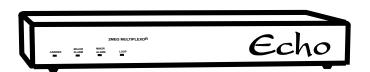# BLACK BOX®
NETWORK SERVICES

Echo E1 Multiplexor

Integrate voice
and data traffic
over high-capacity
E1 2-Mbps links

Key Features
▶ Simple, easy-to-use configuration screen
▶ Drop-and-insert operation
▶ Flexible clocking
▶ X.21/V.11 or V.35 data interfaces
▶ 2:1 voice compression for up to 30 voice channels

Overview

The modular Echo Mux from Black Box uses the latest chip set technology to provide a versatile, user-friendly Multiplexor for integrating voice and data traffic on E1 or fractional E1 circuits. As the process of using multiple circuits for different applications is uneconomical, the Echo will instantly save money by placing all traffic over one link.

The Echo Mux is an E1 time division multiplexor operating at 2.048 Mbps that is compliant with both UK (75-ohm un-balanced) and European (120-ohm balanced) G.703 standards and supports up to 4 X.21/V.11 data channels. The 4 synchronous data ports operate at data rates of up to 1984Kbps steps. The channel data rates are set by time slot allocation (which need not be contiguous).

The unit is configured from either end of the link, using a terminal or a PC running a terminal emulation package. Configuration is as easy as 1, 2, 3, or 4 - the only keys you need to use when allocating bandwidth to the channels - while innovative software offers you reliable connection structured or unstructured E1 circuits. The Echo Mux has many different options that can add functionality to the basic feature set, for example an additional (optional) E1 drop and insert card, a PCM/ADPCM interface, and SNMP management.

The "drop and insert" card is extremely useful where installations have unused bandwidth on the E1 link between two PABXs. The "drop and insert" interface allows extra traffic, be it voice or data, to pass over the E1 connection - this is achieved by liberating unused bandwidth from the 2-Mbps connection and allowing user specified timeslots to be passed transparently between the "drop and insert" port and the main link.

overview cont…

The PCM/ADPCM compression option compresses PABX voice channels and effectively frees up yet more bandwidth for data applications. PCM digitised voice is compressed using the ADPCM algorithm with no noticeable degradation of quality and allows 30 voice channels plus signalling to be used over the E1 link. By using the PCM/ADPCM option 960-kbps of bandwidth is 'reclaimed' and this can then be allocated to legacy data, videoconferencing or to an optional router.

Typical Application:

The Echo may be used to provide up to 4 Nx64K X.21/V.11 channel connections (at any multiple of 64K) between two sites, using a G.703 2-Mbps data link.

The Complete Package:

- Echo E1 Multiplexor
- User Guide
- Mains lead

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 Ports – (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 contacts
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 Signs – Indicate Permanent or Alarm Controlled option
Data Format – Synchronous transparent
Diagnostics – Bilateral Loopbacks, Underflows, 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

Supervisor Port:
Supported Terminals – VT52, VT100™, ADDSVP, ADM3A, H1500, N8009, TV1920
Interface – V.24/V.28 (DCE), 9600 bps async, (8) bits, no parity, (1) stop bit

PCM to ADPCM Compression Option
Network Port Compliance – G.703, G.704, I.431, G.823, PD 7024, CTR12, EN41003, EN60950, EN55022, EN50082-1, BABT, CE (EMC, LVD, TTE)
Interface – G.703 75ohm unbalanced (UK), 2 x BNC connectors (to PD 7024) or G.703 120ohm balanced
   (Europe), 8 way RJ45 connector (to CTR12)
Data Rate – 2.048Mbps +/- 50ppm referenced to Internal, Loop, External or channels 1 to 4
Voice channel compression – Pairs of PCM coded 64Kbps time slots are compressed into the same number of ADPCM coded 64Kbps time slots

General:
Environmental – Operating: 0-40°C, 0-90% humidity (non-condensing)
Front Panel Indicators – Carrier, Major Alarm, Loop
Power Supply requirements – 100-240 VAC, 50-60 Hz, 40 W (internal switched-mode power supply unit)
Size – 6.1H x 43.4W x 34D cm
Weight – Min: 2.4 kg; Max: 2.6 kg

Ordering Information
Product Name: **Order Code:**
Echo Mux Dual X.21/V.11   …………………………………………..…   MXU9070
Echo Mux Dual V.35   …………………………………………………   MXU9076

You may also need:
   Drop & Insert Card   …………………………………………………   MXU9074C
   Dual X.21/V.11 Card   ………………………………………………   MXU9075C
   Dual V.35 Card   ……………………………………………………   MXU9077C
   PCM/ADPCM Compression   …………………………………………   MXU9081C
   SNMP Management   …………………………………………………   MXU9083