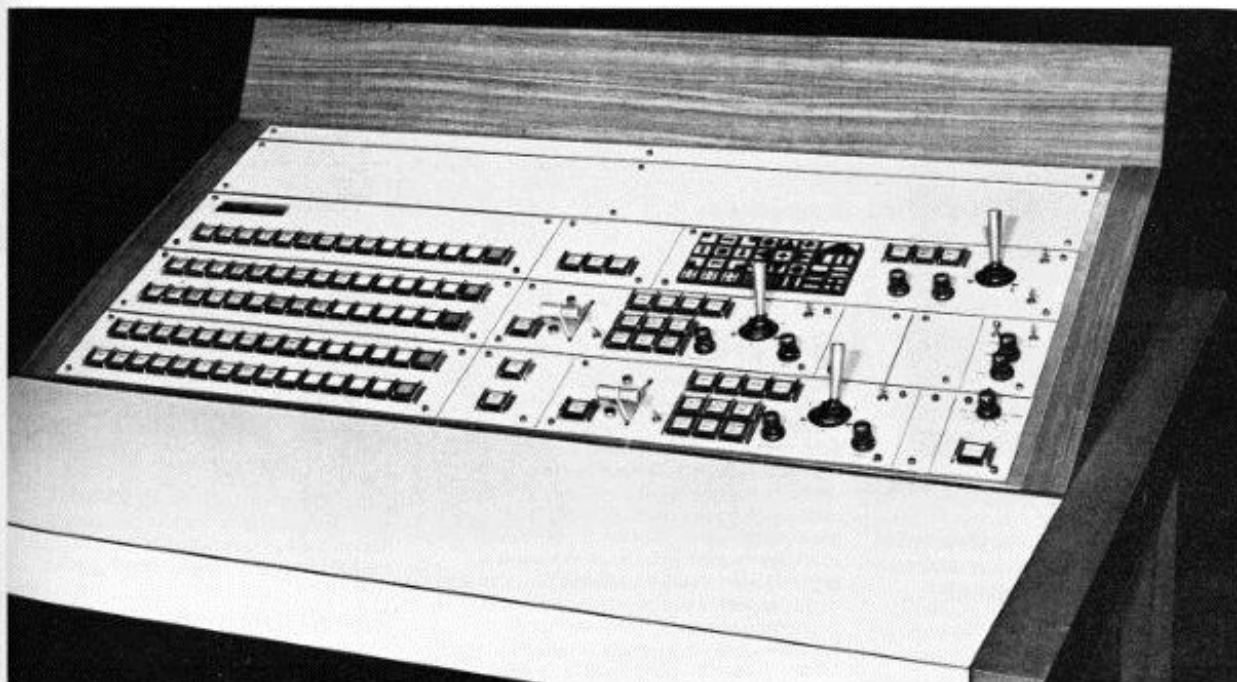




Marconi Broadcasting Studio Systems

Vision Mixer Systems

B3730 Series



15x5 mixer with two Mix/Effects Amplifiers in Control Desk

Features

- All digital pattern generator
- Combined Mix/Effects Amplifiers
- 8, 15 or 22 inputs
- Encoded chroma key
- On-air cues
- Modular construction
- 625 PAL or 525 NTSC
- Mix/Fade/Wipe/Spotlight
- Five key modes
- Multiple patterns
- Hard or soft edges
- Pattern positioner
- Sync Comparator
- Weave and crawl effects
- Non additive mixer

Description

The B3730 Mixer System is a part of the new generation of Marconi equipment in which digital technology is employed to ensure the utmost stability and reliability. The system is a

flexible approach in which combinations of units may be employed to provide different versions of mixer with different facilities. A typical 15 input A/B/C/D mixer with preview is shown on page 2.

The units from which the mixer system is built up are:

- 1) B3731 8x1 Switching Unit.
- 2) B3732 Cues Output Unit.
- 3) B3733 Effects Amplifier.
- 4) B3734 Pattern Generator.
- 5) B3735 Effects Modulator.
- 6) B3736 Sync Comparator.
- 7) B3737 Delay Unit.
- 8) B3738 Power Distribution Unit.
- 9) B3739 Input Timing Equaliser
- 10) B3749 Non Additive Mixer

All units are built in either 1½in, 3½in, or 5½in standard modules and a typical mixer rack layout is shown on page 3. BNC connectors are used throughout and individual units may be rapidly disconnected for unit isolation and servicing. Custom arrangements of control panels can be provided if the design of an individual mixer is required from the component parts available in the system.

The equipment requires only power and video inputs, all other pulses being internally derived.

The mixer includes a facility to prevent operator error if any attempt is made to mix or wipe to a non-synchronous source. The equipment reverts to the cut mode of operation and the cut will not take place until the end of the fader control is reached. Non-synchronous inputs are detected by the sync and burst

comparator which also flashes the fader lamps on the control panel.

The mixer system includes a delay unit with small incremental steps to enable accurate timing of the mixer.

Video Facilities

Fade

The control operates on the 'A' signal and attenuates the picture leaving sync and burst undisturbed. Field blanking width may be adjusted to fade or leave undisturbed Vertical Interval Signals.

Mix

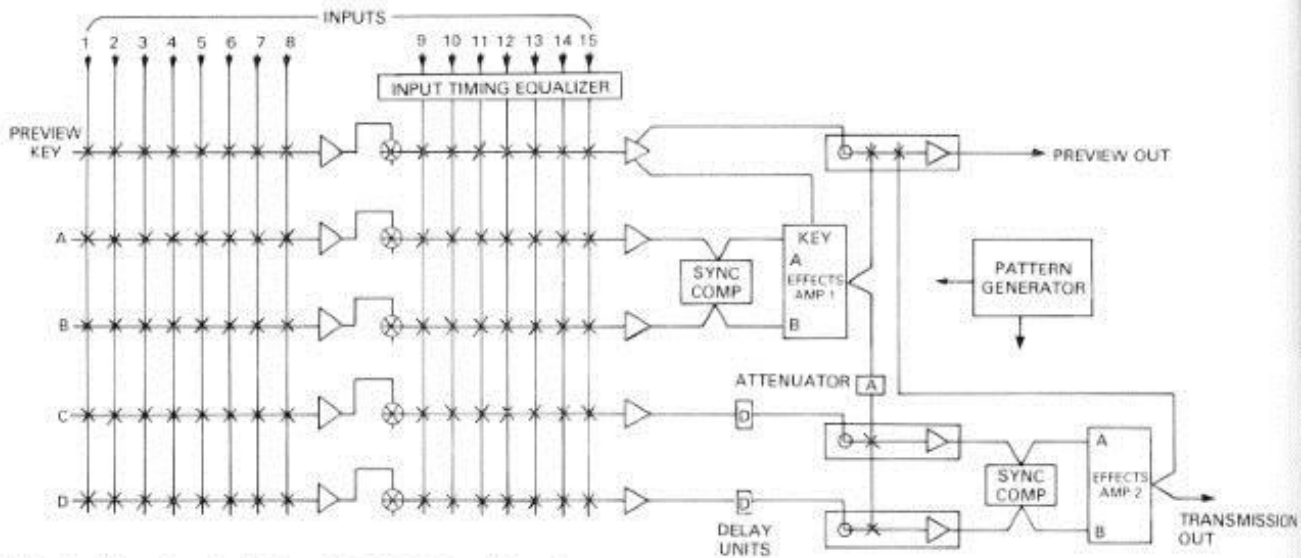
Cross mixes the 'A' and 'B' signals. When mixing from the A bus to the B bus the output contains the A sync and burst until the fader control reaches the B position, whereupon the B sync and burst is inserted instead of A, and vice-versa 'B' to 'A'.

Wipe

Wipes between 'A' and 'B'. Hard or soft edges will be as selected by the pattern generator. The sync and burst arrangement is as for the mix mode. Wipe directions may be Normal or Reverse (both introduce 'B' signal) or Normal/Reverse ('B' and 'A' signal are introduced alternately at the completion of each wipe lever stroke).

Spotlight

The area of the 'A' signal as defined by the selected pattern is transmitted at full amplitude while the remainder (background) is adjustable by the spot control from zero level to full level.



Vision Facilities of a typical 15 input A/B/C/D mixer with preview

Key

There are five key modes of operation. In all modes the 'A' signal sync and burst is transmitted. The five modes are:

- Self White.** Allows the white areas of the B signal to key into the 'A' signal at a level adjusted by the 'key control'.
- Self Black.** Allows the black areas of the B signal to key into the 'A' signal at a level adjusted by the 'key control'.
- Caption.** Allows captions on the B input to key themselves into the 'A' signal at a level adjusted by the 'key control'. Black edge emphasis in horizontal direction is provided.
- External.** Allows an external video signal to key the 'B' signal into the 'A' signal from the white areas of the external signal, at a level adjusted by the 'key control'.
- Chroma.** Allows the background colour of the 'A' signal to key in the 'B' signal. A colourstick control provides selection of the keying colour, whilst the 'key control' adjusts the spectrum around the selected colour which produces the keying waveform.

Wipe Key

Allows any keying signal to be wiped (hard edge only).

Colour Fill

On the Wipe, Caption, or External Key modes a colour background can be inserted. The colour of the background is determined by the position of the colourstick control, and the colour selected will be within the limits of a correctly encoded signal. Modulation may be added to the background. The modulation can be either free running or AFC locked to multiples of field frequency.

Soft Edge

A rotary control provides varying degrees of edge softness from hard to soft. Soft edge automatically overridden when used in the 'wipe key' mode.

Controls are by momentary illuminated push buttons.

Cue outputs are closing relay contacts suitable to drive a 50V, 100mA d.c. load.

Digital Pattern Generator B3734

Each picture element is allocated a specific number and the digital circuits perform the necessary arithmetic to ensure that the selected pattern is produced. The use of digital circuits to achieve patterns ensures perfect symmetry of patterns and complete stability. For example the selection of a very small circle which does not drift in position or diameter for a long period, was always a problem with analogue effects. This is readily achieved with a digital pattern generator.

Digital circuits are renowned for their reliability and set-up problems are eliminated.

Patterns

These are selected from the thirty-two buttons shown below. The size of the pattern is

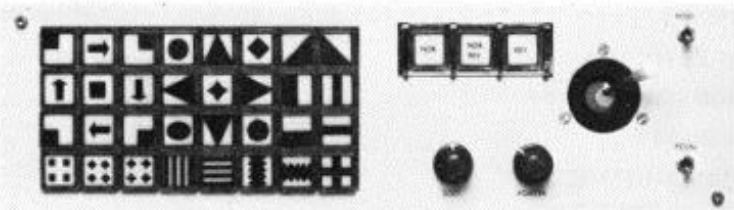
controlled by the wipe control, and a rotary control can be adjusted to set a pointer size. Multiple patterns are available on some patterns as shown on the bottom row of the control panel, and there are eight patterns on each axis.

Positioner

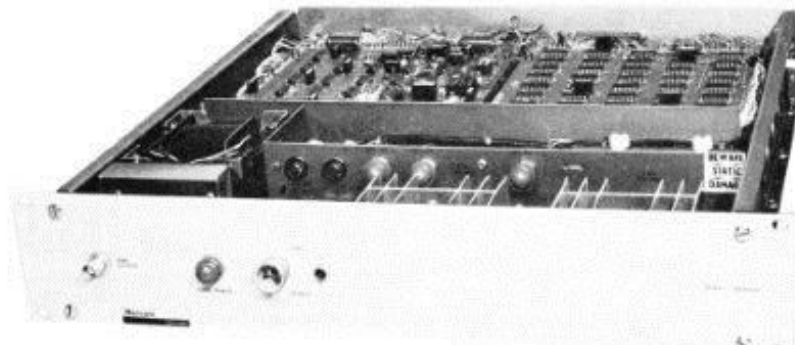
This is a joystick control with the on/off switch mounted separately alongside. Patterns are prevented from reappearing if the full traverse of the positioner is used.

Modulator B3735

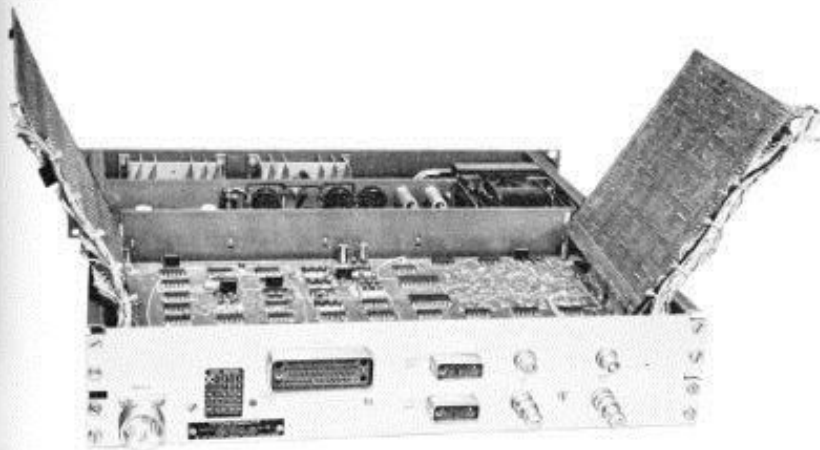
AC modulation can be added to the pattern selected so that this is displaced horizontally, and to the colour fill signal. The modulation may also be locked to the field frequency or derived from an external audio source.



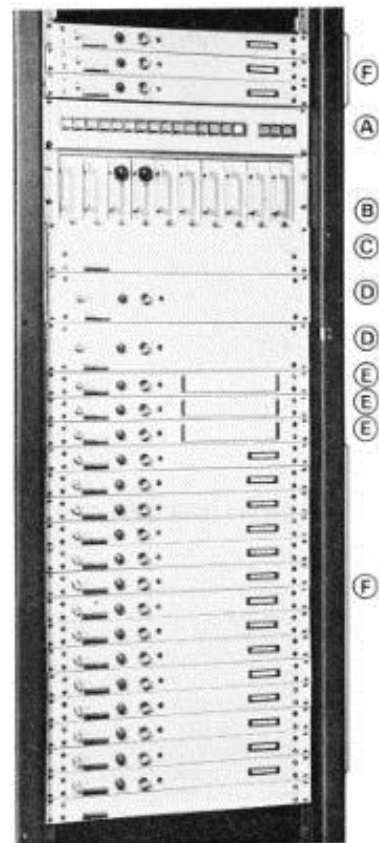
Pattern Selector Control Panel with positioner



Pattern Generator



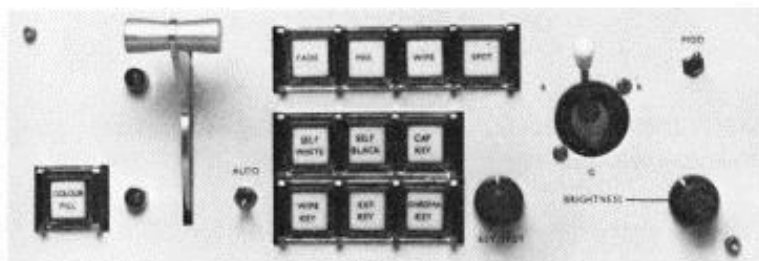
Pattern Generator rear view with boards open for servicing



Typical rack layout of Vision Mixer

- A Engineering Preview Control Panel
- B Frame containing delay units, sync comparator, effects modulator etc.
- C Power Distribution Unit
- D Pattern Generators
- E Effects Amplifiers
- F Switching Units

Mix/Effects Amplifier B3733



Effects Control Panel



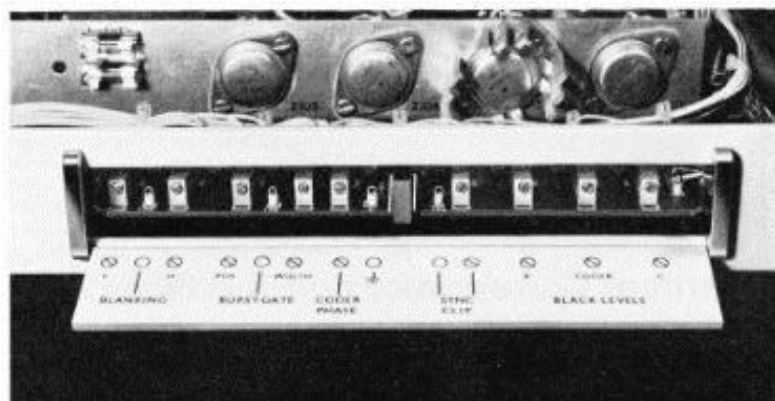
Front View Effects Amplifier B3733



Rear View Effects Amplifier B3733

The use of a combined Mix/Effects Amplifier means that the mixer facilities can be enlarged if required to provide the equivalent of double re-entry. The drawing on page 2 indicates the use of two effects systems, but systems with only one Effects Amplifier can be supplied.

The unit is self contained and provides, additive mixing, electronic switching, on-line chroma keying, clamping and fading. Selection of function is provided from the remote control panel. Modulation of the coloured background signal in the vertical direction is available. The modulation is normally derived from the Effects Modulator Unit in which case the frequency is adjustable from 50-500Hz.



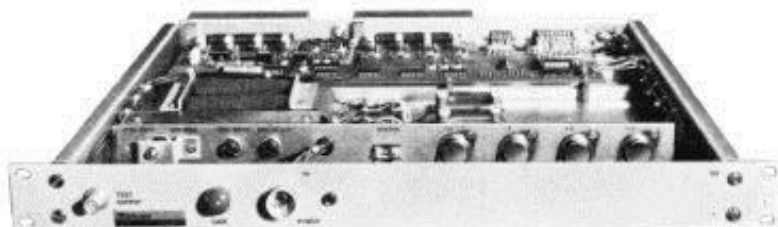
Effects Amplifier Controls

8x1 Switching Unit B3731

A number of these units provide the matrix for the mixer. Each unit has eight bridging inputs and one duplicated output.

The switching action takes place in the blanking interval and is controlled from buttons on the control panel.

The unit includes control and cueing circuits suitable for mixer applications, and occupies 49mm (1.75in) of rack space. Six units are used in a typical 8-input mixer and 13 units in a typical 15-input mixer.



Front View Switching Unit B3731



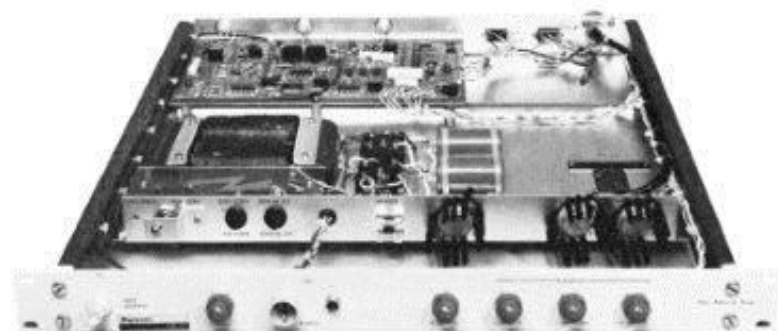
Rear View Switching Unit B3731

Non Additive Mixer B3746

Two picture sources may be mixed in a non-additive manner to provide an insert into a picture or to add a caption in a downstream mode. The NAM action is gated to ensure the effect only occurs within the picture period. The gating frame is positioned by means of preset controls on the front panel.

Two alternative control panels, which fit into the mixer modular system, are available. One is a binary push button (B101-3746) which provides a fast mix in/mix out, the other (B102-3746) gives a controlled mix in/mix out by means of a fader arm. Lifting the fader mixes the 'B' signal into the 'A' signal.

The NAM action can be inhibited by a Sync Comparator if the inputs are non-synchronous.



Front View Non Additive Mixer B3746



Rear view Non Additive Mixer B3746

Data Summary

Systems

CCIR 625 line, 50 field, or 525 lines
60 fields. PAL or NTSC.

Power supply

100-125V or 200-250V selected by internal switch. 48-65Hz a.c EP4 connectors, consumption approx. 250VA for a typical 8-input single Effects Amplifier mixer.

Video inputs

1V p-p composite into 75 Ω , return loss 30dB, to 2T pulse. BNC connector, bridging inputs.

Video outputs (2)

1V or 1.4V as set by link into 75 Ω , return loss 30dB with 2T pulse. BNC connector. Isolation between outputs 30dB at 5MHz.

Cue outputs

Closing relay contacts 2 makes per equivalent matrix input, floating terminal. Suitable to drive a 50V 100mA d.c load.

Ambient temperature -10° to +45°C

Performance

Figures for 8 input, single Effects Amplifier mixer.

Figures in brackets for dual Effects Amplifier mixer.

Crosstalk at 4.43MHz	56dB	(54dB)
Luminance non-linearity	2.0%	
Differential phase	1.0°	(1.5°)
Differential gain	1.5%	(2.0%)
Pulse and bar (2T)		
(a) Ratio	1.0K	
(b) Pulse response	1.0K	
(c) Bar response	1.0K	
L.F response (50Hz)	Tilt less than 0.1%	per ms

Very low freq. response

(a) First overshoot	10%	
(b) Second overshoot	5%	
Luminance/Chrominance inequality		
(a) Gain	1.5%	(2%)
(b) Delay	10ns	(15ns)

Noise

(a) Random weighted	-60dB	
(b) Hum	-52dB	
Video frequency response ± 0.5 dB	100kHz	to 5MHz

Ordering Information

To ensure that you are supplied with equipment to suit your requirements please specify:

- 1) Television standard and system employed.
- 2) A.C voltage and frequency.
- 3) Number of inputs and buses required.
- 4) Any special features.
- 5) Whether additional copies of the handbook are required.
- 6) Whether any spares are required.
- 7) Distance from control desk to equipment rack.

This document gives only a general description of the product(s) and shall not form part of any contract. From time to time changes may be made in the product or in the conditions of supply.

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