



Presentation Switcher System

B3727

Features

Manual or automatic operation

Up to 32 inputs

All solid-state modular construction

Alpha-numeric 15 event display (625 lines) 12 events (525 lines)

Store input equipment choice

Real time standard

Digital time read out

Introduction

The Marconi B3727 Presentation Switcher represents a new design approach to the ever increasing complexities of modern presentation requirements. Adaptation of well-proven computer techniques and use of integrated microcircuits minimizes 'air time' errors, reduces man-power requirements and simplifies operation.

The B3727 can be operated either manually, or fully automatically by the addition of a solid-state store and character generator unit. The store can be programmed from a paper tape reader, computer, or magnetic tape reader etc. A typical block diagram of the system is shown on page 2.

All units are constructed in modular form and a feature of the system is its extreme flexibility. A Presentation Switcher to suit specific requirements can be constructed from the B3727 modules. Customers are invited to discuss their needs with Marconi systems designers.

101	TCA1	TCA1	10	06	30	CUT
102	ST A	ST A	10	06	35	F M
103	YTRC	YTRC	10	21	35	CUT
104	ST A	ST A	10	22	35	F F
105	NETB	NETB	10	30	00	CUT
			10	30	00	
106	ST A	ST A	10	40	00	F M
107	TCC1	ANN	10	45	00	CUT
	CAP					NAM
108	YTRA	YTRA	11	35	00	F F
109	TCB2	TCB2	11	36	25	WCM
110	TCAS	TAPE	11	46	25	CUT
		ANN				
111	ST B	ST B	11	47	10	M M
112	TCCS	TAPE	00	*01	*30	CUT

Description

Inputs are available in groups of eight married (parallel), or unmarried, vision and sound inputs up to a maximum of 32. Three outputs are normally provided, ON AIR, NEXT EVENT and PREVIEW/PRELISTEN.

A typical control panel arrangement for 16 inputs is shown in Fig.2. Three additional high level sound sources may be mixed on to the transmission output for 'voice-over' operation.

Video and sound switching elements, contained in rack-mounted solid-state matrices, are controlled by binary encoded signals from the control panel in the case of manual operation, or from the store in the case of automatic operation.

The number of outputs can be increased to a maximum of eight if desired.

Manual Operation

The panel illustrated in Fig.2 contains four rows of 16 illuminated switches for PRELISTEN, PREVIEW, NEXT-EVENT and ON AIR.

Selection of any of the 16 source buttons on the Next Vision row will switch that source to the next event monitor and the source button lamp will be illuminated.

Four types of transition can be selected - Cut, Mix, Wipe or Fade. If the CUT button is operated the next event source is immediately

transferred to ON AIR, the source lamp changes to a different colour and the NEXT EVENT picture is transferred to the transmission monitor.

If Mix is required the MIX quadrant fader is pushed against the top end stop before mixing through. The Mix mode can be cancelled by a second overpress against the stop.

Alternatively, the MIX buttons in the ON AIR or PREVIEW rows can be used.

Normally, mixing is carried out between ON AIR and NEXT EVENT rows; however, a 'PREVIEW TO MIX' button is provided to permit mixing between ON AIR and PREVIEW rows.

A separate Fader paddle is always in circuit and the fader voltage is used to activate circuits which transfer from NEXT EVENT to ON AIR.

Generally sound is faded or mixed in parallel with the accompanying vision. However a separate sound fader enables independent operation if required.

On the left hand side of the control panel are sound faders controlling three separate high level sound sources.

The sound monitoring circuit consists of a small integral loudspeaker with gain control, and buttons on the PRELISTEN bus allowing selection of appropriate inputs. A choice of P.P.M or V.U meter is included.

Bypass

When the BYPASS button is pressed the lamp shows orange and vision transmission is via the ON AIR row, only Cut transitions can be made. The active circuits of the output Line Clamp Amplifier will also be bypassed in this condition.

Automatic Operation

The B3727 Presentation Switcher can be operated under fully automatic control. In this condition the switcher is controlled by the store and character generator B3728 and may, in addition, be backed up by a long-term store, such as punched paper tape, magnetic tape or computer.

The short-term store can hold up to 15 events for 625 systems and up to 12 events in the case of 525 systems. All these events can be shown on the Alpha-numeric display monitor. A further 'reserve' event can be held during the blanking period and is not displayed. This facility is used for back spacing during correction procedure.

Reading from left to right the characters indicate: Running Event Number, Vision Source, Sound Source, Time to go on air, Vision Transition Mode (Cut, Fade, Wipe, etc.) and Vision Transition speed and direction. A cursor is also available to mark specific items. The time indicated in the transmission line at the top of the picture is real clock time and is thus continually changing. The top line is the Transmission Event, the next line the Next Event, and so on.

Loading the Store

The information displayed is entered into the store by the keyboard shown in Fig.3. This is laid out in a simple fashion which can be easily read and understood.

When the store is full the operation of the Tape Feed Switch enables the information stored to be transferred to the long term memory such as punched paper tape. When the store is empty and the last (15th) event has reached the top of the display the punching of the paper tape stops.

The whole process of loading the store can then be repeated with another 15 events and so on. Ultimately a full day's schedule up to a maximum of 999 events can be entered onto the paper tape.

The tape can then be rerun through, and the display data checked against the daily programme schedule. Tape can only be punched during a period when no action is required from the switcher.

The time displayed in the fourth column is the time each event goes on air. However, the time which an operator must enter on the keyboard is the event duration time. The store automatically performs the necessary arithmetic and converts to the time to go on air.

The real time source can be either:
Station timing clock,
Chronometer or
Divided down from field pulses.

The last facility is always provided and is used automatically as a standby source in the event of a clock failure.

'Second Line' Entry

There are two types of 'Second Line' entry, and examples of both are shown on page 1. These entries may be either of a time or of a source. For example, Event 105 is a cut to Network B at 10 30 00; the entry of time 10 30 00 on the next line means that Event 105 must be taken at 10 30 00, even if changes of duration are made to preceding events. Thus, if the duration of Event 104 were to be increased

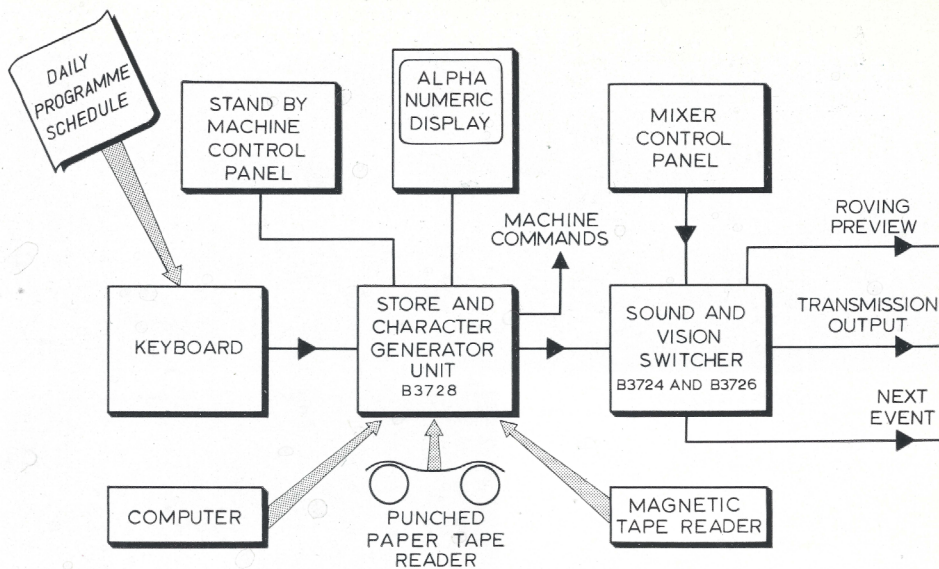


Fig.1 Block Diagram of Presentation Switcher System

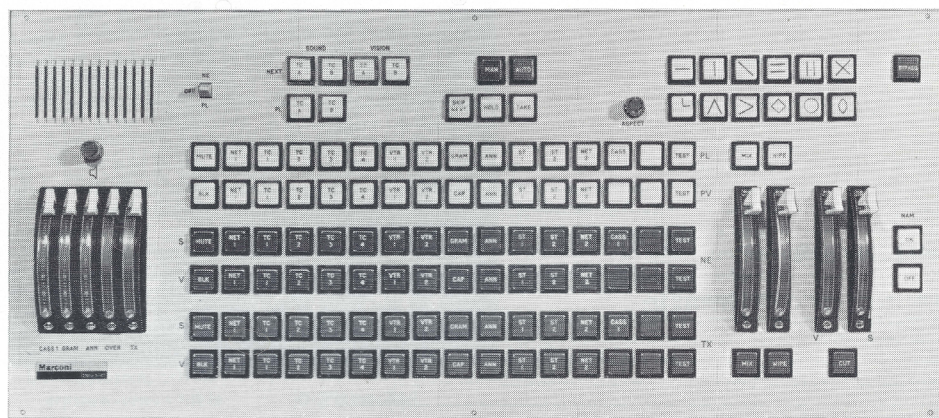


Fig.2 Typical Mixer Control Panel

by 15 seconds, the Take time of Event 105 would change to 10 30 15, but the event would be taken at 10 30 00. By this means, important events which are closely related to real time can always be taken at the correct time, irrespective of last minute changes to preceding events.

Two examples of source 'Second Line' entries are shown on page 1. In the first example, the video source of Event 107 is TCC1, but the second line shows CAP as a second video source, non-additively mixed (NAM in Transition column) with the video from Telecine C1. In the second example, Event 110 shows a second sound source from an Announcer; in this case the announcer's voice is brought up over the tape.

'Open Ended' Event

An 'open ended' event is one where the starting time is known, but the duration, and hence the starting time of the next event, is not known. Event 111 is an example. When this event was loaded, the CUE TIME button was used to provide the time entry, which produces a star in the tens-of-hours column. On completion of the entry, the time entry changes to the time to go on air, as shown. Subsequent event entries appear as duration times, punctuated by stars (see Event 112) to remind the operator that the first event of the series has to be taken manually. When this has been done, succeeding time entries change from duration times to times to go on air.

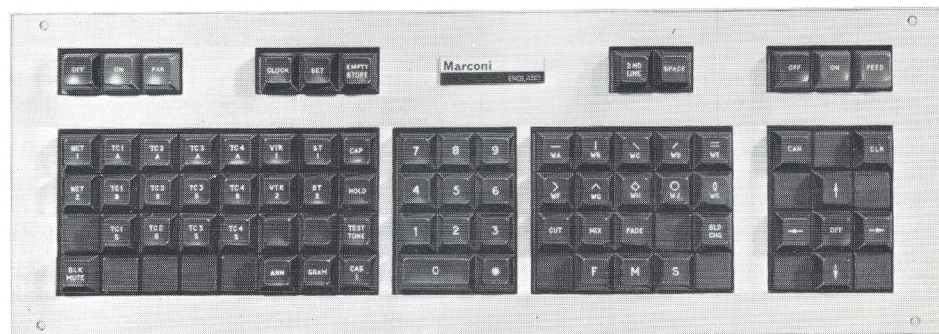


Fig.3 Typical Keyboard Panel

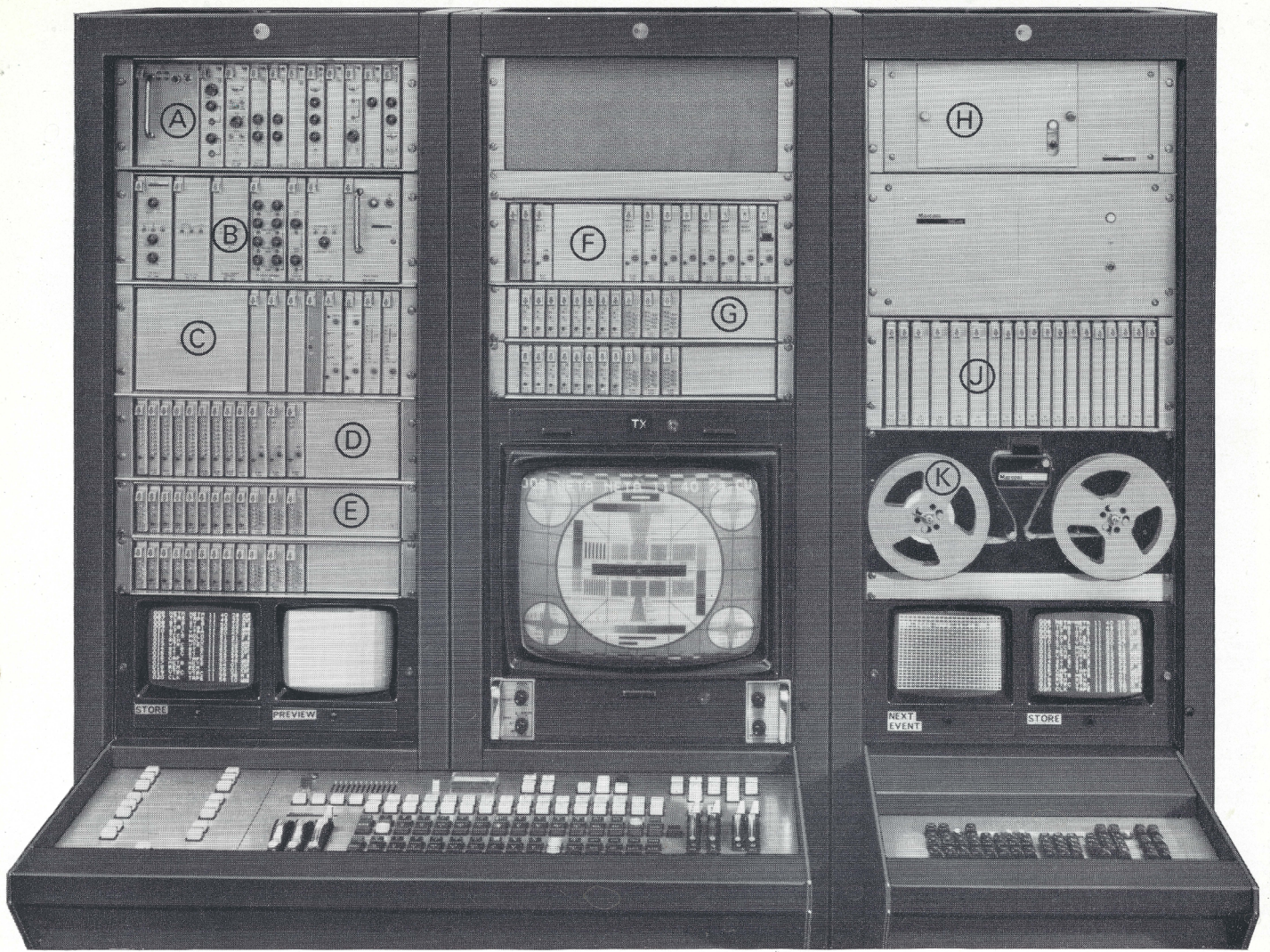


Fig.4 A 16 input Automatic Presentation Switcher with paper tape control

Should a second 'open ended' event be entered in the store before the first one has been taken on air, its time entry is displayed as three stars. All succeeding events will show duration times punctuated with stars. When the event after the first 'open ended' event is manually taken on air, the time displays of all following events down to and including the second 'open ended' event change to show times to go on air. Succeeding events remain as duration times, punctuated with stars.

Corrections

If a wrong event is entered the following is the correction procedure which can be employed. By pressing the appropriate random access button from the row numbered 1-13, say number 7, the cursor will be automatically moved to line 7. If it is desired to change one item, for example the sound source, operation of the space button moves the cursor to the right to underline the sound source. The new information can then be entered from the keyboard, and the wrong item is automatically deleted. The same procedure can be applied for a complete line of information.

Alternatively if it is required to delete the entire event from the schedule, this is achieved by pressing the CANCEL button, which removes the event and leaves a gap on the display. All succeeding events have their air times revised automatically.

If it is required to insert an additional line, it is necessary to press the RANDOM ACCESS button for the appropriate line, press the

- A. Mixer Processing
 - B. Special Effects
 - C. Mixer Electronics
 - D. Video Store and Output Unit
 - E. Video Crosspoint Unit
- } Matrix

- F. Audio Store and Output Unit
 - G. Audio Crosspoint Unit
 - H. Power Supply
 - J. Store and Character Generator Unit
 - K. Paper Tape Reader
- } Matrix

CLEAR button (causing all subsequent events to move down one line) and then insert the new information.

Machine Start

Up to 7 (preset) run-up times up to a maximum of 59 seconds, in 1 second increments, are available for machine run-up. These will cater for all known Video Tape Recorder and Telecine start times. Advance lamp warning to machine operators can be provided.

In emergencies the manual TAKE button on the keyboard can be used. In this case the time that the event is taken is written into the store memory and the whole of the ensuing programme is readjusted.

Another emergency feature is the HOLD button. When this button is operated the transmission audio and video is held ON AIR and the next event must be initiated manually, including any necessary run-up of machines. To revert to normal operation, use the TAKE button.

If the duration of a particular event is unknown, by operating the MANUAL time button instead of duration time all times shown for successive events will be duration times rather than real times. At the end of the manual time event, the TAKE button is

operated to obtain the next event and all subsequent times revert to the normal display.

The storage system can deal with up to 32 sources. One telecine machine, comprising for example 35mm, 16mm and slide projectors, is treated as 1 source. Although the video source from a telecine is the same, irrespective of whether the picture source is a slide or a film, the mixer logic can differentiate between film and slide so that the appropriate run-up commands are fed to the selected machine.

If transition speeds are fixed, the last (speed) column on the display can be used for alternative information.

Logic

The logic system transfers the requirements of the memory into action in the presentation switcher and into the appropriate machine controls. As the memory calls for Telecine 1, the machine is started, the lamp is switched on, and the video and audio sources are faded, mixed, or cut to the transmission bus. Any previously operating machine is switched off.

Digital Clock

A feed from the Real Time Clock can be taken as a video signal to any remote monitor.

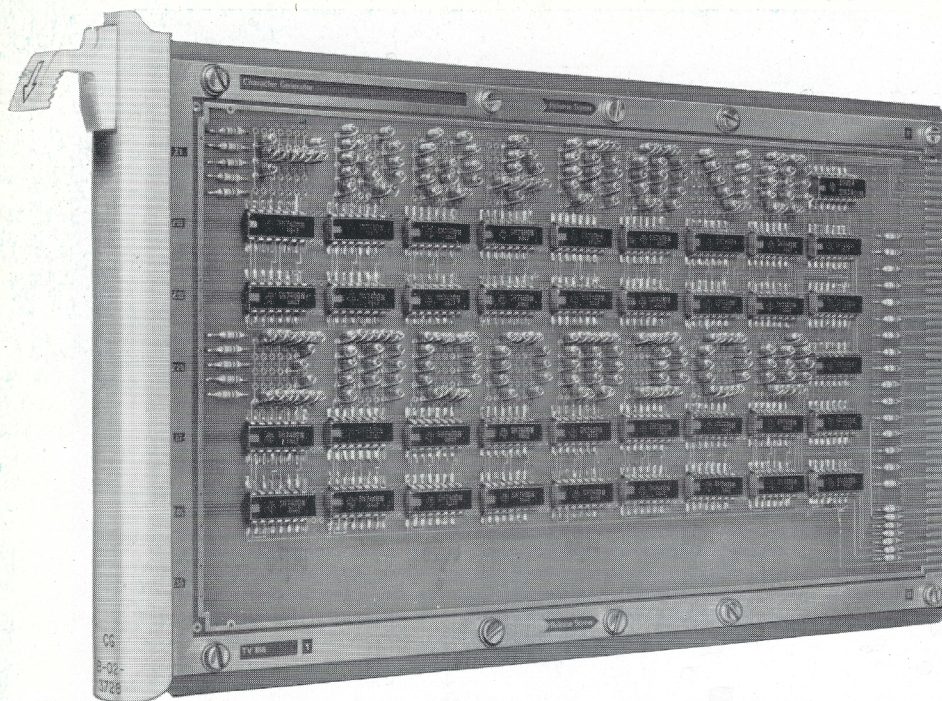


Fig.5 B02-3728 Character Generator Module (typical of the units contained in the B3728 Store and Character Generator Unit)

Data Summary

A.C.: 100-125V and 200-250V in 5% steps, 48-62Hz. 750VA approx. dependent upon installation.

Inputs (maximum number 32):

Video 1V peak to peak composite, return loss better than 30dB to 2 Tc pulse and bar.

Acceptable d.c on video inputs, $\pm 3V$ max.

Audio 0dBm level into 600 Ω balanced, +20dBm maximum.

Memory: From punched paper tape, or similar device.

Gain variation due to path switching ± 0.2 dB.

Outputs: Five standard level 1V peak-to-peak composite, or 0.7V non-composite, bridged.

- | | |
|------------------------|-----------------|
| 1) Picture | } composite |
| 2) Clock | |
| 3) Transmission Event | } non-composite |
| 4) Next Event | |
| 5) Random Access Event | |

Crosstalk - Video, worst path at 4.5MHz better than -56dB.

Crosstalk - Audio better than -70dB.

Video signal to noise ratio (p-p signal-r.m.s weighted noise) better than -60dB.

Audio signal noise level better than -70dBm.

Linearity:

- | | |
|-------------------|----|
| a) Standard input | 2% |
| b) +3dB input | 4% |

Differential gain:

- | | |
|-------------------|----|
| a) Standard input | 1% |
| b) +3dB input | 2% |

Differential phase:

- | | |
|--|--------------|
| a) Standard level | 0.5° |
| b) +3dB input | 1.0° |
| L.F response, 50Hz square-wave tilt is | 0.2% per ms. |
| L.F bounce | |
| 1st overshoot | < 20% |
| 2nd overshoot | < 1% |
| Cross fade linearity | < 2.5% |
| Luminance/chrominance | |
| a) Delay inequality | ± 20 ns |
| b) Gain inequality | $\pm 2%$ |

Machine run-up times: Choice of 7 times in the range from 0-59s at 1s intervals. (These times are preset and adjustable.)

Long-term store: A choice of paper tape, computer or magnetic tape.

A suitable interface equipment can be produced by Marconi system designers, when advised of the type of store required.

Dimensions: All units are 483mm (19in) rack mounting and a complete automatic 16 input switcher occupies 1.98m (78.25in) of rack space.

Ordering Information

When ordering please state:

- 1) Number of and name of inputs.
- 2) Number of outputs.
- 3) Number of telecines and type.
- 4) Number of VTRs and type.
- 5) Number of Studios and caption sources.
- 6) Number of announcer mics.
- 7) Number of audio tape recorders.
- 8) Number of network inputs.
- 9) Any special effects required.
- 10) Whether manual or automatic.
- 11) Long term store preference if automatic.
- 12) Whether additional handbooks are required.
- 13) Whether spares are required.

The information herein is subject to confirmation at time of ordering.

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