

E1 Access Multiplexer Family

Managed Multi-Service E1 Multiplexer



ETU02-MUX-Plus

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 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 up to two separate power supplies, which may derive power from AC (110/220) or DC (-48V) power sources. When two power supplies are installed, the modules provide complete power redundancy and are hot swappable even during the E1 cards' transmission. 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.

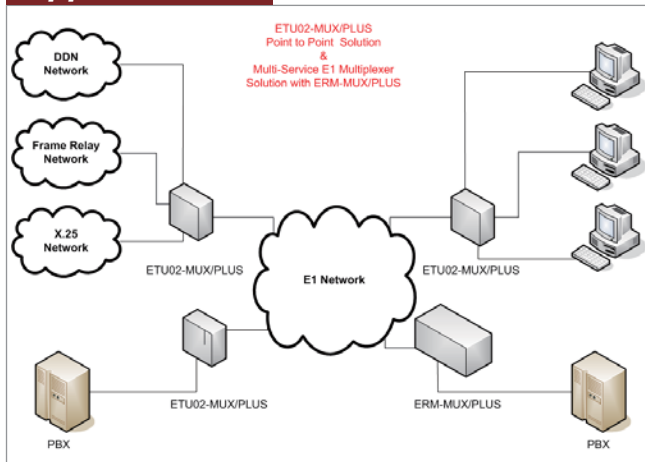
Features

- 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
- 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

Specifications

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

Application



Ordering Information

- **Managed E1 Time Division Multiplexer**
 - ETU02-Mux-Plus-AC 19" 1U chassis with AC Power and SNMP
 - ETU02-Mux-Plus-DC 19" 1U chassis with DC Power and SNMP
- **Optional E1 Trunk Module**
 - ETU02-Mux-Plus-Sub E1 E1 + Sub E1 module Trunk Module with One Main E1 and One Sub E1 Lines in BNC Type Both
 - ETU02-Mux-Plus-E1 E1 Trunk Module with One Main E1 Line in BNC Type

Optional Interface Module

- ETU02-Mux-Plus-N64 2-port Datacom (V.35, X.21, RS-449) Module
- ETU02-Mux-Plus-232 4-port RS-232 Modules
- ETU02-Mux-Plus-ET100 2-port 10/100Base-TX Ethernet module
- ETU02-Mux-Plus-FXS 4-port FXS Module RJ-45
- ETU02-Mux-Plus-FXO 4-port FXO Module RJ-45
- ETU02-Mux-Plus-E&M 4-port E&M Module RJ-45 s
- ETU02-Mux-Plus-G64 2-port G.703 64Kbps Co-directional module RJ-45

Ethernet bridge



- 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
 - Support flow control (Pause)
- Standard IEEE 802.3/802.3u
- Connector RJ-45 x 2
 - 10/100Base-TX, Auto-negotiation
- Frames Supports 64-1522 bytes packet length
- WAN protocol Synchronous HDLC
- WAN rate N*64Kbps, up to 2048Kbps

Specifications

LAN Specifications

- Standard Fully compliant with IEEE 802.3/802.3u
- Connector RJ-45x2
- Speed 10Base-T/100Base-TX, Full or half duplex
- Frames Supports 64 to 1522 byte packet lengths standard and extended length frames for VLAN tagging, etc.

WAN Specifications

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

X.50 card

Specifications

- Interface types RS232
- Connector DB62F with cable adapter
- Line code NRZ
- Data rate 2.4K ~ 19.2kpbs x 5Ch
- Loopback type Local/Remote loopback

G.703/64K co-directional card



- 2-channels , Co-directional 64K interface
- Interface type: ITU-T G.703/64K
- Connector: RJ-45 x 2
- Line code: Co-directional
- Data rate: 64Kbps ± 100ppm x 2-channels
- Line impedance: 120 ohm (balanced)
- Frame mode: Unframed only

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
- Frame mode Unframed only

E1 and Sub E1 module



- Single E1 or 1+1 E1 card (E1 and Sub-E1), provides unbalanced BNC or balanced RJ45 connector
- Each E1 loop provides clock to be used as system clock source

Specifications

- Connectors BNC for unbalanced ; RJ-45 for balanced
- Framing Framed 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

Async card



- 4-channels
- Interface type: RS-232 (V.24)
- Connector: HD62 female with appropriate cable adapter
- Line code: NRZ
- Data rate: Asynchronous mode ≤ 38.4Kbps (4-channels),
Synchronous mode = 19.2/38.4/64/128Kbps

Specifications

- Interface RS232
- Connector HD62F with cable adapter
- Line code NRZ
- Data rate 3.84kpbs x 4ch or 64/128kpbs x 4ch

Nx64 card



- 2-channels , High speed data interface
- Interface type: V35/RS-530/X.21/RS-449
- Connector: HD68 female with appropriate cable adapter
- Line code: NRZ
- Data rate: N*64kpbs, where N=1 to 31 in CCS
N=1 to 30 in CAS

Specifications

- Interface types RS530, X.21, V.35, RS449, RS232
- Connector HD68F with cable adapter
- Line code NRZ
- Data rate Nx64kpbs

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, 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

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

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