



### Dynamic Sensitivity

W. Stride

A dynamic function (touch sensitivity) greatly increases the flexibility of expression available to the player of a music synthesizer. This circuit achieves the dynamic function by measuring the change over time of the keyboard switches, and hence the velocity of the key depressed.

The circuit is basically composed of three parts; firstly an RC time-constant network ( $R_1, C_1$ ) controlled by the keyboard switches, a buffer amplifier and monostable ( $Q_1, IC_3$ ) and a sample/hold circuit ( $IC_1, C_2, IC_2$ ).

Normally  $C_1$  is kept charged up to +7 volts through the 'chain' of closed keyboard switches. When a key is depressed, the 'chain' is broken and  $C_1$  discharges through  $R_1$ . As the key is further depressed, contact is made with the trigger busbar,  $TR_1$  is turned on, and the monostable triggered. The monostable gives out a 1 millisecond pulse, which causes the analog switch ( $IC_1$ ) to close allowing  $C_2$  to charge up to the voltage on  $C_1$  at that time. After this, the voltage is stored on  $C_2$ , the output being buffered by  $IC_2$ . Since the input impedance of IC is  $\sim 1.5 \times 10^{12}$  ohms the delay time of  $C_2$  is very long. An output is available from the emitter of  $TRQ1$  to trigger envelope shapers etc. To make sure the response is the same all over the keyboard, the distance between the gold wires on all the contact assemblies should be made the same.