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INSTRUCTIONS

MODEL AVMM-C-D PULSE GENERATOR

S.N.:

WARRANTY

Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech shall at its option repair or replace said defective item. This warranty does not apply to units which have been dissembled, modified or subjected to conditions exceeding the applicable specifications or ratings. This warranty is the extent of the obligation or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

Fig. 1   <u>PULSE GENERATOR TEST ARRANGEMENT</u>


Fig. 1 — Pulse Generator Test Arrangement
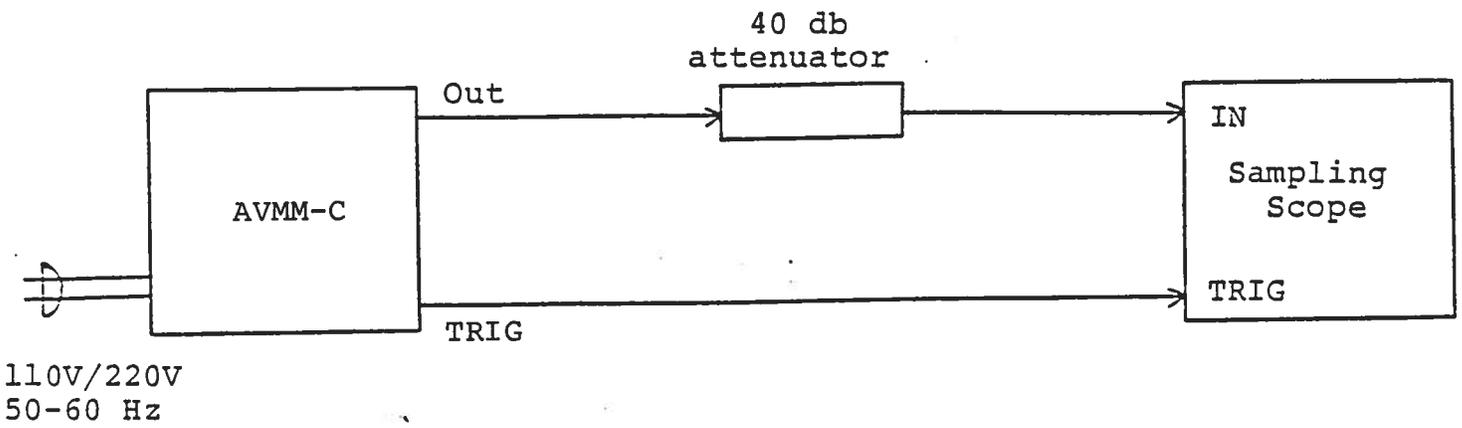
Notes:

1) The bandwidth capability of components and instruments
   used to display the pulse generator output signal
   (attenuators, cables, connectors, etc.) should exceed
   ten gigahertz.

2) The use of 40 db attenuator at the sampling scope
   vertical input channel will insure a peak input signal
   to the sampling scope of less than one volt.

3) The TRIG output channel provides a 0.2 volt 10 nsec
   pulse.

4) To obtain a stable output display the PRF control on the
   front panel should be set mid-range while the PRF range
   switch may be in either range. The front panel TRIG
   toggle switch should be in the INT position. The front
   panel DELAY control and the scope triggering controls
   are then adjusted to obtain a stable output. It is
   recommended that the DELAY control first be set max
   counter clockwise and then turned clockwise until a
   stable display is obtained. The scope may then be used
   to set the desired PRF by rotating the PRF control and
   by means of the PRF range switch. The stability of the
   display on some sampling scopes is very sensitive to the
   trigger delay setting, particularly at high PRF (eg. 10
   to 25 MHz). If necessary, consult your sample scope
   instructions manual for the proper triggering method.

5) The output pulse width is controlled by means of the
   front panel one turn PW control. The control should
   initially be set maximum clockwise and the pulse width
   adjusted using an oscilloscope. Rotation of the PW pot
   causes the position of the falling edge of the pulse to
   change. For the PRF range of 0 to 25 MHz, the output
   pulse width is variable over the range of 0 to 10 nsec.

6) To voltage control the output pulse width, remove the
   jumper wire between banana plugs A and B on the back
   panel and apply 0 to +10V to connector B ($R_{IN} \geqslant 10K$).
   (EW option).

7) The output pulse amplitude is controlled by means of the
   front panel one turn AMP control.

8) To voltage control the output amplitude, remove the
   jumper wire between banana plugs A and B on the back
   panel and apply 0 to +10V to connector B ($R_{IN} \geqslant 10K$).
   (EA option).

9) To DC offset the output pulse connect a DC power supply
   set to required DC offset value to the back panel
   terminals marked O.S. The maximum attainable DC offset

voltage is ±50 volts (for units without the OT or EO option only).

10) For units with the OT or EO options, the output DC offset is variable from +5 to -5 volts by means of the front panel one turn OFFSET control. The offset control may be turned off by means of the rear panel ON-OFF OFFSET switch.

11) For units with the EO option, the output offset may be voltage controlled by removing the jumper wire between banana plugs A and B on the back panel and applying 0 to +10 volts to connector B ($R_{IN} \geqslant 10K$).

12) The AVMM output pulse position or propagation delay can be varied for up to 5 nsec by means of the DELAY T_P control. Rotating the T_P control clockwise increases the delay. (-D option).

13) An external clock may be used to control the output PRF of the unit by setting the front panel TRIG toggle switch in the EXT position and applying a 10 nsec (or wider) TTL level pulse to the TRIG BNC connector input. The AVMM unit triggers on the rising edge of the input trigger pulse. For operation in this mode, the scope time base must also be triggered by the external clock rather than from the TRIG output.

14) WARNING: Model AVMM-C may fail if triggered at a PRF greater than 25.0 MHz.

15) The Model AVMM-C pulse generator can withstand an infinite VSWR on the output port.

16) Dual Polarity Option. To invert the output of the AVMM unit, connect the AVX-2-T unit to the OUT port. An inverted pulse is then obtained at the OUT port of the AVX-2-T unit. To offset the inverted pulse, connect a lead from the rear panel OS OUT banana plug to the DC terminal of the AVX-2-T unit. The DC offset at the output of the AVX-2-T unit is then controlled by the front panel OFFSET control.

17) The AVMM-C unit can be converted from 110 to 220V 50-60 Hz operation by adjusting the voltage selector card in the rear panel fused voltage selector-cable connector assembly.

Fig. 2 FRONT PANEL CONTROLS
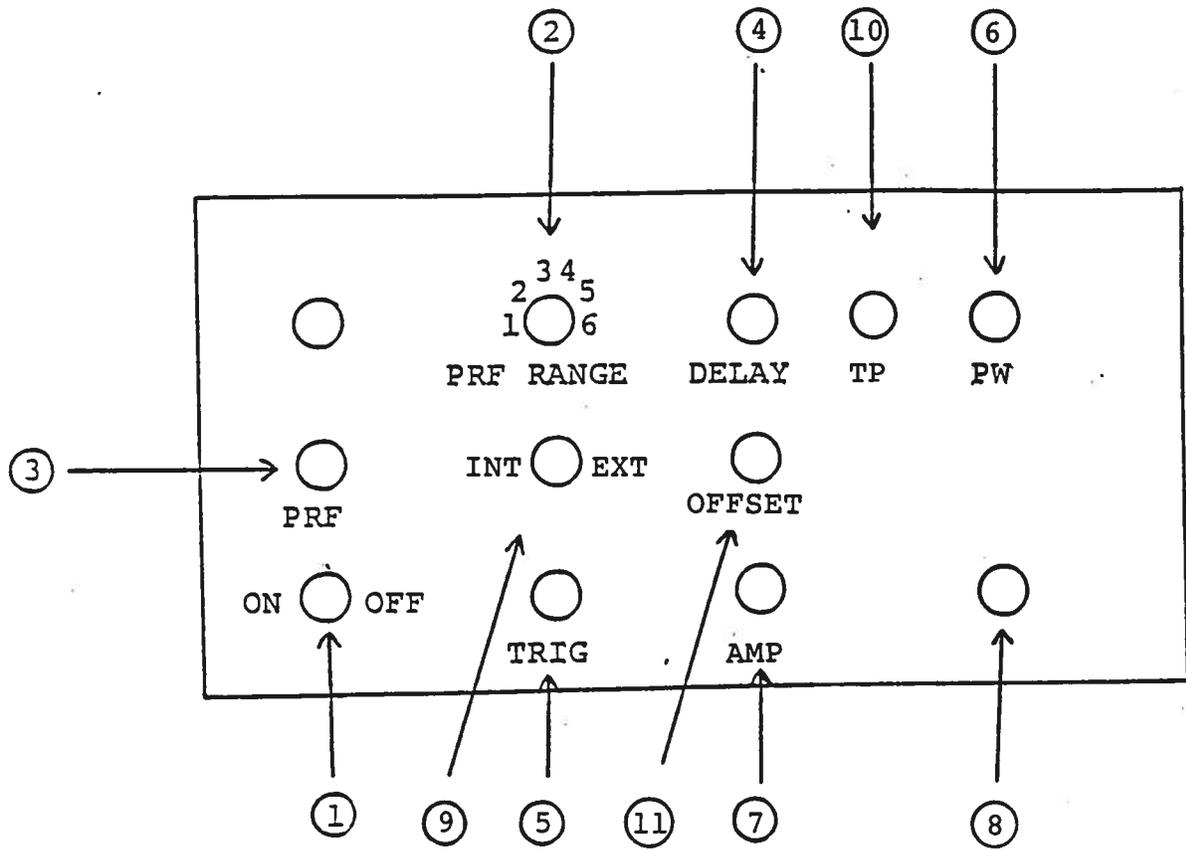
(1)   ON-OFF Switch. Applies basic prime power to all stages.

(2)   PRF Control. PRF RANGE and PRF controls determine
(3)   output PRF as follows:

	PRF MIN	PRF MAX
Range 1	10 KHz	50 KHz
Range 2	50 KHz	250 KHz
Range 3	185 KHz	650 KHz
Range 4	650 KHz	3.3 MHz
Range 5	3.3 MHz	13.3 MHz
Range 6	13 MHz	25 MHz

(4)   DELAY Control.   Controls the relative delay between the
        reference output pulse provided at the TRIG output (5)
        and the main output (8). This delay is variable over
        the range of 0 to at least 100 nsec.

(5)   TRIG Output/Input. This output precedes the main output
        (8) and is used to trigger the sampling scope time base.
        The output is a 200 mV 10 nsec (approx) pulse capable of
        driving a fifty ohm load. The external trigger signal
        is applied at this input when the EXT-INT toggle switch
        is in the EXT position.

(6)   PW Control. A one turn control which varies the output
        pulse width.

(7)   AMP Control. A one turn control which varies the output
        pulse amplitude from 0 to max output to a fifty ohm
        load.

(8)   OUT Connector. SMA connector provides 300 psec rise
        time output to a fifty ohm load.

(9)   EXT-INT Control.   With this toggle switch in the INT
        position, the PRF of the AVMM unit is controlled via an
        internal clock which in turn is controlled by the PRF
        controls. With the toggle switch in the EXT position,
        the AVMM unit requires a 10 nsec (or wider) TTL level
        pulse applied at the TRIG input in order to trigger the
        output stages.   In addition, in this mode, the scope
        time base must be triggered by the external trigger
        source.

(10)   DELAY TP (Option). A one turn control for varying the
        output pulse delay by 0 to 5 nsec.

(11)   OFFSET (Option). A one turn control for varying the
   output DC offset from -5 to +5 volts.

Fig. 4   BACK PANEL CONTROLS
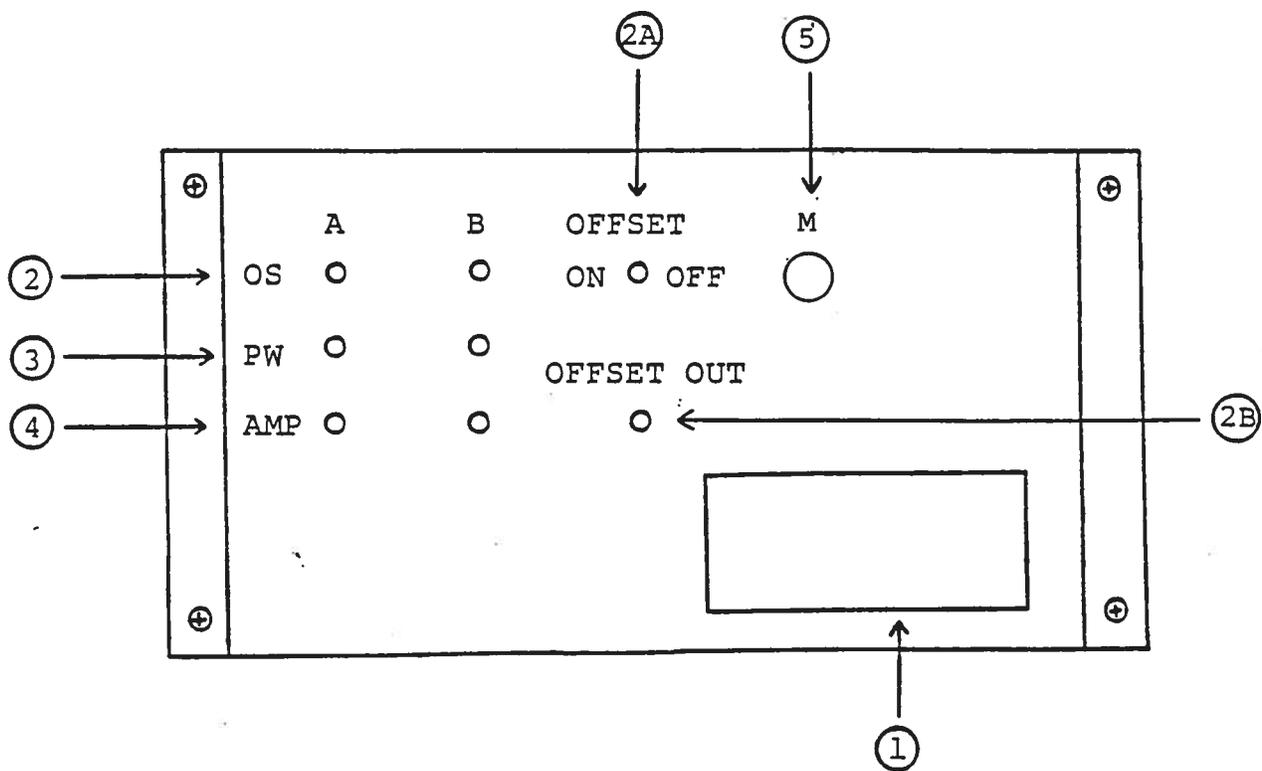
(1)   FUSED CONNECTOR, VOLTAGE SELECTOR. The detachable power
       cord is connected at this point.   In addition, the
       removable cord is adjusted to select the desired input
       operating voltage.   The unit also contains the main
       power fuse.

(2)   To voltage control the output DC offset, remove the
       jumper wire between banana plugs A and B and apply 0 to
       +10V to connector B ($R_{IN} \geqslant$ 10K).   (EO option).

(2A)   Two position switch which turns output DC offset ON or
       OFF.   (EO or OT options).

(2B)   With OFFSET ON-OFF switch in ON position, DC output
       offset potential appears at this terminal.   To offset
       inverted pulse on AVMM units with dual polarity option
       (-PN) connect this terminal to the DC terminal of the
       AVX-2-T-OT module.   (EO or OT options).

(3)   To voltage control the output pulse width, remove the
       jumper wire between banana plugs A and B and apply 0 to
       +10V to connector B ($R_{IN} \geqslant$ 10K).   (EW option).

(4)   To voltage control the output amplitude, remove the
       jumper wire between banana plugs A and B and apply 0 to
       +10V to connector B ($R_{IN} \geqslant$ 10K).   (EA option).

(5)   MONITOR Output. Provides an attenuated (x10) coincident
       replica (to 50 ohm) of the main output. Provides
       replica of pulse width and amplitude but rise time fixed
       at about 300 psec (option).

Fig. 6   SYSTEM BLOCK DIAGRAM
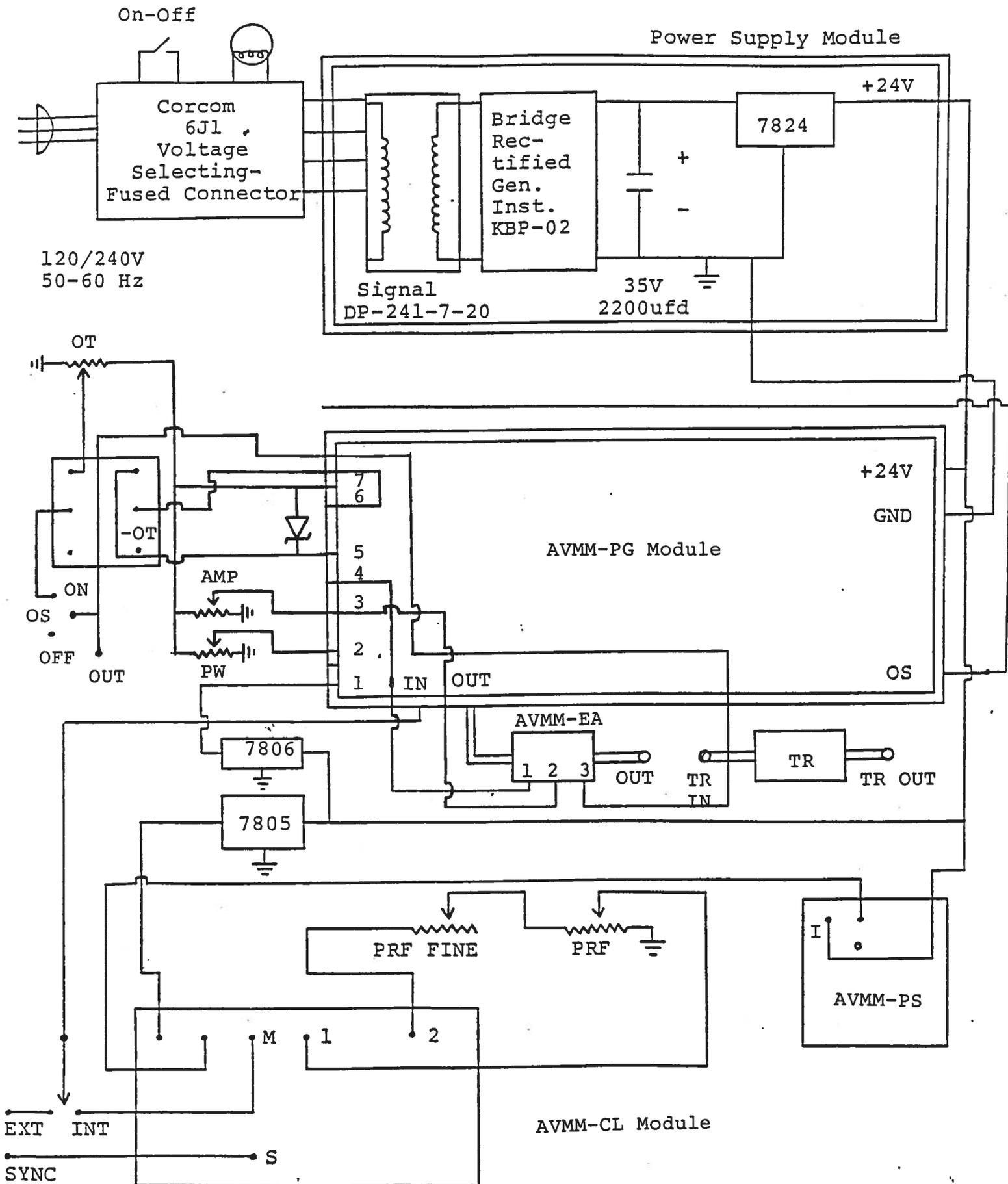
SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVMM-C consists of a pulse generator module (AVMM-PG), a clock module (AVMM-CL), a -5.8 volt power supply module (AVMM-PS) and a power supply board which supplies +24 volts (800 mA max) to the pulse generator module. In the event that the unit malfunctions, remove the instrument cover by removing the four Phillips screws on the back panel of the unit. The top cover may then be slid off. Measure the voltage at the +24 V pin of the PG module. If this voltage is substantially less than +24 volts, unsolder the line connecting the power supply and PG modules and connect 50 ohm 10 W load to the PS output. The voltage across this load should be about +24 V DC. If this voltage is substantially less than 24 volts the PS module is defective and should be repaired or replaced. If the voltage across the resistor is near 24 volts, then the PG module should be replaced or repaired. The sealed PG module must be returned to Avtech for repair (or replacement). The clock module provides a 20 nsec TTL level trigger pulse at pin M to trigger the PG module and a 20 nsec 0.5 V sync pulse at pin S to trigger the sampling scope display device. The output at pin S precedes the output at pin M by 0 to 100 nsec depending on the DELAY control setting. With the INT-EXT switch in the EXT position, the clock module is disconnected from the PG module. The clock module is functioning properly if:

a) 10 nsec, or wider, outputs are observed at pins M and S.

b) The PRF of the outputs can be varied over the range of 10 KHz to 25 MHz using the PRF, PRF FINE and PRF RANGE controls.

c) The relative delay between the pin M and S outputs can be varied by at least 100 nsec by the DELAY control.

The sealed clock module must be returned to Avtech for repair or replacement if the above conditions are not observed.

Schroff   02.06.91

- EW
- EA
- OS
- OT
- EO
- D
- PN
- M