minidrum

The Minidrum described in the previous issue may, by the addition of various extra circuits, be extended to a comprehensive manual drum kit. Some new instruments, a three channel ruffle system and an automatic bassdrum are described in this article.

The basic Minidrum contained only three instruments, a bassdrum, a snaredrum and a cymbal and so only three channels of the TAP were used. Since the TAP board has facilities for six channels the design example given here is based on six instruments. The number of instruments may, of course, be extended to suit individual taste by adding extra TAP boards, one for every six additional instruments.

A pulse generator is included in the design. This is intended to drive the automatic bassdrum, but may be used to drive other instruments either separately or simultaneously.

The ruffle system comprises three ruffle channels driven by a single oscillator. A pulse train appears at one of the outputs when a finger is placed on the appropriate touch contact. This may be used to drive any of the instruments to give drum rolls etc.

The first part of the Minidrum to be described is the TAP circuit which controls the instruments via touch contacts.

The Minidrum TAP

Figure 1 is the circuit diagram of the complete Minidrum TAP. It has six touch inputs and six outputs, corresponding to the six instruments used in the design.

As described in the previous issue each TAP channel consists of a COSMOS inverter (I_1-I_6) followed by a diode and an integrating network. Hum from the player's skin causes the output of the inverter to switch between logic 0 and 1, charging capacitor (C_1-C_6). This output voltage controls the relevant instrument. The 47 k resistors (R_7-R_{12}) limit the base current of the one-shot associated with each instrument.

Two types of RCA COSMOS IC may be used for the TAP, CD4009AE or CD4049AE. When using the former diode D_1 must be included in the circuit (see figure 1), if, however, the CD4049AE is used, D_1 may be replaced by a wire link on the p.c. board.

Due to the high noise immunity and wide supply voltage tolerance of COSMOS circuits a sophisticated power

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