Loop-IP6610 E1/DS1/DTE/DCE/ Router/Bridge Box

Features

- Supports 1 or 4 Ethernet LAN ports
- Supports 1 WAN port for multiple interfaces: E1, DS1, and DTE (V.35, V.36, EIA530, RS449, RS232, X.21, RS422)
- Supports 1 DCE (V.35) port
- Supports 10/100 BaseT speed auto-sensing and half/full duplex auto-negotiation
- Supports Router or Bridge mode
- Multicolor LED indicators
- Local control and diagnostic via DB9S console port
- Local/remote management through local console, LAN, or WAN
- Supports CLI (command line interface)
- Supports SNMP management
- Industrial series: **-40°C to 70°C**; Commercial series: **0°C to 50°C.**

Description

The Loop-IP6610 Router/Bridge provides connectivity from 10/100 BaseT to E1, DS1, DTE or DCE in a small metal box.

The Loop-IP6610 Router/Bridge contains a DB9S console port, which allows users to execute in-service diagnostics and fault isolation from a local or remote terminal. The Loop-IP6610 Router/Bridge also allows remote access to Telnet via Ethernet or WAN port. The IP6610 Router/Bridge series also provides multicolor LED indicators on the front panel and an ACO (Alarm Cut Off) button.

Ordering Information

Note: RoHS compliant units are identified by the letter **G** appearing immediately at the end of the ordering code.

Commercial models: Temperature range 0°C to 50°C.

Model	Description	Note
For E1 WAN port:		
Loop-IP6610-E75-1ETH-BR-pp-**G**	75 ohm E1 WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-E75-4ETH-BR-pp-**G**	75 ohm E1 WAN port and 4 Ethernet ports w/ Bridge function only	
Loop-IP6610-E75-1ETH-RT-pp-**G**	75 ohm E1 WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-E75-4ETH-RT-pp-**G**	75 ohm E1 WAN port and 4 Ethernet ports w/ Router & Bridge function	Temperature range 0°C to 50°C
Loop-IP6610-E120-1ETH-BR-pp-**G**	120 ohm E1 WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-E120-4ETH-BR-pp-**G**	120 ohm E1 WAN port and 4 Ethernet ports w/ Bridge function only	
Loop-IP6610-E120-1ETH-RT-pp-**G**	120 ohm E1 WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-E120-4ETH-RT-pp-**G**	120 ohm E1 WAN port and 4 Ethernet ports w/ Router & Bridge function	
For DS1 WAN port:		
Loop-IP6610-T-1ETH-BR-pp-**G**	DS1 WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-T-4ETH-BR-pp-**G**	DS1 WAN port and 4 Ethernet ports w/ Bridge function only	Temperature range 0°C to 50°C
Loop-IP6610-T-1ETH-RT-pp-**G**	DS1 WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-T-4ETH-RT-pp-**G**	DS1 WAN port and 4 Ethernet ports w/ Router & Bridge function	
For DS1 WAN port with In-band Management:		
Loop-IP6610-T-IM-1ETH-BR-pp-**G**	DS1 WAN port w/ In-band management and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-T-IM-4ETH-BR-pp-**G**	DS1 WAN port w/ In-band management and 4 Ethernet ports w/ Bridge function only	Temperature range 0°C to 50°C
Loop-IP6610-T-IM-1ETH-RT-pp-**G**	DS1 WAN port w/ In-band management and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-T-IM-4ETH-RT-pp-**G**	DS1 WAN port w/ In-band management and 4 Ethernet ports w/ Router & Bridge function	
For DTE WAN port:		
Loop-IP6610-dte-1ETH-BR-pp-**G**	DTE WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-dte-4ETH-BR-pp-**G**	DTE WAN port and 4 Ethernet ports w/ Bridge function only	Temperature range 0°C to 50°C
Loop-IP6610-dte-1ETH-RT-pp-**G**	DTE WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-dte-4ETH-RT-pp-**G**	DTE WAN port and 4 Ethernet ports w/ Router & Bridge function	
For DCE port:		
Loop-IP6610-DCE-1ETH-BR-pp-**G**	DCE port with V.35 (DB25 Female) connector and 1 Ethernet port w/ Bridge function, not included conversion cable.	
Loop-IP6610-DCE-4ETH-BR-pp-**G**	DCE port with V.35 (DC25 Female) connector and 4 Ethernet ports w/ Bridge function not included conversion cable.	Temperature range 0°C to 50°C
Loop-IP6610-DCE-1ETH-RT-pp-**G**	DCE port with V.35 (DB25 Female) connector and 1 Ethernet port w/ Router function not included conversion cable.	
Loop-IP6610-DCE-4ETH-RT-pp-**G**	DCE port with V.35 (DC25 Female) connector and 4 Ethernet ports w/ Router function not included conversion cable.	

Industrial models: Temperature range -45°C to 70°C.

Model	Description	Note
For E1 WAN port:		
Loop-IP6610-IS-E75-1ETH-BR-pp-**G**	75 ohm E1 WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-IS-E75-4ETH-BR-pp-**G**	75 ohm E1 WAN port and 4 Ethernet ports w/ Bridge function only	
Loop-IP6610-IS-E75-1ETH-RT-pp-**G**	75 ohm E1 WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-IS-E75-4ETH-RT-pp-**G**	75 ohm E1 WAN port and 4 Ethernet ports w/ Router & Bridge function	Temperature range -40°C to 70°C
Loop-IP6610-IS-E120-1ETH-BR-pp-**G**	120 ohm E1 WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-IS-E120-4ETH-BR-pp-**G**	120 ohm E1 WAN port and 4 Ethernet ports w/ Bridge function only	
Loop-IP6610-IS-E120-1ETH-RT-pp-**G**	120 ohm E1 WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-IS-E120-4ETH-RT-pp-**G**	120 ohm E1 WAN port and 4 Ethernet ports w/ Router & Bridge function	
For DS1 WAN port:		
Loop-IP6610-IS-T-1ETH-BR-pp-**G**	DS1 WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-IS-T-4ETH-BR-pp-**G**	DS1 WAN port and 4 Ethernet ports w/ Bridge function only	Temperature range -40°C to 70°C
Loop-IP6610-IS-T-1ETH-RT-pp-**G**	DS1 WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-IS-T-4ETH-RT-pp-**G**	DS1 WAN port and 4 Ethernet ports w/ Router & Bridge function	
For DS1 WAN port with In-band Management:		
Loop-IP6610-IS-T-IM-1ETH-BR-pp-**G**	DS1 WAN port w/ In-band management and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-IS-T-IM-4ETH-BR-pp-**G**	DS1 WAN port w/ In-band management and 4 Ethernet ports w/ Bridge function only	Temperature range -40°C to 70°C
Loop-IP6610-IS-T-IM-1ETH-RT-pp-**G**	DS1 WAN port w/ In-band management and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-IS-T-IM-4ETH-RT-pp-**G**	DS1 WAN port w/ In-band management and 4 Ethernet ports w/ Router & Bridge function	
For DTE WAN port:		
Loop-IP6610-IS-dte-1ETH-BR-pp-**G**	DTE WAN port and 1 Ethernet port w/ Bridge function only	
Loop-IP6610-IS-dte-4ETH-BR-pp-**G**	DTE WAN port and 4 Ethernet ports w/ Bridge function only	Temperature range -40°C to 70°C
Loop-IP6610-IS-dte-1ETH-RT-pp-**G**	DTE WAN port and 1 Ethernet port w/ Router & Bridge function	
Loop-IP6610-IS-dte-4ETH-RT-pp-**G**	DTE WAN port and 4 Ethernet ports w/ Router & Bridge function	
For DCE port:		
Loop-IP6610-IS-DCE-1ETH-BR-pp-**G**	DCE port with V.35 (DB25 Female) connector and 1 Ethernet port w/ Bridge function, not included conversion cable.	
Loop-IP6610-IS-DCE-4ETH-BR-pp-**G**	DCE port with V.35 (DC25 Female) connector and 4 Ethernet ports w/ Bridge function not included conversion cable.	Temperature range -40°C to 70°C
Loop-IP6610-IS-DCE-1ETH-RT-pp-**G**	DCE port with V.35 (DB25 Female) connector and 1 Ethernet port w/ Router function not included conversion cable.	
Loop-IP6610-IS-DCE-4ETH-RT-pp-**G**	DCE port with V.35 (DC25 Female) connector and 4 Ethernet ports w/ Router function not included conversion cable.	

Accessories		
User's Manual		
Loop-IP6610-UM	User's Manual (optional paper hard copy). A CD version of the manual is included with every order.	
Power Cord (All power cords are RoHS compliant.)		
Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	AC power cord for UK	
Loop-ACC-PC-AUS	AC power cord for Australia	
Loop-ACC-PC-CH	AC power cord for China	
Conversion Cable (All conversion cables are RoHS compliance)		
Loop-ACC-CAB-DB25M-30-1M34F	DSUB-25pin/Male to M34/Female V.35 conversion cable, Length: 30cm	This cable is for DCE port with V.35 (DB25 Female) connector
Loop-ACC-CAB-DB25F-30-1M34M	DSUB-25pin/Female to M34/Male V.35 conversion cable, Length: 30cm	This cable is for DTE port with V.35 (DB25 Male) connector
Loop-ACC-CAB-DB25F-30-1DB37M	DSUB-25pin/Female to DSUB-37/Male RS449 Conversion cable Length: 30 cm	This cable is for DTE port with V.36/RS449 connector
Tray		
81.TRAY19.000	81.TRAY19.0000**G**	19" tray. One tray for two units
Software		
Loop-IP6610-UPGR-RT	Activation code for Router function	
Firmware Upgrade		
Loop-IP6610-FWUPGR	Firmware Upgrade. Customers who desire to have a firmware upgrade after their warranty has expired can purchase this option. This will upgrade the firmware to the most current version and provide an additional 12 months of software repair and patches on existing functionality as necessary.	

NOTE: When ordering activation code for existing units, please include the units' serial numbers on the order form.

■ Where **pp** is used to select a power supply:

pp =	Description	Note
AC	Fixed AC power supply (90 to 264 Vac)	For AC, choose an appropriate power cord.
DC	Fixed DC power supply (For -24 Vdc and -48 Vdc: -20 to 60 Vdc)	
DC24	Fixed DC power supply (For -24 Vdc: -18 to -36 Vdc)	
DC48	Fixed DC power supply (For -48 Vdc: -36 to -72 Vdc)	

■ Where **dte** is used to select DTE WAN port:

dte =	Description	Note
22	V.35 WAN port	With DB25 Male connector, not included conversion cable.
33	EIA530 WAN port	With DB25 Male connector
44	X.21 WAN port	With DB15 Male connector
55	RS232 WAN port	With DB25 Male connector
66	V.36/RS449 WAN port	With DB25 Male via DB25P Female to DB37S Male (1-feet) conversion cable
77	RS422/V.11 WAN port	With DB25 Male connector

Loop-IP6610 Router Box Product Specification

E1 Line Interface

Line Rate   2.048 Mbps ± 50 ppm
Data Rate   User configurable:
                 n x 64Kbps (n=1 to 31) – ITU G.704
                 2048Kbps (clear channel) – ITU G.703
Line Code   AMI/ HDB3 (selectable)
Output Signal   ITU G.703

Input Signal	ITU G.703
Jitter	ITU G.823
Electrical	75Ω coax/120Ω twisted pair
Connector	BNC (75 ohm), RJ48C (120 ohm, twisted pair) (ordering option)
Compliance	ITU G.703, ITU G.704 (E1 unframed, E1 framed)

DS1 Line Interface

Line Rate	1.544 Mbps ± 32 ppm
Data Rate	n x 64Kbps (n=1-24)
Line Code	AMI/B8ZS
Framing	D4/ESF
Output Signal	DSX-1 w/0, -7.5, -15 dB LBO
Input Signal	DSX-1 0dB to –30dB w/ALBO
Jitter	AT&T TR 62411
Connector	DA15S or RJ48C
Pulse Template	AT&T TR 62411
Surge Protection	FCC Part 68 Sub Part D

DTE Interface- V.35

Connector	DB25 Male
Data Rate	Up to 8.192 Mbps

DTE Interface-RS449/V.36

Conversion Cable	DB25 Male to DB37 Female conversion cable
Data Rate	Up to 8.192 Mbps

DTE Interface- EIA530

Connector	DB25 Male
Data Rate	Up to 8.192 Mbps

DTE Interface-RS232

Connector	DB25 Male
Data Rate	Up to 128 Kbps

DTE Interface- X.21

Connector	DB15 Male
Data Rate	Up to 8.192 Mbps

DCE Interface- V.35

Connector	DB25 Female
Data Rate	2.048 Mbps

Physical Interface

- WAN: E1/FE1, DS1/FDS1 (Integrated CSU/DSU)
  - DTE (V.35/ V.36/ X.21/ RS232/ EIA530/ RS449)
  - DCE (V.35)
- LAN: 10/100 Base-T Ethernet port,

WAN Interface
- Single WAN port
- E1/FE1, DS1/FDS1 (Integrated CSU/DSU), DTE (V.35/ V.36/ X.21/ RS232/ EIA530/ RS449)

Ethernet Bridge (BR ordering option)

- Layer 2 protocol: HDLC, PPP(PAP/CHAP)/BCP, Frame Relay (up to 10 Frame Relay PVCs), Cisco compatible HDLC
- Remote bridge support (padding/ un-padding Ethernet CRC checksum)
- User configurable aging time
- Up to 16K MAC Table
- Cisco ISL packet transparent
- VLAN packet transparent, maximum frame size 2032 bytes
- Bridge with management IP
- 802.1w Rapid Spanning Tree Protocol
- Bridge option can be software upgraded to Router (see Layer2, Bridge mode available for transparent bridging)
- Support IEEE 802.1q VLAN

- Support IEEE 802.1ad Q-in-Q

IP Router (RT ordering option)
- Static Route, RIP v1 & v2
- Layer 2 protocol: HDLC, PPP(PAP/CHAP)/IPCP, Frame Relay (up to 10 Frame Relay PVCs), Cisco compatible HDLC
- For E1 WAN, In-band management channel on dedicated TS
- NAT/NAPT
- Port Forwarding: Static/dynamic address/port forwarding table for NAT and NAPT

LAN Interface
- One or four Ethernet ports
- Embedded Ethernet switch for four Ethernet ports
- Conforms to the relevant sections of IEEE 802.3/802.3u
- Support SNMP management
- Physical interface 10/100 Mbps, Speed auto-sensing, Half/full duplex auto-negotiation, Auto MDI-X
- RJ45 connector

DHCP
- DHCP server support for LAN users (RFC2131, RFC2132)
- BOOTP compatible

SNTP
- SNTP client support
- Sync with up to 4 time servers

Access Control & Firewall (RT)
- Packet filtering based on
    Inbound/outbound direction
    Source/destination IP address
    Protocol types (ICMP, TCP, UDP)
    Port number rang
- Up to 4 control lists

QoS
- QoS based on rate limit
- Classification based on
    - Outbound direction
    - Source/destination IP address
    - Protocol types
    - Port number range
    - DSCP

Management
- Support SNMP v1/v2
- MIB: MIBII, Transmission MIB
- Telnet
- SSH
- HTTP Web-based management
- Serial console with CLI, DB9 / RS232
- TFTP firmware download
- Configuration upload/ download
- SNMP/ Telnet via data channel/ In-band Management channel

Administration & Diagnostics
- Ping
- Trace route
- Loopback

Diagnostics Test

Loopbacks	For E1/ DS1: Line Loopback, Payload Loopback
	For DTE: DTE to DTE Loopback
Test Pattern	For E1: 15-bit PRBS, 3-in-24, 1-in-8, 2-in-8, 1:1
	For DS1: 20-bit QRSS, 3-in-24, 1-in-8, 2-in-8, 1:1
Idle Channel	For E1: Use of idle channel to perform PRBS diagnostic test
	For DS1: Use of idle channel to perform QRSS diagnostic test

Performance Monitor

Performance Store	Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour summary line, user, and remote site
Performance Reports	Date & Time, Error Second, Unavailable Second, Burst Error Second, Severe Error Second, Controlled Slip Second, and Loss of Frame Count
Alarm History	Date & Time, Alarm Type, and Location
Alarm Queue	Maximum 40 alarm records which record the latest alarm type, location, and date & time

Electrical

- AC: Full range support 100 – 240V
- DC: -24V or -48V support
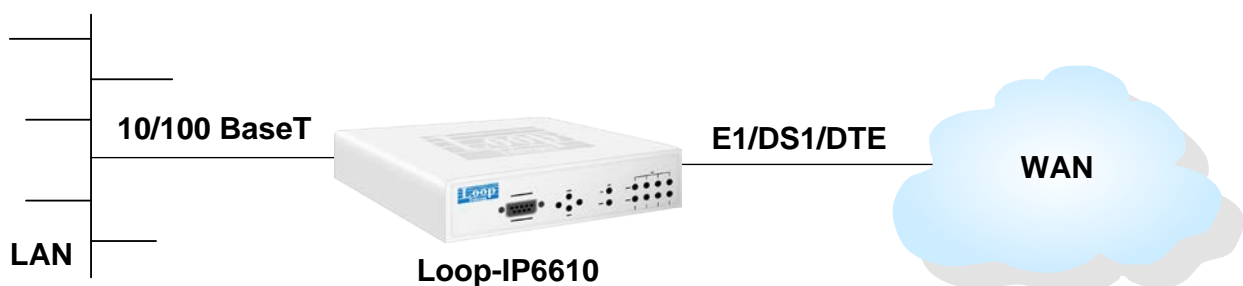- Power consumption: Max. 6 watt

Physical

Dimensions	210 x 41.5 x 140 mm. (WxHxD)
Temperature	Commercial unit: 0 to 50°C; Industrial unit: -40° to 70°C
Humidity	0-95% RH (NON-CONDENSING)
Mounting	Desk-top stackable, wall mount, rack mount with 19" tray available

Compliance

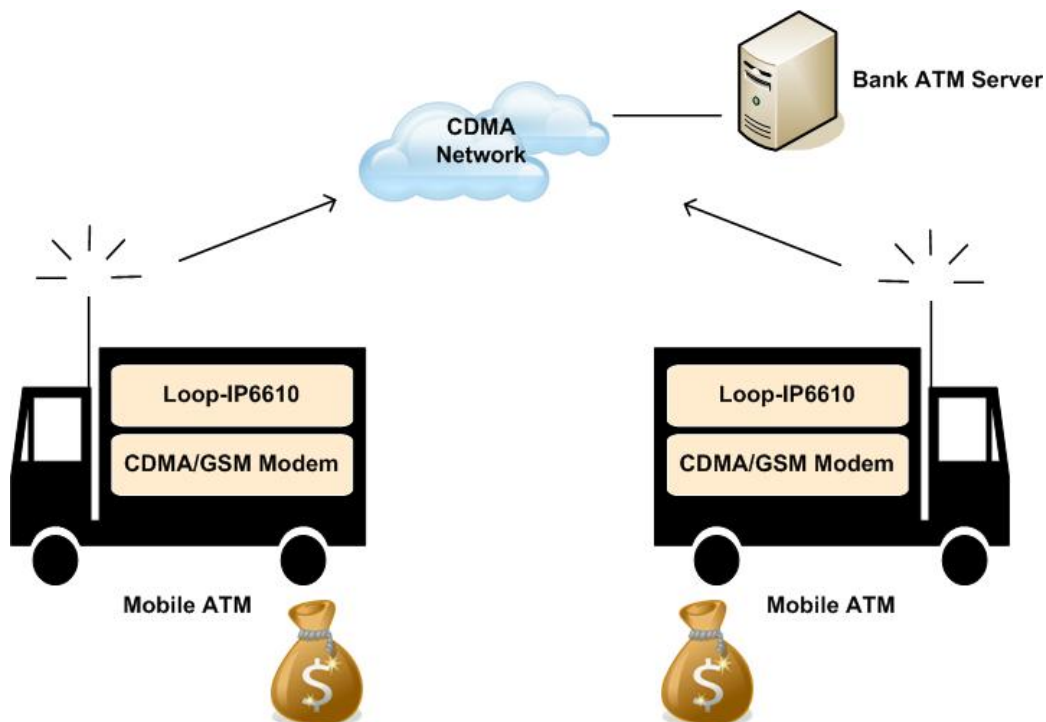|	
EMC	FCC15 Class A EN300 386, EN55022, EN55024
Safety	UL60950 ETL/ETLC, IEC60950 CB, EN60950
Network	FCC68, CS-03

Application Illustrations

Basic Use

Ethernet to Data Transmission Application

DCE (V.35)   **Ethernet**

IP Network

Customer Router

Loop-IP6610

Mobile ATM Solution

CDMA Network

Bank ATM Server

Loop-IP6610

CDMA/GSM Modem

Mobile ATM

Loop-IP6610

CDMA/GSM Modem

Mobile ATM