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GET CONNECTED WITH BETTERBOX®

BetterBox® offers you one of the most complete ranges of multiplexors in today's market. Our range of multiplexors covers most situations you may ever come across, from sync, async or mixed sync/async, TDMs statistical and local multiplexors. Some of them will even allow you to add voice to your digital link. Let's take a closer look at the different models available.

If we take a very simple look at multiplexors, they come in two main categories; (1) those that need a modem or line driver to connect them to a transportation media such as leased or dial-up line, or even private wires, and (2) those that in addition to the multiplexing logic, also have an in-built line driver for direct transportation medium (also known as local multiplexors). In addition, each of the categories can be subdivided into two others; (1) time division multiplexing (TDM) or, (2) statistical time division multiplexing (STDM). Local multiplexors are normally used to save in-house wiring costs since local 2 or 4 wire lines can carry hundreds of kilobits worth of data per second if properly driven. It is possible to take advantage of this capacity to construct sampling multiplexors which are easier and less expensive than statistical multiplexors. Normally in a local multiplexor composite data rates are so high that each channel to be multiplexed is simply sampled many times per bit and the samples per channel are then interleaved in a very simple frame.

Finally, voice and data multiplexors come in two different models, one actually uses very complex digitising techniques to send up to 2 channels of voice mixed with up to 8 channels of synchronous and/or asynchronous data. These units are ideal to save you the costs of telephone lines between two sites. The other is actually a passive unit specifically designed to save you the costs of laying new cable when adding extension wires and allows you to send data and voice simultaneously on the same pair of wires, without them interfering with one another.

Multiplexors Explained...

A definition of multiplexing
This is where multiple signals or streams of data are consolidated into one physical channel, which is then sent across a communications link. On reaching its destination the information is broken back down into its original parts once more. Digital multiplexors are the most common type of multiplexor in use, where Time Division Multiplexing (TDM) and Statistical Time Division Multiplexing (STDM) are by far the most popular. When Analogue multiplexors were around, Frequency Division Multiplexing was the method used for transmitting data, but it is no longer popular. A different way of multiplexing is inverse multiplexing. This method is completely the reverse of the other multiplexing techniques mentioned.

Time Division Multiplexing
During system configuration bandwidth is set up for each user, the amount of bandwidth is decided by the person implementing the multiplexor and generally stays unchanged. The user can then send data to their allocated bandwidth slot, all the slots are then sent as one composite signal across the physical channel. At its destination the signal is separated back out into its original parts (demux). Should any of the slots be empty, they will still be transmitted with the other slots. With this method voice can be sent, this is because the bandwidths are fixed and are therefore guaranteed to be able to provide a reliable service, as opposed to statistical multiplexing where the bandwidth is not fixed and is therefore mainly used for data transmission not voice.

Statistical Time Division Multiplexing
This is a popular method of sharing the physical channel. The bandwidth is allocated dynamically to channels moment by moment based on their level of usage; to do this the multiplexor uses various algorithms to determine the allocated resources. Unlike the TDM the bandwidth is not fixed and can therefore be more responsive to volume of data traffic using the line more effectively.

Inverse Multiplexing
The complete opposite of the above mentioned multiplexing methods, a single large data stream is broken down into smaller pieces and transmitted through separate physical channels. One of the main reasons for use is to gain cost savings. If for instance you wanted to connect to your office in Italy sending one main data stream, rather than paying high costs for the one expensive large physical channel to send this data, the Imux can break it down into small pieces and send them over smaller, cheaper separate physical channels.

Multiplexors
Time Division, Statistical, Inverse

CWDM - More Bandwidth over Fibre Optic

Description
The flexible CWDM / OADM concept provides the ideal enhancement for your current fibre optic infrastructure. It will transmit up to 16 connections of different standards, data rates or protocols over one single fibre link. ESCON, ATM, Fibre Channel, Gigabit Ethernet are supported simultaneously, without disturbing each other. The express CWDM system can also be cascaded: start with e.g. 4 channels and use the extension port later to access additional applications when needed. Up to 16 channels can be transported this way without extending the fibre optical infrastructure cabling. Due to its purely passive technology, the express CWDM series is well-prepared for building a fail-safe and maintenance-free backbone architecture. With our complimentary express OADM components you can drop single channels from a CWDM bus or build optical add-and-drop rings in a flexible way.

FEATURES
- Passive CWDM Multiplexors with 4, 8 or 16 channels
- Optional extension and cascading ports for network upgrade or add-and-drop
- Up to 10 Gbit/s per channel
- Compliant to ITU-T G694.2 CWDM standard
- Easy integration of new services over existing fibre optic lines
- Low-cost transceivers applicable, existing equipment can still be used
- Metro distance, up to 80 km
- Fully transparent to all data rates and protocols
- Entirely passive device, no power supply needed

SPECIFICATIONS
- **CWDM: Channels** — 4/8/16 Duplex LC Connector, Max. 10 Gbit/s, Channel Separation 20nm Supports ITU-T G.694.2
- **Extension-Port:** — Optional Broadband Express Port for one 5104/5108 only more express CWDM 5104/5108 (8 consecutive channels) Duplex LC connector
- **Cascading Port:** — Optional Cascading Port for one more 5104 only express CWDM 51044 on consecutive channels) Duplex C connector
- **CWDM Network Port:** 1 Duplex LC Connector
- **Power Supply:** Not needed
- **Mechanical:** 19" 1HU, Depth 260 mm
- **Environmental:** Temperature 0-60°C, Humidity max. 90% Non-condensing

Application Examples
- **Enterprises and Carriers/Telcos with Fibre Infrastructure**
- **Access to Additional Applications via existing links**
- **ATM, Escon, Fibre Channel, Gigabit Ethernet Simultaneously**
- **Cost-Effective Transmission of High Data Volumes**
- **Ideal Solution for Metro-Core, Metro-Access and Enterprises**

Order Code	Description	Price
G-CWDM5104	4 x 20 nm Channel 1 x CWDM Network optional: 1 x Extension Port (8 consecutive channels) optional: 1 x Cascading Port (4 consecutive channels)	**£Call**
G-CWDM5108	8 x 20 nm Channel 1 x CWDM Network optional: 1 x Extension Port (8 consecutive channels)	**£Call**
G-CWDM5116	16 x 20 nm Channel 1 x CWDM Network	**£Call**

Other CWDM Multiplexor types on request, please call.

MULTIPLEXORS

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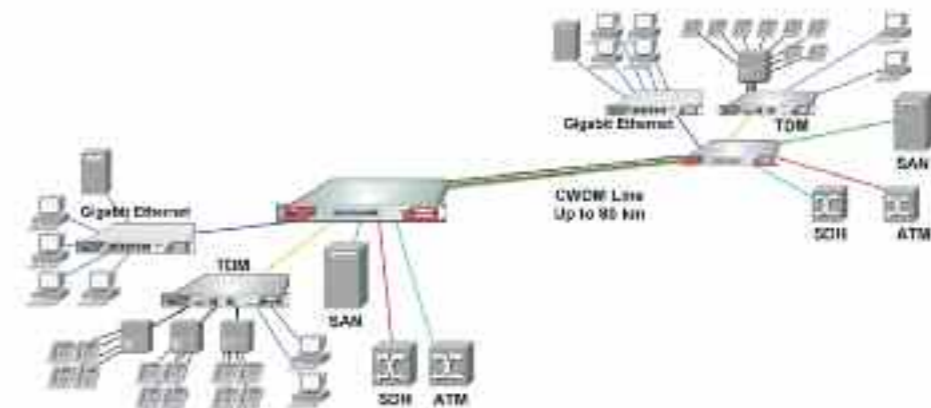
MUXNx8 TDM Multiplexor

Description

The 16-Port MUXNx8 is a modular TDM Multiplexor designed to support up to sixteen sub-channel ports from 1200bps to 64Kbps in both Sync and Async formats. The unit is supplied with a variable composite port rate from 8Kbps to 128Kbps in 8k increments for maximum flexibility. The composite port data interface is software selectable for RS-232, RS-530, V.35, RS-422/449 or X.21.The sub-channel ports may be individually configured to support flow control of RTS to DCD on a port by port basis or no flow control. The ports also support individual RTS to CTS delays and external TXC timing for DCE to DCE crossover. The data interfaces are RS-232 on 16 ports. Four of the user ports are software selectable for RS-232, RS-530, V.35, RS-422/449 or X.21. The MUXNx8 derives its timing from the external DCE attached to the composite port. Alternately, timing may be sourced by the unit itself in a direct cabled pair of multiplexers. The MUXNx8 utilizes four, 4-port interface cards, a main processor card and a power supply card. This modular design facilitates future upgrades and allows the user to add user ports in 4-port increments. All cards are front load .The management port allows local and remote configuration commands. Integral software design features allow configuration of a sub-channel without disrupting existing sub-channels. Network management features include channel and composite loop backs, and link down error reporting. All port parameters are set with an async terminal connected to the configuration port. Setup procedures are menu driven and all parameters are stored in memory that supports power outages and supports end to end software upgrades via management channel.

Application
Multiple Sync or Async DTE devices time division multiplexed onto one Sync DCE communication link
Timing
System Timing: External via Composite Port or Internal Timing for back-to-back connections Each sub-channel Port capable of accepting external TXC timing for DCE to DCE crossover
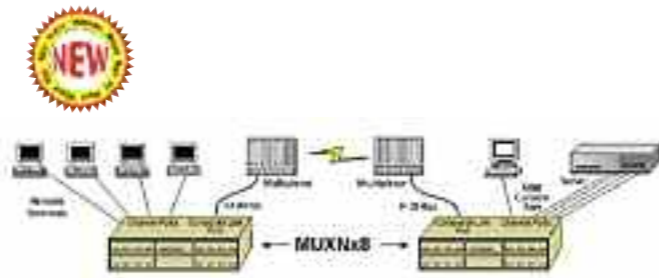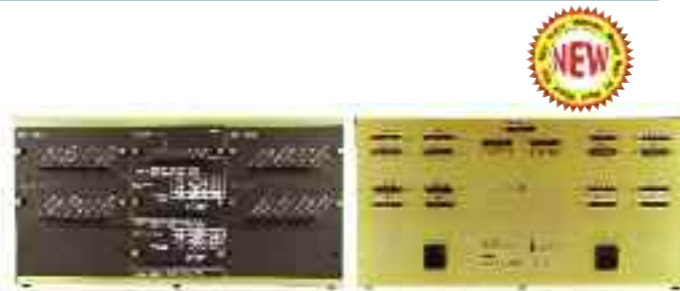
SPECIFICATIONS

- Operating Temperature: 32° to 122° F (0° to 50°C)
- Relative Humidity: 5 to 95% Non-Condensing
- Altitude: 0 to 10,000 feet

Dimensions
- Height: 8.72 inches (22.10 cm)
- Width: 17.00 inches (43.20 cm)
- Length: 8.00 inches (20.30 cm)
- Weight: 9 pounds (4.2 Kg)

Order Code	Description	Price
G-MUXNx8	Mux Chassis w/ Dual Power Slots	£845.00
G-MUXNx8PCB	MUX Processor (1 required)	£275.00
G-MUXNx8I/O	4 port I/O card (1 - 4 required)	£225.00
G-MUXnx8PWR	Mux Single Redundant Power Supply	£175.00

MUXNx64 TDM Multiplexor

Description

The 16-Port Dual Nx64-MUX is a modular TDM Multiplexor designed to support up to sixteen sub-channel ports from 9.6Kbps to 768Kbps in both Sync and Async formats. The unit is designed with a pair of composite ports with variable port rates from 64Kbps to 2.048Mbps in 64k increments for maximum flexibility. The composite port data interface is software selectable as RS-232, RS-530, V.35, RS-422/449 or X.21.The dual composite architecture allows for the distribution of channels over two aggregate links of equal bandwidth. This permits the utilization of the 2X bandwidth either to achieve up to 4 Mbps total bandwidth, or to allocate spare bandwidth for channel recovery in the event either link fails. For the latter configurations, channels may be assigned with either high or low priority, which assures that high priority channels remain in service on the surviving link.The sub-channel ports may be individually configured to support flowcontrol of RTS to DCD on a port by port basis or no flow control. The ports also support individual RTS to CTS delays and external TXC timing for DCE to DCE crossover. The data interfaces are RS-232 on 16 ports. Four of the user ports are software selectable for RS-232, RS-530, V.35, RS-422/449 or X.21.The Dual Nx64-MUX derives its timing from the external DCE attached to the composite port. Alternately, timing may be sourced by the MUXNx64D in a direct cabled pair of multiplexors. When using dual composites, timing may be independently selected for each link. The Dual MUXNx64D utilizes four, 4-port interface cards, a main processor card and dual power supply cards. This modular design facilitates future upgrades and allows the user to add user ports in 4-port increments. The management port allows local and remote configuration commands. Integral software design features allow configuration of a sub-channel without disrupting existing sub-channels. Network management features include channel and composite loop backs, and link down error reporting. All port parameters are set with an async terminal connected to the configuration port. Setup procedures are menu driven and all parameters are stored in memory that supports power outages.

SPECIFICATIONS

- Operating Temperature: 32° to 122° F (0° to 50°C)
- Relative Humidity: 5 to 95% Non-Condensing
- Altitude: 0 to 10,000 feet

Dimensions
- Height: 8.72 inches (22.10 cm)
- Width: 17.00 inches (43.18 cm)
- Length: 9.00 inches (22.86 cm)
- Weight: 15 pounds (6.8 Kg)

Order Code	Description	Price
G-MUXNx64D	Mux Chassis w/ Dual Power Slots	£1,295.00
G-MUXNx64DPCB	MUX Processor (1 required)	£995.00
G-MUXNx64I/O	4 port I/O card (Use between 1 and MUXNx64I/O)	£225.00
G-MUXnx64PWR	Mux Single Redundant Power Supply	£175.00

FOMPCM30 Fibre Mux

Description

The FOMPCM30 Fibre Mux can provide 1-8 channels, 1-16 channels, 1-24 channels, or 1-30 channels telephone through optical cable, the network application is point-to-point, supporting FXO/FXS. It has solved telephone transmission problem of edge customers. This equipment uses special digital multiple-connected chip whose function is formidable that integrates nearly all the digital logical function of equipment, thus remarkably enhancing product performance and reducing cost. Additional channels of E1, Ethernet and RS-232 can be added upon request.

FEATURES

- Low cost solution for delivering analogue POTS lines over long distance fibres
- Up to 30 FXO ports for connection to PABX or PSTN;
- Up to 30 FXS ports for connection of phones or faxes;
- Ethernet port for LAN interconnection;
- RS-232 for data transmission
- Up to 4E1 ports as an option for PABX interconnection or any other E1 Leased lines services
- MTBF (more than 10 years)

SPECIFICATIONS

FXS
- ringing voltage: 75V
- ringing frequency: 25HZ

FXO
- Two line input impedance: 600 Omega (hanging off)
- Wastage: 40 db
- Ringing detecting voltage: 35V
- Optical Interface Parameter
- Optical wavelength: 850nm/1310nm for multimode optical interface, 1310nm/1550nm for singlemode optical interface
- Optical interface: SC
- Receiving and dispatching module: >-6dBm
- Optical receiver receiving sensitivity <-36 (BER<10):
- Dynamic receiving range: >-30dB
- Vibration characteristic: Conforms G.742 and G.832 standard

Order Code	Description	Price
G-FOMPCM30FXO	30 channels voice FXO	£1,345.00
G-FOMPCM30FXS	30 channels voice FXS	£1,345.00
G-FOMPCM304XOE1ETH	30 x FXO, 4 x E1, 1 x 10/100	£1,555.00
G-FOMPCM304XSE1ETH	30 x FXS, 4 x E1, 1 x 10/100	£1,555.00
G-FOMPCM304XOE1ETH232	30 x FXO, 4 x E1, 1 x 10/100, 1 x RS232	£1,625.00
G-FOMPCM304XSE1ETH232	30 x FXS, 4 x E1, 1 x 10/100, 1 x RS232	£1,625.00