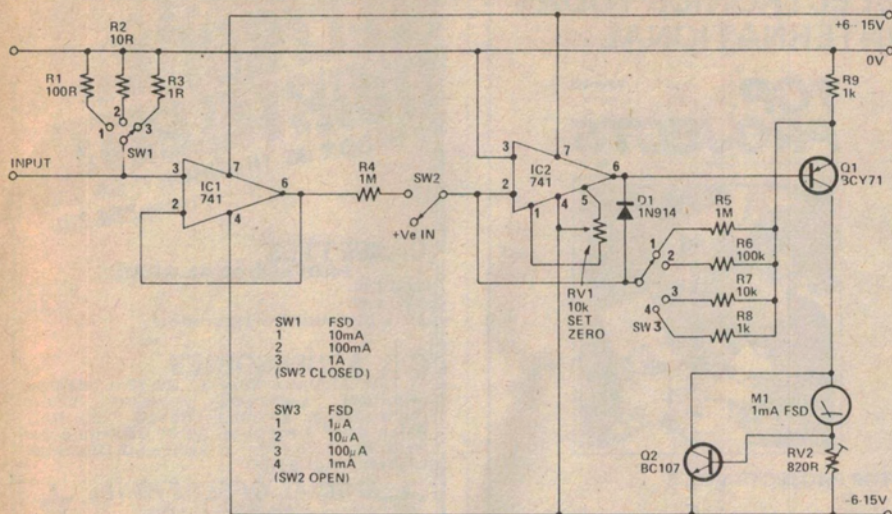


# Ideas for experimenters



## WIDE RANGE AMMETER

The instrument shown will measure currents from 1μA to 1A F.S.D. in seven ranges.

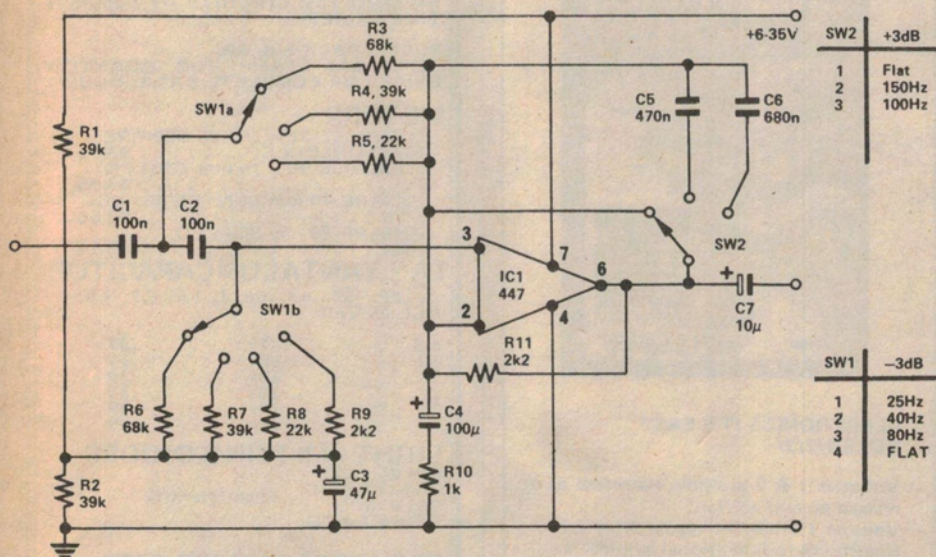
IC1 is connected as a unity gain buffer and the input current flows through the resistor selected by SW1 to earth. In so doing a voltage proportional to the input current is developed across the resistor and this appears at the output, pin 6.

Small currents are measured by IC2. In this mode the current flows into the non-inverting input. Since this is a

virtual earth, the output will generate a voltage proportional to the input current.

In practice, this voltage is developed across R9 and hence provides a proportional current through Q1 and M1.

Q2 and RV1 form a meter protection circuit and the latter component should be adjusted so that Q2 starts to conduct at F.S.D. D1 is included to prevent damage to the base emitter junction of Q1 in the event of an input of wrong polarity.



## SWITCHABLE RUMBLE FILTER

The circuit shown provides a cut-off at 25, 40, or 80Hz. C1 and C2 in conjunction with R3-9, form second order Butterworth filters with 12db/octave roll-off below the turnover frequency.

Unlike most designs, the feedback is taken from the inverting input. In practise this works well once the signal

at this point follows exactly that at the non-inverting input.

A useful feature is the deep bass boost provided by the feedback loop proper.

S2 in position 3 gives a +3db point at 100Hz whilst position 2 provides a +3db point at 150Hz. A supply 6-35V DC at 10mA is required.