

Insert a $0.25\mu\text{F}$ capacitor into OA4/SK11 and SK12, and switch S11 to 10Hz. A "buzz" from the relays should now be heard, which may or may not sound erratic. Transfer the d.c. voltmeter to OA4 output while the relays are still working and adjust VR2 on the bistable relay panel for zero volts; this should produce an even note from the relays. Return the voltmeter lead to the multiplier output M/SK3 and this time zero-set with VR25.

Apply an input of +5V to M/SK2; the relay "buzz" will drop in frequency, but no output should be observed at M/SK3. Transfer the +5V patching lead to M/SK1 and again no output should be seen. Finally, apply +5V to both inputs, M/SK1 and SK2, to produce a multiplier output of $5^2/10$ or 2.5V.

Throw switch S12 to change output polarity and experiment with inputs of differing sign. If all is well, the product voltage should retain its value of 2.5 for any sign combination of input voltages and S12.

For best accuracy it is advisable to go over all adjustments again to obtain optimum settings, and also verify that the multiplier will handle a full range of input voltages.

Due to the fact that the power supply may be working close to its maximum current limit, there could be some fall-off in multiplier accuracy because of switching transients, this can be checked by employing the extra current facility, S1 in Fig. 3.1. The optional -12V relay power supply should obviate the difficulty if it occurs.

To use the operational amplifier (OA4) on its own, merely switch S11 to the "off" position and patch the amplifier sockets in the normal way.

Next month: The final article in the PEAC series. This will complete the operational details of UNIT "D", and will give some examples of special circuits to represent mechanical phenomena, and some general notes.
