

# ETU02-MUX-Plus

## 1U, E1 Multi-Service Multiplexer



The ETU02-MUX/PLUS is a 1U 19(23)" 3 slot rack type E1 Time Division Multiplexer for Fractional E1 network access which provides an economic solution for central site or remote installations. There are 3 slots available for hot-swappable ETU02-MUX/PLUS-I/O cards. One front panel slot is provided for MUX-E1 card, which provides either single E1 main link or main E1 link plus a drop and insert sub-E1 port. The MUX-E1 card may be linked to another ETU02-MUX/PLUS or ERM-MUX/PLUS Rack to provide a point-to-point variety of datacom, Ethernet & voice over E1 network services. The ETU02-MUX/PLUS optionally accommodates one power supplies, which may derive power from AC (110/220) or DC (-48V) power sources. The ETU02-MUX/PLUS provides BNC and RJ-45 for E1 Line interface connections, RJ-45 connections are used for all voice (FXO, FXS, E&M), for 10/100 Ethernet Bridge and G.703/64K Co-directional. Optional cable adapters are used to convert the DB-62F DCE ports of the I/O cards to 4xRS-232 or HP68F DCE ports of I/O card to 2x V.35, RS-530, RS-449, RS-422 and X.21 channels.

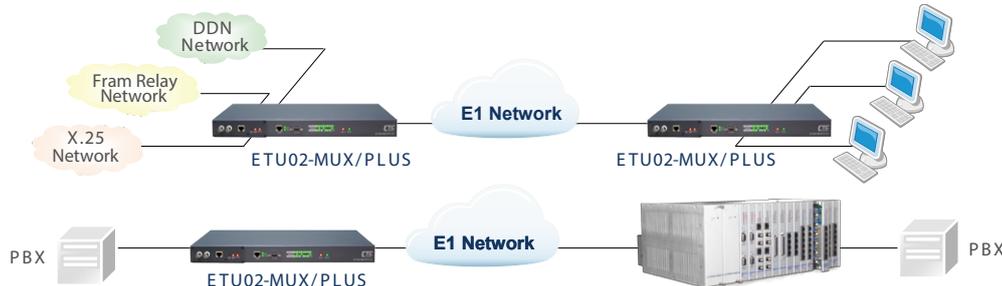
### Features

- 1U 19" 3-slot chassis
- Provides 3 slots, removable interfaces: V35, X21, RS530, RS449, RS232, G.703 Co-directional, Ethernet Bridge, FXO, FXS and E&M, 8-ch E1 DXC
- Optional drop and insert E1 port (Sub E1)
- Setup and Control via RS-232 terminal
- Multiple clock source selection (Internal or External: E1 recovery, DTE or DCE)
- Optional SNMP management
- Digital cross connect solution up to 16E1

### Specifications

<b>Indications</b>	Power, Signal loss, Sync loss, Alarm (AIS, MRAI, RAI), TD, RD, Error, Test	<b>Dimensions / Weight</b>	235 x 438 x 45mm (D x W x H) / 2.9kg
<b>Standard</b>	ITU-T G.703/G.704/G.706 & G.732, G823	<b>Temperature</b>	0 ~ 50°C (Operating), -10 ~ 70°C (Storage)
<b>Power / Consumption</b>	AC: 90 ~250V / 20W	<b>Humidity</b>	10 ~ 90% non-condensing
		<b>MTBF</b>	57,000 hrs

### Application



### FXO

- Provides 4 independent channels
- Connects directly to PSTN



#### Specifications

Connector	RJ-45*4
Impedance	600 ohms
Level Gain	On Tx side 0 dB On Rx side -3.5dB
Ring current impedance	> 7.5k ohms
Direct current resistance	< 300 ohms
Maximum direct current borne	> 70V

### G.703/64K co-directional card

- 2-channels, Co-directional 64K interface



#### Specifications

Interface types	G.703/64K, Co-directional
Connector	RJ45 x 2
Line code	ITU-T G.703/64K, Co-directional
Data rate	64kpbs±100ppm x 2 channels
Line impedance	120 ohms (balanced)
Frame mode	Unframed only

### 8E1-DXC

- 8 independent channels
- E1 P to P 64kpbs transparent data cross connect
- Supports Broadcasting and E1 channel backup
- Maximum 2 card per chassis



#### Specifications

Connectors	BNC for unbalanced ; RJ-45 for balanced
Framing Format	Unframed / Framed CCS(PCM31) / CAS (PCM30)
CRC check	CRC4 on/off
Bit rate	2.048Mbps±0 ppm
Line code	AMI / HDB3
Line impedance	75 ohm(BNC) / 120 ohm(DB-15, RJ-45)

### FXS

- Provides 4 independent channels
- Connects to standard telephones



#### Specifications

Connector	RJ45 x 4
Impedance	600 ohms
Level Gain	On Tx side 0 dB; On Rx side -3.5dB
Ring current Output	75±15V
Frequency	25±3Hz
Feeding voltage	-48
Loop resistance	1800 ohms
Connecting distance	up to 4km
Wire Gauge	0.4mm
Feeding working current	20mA

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

## ET-100 Ethernet Bridge card

- 2 independent channels, Ethernet bridge interface 10/100Base-TX bridge Auto-Negotiation, Auto MDI/MDIX Forward 1522 bytes (Max.) packets Supports IEEE 802.1Q Tag VLAN pass thru Supports flow control (Pause)



### Specifications

#### LAN Specifications

Standard	Fully compliant with IEEE 802.3/802.3u
Connector	RJ-45x2, 10/100Base-TX, Auto-negotiation
Speed	10Base-T/100Base-TX, Full or half duplex
Frames	Supports 64 to 1522 byte packet lengths

#### WAN Specifications

Protocol	Synchronous HDLC
Rates	N*64 or N*56Kbps, up to 2048Kbps

## E1 and Sub E1 module

- Single E1 card supports both RJ45 and BNC connector
- Single E1 + Sub E1 card supports BNC connector
- Each E1 loop provides clock to be used as system clock source



SUB E1



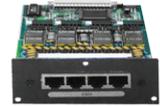
E1

### Specifications

Connectors	BNC for unbalanced ; RJ-45 for balanced
Framing Format	Unframed / Framed CCS (PCM31) / CAS (PCM30)
CRC check	CRC4 on/off
Bit rate	2.048Mbps±0 ppm
Line code	AMI / HDB3
Line impedance	75 ohm (BNC) / 120 ohm (DB-15, RJ-45)
Relative receive level	0 to -43dB
Transmitter driver reach	1.5Km
Pulse amplitude	Nominal 2.37V ±10% for 75ohm Nominal 3.00V ±10% for 120ohm
Zero amplitude	±0.1V
Transmit frequency	Internal timing ±30 ppm
Tracking	Recovery timing ±50 ppm
External	timing±100 ppm
Jitter performance	According to ITU-T G.823
Compliance	ITU G.703, G.704, G.706, G.732

## E&M

- BD/GD wires are for battery and ground detection
- E&M card provides 4 independent channels
- E&M interface provides 1 pair of E and 1 pair of M
- Each E&M can support Type I, II, III, IV or V
- Loop current range is normally 5-30mA, 70mA max
- Timeslot 16 complies with ITU-T G.711
- TX / RX attenuation (Range ±7.5dB), and 2 / 4 wire operation



### Specifications

Input level	0 to -16dB, in 0.5dB steps
Output level	0 to -16dB, in 0.5dB steps
Impedance	600 ohms, option
Return loss	2-wire 300-600Hz: >12dB 2-wire 600-3400Hz: >15dB 4-wire 300-3400Hz: >20dB
Group delay	2-wire @ -10dBm: < 750µ second 4-wire @ -10dBm: < 600µ second
Total distortion	According to ITU-T G223
Channel cross-talk	Not exceed -65dB, 1020Hz@0dBm
Out-of-band Signal attenuation	-25dBm@4.6~72KHz
Level not to exceed	-50dBm
Noise	<-65dBm
Interface connector	RJ-45*4

## RS-232 card

- 4-channels
- Data rate:  
Asynchronous mode ≤ 38.4Kbps (4-channels),  
Synchronous mode = 19.2/38.4/64/128Kbps



### Specifications

Interface type	RS-232
Connector	HD62F (female) with cable adapter
Line code	NRZ
Data rate	3.84kbps x 4ch or 64/128kbps x 4ch

## Nx64 card

- 2-channels , High speed data interface
- Data rate:  
N\*64kbps, where N=1 to 31 in CCS  
N=1 to 30 in CAS



### Specifications

Interface types	RS-530, X.21, V.35, RS-449, RS-232
Connector	HD68F (female) with cable adapter
Line code	NRZ
Data rate	Nx64kbps

## Ordering Information

Model Name	Type	Description
ETU02-MUX/Plus/AC	Chassis	1U 19" 3+1 slot Chassis with SNMP card and AC Power
ETU02-MUX/Plus/DC48	Chassis	1U 19" 3+1 slot Chassis with SNMP card and DC 48V Power
ETU02-MUX/Plus/DC24	Chassis	1U 19" 3+1 slot Chassis with SNMP card DC 24V Power
ETU/E1SUB	Card	Single E1 + Sub E1 card supports BNC connector
ETU/E1	Card	Single E1 card supports both RJ45 and BNC connector
ETU/N64	Card	2-Ch V.35/X.21/RS-449 Module, N X 64Kbps
ETU/232	Card	4-Ch RS-232 Module
ETU/232-C	Card	4-Ch RS-232 Module with Clock
ETU/ET100	Card	2-Ch 10/100Base-T Ethernet Module RJ-45
ETU/FXS	Card	4-Ch FXS Interface Module RJ-45
ETU/FXO	Card	4-Ch FXO Interface Module RJ-45
ETU/E&M	Card	4-Ch E&M Interface Module RJ-45
ETU/G64	Card	2-Ch G.703 64Kbps Co-directional Module RJ-45
ETU/8E1-DXC	Card	ETU/8E1-DXC is one type of card with two type of cables. BNC and RJ45
ETU/8E1-DXC-R	Cable	8-Ch E1 DXC card with 8-port RJ45 cable
ETU/8E1-DXC-B	Cable	8-Ch E1 DXC card with 8-port BNC cable

Power Type

ETU02 – MUX – Plus –

Example: ETU02 – MUX – Plus – AC

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