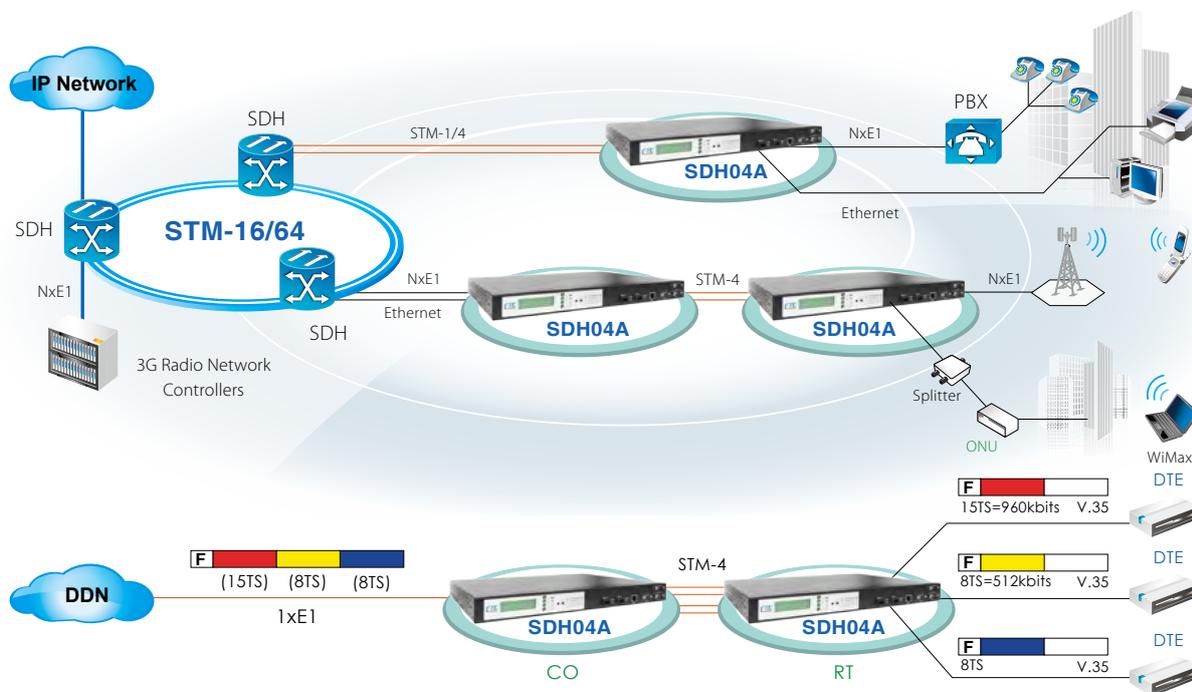
The SDH04A is a compact NG-SDH equipment which supports STM-1/4 ADM and offers various tributary interfaces like E1/T1, V.35, GbE, E3/T3…etc to provide any service in any slot. SDH04A is suitable for the applications of GSM/UMTS base station radio access networks (RAN) / MSAN and wireless backhaul. The SFP cage design in SDH04A offers the plug-and-play flexibility to change fiber modules for different bit rate and higher availability to use off-the-shelf fiber modules. SDH04A is a 1U standard form factor making it easy to fit in any 19" or 23" chassis and outdoor cabinet; Although SDH04A is a compact NG-SDH box, it also has similar flexibility of shelf-type SDH equipment, such as hot-swappable tributary cards / fiber modules / power modules and 1+1 load-sharing redundant power design. In order to supply reliable networks to carry more upcoming broadband services from wireless / HSDPA base stations to central office, CTC SDH04A provides carrier-grade Ethernet (E-Line) bundled with L2 functions to totally control QoS between end to end.

Features

- SDH04A provides multiple service solutions with standard STM-1/4 interfaces (SDH ADM/TM)
- Multiple hot-swappable tributary modules in any combination:
  4-channels E1 card (QE1R/B)
  8-channels E1/T1 card (8ET)
  8-channels E1 card (8E1R)
  4-ports Gigabit Ethernet switch card (QGbE)
  4-ports V.35 Data communication Interface card (QV35)
  Single port E3/T3 interface card (ET3)
- 4 slots to support combinations of traffics in a 1U-height box

- Ethernet traffic is encapsulated and transported over SDH using Generic Framing Procedure (GFP) & Virtual Concatenation (VCAT)
- Hot swappable fiber optical module in SFP with optional 1+1 automatic protection switching (APS) for optical links.
- Automatic Laser Shutdown (ALS) based on ITU-T G.958/G.664.
- Data Communication Channel for remote control and online remote upgrade.
- Various network management interfaces: RS-232/ Ethernet/ LCD
- 1+1 Redundant AC/DC power modules with load sharing.
- Cross connect for TDM traffic (E1 & V.35)
- EMS tool for SDH04A series (GMS)
- DHCP Client/Telnet/Web for NMS port
- Keypad Lock/ Password for LCD security

Application

Specifications

V.35 Tributary Interface (QV35)
Data rate : 4CHx Nx64Kbps (N=1~32)
Compliance : ITU-T V.35
Clock Source : External, Internal and Recovery
Control Signal : DSR, CTS, DCD, RL, LL …
Test Loops : Local/remote line/terminal/V.54 loopback
Connector : DB44 connector (DB44 to M34 converter cable)

E3 /DS3 Tributary Interface (ET3)
Bit rate : 34.368 / 44.736 Mbps±20ppm
Compliance : ITU-T G.703, G.823, G.824
Impedance(connector) : 75Ω(BNC)
Line code : HDB3 / B3ZS
Software selectable E3/DS3 mode

E1 Tributary Interface (QE1B)
Bit rate : 4CHx2.048Mbps±50ppm
Compliance : ITU-T G.703, G.704, G.706, G.732, G.823
Impedance (connector) : 75Ω(BNC)
Line code : HDB3 / AMI

8E1/ T1 Tributary Interface (8ET)
Bit rate :
8CHx2.048Mbps±50ppm /1.544Mbps±50ppm
Impedance(connector) :
120/100Ω software selective (wire-wrap)

AC Power Card
Input Voltage : AC90V ~ 260V
Input Frequency : 47 ~ 63Hz
Power : 27W Max

DC Power Card
Input Voltage : DC-36V ~ -72V
Power : 27W Max

Gigabit Ethernet interface (QGbE)
Connector : 4xRJ45
Compliance : 802.3z, 802.3x, 802.1p, 802.3u, 802.3, G.7041 GFP-F Up to 1Gbps throughput, 802.1Q VLAN support for the full 4096 VLAN ID Up to 8K MAC address, Port trunking, Traffic rate control, loopback test

Dimension & Weight	Power Consumption	Management Interface	Operation Requirement
(WxDxH) : 442 x 312 x 44mm 1U, 19" rack mount/ wall mount/ standalone Weight : 3.7kg	27W in full load	Protocol : VT-100 ANSI/ Telnet and SNMP (EMS) Craft interface : RS232 Asyc. (EIA561) Telnet//SNMP/httpd : 10/100 BaseT (RFC 1406) LCD : 2 X 16 LCD display with key control	Operating temperature : 0 ~ 55°C Humidity : 0% ~ 100% (100% at 30°C) MTBF: > 50000 hours EMI : CISPR 22 class A ESD : IEC-61000-4-2 level 2 Lightening and Surge : IEC-61000-4-5 class3

Ordering Information

Model Name	Type	Description
SDH04A-CH	Chassis	1U 19" 4-slot, STM4/1 ADM Rack without power module
SDH04A-AC	Power	30W AC power module for SDH04A rack
SDH04A-DC	Power	30W DC power module for SDH04A rack
SDH01-4E1B	Card	4 x E1 G.703 interface card BNC
SDH01-8E1B	Card	8 x E1 G.703 interface card 75 ohm RJ48 with 8 x 1ch RJ48 to BNC cables
SDH01-8E1R	Card	8 x E1 G.703 interface card 120 ohm RJ48
SDH01-8T1/E1W	Card	8 x T1/E1 G.703 interface card Wire-Wrap
SDH01-4V35	Card	4 x V35 interface card with 2 x 2ch M34 cables
SDH01-ET3	Card	E3/DS3 interface card
SDH04-QGbE	Card	4 ports Giga switch tributary card

Chassis Type
SDH04A – □□
Example: SDH04A – CH

Power Type
SDH04A – □□
Example: SDH04A – AH

Card Type
SDH04A – □□□□
Example: SDH04A – QGbE

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

NEW

FMUX1001

Modularized 16E1/T1 +
4x GbE Fiber Managed Multiplexer
(E1/T1, Data, Voice, Ethernet)

The FMUX1001 is a 1U, 19" rack mountable, PDH fiber optic multiplexer that transmits up to 16 channels plus a 10/100/1000Base-T Fast Ethernet channel over a single fiber optic link. The FMUX1001 chassis suppats redundant power and hot swappable design. The AC supplies operate from 90~260VAC while DC supplies operate from 36~72VDC or 20~60VDC. From the rear of the chassis, one to four hot swappable quad E1 or T1 line cards, serial data communications (V.35, X.21, RS-530) or FXO/FXS voice cards are supported. The standard FMUX1001 configuration may be viewed or set via the front panel LCD/menu keys, serial VT-100 terminal connection, Telnet, web HTTP or SNMP.
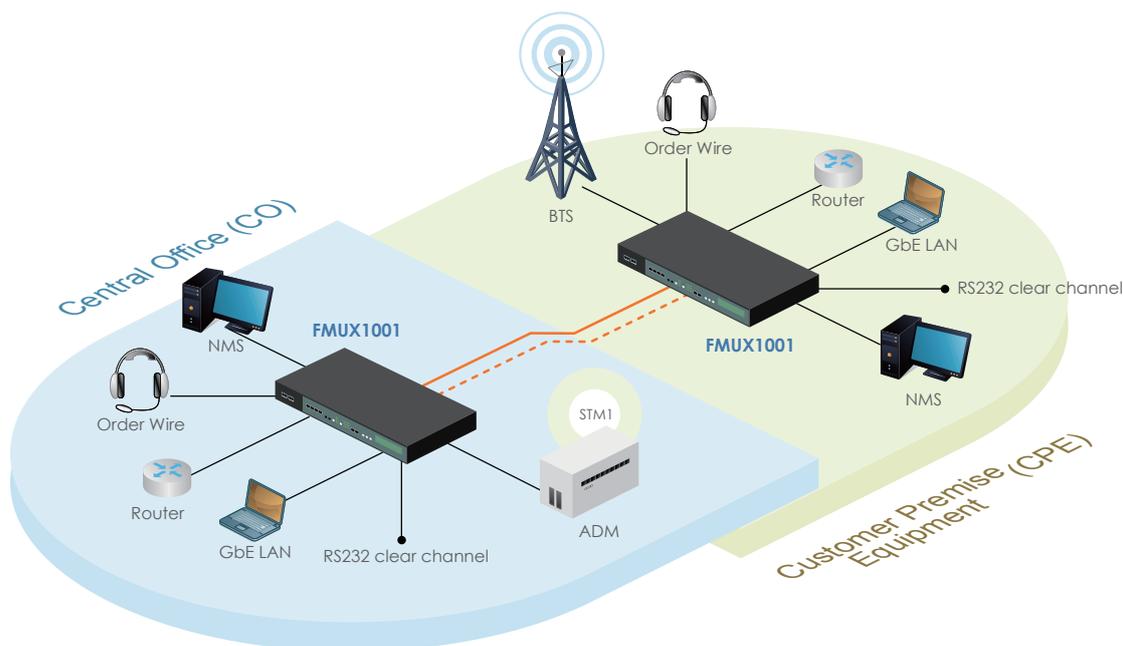
Features

- 1U, 19 (23)" 4-slot chassis
- 16 E1 (2.048Mb/s) Multiplexer, 1000Mbps Ethernet and RS-232 data (async)
- RS-232 port for system console
- One alarm output port, one Order Wire port
- SNMP management
- LCD plus menu keys for local configuration
- Port based VLAN, tag based VLAN & bandwidth control
- Telnet and web based remote configuration
- 2 plug-in SFP slot in I/O slots for optical SFP module

Specifications

Optical Interface	Connector	SFP - LC
	Data rate	1.25G
	Bit Error Rate	Less than 10^{-12}
	Fiber	MM 62.2/125µm, 50/125µm
		SM 9/125µm
	Distance	MM 2km. SM 15/30/50/80/120km
		WDM 20/40/60/80km
	Wavelength	1310, 1550nm
Electrical Interface	Console, SNMP	RJ45
	Ethernet	4 x RJ45
	Alarm	RS232 (DB9F)

Standards	E1:ITU-T, T1:ITU-T, AT&T, ANSI, Ethernet: IEEE802.3x
Indications	PWR, Alarm, LBK, RD, LCK, RNG, ACO, Port, Channels
Power Input	TBD
Power Consumption	TBD
Dimensions	250 x 438 x 43mm (D x W x H)
Weight	3.58 kg
Temperature	0 ~ 60℃ (Operating), 0 ~ 70℃ (Storage)
Humidity	10 ~ 90% non-condensing
Certification	CE, FCC, RoHS compliant
MTBF	TBD

Application

Specifications - Modules

FXO/FXS I/F

FXO/FXS Module	
Standards	G.711 A-law (separate modules for FXO, FXS)
Voice channel transparent	T.38 and Group III Fax relay at 2.4 ~14.4kbps Fax application
Distance	2km
Bandwidth	64K voice channel
Connector	RJ11*4 (4 voice channel /per unit)
Internet application	Supports modem pass-through

E1/T1 RJ-45 I/F

T1 Interface Module	
Standards	ITU-T G.703, G.704, AT&T TR-62411,ANSI T1.403
Ports	4 ports
Framing	Unframed (clear channel)
Data rate	T1: 1.544 Mbps ±50 ppm
	E1: 2.048 Mbps ±50 ppm
Line code	T1: B8ZS / AMI
	E1: HDB3 / AMI
Receive Level	Short haul - 15dB
Line impedance	T1: 100 ohms ±5%
	E1: 120 ohms ±5%
Connector	RJ-45

Datacom I/F

Datacom Interface Module	
Standards	ITU-T, E1A
Card Type	V.35/ RS-530 (Include X.21 and RS-449)/ RS-232 I/F
Bit rate	n x 64K, n = 1 to 32
	V.35 & RS-530 up to 2Mbps
	RS-232 up to 115.2Kbps (ASYNC)
Line code	NRZ
Clock Mode	Transparent, Recovery
	External (From data port ETC)
	Internal (From oscillator)
Control Signal	CTS always On or follows RTS
	DSR constantly ON, except during test
	loops (RS-530 DSR always connect to DTR)
	DCD constantly ON,except during fiber signal loss
Test Loops	Local loop back, Remote loop back, V.54
Connector	Type Uses HD-68 pin D type Female with adapter cables

E1 BNC I/F

E1 Module	
Standards	ITU-T G.703, G.704, G.706, G.732
Ports	4 ports
Framing	Unframed (clear channel)
Data rate	2.048 Mbps ± 50 ppm
Line code	HDB3/AMI
Receive Level	Short haul - 15dB
Line impedance	75 ohms ± 5% / 120 ohms ± 5%
Connector	RJ-45 for 120 ohms BNC for 75 ohms Wirewrap for 120 ohm

Ordering Information

Model Name	Type	Description
FMUX1001	Chassis	1U 19" 4-Slot Rack Mount Chassis
FMUX1001-AC	Power	Chassis Power Module 110~240VAC
FMUX1001-DC	Power	Chassis Power Module 36~72VDC
FMUX1001-E1/BNC	Card	4 x G.703 E1 BNC interface card
FMUX1001-E1/RJ45	Card	4 x G.703 E1 RJ-45 interface card
FMUX1001-T1/RJ45	Card	4 x G.703 T1 RJ-45 interface card
FMUX1001-V35	Card	V35 interface card with one HD68M to 4 x MB34F cable
FMUX1001-530	Card	RS-530 interface card with one HD68M to 4 x DB25F cable
FMUX1001-449	Card	RS-449 interface card with one HD68M to 4 x DB37F cable
FMUX1001-X21	Card	X.21 interface card with one HD68M to 4 x DB15F cable
FMUX1001-232/Async	Card	RS-232 Async card with one HD68M to 4 x DB9F cable
FMUX1001-FXO	Card	4 x FXO interface card
FMUX1001-FXS	Card	4 x FXS interface card

Power Module Type	Line Card I/F Type			
AC, DC, AC2, DC2, AD	0 : Empty	D : Quad V.35	H : Quad X.21	K : Quad High-Speed V.35
	A : Quad E1 BNC	E : Quad RS-232	I : Quad RS-449	L : Quad High-Speed RS-530
	B : Quad E1 RJ-45	F : Quad RS-530	J : Wire-Wrap I/F for Quad E1/ T1	
	C : Quad T1 RJ-45	G : Single port Fast Ethernet 10/100		

Power Type Card Type
FMUX1001 – □□ / □□□□
Example: FMUX1001 – AC – AAAA

NEW

FMUX101

Modularized 16E1/T1 +
4x FE Fiber Managed Multiplexer
(E1/T1, Data, Voice, Ethernet)

The FMUX101 is a 1U, 19" rack mountable, PDH fiber optic multiplexer that transmits up to 16 channels plus a 10/100Base-TX Fast Ethernet channel over a single fiber optic link. The FMUX101 chassis suppats redundant power and hot swappable design. The AC supplies operate from 90~260VAC while DC supplies operate from 36~72VDC or 20~60VDC. From the rear of the chassis, one to four hot swappable quad E1 or T1 line cards, serial data communications (V.35, X.21, RS-530) or FXO/FXS voice cards are supported. The standard FMUX101 configuration may be viewed or set via the front panel LCD/menu keys, serial VT-100 terminal connection, Telnet, web HTTP or SNMP.
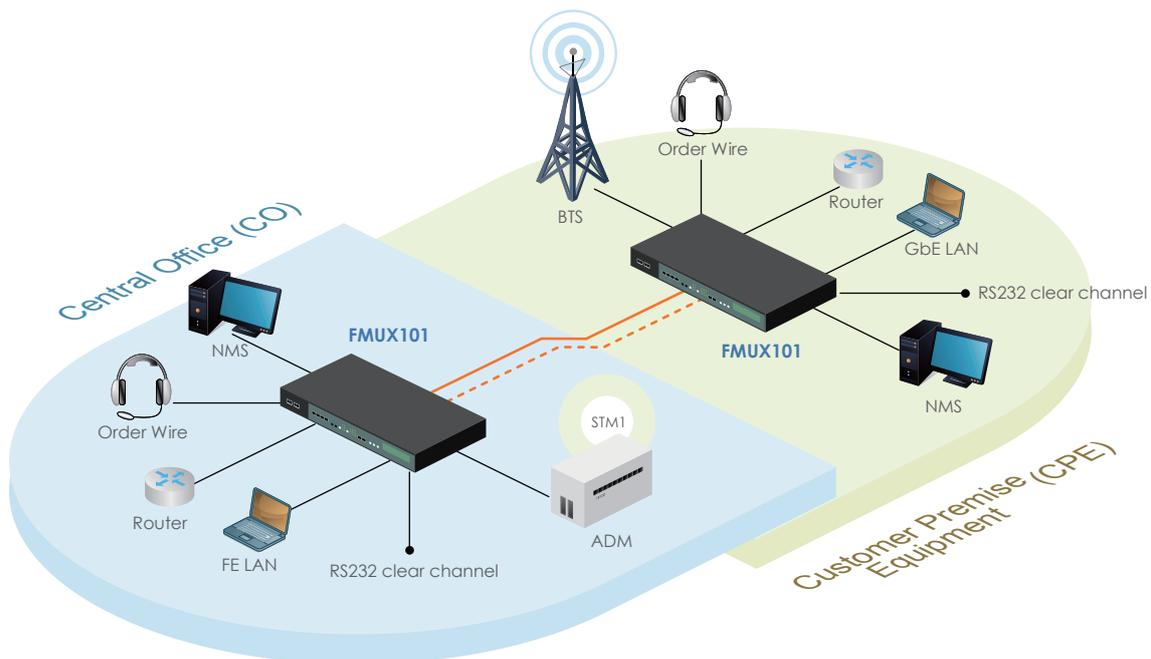
Features

- 1U, 19 (23)" 4-slot chassis
- 16 E1 (2.048Mb/s) Multiplexer, 10/100Mbps Ethernet and RS-232 data (async)
- RS-232 port for system console
- One alarm output port, one Order Wire port

- SNMP management
- LCD plus menu keys for local configuration
- Port based VLAN, tag based VLAN & bandwidth control
- Telnet and web based remote configuration
- 2 plug-in SFP slot in I/O slots for optical SFP module

Specifications

Optical Interface	Connector	SFP - LC
	Data rate	155Mbps
	Bit Error Rate	Less than 10-11
	Fiber	MM 62.2/125µm, 50/125µm
		SM 9/125µm
	Distance	MM 2km. SM 15/30/50/80/120km
		WDM 20/40/60/80km
	Wavelength	1310, 1550nm
Electrical Interface	Console, SNMP	RJ45
	Ethernet	4 x RJ45
	Alarm	RS232 (DB9F)

Standards	E1:ITU-T, T1:ITU-T, AT&T, ANSI, Ethernet: IEEE802.3x
Indications	PWR, Alarm, LBK, RD, LCK, RNG, ACO, Port, Channels
Power Input	AC : 100 ~240V
	DC24 : 20 ~ 60V, DC48 : 36 ~ 72V
Power Consumption	< 40W
Dimensions	250 x 438 x 43mm (D x W x H)
Weight	3.58 kg
Temperature	0 ~ 50℃ (Operating), 0 ~ 70℃ (Storage)
Humidity	10 ~ 90% non-condensing
Certification	CE, FCC, RoHS compliant
MTBF	57350 hours

Application

Specifications - Modules

FXO/FXS I/F

FXO/FXS Module	
Standards	G.711 A-law (separate modules for FXO, FXS)
Voice channel transparent	T.38 and Group III Fax relay at 2.4 ~14.4kbps Fax application
Distance	2km
Bandwidth	64K voice channel
Connector	RJ11*4 (4 voice channel /per unit)
Internet application	Supports modem pass-through

E1/T1 RJ-45 I/F

T1 Interface Module	
Standards	ITU-T G.703, G.704, AT&T TR-62411,ANSI T1.403
Ports	4 ports
Framing	Unframed (clear channel)
Data rate	T1: 1.544 Mbps ±50 ppm
	E1: 2.048 Mbps ±50 ppm
Line code	T1: B8ZS / AMI
	E1: HDB3 / AMI
Receive Level	Short haul - 15dB
Line impedance	T1: 100 ohms ±5%
	E1: 120 ohms ±5%
Connector	RJ-45

Datacom I/F

Datacom Interface Module	
Standards	ITU-T, E1A
Card Type	V.35/ RS-530 (Include X.21 and RS-449)/ RS-232 I/F
Bit rate	n x 64K, n = 1 to 32
	V.35 & RS-530 up to 2Mbps
	RS-232 up to 115.2Kbps (ASYNC)
Line code	NRZ
Clock Mode	Transparent, Recovery
	External (From data port ETC)
	Internal (From oscillator)
Control Signal	CTS always On or follows RTS
	DSR constantly ON, except during test
	loops (RS-530 DSR always connect to DTR)
	DCD constantly ON,except during fiber signal loss
Test Loops	Local loop back, Remote loop back, V.54
Connector	Type Uses HD-68 pin D type Female with adapter cables

E1 BNC I/F

E1 Module	
Standards	ITU-T G.703, G.704, G.706, G.732
Ports	4 ports
Framing	Unframed (clear channel)
Data rate	2.048 Mbps ± 50 ppm
Line code	HDB3/AMI
Receive Level	Short haul - 15dB
Line impedance	75 ohms ± 5% / 120 ohms ± 5%
Connector	RJ-45 for 120 ohms BNC for 75 ohms Wirewrap for 120 ohm

Ordering Information

Model Name	Type	Description
FMUX101	Chassis	1U 19"4-Slot Rack Mount Chassis
FMUX101-AC	Powe	Chassis Power Module 110~240VAC
FMUX101-DC	Powe	Chassis Power Module 36~72VDC
FMUX101-E1/BNC	Card	4 x G.703 E1 BNC interface card
FMUX101-E1/RJ45	Card	4 x G.703 E1 RJ-45 interface card
FMUX101-T1/RJ45	Card	4 x G.703 T1 RJ-45 interface card
FMUX101-V35	Card	V35 interface card with one HD68M to 4 x MB34F cable
FMUX101-530	Card	RS-530 interface card with one HD68M to 4 x DB25F cable
FMUX101-449	Card	RS-449 interface card with one HD68M to 4 x DB37F cable
FMUX101-X21	Card	X.21 interface card with one HD68M to 4 x DB15F cable
FMUX101-232/Async	Card	RS-232 Async card with one HD68M to 4 x DB9F cable
FMUX101-FXO	Card	4 x FXO interface card
FMUX101-FXS	Card	4 x FXS interface card

Power Module Type	Line Card I/F Type			
AC, DC, AC2, DC2, AD	0 : Empty	D : Quad V.35	H : Quad X.21	K : Quad High-Speed V.35
	A : Quad E1 BNC	E : Quad RS-232	I : Quad RS-449	L : Quad High-Speed RS-530
	B : Quad E1 RJ-45	F : Quad RS-530	J : Wire-Wrap I/F for Quad E1/ T1	
	C : Quad T1 RJ-45	G : Single port Fast Ethernet 10/100		

Power Type   Card Type

FMUX101 – □□ / □□□□

Example: FMUX101 – AC – AAAA

FMUX1600
FMUX800

16E1/T1 + 4x GbE, RJ45 Fiber Managed Multiplexer
8E1/T1 + 4x GbE, RJ45 Fiber Managed Multiplexer
(SNMP, Order Wire optional)

The FMUX1600/FMUX800 is 1U 19" rack mountable, PDH fiber optical Multiplexer that transmits up to 16/8 E1/T1 + 4 x 10/100/1000Base-T Gigabit Ethernet over a single fiber optic link. The FMUX1600/FMUX800 chassis in available in five different power configurations; single AC, single DC, dual AC, dual DC, or AC+DC. The AC supplies operate from 90 ~ 240VAC while DC supplies operate from 18~72VDC. On the rear of the chassis, the BNC model provides 32/16 unbalanced 75 Ohm coaxial connections with BNC connectors while the RJ-45 model provides 16/8 balanced 120 Ohm connections over twisted pair wiring with RJ45 connectors . With two SFP sockets on fiber ports, the FMUX1600/FMUX800 gives you the fiber cabling connector SFP-LC, both multi-mode and single-mode are available as well as BiDi which allows bi-directional transmissions using only a single fiber cable. 1+1 Automatic optical line protection is also supported for the aggregate fiber ports. The standard FMUX1600/FMUX800 configuration may be viewed or set via serial VT-100 terminal connection or SNMP card with web, telnet, and SNMP management
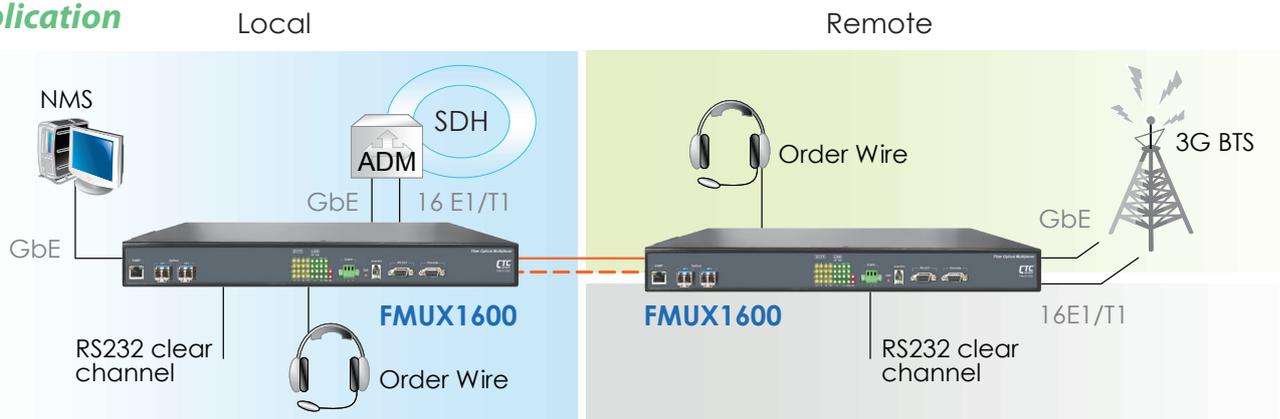
Features

- Provides 16/8 E1/T1 G.703 transparent transmission over fiber
- Provide 4 x 10/100/1000 Mbit/s Ethernet Ports
- Provides one RS232 channel
- Loopback test on E1/T1 fiber port
- Provides one hotline channel (order-wire)
- Supports full/half duplex, 10M/100M/1000M, auto-Negotiation

- Forward 10K byte jumbo packets on Ethernet port
- Supports 1+1 fiber line protection. Less than 50ms
- Complete alarm function and can monitor remote device status
- Power combination AC220V and DC-48V for redundant options
- Supports RS232 local management ; Supports on-line f/w upgrade
- Supports Web, Telnet, SNMP management (optional)

Specifications

Optical Interface	Connector	SFP- LC
	Data rate	1.25Gbps
	Bit Error Rate	Less than 10^{-11}
	Distance	MM 2km, SM 15/30/50/80/120km
	Wavelength	WDM 20/40/60/80km
Electrical Interface	Connector	Console : RS232 / SNMP : RJ45
		Ethernet : RJ45 (4-port)
		Alarm : RS232 / Order wire : RJ11
E1 Interface	Standards	ITU-T G.703, G.704, G.706, G.732
	Ports	8/16 ports
	Data Rate	2.048 Mbps ± 50 ppm
	Line Code	HDB3/AMI
	Connector	RJ-45 for 120 ohms BNC for75 ohms Wire wrap for 120 ohm

T1 Interface	Standards	ITU-T G.703, G.704, AT&T TR-62411, ANSI T1.403
	Ports	8/16 ports
	Data Rate	1.544 Mbps ±50 ppm
	Line Code	B8ZS / AMI
	Connector	RJ-45 for 100 ohms Wire wrap for 100 ohms
Certification		CE, FCC, RoHS compliant
Standards		ITU-T G.703, G.823 and G.742, ANSI, AT&T, IEEE803.2, IEEE802.3u, IEEE802.3ab
Indications		Power, Alarm, LBK, RD, LCK, RNG, ACO, Port, channel
Power Input		100 ~ 240VAC, 20~60VDC, 36~72VDC
Power Consumption		<25W
Dimensions		250 x 438 x 43mm (D x W x H)
Weight		3.58kg
Temperature		0 ~ 60°C (Operating), -10 ~ 70°C (Storage)
MTBF		50,000 hrs

Application

Local   Remote

Ordering Information

Model Name	Description
FMUX1600B-AC/DC/AD	16x E1 BNC + 4 x 10/100/1000Base-T Ethernet Fiber Multiplexer, build-in AC, DC or AD Power
FMUX1600R-AC/DC/AD	16x E1/T1 RJ-45 + 4 x 10/100/1000Base-T Ethernet Fiber Multiplexer, build-in AC, DC or AD Power
FMUX1600-SNMP	SNMP Card with 10/100Base-TX Ethernet Port
FMUX800B-AC/DC/AD	8x E1 BNC + 4 x 10/100/1000Base-T Ethernet Fiber Multiplexer, build-in AC, DC or AD Power
FMUX800R-AC/DC/AD	8x E1/T1 RJ-45 + 4 x 10/100/1000Base-T Ethernet Fiber Multiplexer, build-in AC, DC or AD Power
FMUX800-SNMP	SNMP Card with 10/100Base-TX Ethernet Port
FMUX-Phone-2	2 Wires Order Wire
FMUX-Phone-4	4 Wires Order Wire

Power Type
FMUX1600 – ☐ – ☐☐
Example: FMUX1600 – B – DC

FMUX–Phone – ☐
Example: FMUX–Phone – 2

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

FMUX160
FMUX80

16E1/T1 + 4x FE, RJ45 Fiber Managed Multiplexer
8E1/T1 + 4x FE, RJ45 Fiber Managed Multiplexer
(SNMP, Order Wire optional)

The FMUX160/FMUX80 is 1U 19" rack mountable, PDH fiber optical Multiplexer that transmits up to 16/8 E1/T1 + 4 x 10/100Base-TX Fast Ethernet over a single fiber optic link. The FMUX160/FMUX80 chassis in available in five different power configurations; single AC, single DC, dual AC, dual DC, or AC+DC. The AC supplies operate from 90 ~ 240VAC while DC supplies operate from 18~72VDC. On the rear of the chassis, the BNC model provides 32/16 unbalanced 75 Ohm coaxial connections with BNC connectors while the RJ-45 model provides 16/8 balanced 120 Ohm connections over twisted pair wiring with RJ45 connectors. the FMUX160/FMUX80 gives you the fiber cabling connector ST SC FC, both multi-mode and single-mode are available as well as BiDi which allows bi-directional transmissions using only a single fiber cable. 1+1 Automatic optical line protection is also supported for the aggregate fiber ports. The standard FMUX160/FMUX80 configuration may be viewed or set via serial VT-100 terminal connection or SNMP card with web, telnet, and SNMP management
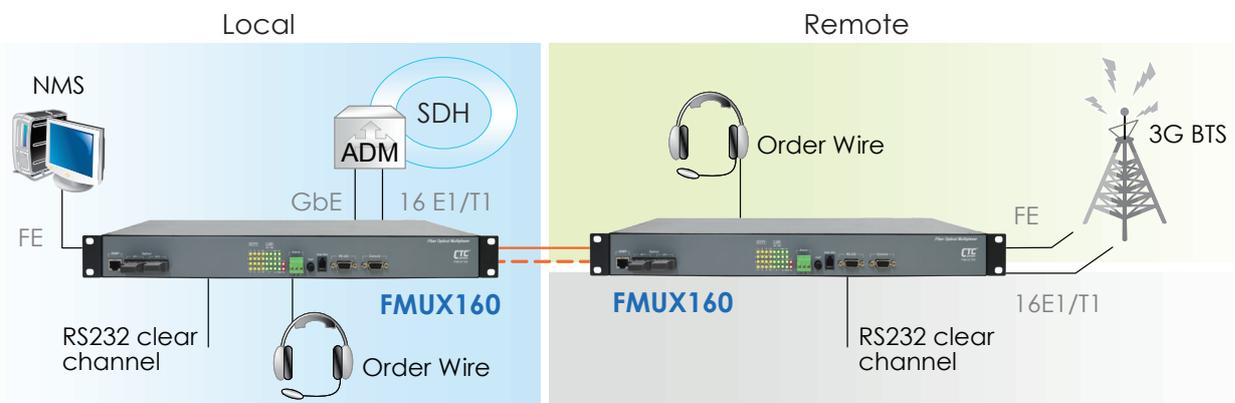
Features

- Provides 16/8 E1/T1 G.703 transparent transmission over fiber
- Provide 4 x 10/100 Mbit/s Ethernet Ports (100Mbps aggregate)
- Provides one RS232 channel
- Loopback test on E1/T1 fiber port
- Provides one hotline channel (order-wire)
- Supports full/half duplex, 10M/100M, auto-Negotiation
- Forward 1792 byte packets on Ethernet port
- Supports 1+1 fiber line protection. Less than 50ms
- Complete alarm function and can monitor remote device status
- Power combination AC220V and DC-48V for redundant options
- Supports RS232 local management ; Supports on-line f/w upgrade
- Supports Web, Telnet, SNMP management (optional)

Specifications

Optical Interface	Connector	ST, SC, FC
	Data rate	155.52Mbps
	Bit Error Rate	Less than 10^{-11}
	Distance	MM 2km, SM 15/30/50/80/120km WDM 20/40/60/80km
	Wavelength	1310nm, 1550nm, CWDM 1471nm~1611nm
Electrical Interface	Connector	Console : RS232 / SNMP : RJ45
		Ethernet : RJ45 (4-port)
		Alarm : RS232 / Order wire : RJ11
E1 Interface	Standards	ITU-T G.703, G.704, G.706, G.732
	Ports	8/16 ports
	Data Rate	2.048 Mbps ± 50 ppm
	Line Code	HDB3/AMI
	Connector	RJ-45 for 120 ohms BNC for75 ohms Wire wrap for 120 ohm

T1 Interface	Standards	ITU-T G.703, G.704, AT&T TR-62411, ANSI T1.403
	Ports	8/16 ports
	Data Rate	1.544 Mbps ±50 ppm
	Line Code	B8ZS / AMI
	Connector	RJ-45 for 100 ohms Wire wrap for 100 ohms
Certification		CE, FCC, RoHS compliant
Standards		ITU-T G.703, G.823 and G.742, ANSI, AT&T, IEEE803.2, IEEE802.3u
Indications		Power, Alarm, LBK, RD, LCK, RNG, ACO, Port, channel
Power Input		100 ~ 240VAC, 20~60VDC, 36~72VDC
Power Consumption		<25W
Dimensions		250 x 438 x 43mm (D x W x H)
Weight		3.58kg
Temperature		0 ~ 60℃ (Operating), -10 ~ 70℃ (Storage)

Application

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.
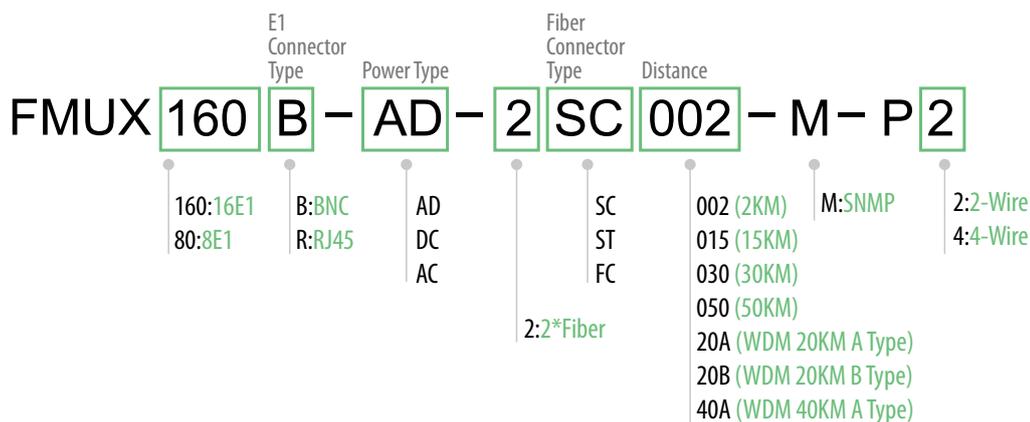
CTC UNION TECHNOLOGIES CO., LTD.   www.ctcu.com   **FMUX160 / FMUX80**   6-9

Ordering Information

Two Fiber model

Model Name	Description
FMUX160B-AD-2SC002	16x E1 BNC + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with two MM 2km SC fiber, AC+DC Power
FMUX160R-AD-2SC002	16x E1 RJ45 + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with two MM 2km SC fiber, AC+DC Power
FMUX80B-AD-2SC002	8x E1 BNC + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with two MM 2km SC fiber, AC+DC Power
FMUX80R-AD-2SC002	8x E1 RJ45 + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with two MM 2km SC fiber, AC+DC Power

One Fiber model

Model Name	Description
FMUX160B-AD-SC002	16x E1 BNC + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with one MM 2km SC fiber, AC+DC Power
FMUX160R-AD-SC002	16x E1 RJ45 + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with one MM 2km SC fiber, AC+DC Power
FMUX80B-AD-SC002	8x E1 BNC + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with one MM 2km SC fiber, AC+DC Power
FMUX80R-AD-SC002	8x E1 RJ45 + 4 x 10/100Base-T Ethernet Fiber Multiplexer, with one MM 2km SC fiber, AC+DC Power

Optional modules

Model Name	Description
FMUX160-SNMP	SNMP Card with 10/100Base-TX Ethernet Port
FMUX80-SNMP	SNMP Card with 10/100Base-TX Ethernet Port
FMUX-Phone-2	2 Wires Order Wire with RJ9 to RJ11 cable
FMUX-Phone-4	4 Wires Order Wire

FMUX 160 B – AD – 2 SC 002 – M – P 2

- E1 Connector Type
- Power Type
- Fiber Connector Type
- Distance

160: 16E1
80: 8E1

B: BNC
R: RJ45

AD
DC
AC

2: 2*Fiber

SC
ST
FC

002 (2KM)
015 (15KM)
030 (30KM)
050 (50KM)
20A (WDM 20KM A Type)
20B (WDM 20KM B Type)
40A (WDM 40KM A Type)

M: SNMP

2: 2-Wire
4: 4-Wire

FMUX04E
4E1/T1+ 3x FE Fiber Multiplexer

FMUX04E is a fixed design for 4xE1 + Fast Ethernet multi-service to dual strand fiber PDH multiplexer. FMUX04E provides E1 transmission transparently and pure 100Mbps Fast Ethernet simultaneously. The fiber optic line is based on SFP technology that allows the flexible use of Multimode or Single mode lines and enables support for different wavelengths and distances. The use of bi-directional SFPs maximizes the utilization of fiber optic line and results in saving line costs. The multiplexer can be equipped with optional AC and DC power supplies for redundant operation. With SNMP and Web-based management in the FMUX04E, the Network administrator can monitor, configure and control the activity remotely.
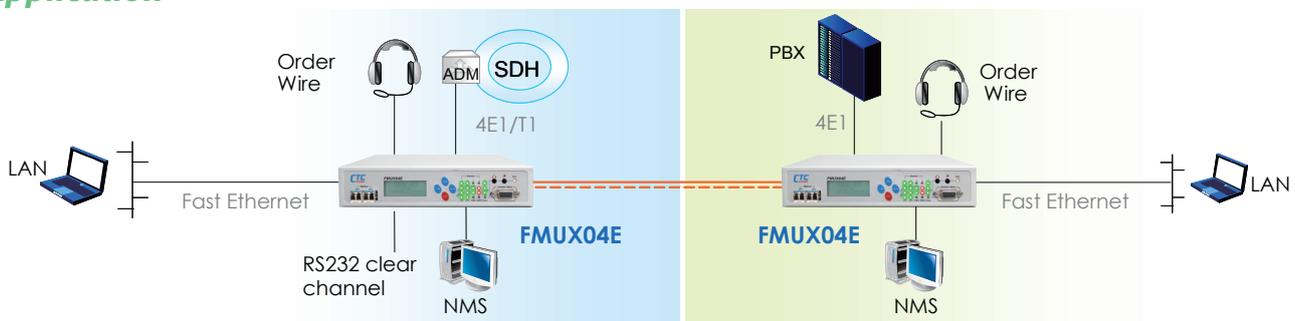
Features

- 4 channels unframed E1/T1
- 3-CH 10/100Base-TX Ethernet
- Auto MDI/MDIX
- Auto-Negotiation or Force mode
- Supports flow control
- Supports 1552 packets (max)
- One clear channel RS232 up to 250Kbps(Async)
- 1+1 fiber protection, less than 50ms
- Supports Digital Diagnostics Monitoring Interface (DDMI)

- AIS on signal loss on E1/T1 and fiber port
- Port based VLAN function
- Loopback test on E1/T1, RS-232, fiber ports
- Supports Dying Gasp
- Supports local or remote In-band management
- Optional SNMP management
- Supports Order wire Ear / Microphone port.
- Supports On-Line F/W upgrade (local or remote) by the SNMP manager

Specifications

E1/T1 ports	
	Framing: Unframed (transparent)
	Bit Rate: E1:2.048 Mb/s , T1: 1.544Mb/s
	Line Code: E1:AMI/HDB3, T1: AMI/B8ZS
	Line Impedance:
	E1: Unbalanced 75 ohms (BNC)
	E1: Balanced 120 ohms (RJ-45)
	T1: Balanced 120 ohms (RJ-45)
	Receiver sensitivity: Short haul
"Pulse" Amplitude:	Nominal 2.37V+/-10% for 75 ohms
	Nominal 3.00V+/-10% for 120 ohms
	"Zero" Amplitude: +/-0.3V
	Internal Timing: +/-30 ppm
	Jitter Performance: According to ITU-T G.823
	Standard: ITU-T G.644, G.703, G.704, G.706 and G.732
	Interface Connectors: RJ-45, BNC

E1/T1 ports	Test Loops:	LLB (Local Loop Back)
		RLB (Remote Loop Back)
		RRLB (Request Remote Loop Back)
Ethernet	Interface Type: 10/100Base-TX	
	Connector: 3x RJ-45	
	Standard: IEEE 802.3, 802.3u	
	Duplex modes: full/half	
Indication	FX1 Link, FX2 link , E1/T1 Mode/Link/Loopback test, Order wire phone indicator , LAN Link/Speed	
Power Input	AC : 100~240VAC, DC : 18-75 VDC	
Dimensions	248 x 215 x 43mm (D x W x H)	
Operating Temperature	0 ~ 50°C (Operating)	
	-10 ~ 20°C (Storage)	
Humidity	10 ~ 90% non-condensing	
Certifications	CE, FCC, RoHS compliant	
MTBF	57,350 hrs	

Application

Ordering Information

Model Name	Description
FMUX04E-AC, DC, AD	Standalone FOM with built-in AC, DC or AD (AC+DC) Power, optional SNMP
FMUX04E-SNMP	SNMP management card, support web, telnet, SNMP functions

* SNMP option only required in one onit of paired link

FMUX04E – ☐☐
Example: FMUX04E – AD

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

FMUX04

4E1/T1 Fiber Multiplexer

The FMUX04 is a 1U half 19" stand-alone or rack mountable point-to-point multiplexer for 4*E1 or 4*T1 (selectable) transmissions over a single fiber optic link. Its half-rack format makes it ideal for low cost multiplexing applications that require up to 4-channel. All channels provide completely transparent transmission of E1 or T1 regardless of frame mode, clock source or timeslot assignment. Available in either AC or DC models, the AC supplies operate from 100~240VAC while DC supplies operate from 18~72VDC. A wide range of transceiver selection provides fiber connection with SC, FC or ST type connectors in multimode or single mode and at distance from 2 to 120km as well as BiDi (single fiber) at distances of 20, 40, 60, or 80km. Additional options include "Order Wire" phone connection (FXS port) and a SNMP management.
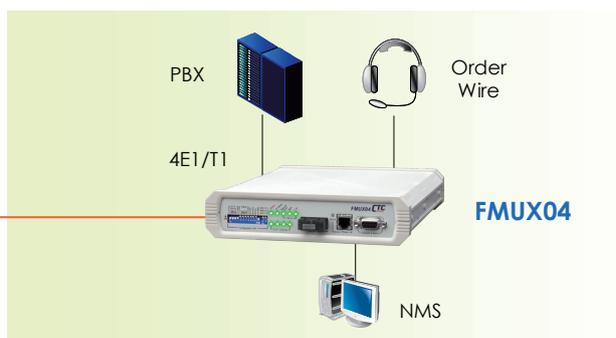
Features

- 1U stand-alone unit
- Channel service setting and remote loop-back setting via front panel DIP switch or serial console
- Far End Fault (FEF) on fiber link, selectable
- On-line Bit Error Rate monitor feature with four error-rate classes
- Dual color LEDs indicators
- Optional dedicated Order Wire phone port (FXS, RJ-11 port)
- Console port and one alarm relay
- Optional SNMP management, Telnet, and Web Based local and remote configuration
- System BER 10^{-11}

Specifications

Optical Interface	Connector	1x9 (SC, ST, FC)
	Data rate	38Mbps
	Bit Error Rate	Less than 10^{-11}
	Fiber	MM 62.2/125μm, 50/125μm
		SM 9/125μm
	Distance	MM 2km, SM 15/30/50/80/120km, WDM 20/40/60/80km
	Wavelength	1310, 1550nm
Electrical Interface	Console	RS-232 (DB9F) Async
	SNMP / Order wire	RJ-45 / RJ11
	E1	BNC 75 Ω, RJ45 120 Ω, T1 RJ45 100 Ω
Standard	E1: ITU-T, T1: ITU-T, AT&T, ANSI	

Indication	PWR, Alarm, Far End /Near End Error
	System failure, E1/T1 status
Power input	AC : 100 ~240V
	DC24 : 18 ~ 36V, DC48 : 36 ~ 72V
Power Consumption	<20W
Dimensions	235 x 195 x 45mm (D x W x H)
Weight	0.85kg
Temperature	0 ~ 50℃ (Operating), 0 ~ 70℃ (Storage)
Humidity	10 ~ 90% non-condensing
Certification	CE, FCC, RoHS compliant
MTBF	57,350 hrs

Application

Ordering Information

Model Name	Description
FMUX04-AC/SC 015	SC, 15Km, 1310nm, 12dB
FMUX04-AC/SC 030	SC, 30Km, 1310nm, 20dB
FMUX04-AC/SC 050	SC, 50Km, 1310nm, 28dB
FMUX04-AC/SC 080	SC, 80Km, 1550nm, 29dB
FMUX04-AC/SC 120	SC, 120Km, 1550nm, 35dB, DFB Laser
FMUX04-AC/SC 20A	SC, 20km, Tx1310 /Rx1550nm (A type), 17dB
FMUX04-AC/SC 20B	SC, 20km, Tx1550 /Rx1310nm (B type), 14dB
FMUX04-AC/SC 40A	SC, 40km, Tx1310 /Rx1550nm (A type), 25dB
FMUX04-AC/SC 40B	SC, 40km, Tx1550 /Rx1310nm (B type) , 22dB, DFB Laser
FMUX04-AC/SC 60A	SC, 60km, Tx1310 /Rx1550nm (A type), 29dB
FMUX04-AC/SC 60B	SC, 60km, Tx1550 /Rx1310nm (B type) , 29dB, DFB Laser

Model Name	Description
FMUX04-DC/SC 002	SC, MM, 2Km, 1310nm, 11dB
FMUX04-DC/SC 015	SC, 15Km, 1310nm, 12dB
FMUX04-DC/SC 030	SC, 30Km, 1310nm, 20dB
FMUX04-DC/SC 050	SC, 50Km, 1310nm, 28dB
FMUX04-DC/SC 080	SC, 80Km, 1550nm, 29dB
FMUX04-DC/SC 120	SC, 120Km, 1550nm, 35dB, DFB Laser
FMUX04-DC/SC 20A	SC, 20km, Tx1310 /Rx1550nm (A type), 17dB
FMUX04-DC/SC 20B	SC, 20km, Tx1550 /Rx1310nm (B type) , 14dB
FMUX04-DC/SC 40A	SC, 40km, Tx1310 /Rx1550nm (A type), 25dB
FMUX04-DC/SC 40B	SC, 40km, Tx1550 /Rx1310nm (B type) , 22dB, DFB Laser
FMUX04-DC/SC 60A	SC, 60km, Tx1310 /Rx1550nm (A type), 29dB
FMUX04-DC/SC 60B	SC, 60km, Tx1550 /Rx1310nm (B type) , 29dB, DFB Laser

FMUX04 – ☐☐ / ☐☐☐☐☐
Power Type / Connector Type / Connectivity Distance

Example: FMUX04 – AC / SC015