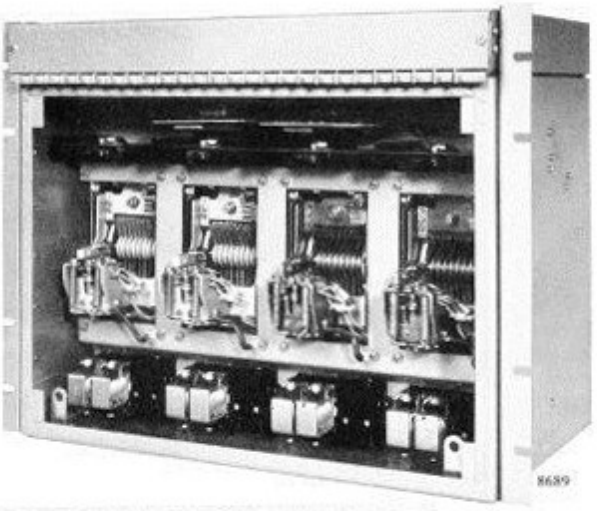
Uniselector Switching Panel Type BD 932

IN television switching equipment a number of devices have been used as the basic switching elements, including cross bar switches, semi-conductor cross points and, (more recently) uniselectors.

A detailed examination carried out some years ago revealed that the heavy-duty standard telephone uniselector is superior on all counts with the exception of timing. Also on economic grounds for switches having more than a dozen inputs the uniselector is the most economical solution. Reliability is excellent due to the very long development it has undergone in telephone systems and can be still further improved by gold plating the contacts and by the use of dust proof enclosures. Also by providing high impedance amplifiers on the outputs, contact resistance has to be very high indeed before it produces an appreciable effect. The ease with which the whole mechanism may be removed without disturbing the wiring is another useful feature.



Uniselector Switching Panel Type BD 932 with cover removed.

EQUIPMENT

The Marconi Uniselector Switching Panel Type BD 932 comprises a 19 in. rack mounting chassis containing four uniselectors and associated control relays and circuits enclosed within dustproof covers. The 25 vision input circuits are split through four-way resistance attenuators to supply each uniselector bank contact individually. Transistor output amplifiers restore the level and apply the outgoing signals to line. Muting relays replace the outgoing signal with a synchronizing or distinctive picture signal whilst the uniselector wiper is in motion, preventing a quick succession of pictures from appearing at the output as the wiper revolves. Another relay operates to mute the sound input.

The sound inputs are looped over the banks of the four uniselectors. Sound isolation amplifiers are not provided in this panel but, if required, amplifiers may be chosen from our range of unit-system plug-in amplifiers.

In addition to switching sound and vision signals simultaneously, each uniselector switches the associated cue and sync-interlock circuits with muting during movement as before.

Alternative editions of the switching panel can be provided to switch vision only or sound only or, if it is desired to switch sound and vision independently, one of each would be used.

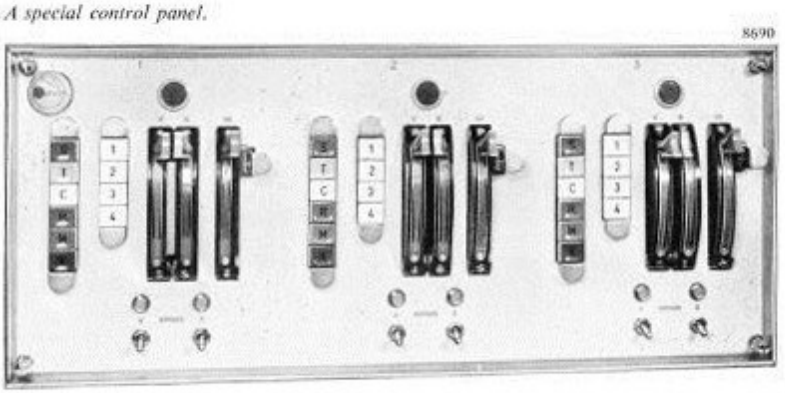
Where more than four vision outputs need to be selected from the 25 inputs, this can be done without the need for 25 distribution amplifiers by adding a further series of 26 resistive pads. These split the input feeds to supply three uniselector switching panels. Thus up to twelve outputs can be obtained from a single set of 25 inputs.

CONTROL SYSTEMS

Control panels and systems are designed and built to customers' specific requirements.

In some systems a separate selector button is provided for each input channel (up to 25) or, alternatively, it may be convenient to use two-character selection. Two rows of buttons are used, one carrying letters (S for Studio, T for Telecine, etc.) and the other figures so that, for example, S1 is pressed for Studio 1, T3 for Telecine 3 and so on. This system offers considerable economy in control panel space and the number of buttons required and reduces the wiring between the control panel and the uniselector panel. Distinctive cue information is supplied by alpha/numeric (in line) indicators which can either be on the control panel or, more usually, placed with the associated monitors.

A special control panel.



Control panels can be provided where the changes to a number of outputs may be pre-set and occur only when a 'GO' button is operated. A further logical extension to this system is to provide a multiple pre-set so that all the operations in say, a commercial break, can be pre-set and then switched through by a single control. By the introduction of some intermediate storage circuits the uniselector switch panel can be operated from a full automation module using punched tape or other storage means.

MASTER CONTROL SWITCHES

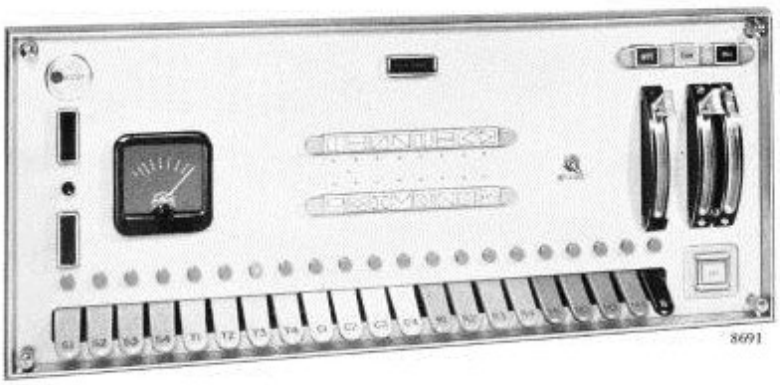
Uniselector switching panels, operating on a pre-select basis may be used as master control switches in a master control room. The next channel required is selected by operating two of the buttons (for e.g. T2) on the control panel, causing the uniselector not 'on-air' to hunt for the Telecine 2 input on its bank. The picture is displayed automatically on the pre-view monitor and sound monitored automatically on the pre-listen loudspeaker without change to the 'on-air' signals. A direct 'cut' to the new signal is made by pressing the CUT button which connects Telecine 2 to the outgoing vision and sound circuits. Uniselector 2 now becomes the transmission switch and uniselector 1, the auto-preview. Pre-selection of the next required channel causes uniselector 1 to hunt for the new circuit which is pre-monitored as before.

Alternatively to direct cutting, the outgoing signal may be faded out. As the fade levers reach the end of their travel relays operate to finally cut the outgoing signal and bring in the new, which is faded in by restoring the levers. Uniselectors 3 and 4 can either be used for independent preview/prelisten service or can give a second output (e.g. to 'Network') controlled by another identical control panel.

A further refinement is to make the sound transfer by an electronically controlled cross-mix. The operator would normally be provided with a pair of picture (or picture and waveform) monitors, one fed from the auto preview output and the other from the transmission output, each having an alpha/numeric display panel indicating pre-set material in green on the preview display and on-air selection, on the transmission display, in red.

PRESENTATION MIXER

In this type of control, each input circuit is selected by a 'tab' key, as shown in the illustration, which is similar to those used in organs. With this type of control, light pressure operates one contact and increased pressure overides the first contact and operates a second contact. In this way, the first touch can be arranged to pre-select the next channel which is finally cut to transmission by a second heavier touch. Alternatively a separate 'cut' or 'go' control can be used. Similar fading arrangements to those described under the previous heading of 'Master control switches' can be provided or modified to suit any particular requirement.



Typical presentation mixer.

Data Summary

NOTE. *The following data refers to The Uniselector Switching Panel Type BD 932 and not to a complete system.*

INPUTS

Power: −24 V d.c (in duplicate from central battery supply).

Vision: Composite or equivalent non-composite, white positive, 1 V p-p. Input impedance 75 Ω ±2% to 6 Mc/s. Up to 25 inputs (plus one as above to provide sync, input at 0·3V for muting).

Sound: Up to 25 balanced inputs at a standard level in the range ±10 dBm. 600 Ω terminations, if required, should be fitted to terminal block.

OUTPUTS

Vision: Levels as at inputs, one from each of the four selectors.

Sound: Levels as at inputs, one from each of the four selectors. To bridging impedance.

Cues: 24 V, all above earth.

PERFORMANCE

Amplitude/frequency: ±0·2 dB, 100 kc/s to 6 Mc/s is not greater than −3 dB at 10 Mc/s.

Waveform distortion: Sin^2 pulse and bar tests give 'K' ratings of less than ½% for a 2T pulse for a cut off frequency of 5 Mc/s.

Differential gain: ±1% at 1 Mc/s measured with 0·1 V p-p 1 Mc/s on 1 V p-p composite sawtooth or staircase, every 4th line. With intermediate lines variable from reference black to reference white.

Crosstalk: To a wanted input from identical unwanted adjacent inputs or from muted input better than 48 dB at 5 Mc/s.

Dimensions:
Height 14 in. (36 cm)
Width 19 in. (48 cm)
Depth 13 in. (33 cm)
Weight 56 lb (25 kg)

Connectors: All connections apart from the 4-wire outputs are by means of taper pairs.

Marconi

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