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SINCE 1975

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INSTRUCTIONS

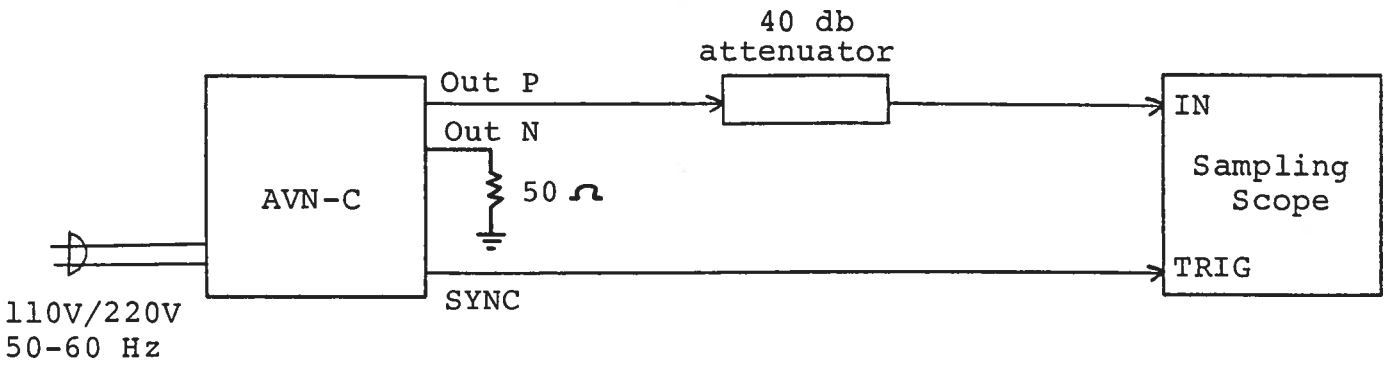
MODEL AVN-3-C-PN-OT-WLG1 PULSE GENERATOR

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 PULSE GENERATOR TEST ARRANGEMENT



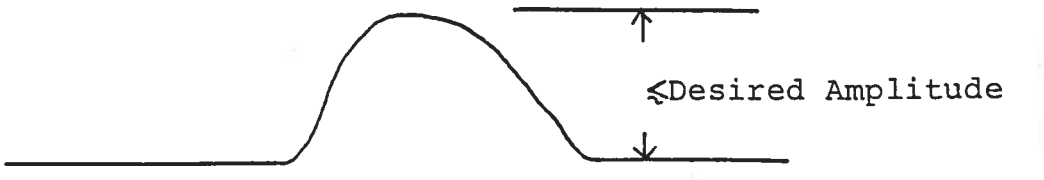
Notes:

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

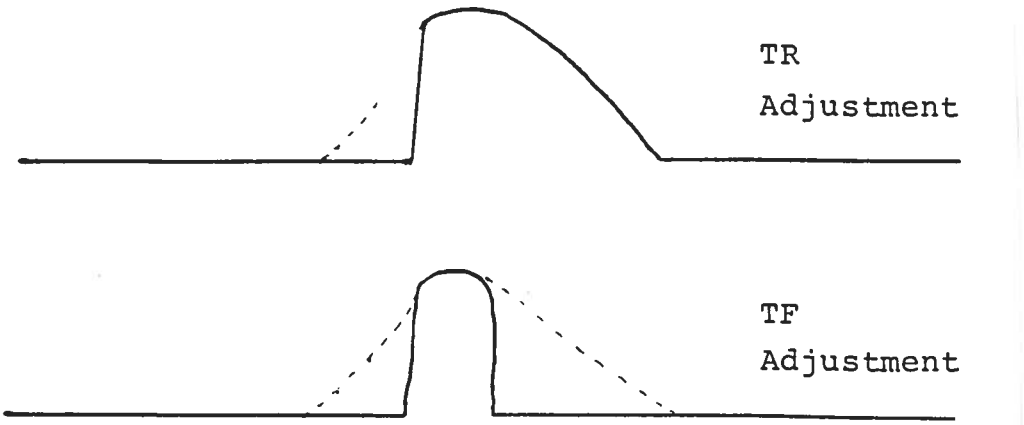
2) The use of 40 db attenuator at the sampling scope vertical input channel will insure a peak input signal to the sampling scope of less than one volt. Note that both the POS and NEG outputs must be terminated in 50 Ohms.

3) 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 scope triggering controls are then adjusted to obtain a stable output.

4) The output pulse shape is determined by the two front panel pot controls TR and TF (PW controls). TR controls the leading edge of the pulse while TF controls the falling edge. Clockwise rotation of TR and TF increases the output pulse width. Initially rotate the TF pot fully clockwise and set the TR pot at mid-range. The output amplitude is controlled by the front panel AMP control and by the input signal level. Initially the AMP control should be set maximum clockwise. The CRT display will resemble the following:



5) Having obtained a display of the form shown above, the desired pulse width is then obtained by adjusting the two front panel pots TR and TF. Rotate TR counter clockwise from the positive set in step 2) until a sharp 150 ps leading edge is observed. Then rotate TF counterclockwise until the desired pulse width and fall time are obtained.



Further iterative adjustments of TR and TF will be necessary to simultaneously obtain the lowest rise time, lowest fall time, the desired pulse width, and pulse top shape, and low spurious signal level. In addition some additional adjustment of signal level may be necessary to obtain the desired amplitude. If the input frequency is then changed it will be necessary to readjust AMP, TR and TF to establish the required pulse shape. Following the above sequence it is possible to generate output pulses having amplitudes of at least 15 volts with variable pulse width (at least from 300 to 1000 psec) with pulse repetition frequencies in the range of 50 to 260 MHz (max output amplitude decreases to 5 volts at 250 MHz). WARNING: Do not operate below 50 MHz as failure may result. Also do not exceed 15 volts out.

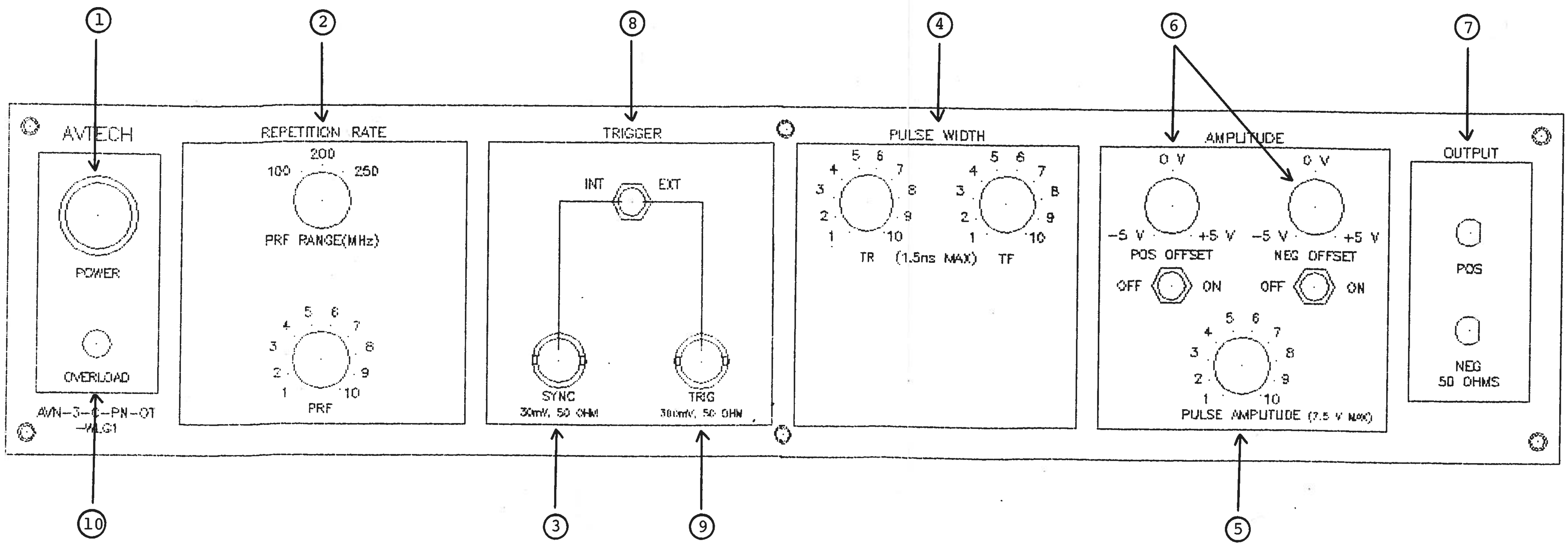
6) AVN-3-C units with a serial number higher than 6600 are protected by an automatic overload protective circuit which controls the front panel overload light. If the unit is overloaded (by operating at an exceedingly high duty cycle or high output amplitude or by operating into a short circuit), the protective circuit will turn the output of the instrument OFF and turn the indicator light ON. The light will stay ON (i.e. output OFF) for about 5 seconds after which the instrument will attempt to turn ON (i.e. light OFF) for about 1 second. If the overload condition persists, the instrument will turn OFF again (i.e. light ON) for another 5 seconds. If the overload condition has been removed, the instrument will turn on and resume normal operation. Overload conditions may be removed by:

   1) Reducing output amplitude
   2) Reducing pulse width
   3) Removing output load short circuit (if any)

7) To trigger externally, set the INT-EXT switch to EXT and connect a sine wave generator to the TRIG connector. The output PRF will equal the sine wave PRF. The sine wave amplitude should be set at 0.3 VRMS.

8) For units with the OT option, the output DC offset is variable from +5 to -5 volts by means of the front panel one turn OFFSET controls. The offset control may be turned off by means of the ON-OFF OFFSET switches.

9) DC offset may also be applied to the output by setting the ON-OFF switches in the OFF position and applying the desired potential to the rear panel OS (P and N) solder terminals ($\pm$100 mA max).


AVTECH
POWER
OVERLOAD
AVN-3-C-PN-OT
-WLG1
REPETITION RATE
100 200 250
PRF RANGE(MHz)
PRF
TRIGGER
INT EXT
SYNC
30mV, 50 OHM
TRIG
300mV, 50 OHM
PULSE WIDTH
TR (1.5ns MAX) TF
AMPLITUDE
0 V
-5 V +5 V
POS OFFSET
NEG OFFSET
OFF ON
PULSE AMPLITUDE (7.5 V MAX)
OUTPUT
POS
NEG
50 OHMS

10) The AVN-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.

11) For additional assistance:

Tel: (613) 226-5772
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FRONT PANEL CONTROLS

(1) ON-OFF Switch. Applies basic prime power to all stages.

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

	PRF MIN	PRF MAX
Range 1	50 MHz	125
Range 2	100	200
Range 3	100	250

(3) SYNC Output. This output is approximately coincident with the main output (6) and is used to trigger the sampling scope time base. The output is a 30 mV sine wave capable of driving a fifty ohm load.

(4) PW Control. One turn controls which vary the output pulse width. The output pulse shape is determined by the two front panel pot controls TR and TF. TR controls the leading edge of the pulse while TF controls the falling edge. Clockwise rotation of TR and TF increases the output pulse width. The pulse widths of the POS and NEG outputs are equal (and controlled by common controls).

(5) PULSE AMP Control. A one turn control which varies the output pulse amplitude from 0 to max output to a fifty ohm load. The amplitudes for the POS and NEG outputs are controlled by the one common control.

(6) OFFSET AMPLITUDE. Two one turn controls (and ON-OFF switches) vary the DC offset on the POS and NEG outputs (3) from 0 to $\pm$5 Volts.

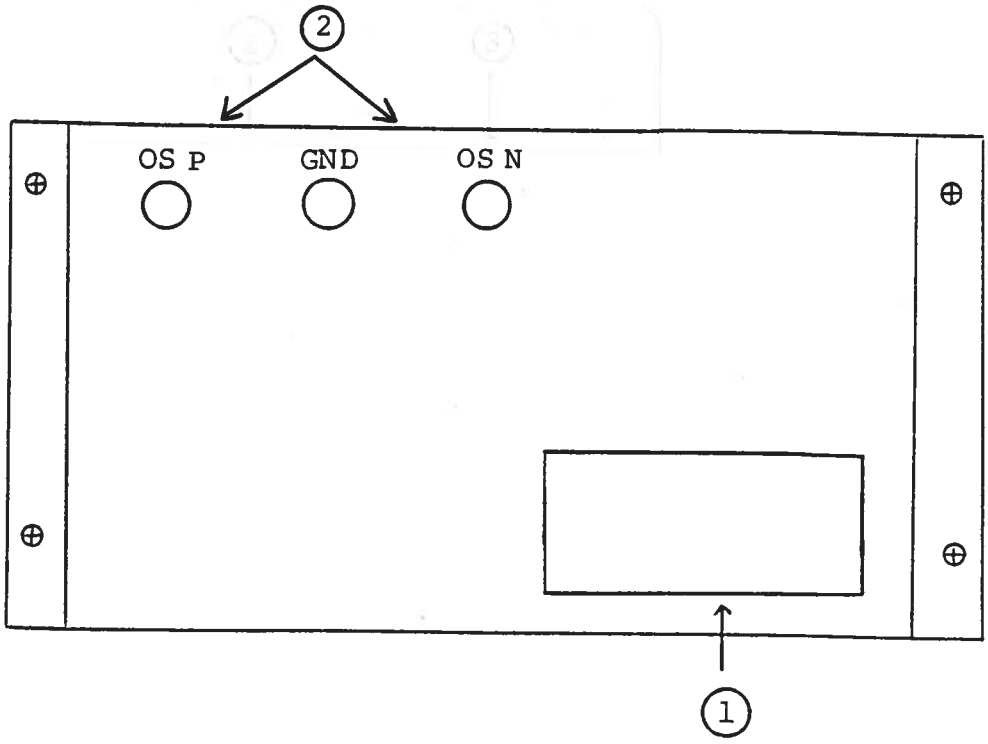
(7) OUT Connectors. SMA connectors provide outputs to fifty ohm loads (POS and NEG).

(8) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVN 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 AVN unit requires a 0.3 V RMS sine wave 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.

(9) TRIG Input. The external trigger signal is applied at this input when the EXT-INT toggle switch is in the EXT position.

Fig. 3

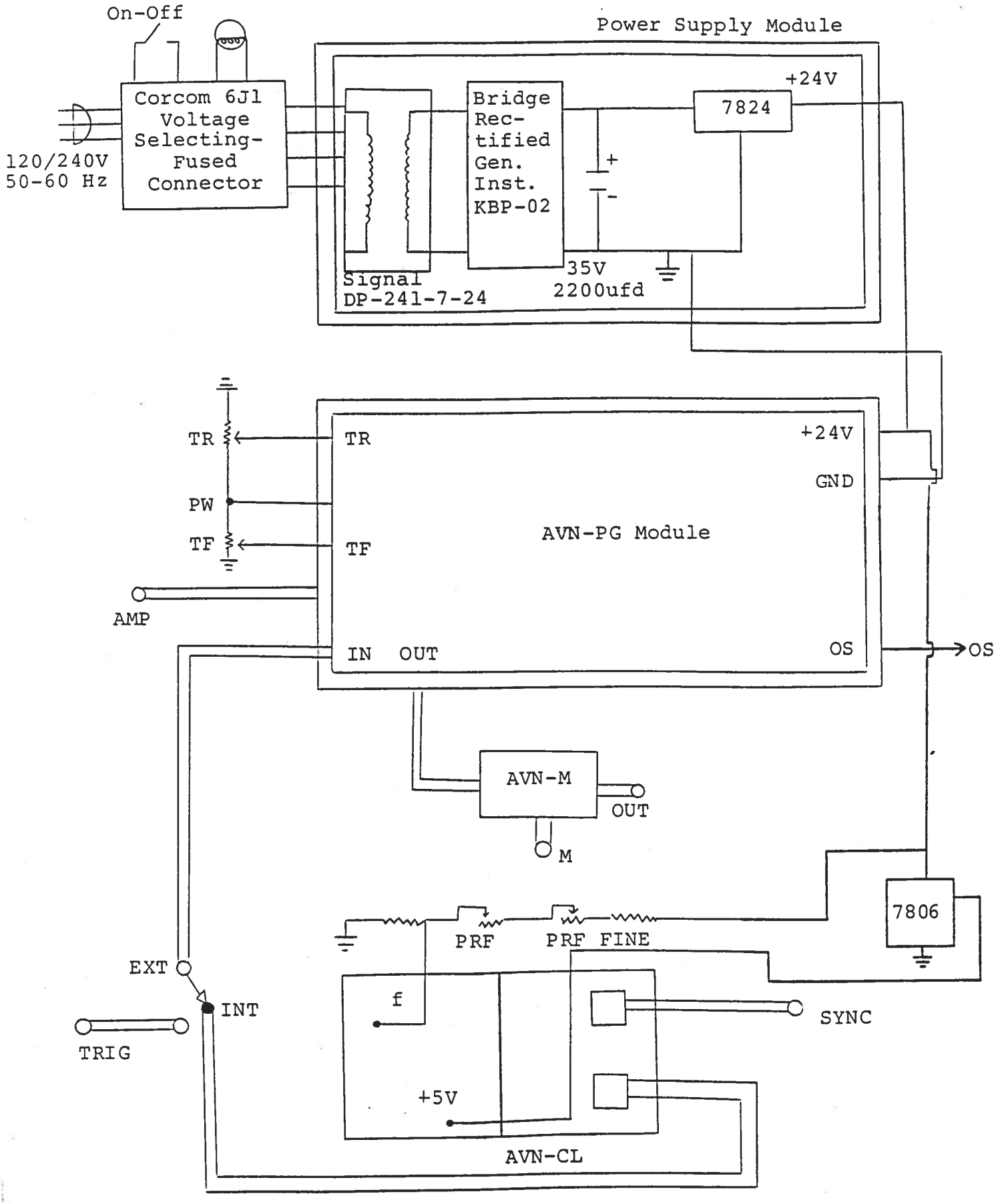
BACK PANEL CONTROLS



(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 (0.5 A SB).

(2) DC OFFSET Input. To DC offset the output pulse using a lab power supply, set the front panel switches in the OFF position and connect a DC power supply set to the desired offset value to these terminals. The maximum allowable DC offset voltage is ±5 volts (±100 mA). If the front panel switches are in the ON position the internally generated DC offset potential appears on these solder terminals.

Fig. 5 SYSTEM BLOCK DIAGRAM



SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVN-C consists of a pulse generator module (AVN-PG), a clock module (AVN-CL) and a power supply board which supplies +24 volts (600 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 of the unit. The top may then be slid off. Measure the voltage at the +24V 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 0.3 V RMS sine wave to trigger the PG module and a 30 mV sine wave to trigger the sampling scope display device. The clock module is powered by +5.0V supplied by the PG module. With the INT-EXT switch in the EXT position, the clock module is disconnected from the PG module.

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

Oct. 18/93

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