

The method of inserting an initial condition voltage is as follows. When S1 is closed the reset resistor R_r is connected between the amplifier output and summing junction, and can therefore be regarded as a feedback resistor in parallel with C_f .

As long as S1 remains closed, R_{ic} will be acting as an input resistor, so that

$$E_o = - E_{ic} \frac{R_r}{R_{ic}}$$

and $E_o = - E_{ic}$ when $R_r = R_{ic}$. R_{ic} and R_r are disconnected from the amplifier summing junction when S1 opens, but C_f will "remember" the initial condition voltage and hold the amplifier output steady prior to the application of compute voltages when S2 closes.

INTEGRATOR SWITCH CIRCUIT

The complete circuit of the integrator switch is shown in Fig 6.10. The 1st monostable consists of TR2 and TR3, with RLA actuated by emitter follower TR1. VR18 continuously covers two ranges given by C3 (10–100ms), and C4 (0.1–1s). Components associated with the 1st monostable input are C2, R1, and D1.

The 2nd monostable is almost identical to the 1st. TR4 drives RLB, C7 and C8 offer the same timing range coverage as C3 and C4, and input components are C6, R8, R9, and D2. However, more care is taken to establish the correct values for 2nd monostable timing capacitors C7 and C8, and VR2 allows precise calibration of the "fast end" of the VR19 timing scale, so that compute intervals can be determined by a reasonably accurate dial setting.

VR1 establishes the working point of both monostables, to achieve reliable operation at all dial settings. S7 is a push button on the front panel for starting a "single shot" computer run. Full control of an oscilloscope trace, from UNIT "B" front panel, can be realised by suitable connection to the integrator switch circuit. With S8 switched to "hold", the mode sequence can be triggered repetitively, with a variable hold interval, by the oscilloscope timebase output or by a separate oscillator. Consistent synchronisation of the trace, with continuous or single-sweep timebases, is made possible by linking IS/SK10 to an appropriate oscilloscope input

A SEPARATE SUPPLY

The load capacity of the existing stabilised power supply can be improved by wiring the collectors of TR1 and TR4 (shown dotted in Fig. 6.10) to a separate –12V unregulated supply, which can be housed inside the UNIT "B" box, and in this event C1 could be omitted from the Fig. 6.10 circuit, as it merely serves to prevent current pulses from flowing in the negative stabilised supply line during relay switching.

RLA and RLB consist of two triple-switch coils, catering for the needs of three integrating amplifiers. A duplicate relay panel could be added later, by wiring relay coils in parallel, to increase the switching capacity to six amplifiers.

CORRECTION

In Fig. 5.7, the captions for the first and second oscillographs (top row, left and centre) should be transposed.

Next month: Assembly and setting up of the Integrator Switch; practical examples in the use of this section. Introduction of UNIT "C" Function Generator.