

## Ethernet over unframed E1 w/SNMP Eoe1A



The EOE1-A is a Channel Service Unit for unframed ITU-T G.703 E1 that features a built-in Ethernet bridge. The CSU has a built-in Network Terminating Unit (NTU) and may connect to either 75 Ohm unbalanced, BNC connectors or to 120 Ohm balanced, unframed E1 via twisted pairs and a shielded RJ-45 connector. The EOE1-A Ethernet Bridge uses HDLC encapsulation to transport Ethernet packets across the WAN and supports 10/100 auto-negotiation or manual settings for 10M, 100M, Full or Half Duplex Ethernet. The Ethernet port also supports a standard auto-MDIX feature that will completely eliminate Ethernet cross-over cables or the guessing that is sometimes involved in choosing a cable when connecting to a HUB or a PC. The EOE1-A is very easy to configure by a menu driven serial console interface. SNMP and proprietary MIB add the ability to manage the EOE1-A centrally through third party network management software or via CTC Union's EMS management system.

### Features

- Supports 10/100Base-TX Ethernet over Unframed E1
- Automatic address learning, aging and deletion after 5 minutes
- Auto padding of undersized packets to meet the minimum Ethernet packet size requirement
- Buffering modes can be selected according to the setting of WAN and LAN line speeds
- Forwarding and filtering rate at WAN speed with throughput latency of 1 frame
- Auto MDI / MDIX
- Real-time filtering with 256 MAC address table
- Supports Console, Telnet, SNMP and Web management

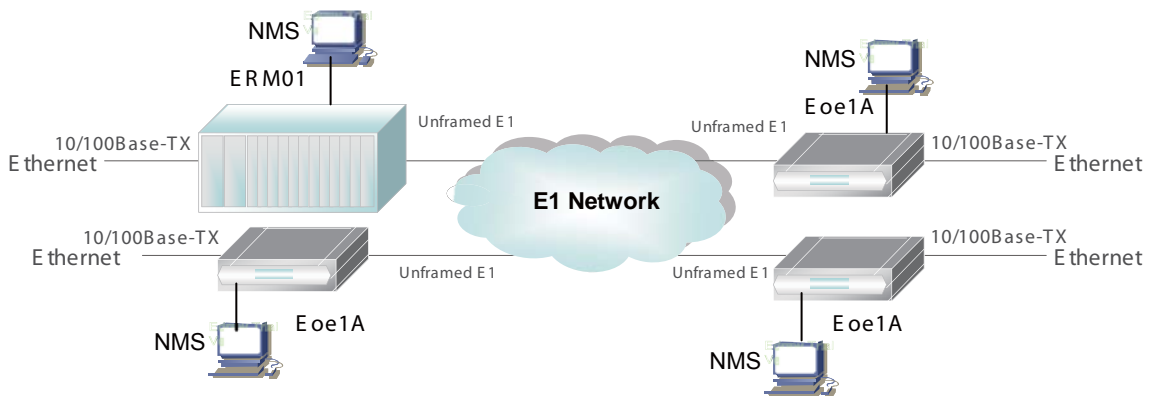
### G.703 E1 Specifications

Framing	Unframed
Line code	AMI/ HDB3
Bit rate	2.048Mbps (clear channel)
Relative receive level	0 to -43dB
Transmit level	
Pulse Amplitude	Nominal 2.37V ±10% for 75ohm Nominal 3.00V ±10% for 120ohm Zero amplitude ±0.1V
Jitter performance	According to ITU-T G.823
Connector	BNC(unbalanced), RJ-48(balanced)
Clock modes	
Clock mode 0 (DCE1)	Receive & transmit clock (recovered) to the sync. DTE
Clock mode 1 (DCE2)	Receive & transmit clock (internal oscillator) to the sync. DTE
Test Switches	Digital local loopback, Analog local
Diagnostics	Digital local and remote loopback, Analog local loopback, Test pattern

### Ethernet Specifications

Connector	RJ-45
Data Rate	10/100Mbps; Half Duplex / 20/200Mbps; Full duplex
Filtering & Forwarding Delay	90,000 packets/sec 1 frame
Frame Buffer	340 frames
MAC Table	256 MAC address
Protocol	Synchronous HDLC
Indications	LEDs (Power, Signal Loss, Alarm, Link, TD, RD, 100, Full, Error, Error, Test)
Standard	ITU-T G.703, G.706 and G.732 IEEE 802.3/802.3u
Management	Console, Telnet, Web, SNMP
Power Input	AC: 90-250VAC ; DC: 18-72 VCD
Power Consumption	20W
Dimensions	250 x 195 x 45mm (D x W x H)
Weight	1.5kg
Temperature	0 ~ 50°C (Operating), -10 ~ 70°C (Storage)
Humidity	10~90% non-condensing
Certification	CE, FCC, RoHS
MTBF	57,000 hrs (25°C)

### Managed Unframed E1 P to P Application



### Ordering Information

Eoe1A- Power type  
AC  
DC  
Example: Eoe1A-AC



## Ethernet over unframed E1

### Eoe1

The Eoe1 is a Channel Service Unit for unframed ITU-T G.703 E1 that features a built-in Ethernet bridge. The CSU has a built-in Network Terminating Unit (NTU) and may connect to either 75 Ohm unbalanced, BNC connectors or to 120 Ohm balanced, unframed E1 via twisted pairs and a shielded RJ-45 connector. The Eoe1 Ethernet Bridge uses HDLC encapsulation to transport Ethernet packets across the WAN and supports 10/100 auto-negotiation or manual settings for 10M, 100M, Full or Half Duplex Ethernet. The Ethernet port also supports a standard auto-MDIX feature that will completely eliminate Ethernet cross-over cables or the guessing that is sometimes involved in choosing a cable when connecting to a HUB or a PC. The Eoe1 is very easy to configure by DIP switch setting

#### Features

- Supports 10/100Base-TX Ethernet over Unframed E1
- Automatic address learning, aging and deletion after 5 minutes
- Auto padding of undersized packets to meet the minimum Ethernet packet size requirement
- Buffering modes can be selected according to the setting of WAN and LAN line speeds
- Forwarding and filtering rate at WAN speed with throughput latency of 1 frame
- Auto MDI / MDIX
- Real-time filtering with 256 MAC address table

#### G.703 E1 Specifications

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 Line code AMI/ HDB3  
 Bit rate 2.048Mbps (clear channel)  
 Relative receive level 0 to -43dB  
 Transmit level  
 Pulse Nominal 2.37V ±10% for 75ohm  
 Amplitude Nominal 3.00V ±10% for 120ohm  
 Zero amplitude ±0.1V  
 Jitter performance According to ITU-T G.823  
 Connector BNC(unbalanced), RJ-48(balanced)  
 Clock modes  
 Clock mode 0 Receive & transmit clock (DCE1) (recovered) to the sync. DTE  
 Clock mode 1 Receive & transmit clock (DCE2) (internal oscillator) to the sync. DTE  
 Control signals CTS constantly ON  
 DSR constantly ON, except during test loops  
 DCD constantly ON or follows RTS, except during signal loss

#### Ethernet Specifications

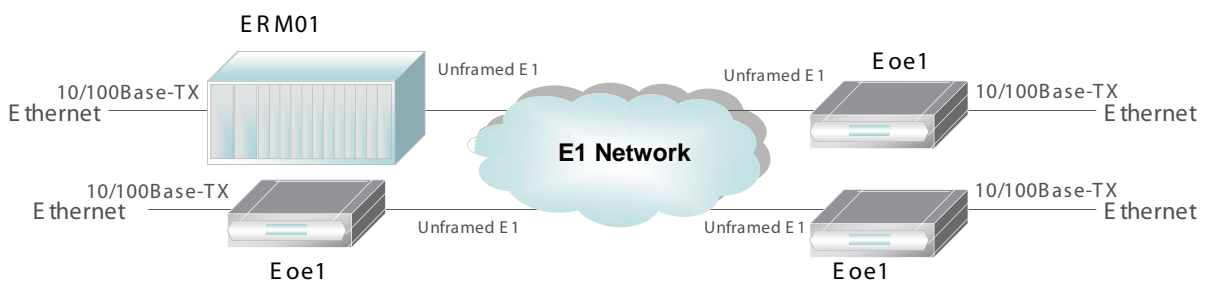
Test Switches Digital local loopback, Analog local  
 Diagnostics Digital local and remote loopback, Analog local loopback, Test pattern  
 Connector RJ-45  
 Data Rate 10/100Mbps; Half Duplex / 20/200Mbps; Full duplex  
 Filtering & Forwarding 90,000 packets/sec  
 Delay 1 frame  
 Frame Buffer 340 frames  
 MAC Table 256 MAC address  
 Protocol Synchronous HDLC  
 LEDs (Power, Signal Loss, Alarm, Link, TD, RD, 100, Full, Error, Error, Test)  
 ITU-T G.703, G.706 and G.732  
 IEEE 802.3/802.3u  
 Management Console, Telnet, Web, SNMP  
 Power Input AC: 90-250VAC ; DC: 18-72 VCD  
 Power Consumption 20W  
 Dimensions 250 x 195 x 45mm (D x W x H)  
 Weight 1.5kg  
 Temperature 0 ~ 50°C (Operating), -10 ~ 70°C (Storage)  
 Humidity 10-90% non-condensing  
 Certification CE, FCC, RoHS  
 MTBF 57,000 hrs (25°C)

#### Indications

#### Standard

Management Console, Telnet, Web, SNMP  
 Power Input AC: 90-250VAC ; DC: 18-72 VCD  
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 Certification CE, FCC, RoHS  
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### Unframed E1 P to P Application



### Ordering Information

Eoe1-      Power type

AC  
 DC

Example: Eoe1-AC



## Unmanaged Ethernet extender over coaxial cable modem

### EOC-10

The EOC-10 is point-to-point and point-to-multipoint EoCNA (Ethernet over Coax Network Alliance) solution that efficiently extends 10/100 Ethernet circuits up to 900 meters (2,952feet) at full Fast Ethernet speed using existing coaxial cable. The EOC-10 will allow Ethernet connectivity in existing facilities or homes without pulling extra cable. This is perfect solution for Ethernet on the factory floor where systems have been upgraded from slower serial communication to Ethernet networking. Installation is easy with absolutely no settings required. The EOC-10 is used in Coaxial cable systems to extend Ethernet connectivity over existing CCD/CATV grade Coaxial cable. The EOC-10 works by sharing the same cable with CATV signals, without interference to the existing CATV signals.

#### Features

- Extends LAN connectivity using existing coaxial cable
- Transmits CATV and Ethernet over the same coaxial cable
- 112Mbps (PHY speed) @ 900 meters (2,952feet)
- 32Mbps (PHY speed) @ 1.2Km (4,000feet)
- Supports point to point and point to multi-point up to 32 nodes over tap/splitter
- Asymmetrical using EoCNA standard
- Operates transparently to high layer protocols such as TCP/IP
- Auto MDI / MDIX
- Auto negotiation
- Plug and Play, no configuration required
- Status LEDs for simple monitoring

#### Interface

Fast Ethernet Interface 10/100 Mbps, RJ45  
 Coax Interface Two F-Type Female Coax Connectors, One for EoCNA, the other for TV  
 Protocol Transparent to higher layer protocols  
 Transmission Power 8 ±1 dBm, 12-28 MHz and Spectrum  
 Physical layer transmission speed and distance  
 Up to 112Mbps@900 meters  
 Up to 32Mbps @ 1.2Km (-176dBm/Hz Noise Floor)

#### Indications

LEDs (PWR, LAN Link/Act, Coax Link/Act, Coax Sync)

#### Standard

ITU G.9954, IEEE802.3, IEEE802.3u, IEEE802.3x

#### Power Input

DC 5V (via AC switching adapter)

#### Power Consumption

6W

#### Dimensions

83 x 138 x28mm (D x W x H)

#### Weight

330g

#### Temperature

0 - 50°C (Operating), -10-70°C (Storage)

#### Humidity

10-90% non-condensing

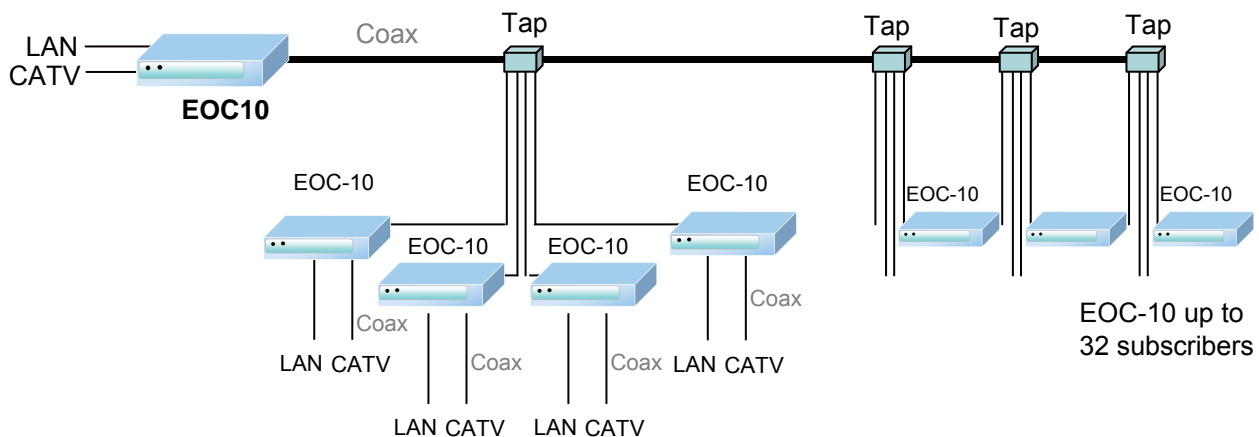
#### Certification

CE, FCC, RoHS

#### MTBF

57,000 hrs (25°C)

### Ethernet / CATV over coax application



#### Ordering Information

EOC-10



## Managed Ethernet extender over coaxial cable (CO/CPE modem)

# EOC-20, EOC-21

The EOC-20/21 is a point-to-multipoint EoCNA (Ethernet over Coax Network Alliance) solution that efficiently extends 10/100 Ethernet circuits up to 900 meters (2,952feet) at full Fast Ethernet speed using existing coaxial cable. The EOC-20 is a master unit which acts as a bridge and distributes bandwidth to up to 32 EOC-21 subscriber units in a fashion similar to time division multiplexing. The EOC-21 is actually where all the packet processing takes place. At the heart of this device is a 6 port L2/3/4 switching gateway controller. By placing all the management in the cpe units, Multi-Service Operators can guarantee that no single client will be able to hog all of the EoCNA bandwidth and effect other customer's service. This allows deployment of triple-play applications where quality of service must be maintained. The EOC-20/21 works by sharing the same cable with CATV signals, without interference to the existing CATV signals.

### Features

- Extends LAN connectivity using existing coaxial cable
- Transmits CATV and Ethernet over the same coaxial cable
- Supports VLAN tag and port, QoS, bandwidth control, auto-provisioning via TFTP
- Supports Web, Telnet and SNMP management
- Two (2) Ethernet ports, one for STB (Set Top Box), one for LAN
- 112Mbps @ 900 meters (2,952feet) reach
- 32Mbps @ 1.2Km (4,000feet)
- Supports point to point and point to multi-point with up to 32 nodes over tap/splitter
- Asymmetrical using EoCNA standard
- Operates transparently to high layer protocols such as TCP/IP
- Auto MDI / MDIX
- Auto negotiation
- Status LEDs for simple monitoring

### Interface

Fast Ethernet Interface 10/100 Mbps, RJ45  
Coax Interface Two F-Type Female Coax Connectors  
One for EoCNA · the other for TV  
Protocol Transparent to higher layer protocols  
Transmission Power  $8 \pm 1$  dBm, 12-28 MHz  
and Spectrum

### Quality of Service

Physical layer transmission speed and distance  
160Mbps maximum speed  
Up to 112Mbps @ 900 meters  
Up to 32Mbps @ 1.2Km (-176dBm/Hz Noise Floor)

### Management

Priority Based on IEEE802.1p and TCP/UDP port  
Priority Based on 802.1Q Tag  
Guaranteed QoS based on Layer II Parameterized QoS  
Diagnostic EoCNA function  
Secured/Isolated Communication between devices  
Provision/Denial of Service  
CPE profile download provision & SNMP  
read/write & Web Manager setting  
DHCP snooping  
DHCP Option 82 support  
DHCP session manager  
NetBIOS filtering  
ARP support

### Indications

Port Rate limit function for HCNA port or Port Based  
EOC20: PWR, LAN Link/Act, STB Link/Act,  
Coax Link/Act, Coax Sync  
EOC21: PWR, Alarm, Sys, LAN Link/Act,  
STB Link/Act, Coax Link/Act, Coax Sync

### Standard

ITU G.9954, IEEE802.3, IEEE802.3u, IEEE802.3x,  
IEEE802.1Q, IEEE802.1p, IGMPv1/v2

### Power Input

5VDC (via AC switching adapter)

### Power Consumption

6W

### Dimensions

83 x 138 x28mm (D x W x H)

### Weight

330g

### Temperature

0-50°C (Operating), -10-70°C (Storage)

### Humidity

10-90% non-condensing

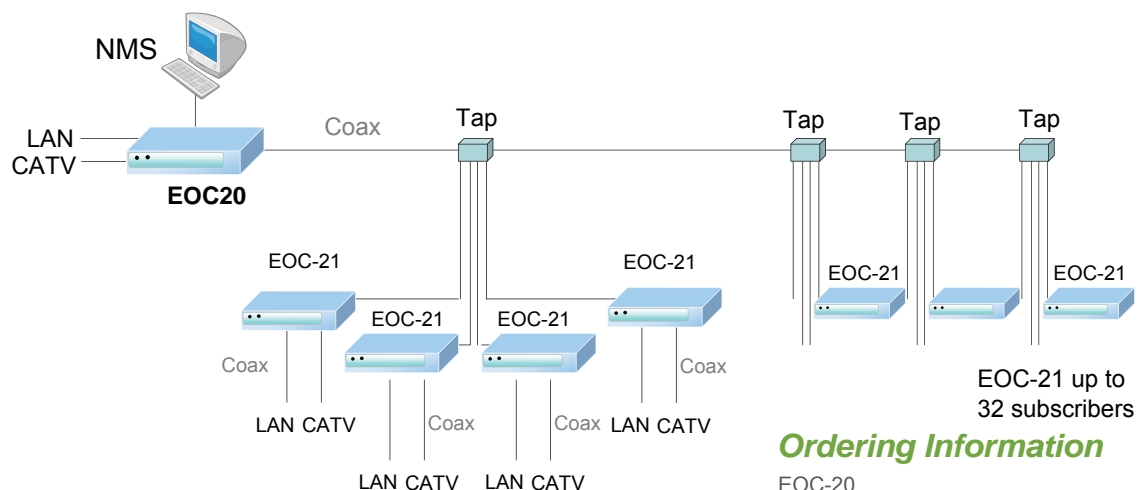
### Certification

CE, FCC, RoHS

### MTBF

35,000 hrs (25°C)

## Ethernet / CATV over Coax application



### Ordering Information

EOC-20  
EOC-21



## Ethernet to WAN (V.35, RS530, RS449, X.21) bridge ET100

The ET100 Network Bridge is a high performance remote, self-learning, Ethernet bridge. Its compact size and low cost makes it ideal for cost-sensitive bridging applications, or as a LAN extender or segmenter over bit stream type infrastructures. The built-in n x 64(56)Kbps timing clock generator makes it easy to connect to other n x 64(56)Kbps related data equipment. Several options of data interfaces, including V.35, RS-530, RS-449, X.21 and RS-232, make this unit's connection between 10Base-T or 100Base-TX LAN and various data port interfaces convenient.

### Features

- High performance bridge for 10Base-T or 100Base-TX Ethernet extension
- Auto MDI/MDIX
- Selectable data port : V.35, X.21, RS530, RS449, RS232
- Transparent half / Full duplex support on WAN, LAN interface
- Nx64, Nx56 timing clock generator for Sync WAN link
- LEDs indication for LAN, WAN status

### Interface

#### WAN Interface

Interface : Selectable RS232(Sync), V.35, RS530/449, X.21

Protocol : Synchronous HDLC (ISO 13239)

Connector : DB25M

Type : DTE port

Data rate: • RS232 up to 128Kbps

• V35, X21, RS530, RS449 up to 2Mbps

• Nx64(56)Kbps up to 2048Kbps

Clock source : Tx/Rx internal or external

#### LAN Interface

• Compliant with IEEE 802.3, 802.3u

• Connector: RJ45

• Speeds: 10/100Base-TX, Full/Half duplex

• Frames: Support 64 ~ 1522 byte packet lengths

Bridge Specifications

• Protocol: Synchronous HDLC (ISO 13239)

• Address learning, aging and deletion after 5 minutes

• 256 addresses MAC table

• 340 packet buffer

LEDs (PWR, WAN Rx/Tx, LAN Tx/Rx/Link/Err/Speed)

IEEE802.3, 802.3u

9VDC

<5W

135 x 79 x 25mm (D x W x H)

150g

0~50°C (Operating), -10~70°C (Storage)

10~90% non-condensing

CE, FCC, RoHS

35,000 hrs (25°C)

### Indications

Standard

Power Input

Power Consumption

Dimensions

Weight

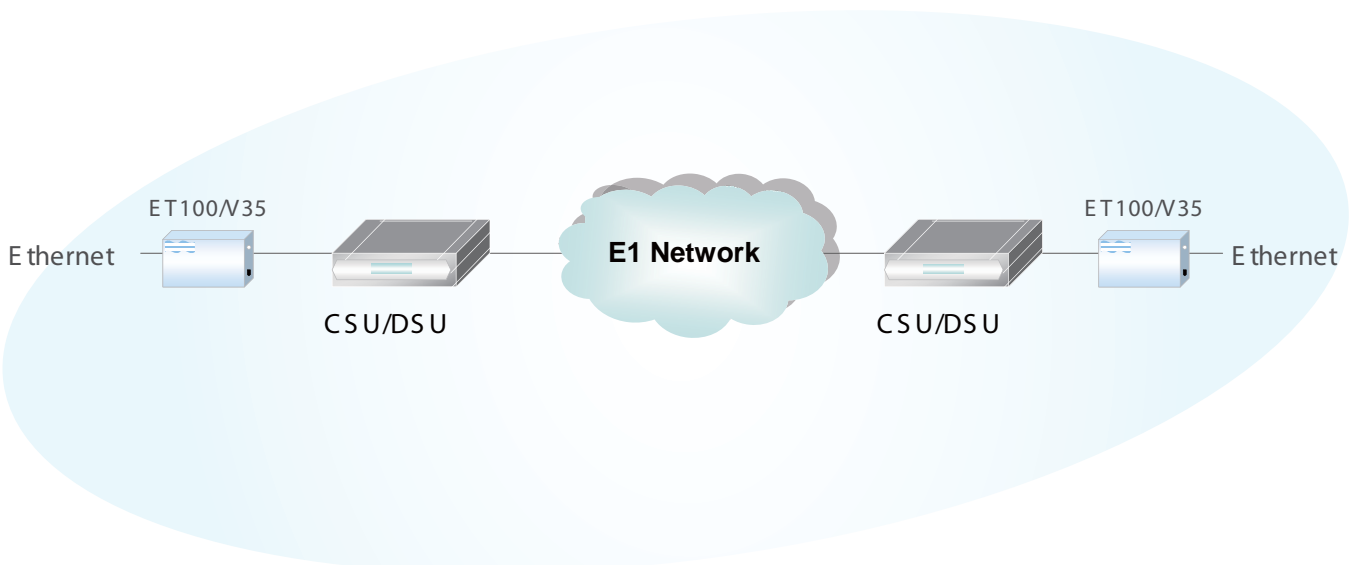
Temperature

Humidity

Certification

MTBF

## Ethernet to Data P2P Application



## Ordering Information

ET100



## Stand-alone Ethernet to NRZ bridge ET100/NRZ

The ET100/NRZ Network Bridge is a high performance, remote, self-learning Ethernet bridge. Its solid design makes it ideal for cost-sensitive bridging applications, or as a LAN extender or segmenter over NRZ bit stream type infrastructures. Multiple clocking options including a built-in n x 64(56)Kbps timing clock generator makes it easy to connect to other n x 64Kbps NRZ data equipment.

### Features

- 10BASE-T/100BASE-TX, Auto, Full Duplex or Half Duplex
- HP Auto-MDI/MDIX detects and corrects crossed cable
- IEEE 802.3x flow control enable/disable
- Real-time filtering with 256 MAC address table
- Automatic address learning, aging and deletion after 5 minutes
- Up to 340 packet-buffering capacity
- Forwarding and filtering rate at wire speed with throughput latency of 1 frame.
- Auto padding of undersized packets to meet the minimum Ethernet packet size requirement
- Buffering modes can be selected according to the setting of WAN and LAN line speeds
- Built-in nx64K / nx56K timing clock generator for WAN link

### Ports

#### WAN Interface

Type: Fixed type NRZ  
 Protocol: Synchronous HDLC (ISO 13239)  
 Connector: 4x BNC  
 Data rate: Nx64Kbps, up to 2048Kbps  
 Clock source: Tx/Rx internal or recovery from NRZ

#### LAN Interface

- Compliant with IEEE 802.3, 802.3u
- Connector: RJ45
- Data rate: Nx64Kbps
- Speeds: 10/100Base-TX, Full/Half duplex
- Frames: Support 64 ~ 1536 byte packet lengths

### Indications

Standard IEEE802.3, 802.3u, ISO 13239  
 Power Input AC: 100 ~240V, DC 18 ~ 72V  
 Power Consumption <15W  
 Dimensions 235 x 195 x 45mm (D x W x H)  
 Weight 950g  
 Temperature 0 ~ 50°C (Operating), -10~70°C (Storage)  
 Humidity 10 ~ 90% non-condensing  
 Certification CE, FCC, RoHS  
 MTBF 57,000 hrs (25°C)

### Ethernet to NRZ P to P Application



### Ordering Information

ET100NRZ      Power type

AC  
 DC

Example: ET100NRZ-AC

# Stand-alone Ethernet to G.703 Co-directional 64K bridge

## ET100/G64



The ET100/G64 Network Bridge is a high performance remote, self-learning, Ethernet bridge. Its compact size and low cost makes it ideal for cost-sensitive bridging applications, or as a LAN extender or segmenter over legacy 64Kbps co-directional bit stream type infrastructures. Multiple clock source settings including a built-in 64Kbps timing clock generator makes it easy to connect to other 64Kbps G.703 co-directional data equipment, making this unit's connection between 10Base-T or 100Base-TX LANs convenient.

### Features

- 10/100Base-TX, Full Duplex or Half Duplex
- Auto MDI/MDIX
- IEEE 802.3x flow control
- Real-time filtering with 256 MAC address tabl
- Auto address learning, aging and detection after 5 mins
- up to 340 packet-buffering capacity
- Built-in nx64K / nx56K timing clock generator for WAN link

### Ethernet to G.703 64Kbps P2P Application

#### Interface

#### WAN Interface

Type: Co-directional 64Kbps  
 Line code: Co-directional  
 Line: 4 wires 19 to 26 AWG  
 Range: up to 800 meters over 24 AWG  
 Impedance: 120 ohms  
 Pulse Amplitude: Nominal 1.0V±10%  
 Zero Amplitude: Nominal 0V±0.1V  
 Clock Frequency: ±100ppm  
 Connector: RJ45  
 Frame format: Unframed

#### LAN Interface

- Compliant with IEEE 802.3, 802.3u
- Connector: RJ45
- Data rate: 64Kbps
- Speeds: 10/100Base-TX, Full/Half duplex
- Frames: Support 64 ~ 1536 byte packet lengths

#### Bridge Specifications

- Protocol: Synchronous HDLC (ISO 13239)
- Address learning, aging and deletion after 5 minutes
- 256 addresses MAC table
- 340 packet buffer

#### Indications

Standard

Power Input

Power Consumption

Dimensions

Weight

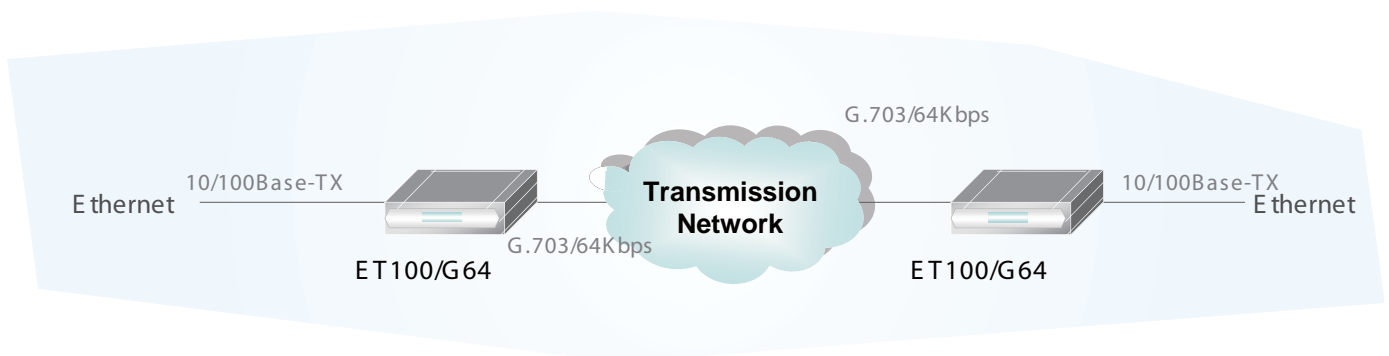
Temperature

Humidity

Certification

MTBF

PWR, TD/RD, Link, LAN Rx/Tx, 100M, Full, Err, Test  
 IEEE802.3, 802.3u, ITU-T G.703, G.823  
 AC: 100 ~240V, DC 18~72V  
 <5W  
 235 x 195 x 45mm (D x W x H)  
 950g  
 0 ~ 50°C (Operating), -10 ~ 70°C (Storage)  
 10 ~ 90% non-condensing  
 CE, FCC, RoHS  
 57,000 hrs (25°C)



### Ordering Information

ET100/G64      Power type

AC  
 DC

Example: ET100/G64-AC