



BLACK BOX[®]

NETWORK SERVICES

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ECHO MULTIPLEXOR



Key Features

- ▶ *Intuitive configuration*
- ▶ *Drop and Insert Port*
- ▶ *Made in the UK*
- ▶ *2:1 Voice compression*
- ▶ *Flexible Clocking*

The Black Box Echo Multiplexor has been designed to be an extremely flexible E1 Multiplexor. It can multiplex four X.21/V.35 ports onto a single E1 2.048Mbps composite link or any N x 64K composite supplied. In addition to the data ports, the Echo Multiplexor can also contain a Drop and Insert port to connect to devices such as a PBX or a high speed router. The multiplexor contains management and the ability to drive dry contact relays.

Composite Link

The Composite link is presented as both a pair of 75 ohm BNC connectors and a single 120 ohm RJ45 female connector. Either of these options can be configured by the user. The composite port will support any service, from an N X 64K G.703/G.704 link, up to a provision, including DSL, satellite links,

radio, microwave, leased lines and laser technologies, as well as campus style line drivers and fibre extenders.

Data Ports

The data ports or DTE ports are presented on DB15 way female connectors which can be configured internally to be either X.21 or V.35. The connector presents an X.21 DCE to the world and if V.35 is required, then a short stub cable converts the DB15 way female to a female M34 or 34 way Winchester connector. This again is configured as a DCE. The data ports will support any speed from 64K up to 1.984Mbps in 64K steps and are fully programmable.

Drop and Insert Options

The drop and Insert card is available in two versions. Both cards present a pair of 75 ohm

BNC connectors for unbalanced connection, and a 120 ohm RJ45 female for balanced connection. These options are all configurable on site.

The Drop and Insert card is the standard card. This will connect to a PBX or a high speed router, and intergrate the Drop and Insert traffic with the data traffic onto the composite link in 64K timeslots. The user has full control over the timeslot allocation through the management, and can allocate any timeslot from the composite link to any data port or the Drop and Insert port.

The second Drop and Insert option is the compression card which has all the abilities of the standard card but can also compress voice channels by 2:1, freeing up, up to 960Kbps of bandwidth for additional data. The compression works with no loss

of quality to the voice, and will take 30 timeslots of voice and compress them into 15 timeslots on the composite link. The remaining timeslots are then be channeled to the data ports, effectively giving you 960K of free bandwidth!

Clocking Options

There are multiple clocking options on the Echo Multiplexor. The first option is Internal clock, which is used to master a clock onto the E1 network. This is ideal for situations where the service provider is not providing a clock. In conjunction with this, the second option is Slave clock, which is ideal for situations where there is a clock being provided by the network. In most applications, the clocking would set with one end as Internal Clock and the other end as Slave.

The third option is External Clock, this is a separate 75 ohm

BNC connector on the rear of the unit, for the sole purpose of bringing an external clock into the multiplexor. The fourth option is to take an external clock through one of the Data ports. This can be provided through any of the DTE ports and is used to sync the data channel onto the main board through FIFO (First In First Out) buffers to avoid any clock slip between the two systems.

When the Drop and Insert options are used, there are further options available for using the card to master the clock. This allows two PBXs to be connected together over a G.703 composite link with data running alongside, and keep the PBX's in sync with each other.

Management

The management of the Echo Multiplexor, is accessed through the console port on the rear of the unit. The console port presents

itself as a DB25 way female DCE connector, so connection to the box is carried out using a standard AT modem cable. The management port offers seven types of terminal emulation which are VT52, VT100, ADDSVP, ADM3A, H1500, N8009 and TV1920. All the management features are accessed through the built in menu system and are very easy to navigate.

The initial menu screen displays the majority of the options including link speed, clock type, data port speed, data port clocking, and a complete timeslot allocation chart, allowing the user to configure any timeslot from the composite link, to any data port or Drop and Insert channel. The next menu is the Drop and Insert menu which only appears when the option is fitted. This menu allows you to configure such items as the Drop and Insert

clocking options and the Timeslot 0 usage.

Then comes the System Alarms menu which provides current information on the status of the Echo including the status of the composite link and of the Drop and Insert channels. This particular menu is very good for fault finding when required.

The next menu is the G.823 statistical menu which offers the user a full 24 hour log of statistics broken down into 15 minute sections.

Dry Contact Relay Port

The Echo multiplexor also has the ability to drive a selection of dry contact relay devices such as alarms, flashing lights etc.... There are six contacts altogether, split up as 3 major alarms and 3 minor alarms, all of which are user definable through the menu system.

Specifications

Composite Link and Drop and Insert Port

Compliance:

G.703, G.704, I.431, G.823, PD7024, CTR12, EN41003, EN60950, EN55022, EN50082-1, BABT, CE (EMC, LVD, TTE).

Link Port:

(1) E1 port..

Speed:

2.048 Mbps +/- 50 ppm, internal, loop, external/channel options.

Statistics and Alarms:

24-hour BERT/15-minute intervals, (2) Major and Minor Alarm.

Transmission:

AMI/HDB3.

Interface:

G.703 75-ohm unbalanced (UK): (2) BNC connectors (to PD7024) or G.703; 120-ohm balanced (Europe): 8-way RJ-45 connectors (to CTR12).

Nx64K Data Channels

Control Signals:

Indicate Permanent or Alarm Controlled option.

Data Format:

Synchronous transparent.

Diagnostics:

Bilateral loopbacks, undeflow, overflow alarms.

Speed:

OFF, 64 kbps through 1984 kbps in 64-kbps steps, internal or

external clocks.

Interface:

MXU9070: X.21/V.11 (DCE); MXU9076: V.35.

Management Port

Supported Terminals:

AVT52, VT100, ADDSVP, ADM3A, H1500, N8009, TV1920.

Interface:

V.24/V.28 (DCE), 9600 bps async, (8) bits, no parity, (1) stop bit.

General

Environment:

Operating: 0 to 40°C, 0 to 90% humidity non-condensing.

Indicators:

Front Panel: Carrier, Major Alarm, Minor Alarm, Loop.

Power Supply Requirements:

100-240 VAC, 50-60 Hz, 40W (internal switched-mode power supply unit).

Size:

6.1H x 43.4W x 34D cm

Weight:

Minimum 2.4 kg; Maximum 2.6 kg

Ordering Information

ITEM	CODE
Echo Mux Dual	
X.21/V.11	MXU9070
V.35.....	MXU9076
You may also need these options...	
Drop and Insert Card	MXU9074C
Dual X.21/V.11 Card	MXU9075C
Dual V.35 Card	MXU9077C
PCM/ADPCM Compression Option	MXU9081C