A GENERAL PURPOSE SOUND SWITCHING UNIT

Television centres employ a large number of vision and sound switching units for various duties, ranging from on-air switching and signal routeing to picture matching and monitoring. Each of these functions poses a somewhat different set of requirements on the switching equipment. In theory it would be possible to produce such a flexible design that one type of matrix for vision and another one for sound would be able to satisfy all the conceivable applications. Every time a new design of switching equipment is started the thought of a universal solution is never very far from the designer. Unfortunately, economic considerations make a full attainment of this ideal not quite practical, at least for the moment.

The Marconi range of switching units is comprehensive: Semiconductor Vision Matrix B3724, employed in studio and presentation mixers and its companion Sound Matrix B3726, used also in presentation mixers, (both incorporating microcircuits as switching elements), Vision Transmission Line Matrix B40-6065, based on miniature relays and used for large network and assignment switchers, and Uniselector Switching Panel W94930 employing uniselectors for married switching of sound and vision for the less arduous duties of assignment and monitoring. The recently introduced B3760 Vision Switching Unit was described in the Winter, 1972, issue of this journal and its companion B3762 Sound Switching Unit now joins the switching family. The unit, while not a major technological innovation, does illustrate the constant efforts made to extend the range of units to meet the demands of television switching systems in the most economical way without sacrificing either performance or reliability.

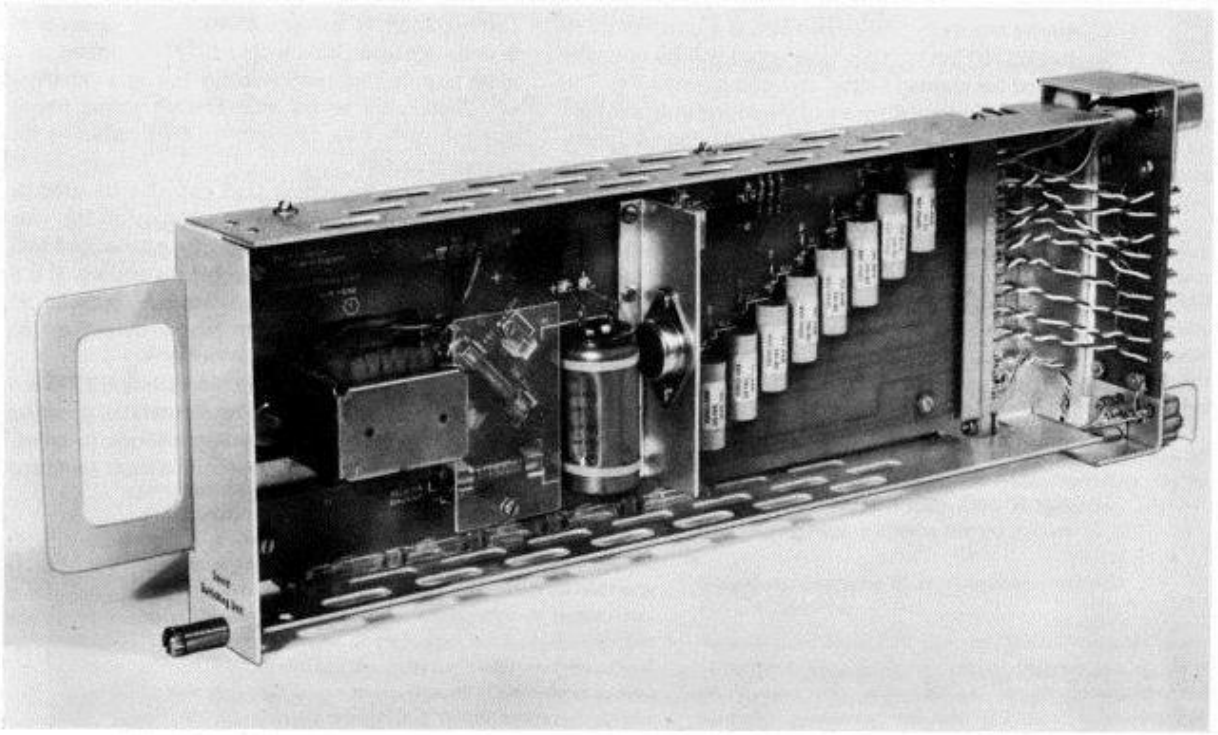

Fig.1 Sound Switching Unit, type B3762.

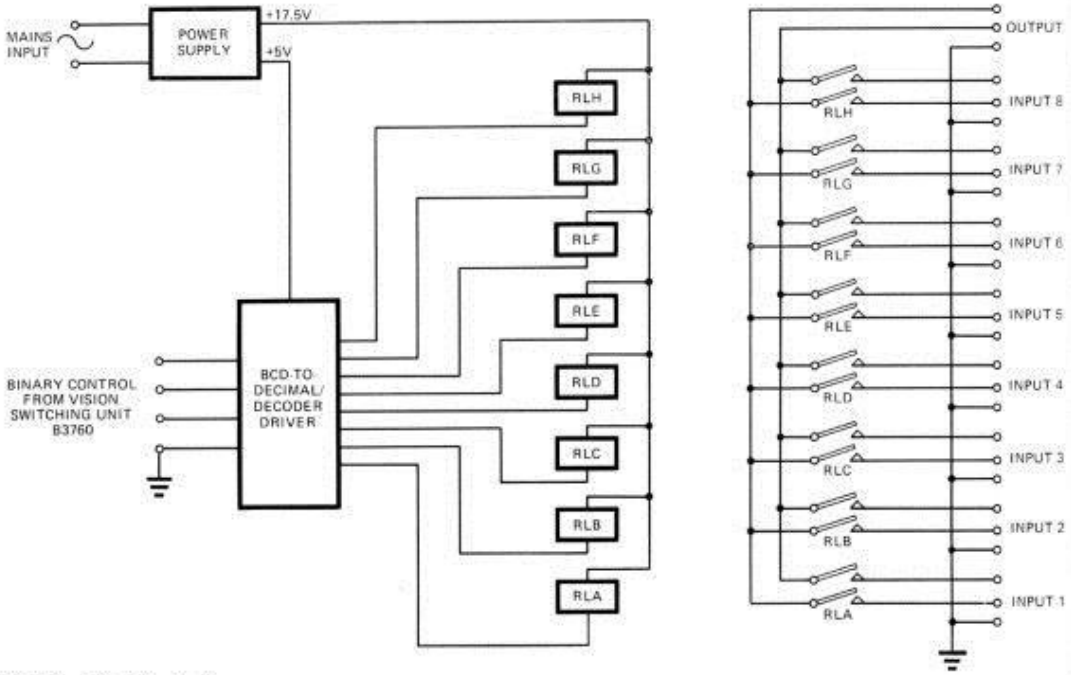

Fig.2 Simplified circuit diagram.

The Sound Switching Unit, Type B3762, is mounted on a 40·7mm (1·6in) wide, plug-in module suitable for mounting in a standard 133mm (5·25in) frame B4308 (Fig.1); up to ten modules can be accommodated in one frame. The back mounting kit carries a tag board for input and output connections, a connector block for a.c mains input and a multiway connector for controls. An integral power supply is provided.

The unit is designed to switch eight balanced sound inputs to one output and is a companion to the B3760 Vision Unit to which it will be normally slaved for married sound and vision switching. The simplified circuit diagram of the sound unit is shown in figure 2. The switching is controlled by binary coded cues from the Vision Switching Unit, the cues being decoded by a single microcircuit which also acts as a relay driver. Two-make contact diaphragm relays, which proved their reliability in the Mark VIII Communication Unit, are used as switching elements and the signal path is completely passive. A Sound Amplifier B1337, having the same physical dimensions as the Sound Switching Unit can be used as an output amplifier when it is required to drive 600Ω lines. The Switching Unit ensures that crosstalk is better than −70dB up to 15kHz, but the performance of the signal path in all other parameters will be determined by the sound amplifier.

The Sound Switching Unit is a self-contained system building block from which matrices can easily be assembled. For married sound and vision operation when the Sound Unit is controlled by the Vision Unit, the interconnection of both units into matrices must follow the same pattern. Each input can be bridged across eight units, thus matrices with up to eight outputs can be formed. To increase the number of inputs sound units can be connected in series but for a larger number of inputs a 'tree' configuration is preferred where the outputs of 8 units are each connected to a crosspoint of a ninth unit. In this configuration, giving a capability of handling up to 64 inputs, each signal passes through only two crosspoints thus reducing the overall crosstalk.

The Sound Switching Unit can also be used for separate sound switching, the control in this case being derived from mechanically interlocked buttons with diodes to provide binary coding. If it is desired to use momentary touch buttons an electronic latch circuit with binary output can be provided.

The versatile pair of Switching Units B3760 and B3762, although not reaching the ideal of complete universality, satisfies many applications in broadcasting system for assignment, network switching and monitoring.