



A HOLD-OFF CIRCUIT FOR THE MODEL 405AR DIGITAL VOLTMETER

This Application Note describes a simple hold-off circuit which added to a Model 405AR Digital Voltmeter and supplied with an external voltage, will cause it to hold its reading. The Model 405AR has been superseded by the Model 405CR which already contains a hold-off circuit.

For some system applications it is desirable to hold a reading on the Model 405AR until some external equipment is prepared to accept information. Two examples of this are scanning systems and the case where a Model 405AR and an insynchronized unit are both operated into one Digital Recorder.

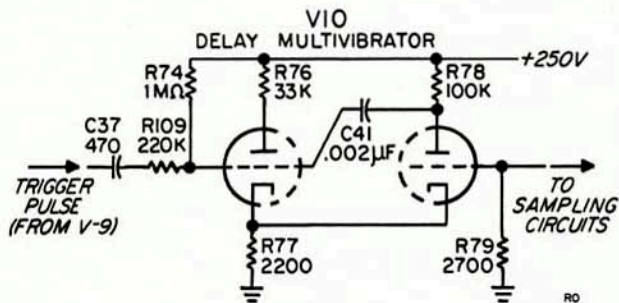


Figure 1 - 405AR Circuitry (Simplified) Affected by The Hold-off Circuit.

The Model 405AR circuitry affected by the hold-off circuit is shown in Figure 1. In normal operation, a trigger pulse from V9 triggers the delay multivibrator and starts a new reading.

The 405AR circuitry with the hold-off circuit (shown by dotted lines) added is shown in Figure 2; the only additional components required are R1, R2, C1 and CR1.

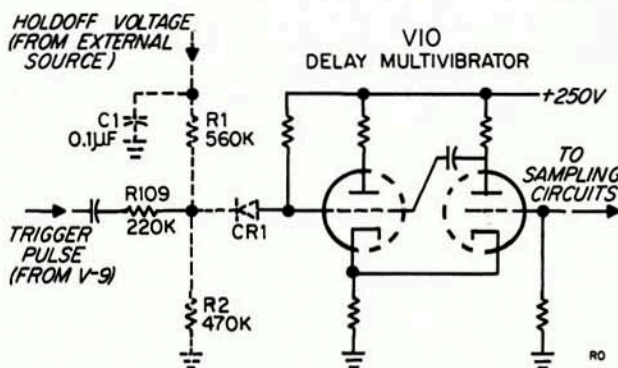


Figure 2 - 405AR Circuitry with Hold-off Circuit Added.

The addition of CR1 to the input to the delay multivibrator prevents input trigger pulses from starting a new reading when CR1 is reverse biased. (Hence the existing reading is held.) R1 and R2 form a resistance voltage divider for application of the hold-off voltage to CR1. CR1 is a silicon rectifier capable of 400 volts reverse voltage. A Model SD 500 manufactured by International Rectifier Company was used here. This is Ⓢ stock number 212-147.

Since the input trigger pulses from V9 are quite large, approximately 120 volts, a hold-off voltage of at least 200 volts and preferably 250 volts is desirable. A hold-off voltage of +200 volts at point A will cause the 405AR to hold a reading and the Nixie tubes will remain lighted displaying the count. If the voltage at point A is removed or if the voltage is reduced to +50 volts or less normal operation of the 405AR will be restored. Point A can also be grounded without harm. It may be necessary to add capacitor C1 to filter out switching transients. A .1 mfd capacitor should be adequate.

If hold-off action is marginal, it may be desirable to change R109 from 220 K to 470 K in order to attenuate the trigger signal.

The Models 560A and 561B Digital Recorders supply a hold-off signal from a 250 volt source which is filtered adequately. When these Recorders are used with the 405AR Digital Recorder the hold-off signal is delivered to pin 47 of the top 50 pin connector at the rear of the 405AR.

Ⓢ has designed a Dual Input Coupler which takes advantage of the hold-off supplied by the 560A Digital Recorder so that two Model 405AR's (with hold-off circuit added) or one 405AR and an Ⓢ or Dymec Counter can be operated into one 560A Digital Recorder.

The hold-off circuit described above should make the 405AR more adaptable to scanning and other applications. This circuit has been incorporated in the more recently introduced Model 405CR.

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