

AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
ENGINEERING - MANUFACTURING

□ P.O. BOX 265
OGDENSBURG
NEW YORK
13669
(315) 472-5270

☒ BOX 5120, STN. "F"
OTTAWA, ONTARIO
CANADA K2C 3H4
TEL: (613) 226-5772
FAX: (613) 226-2802
TELEX: 053-4591

INSTRUCTIONS

MODEL AVO-8A-C-P-M-CMA PULSE GENERATOR

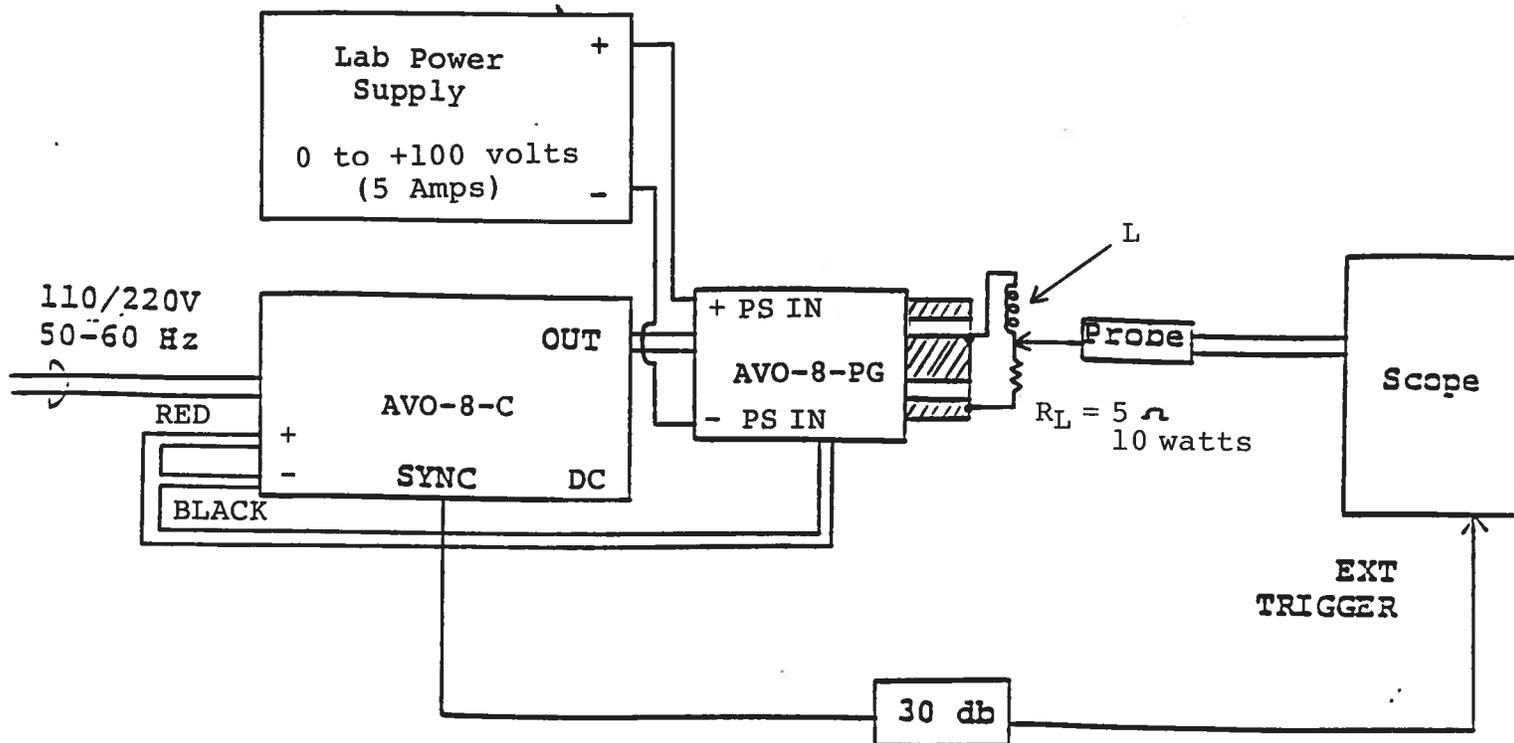
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WARRANTY

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 disassembled, 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.

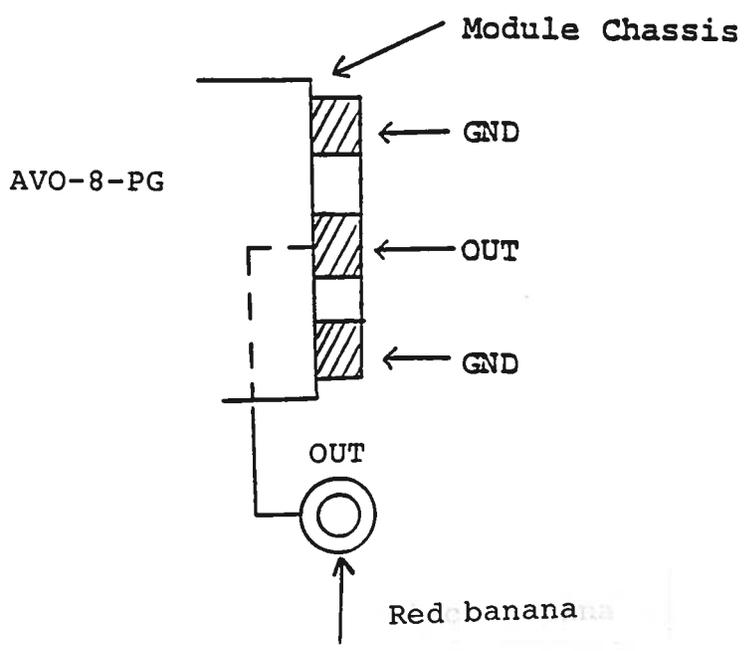
Fig. 1

PULSE GENERATOR TEST ARRANGEMENT

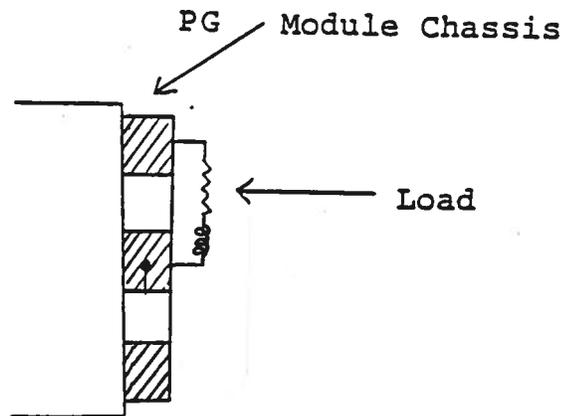


GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above. Since the AVD unit provides an output pulse rise time as low as 0.1 usec a fast oscilloscope (at least 50 MHz) should be used to display the waveform.
- 2) The user supplied lab power supply attaches to the -PG output module via the red and black banana connectors. The positive terminal of the power supply is to be connected to the RED connector on the -PG module. The negative terminal on the lab power supply is to be connected to the BLACK connector on the -PG module. The black 1/2" diameter power cable which is permanently attached to the -PG module connects to the banana terminals on the rear panel of the instrument mainframe. The RED lug on the end of the cable is to be connected to the RED banana while the BLACK lug is to be connected to the BLACK banana. CAUTION: The output lugs on this cable are at the same potential as supplied to the PG module.
- 3) The sync output channel provides TTL level signals. To avoid overdriving the TRIG input channel of some scopes, a 30 db attenuator should be placed at the input to the scope trigger channel. The SYNC output precedes the main output when the front panel LEAD-LAG switch is in the LEAD position. The SYNC output lags the main output when the switch is in the LAG position.
- 4) To obtain a stable output display the PW and PRF controls on the front panel should be set mid-range. The front panel TRIG toggle switch should be in the INT position and the MODE switch should be in the A position. The DELAY controls and the scope triggering controls are then adjusted to obtain a stable output. The scope may then be used to set the desired PRF by rotating the PRF controls.
- 5) The output terminals of the pulse generator module consists of a short length of microstrip transmission line protruding from the module chassis. The OUT terminal is the center conductor which is bounded on both sides by the ground plane (see below). Note that the "OUT" red banana terminal is in parallel with the microstrip center conductor and so may also be used as the output terminal.



The load should be connected between the OUT and GND terminals using very short leads ($\ll 2.0$ cm).



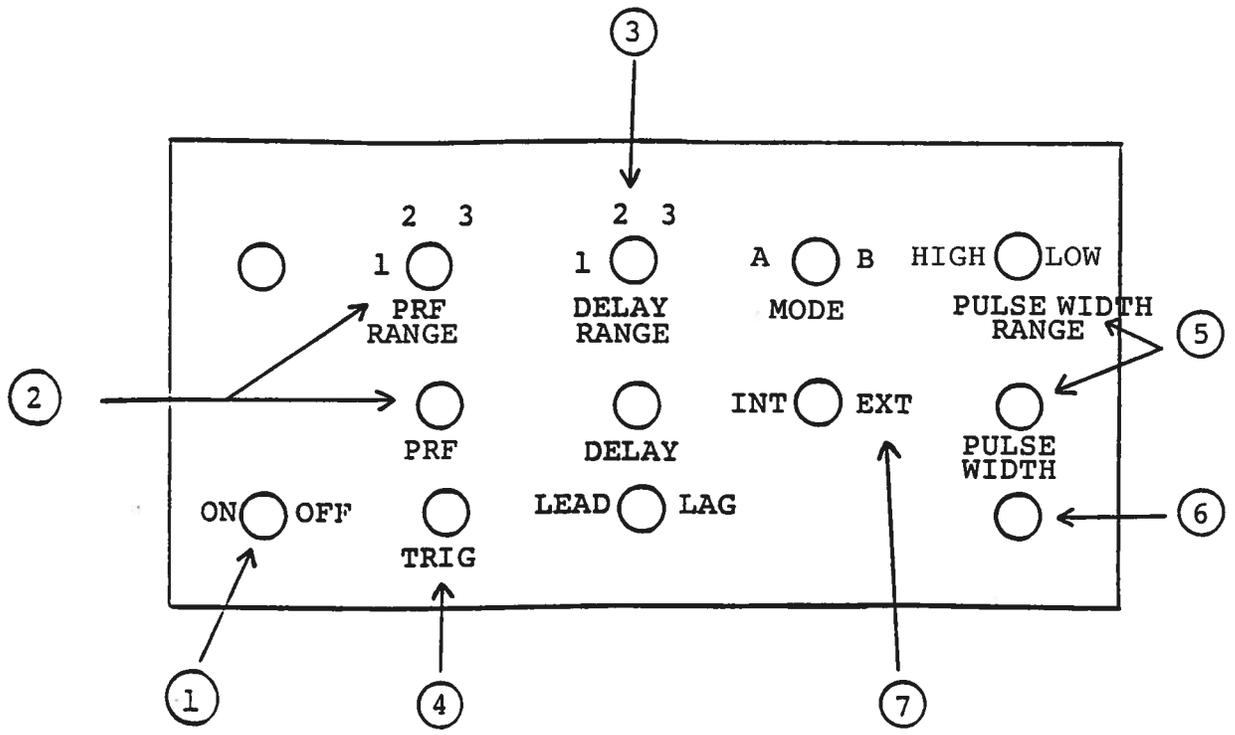
Take care to insure that during soldering the OUT conductor is not shorted to the chassis. Also, use minimal heat when soldering.

- 6) The output pulse width is controlled by the 2 position range switch and one turn fine control.
- 7) The output amplitude is controlled by the amplitude of the DC potential supplied to the banana connectors on the PG module. Note that rate at which the output amplitude may be changed (particularly reduced) is limited by the large energy storage capacitor (110,000) in the mainframe. For operation at narrow pulse widths (eg. 5 μ s) this capacitor may be removed from the system by simply disconnecting the cables to the rear panel banana terminals. Note that these cables are in parallel with the output of the user supplied lab power supply.

- 8) 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 0.2 usec (approx) TTL level pulse to the TRIG BNC connector input. For operation in this mode, the scope time base must also be triggered by the external clock rather than from the SYNC output.
- 9) When the MODE A-B switch is in the B position and the INT-EXT switch is in the EXT position, the output pulse width is equal to the TTL trigger pulse applied at the TRIG BNC.
- 10) The AVO-BA is designed to supply up to 20 amperes peak to a maximum load voltage of 100 volts. Factory tests are conducted with a 5.0 ohm load capable of dissipating at least 10 watts. Higher load resistance values may be used but the input voltage must be limited to 100 volts or less. Note that the unit may fail if the average output current exceeds 5 Amp.
- 11) The 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.
- 12) The rear panel monitor output BNC (M) provides an output voltage (to 50 ohms or higher) which is proportional to the current flowing through the microstrip output terminals (180 mV \simeq 5 Amps). Note that the monitor function is not connected to the banana output terminals.
- 13) If application assistance is required, call (613) 226-5772.

Fig. 2

FRONT PANEL CONTROLS



- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. Varies PRF from 10 Hz to 5 KHz as follows:

Range 1	1.0 Hz	to	10 Hz
Range 2	10 Hz	to	100 Hz
Range 3	100 Hz	to	1.0 KHz

- (3) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (4) and the -PG output. This delay is variable as follows:

Range 1	0.2 us	to	10 us
Range 2	10 us	to	100 us
Range 3	100 us	to	1 ms

The TRIG output precedes the main output when the LEAD-LAG switch is in the LEAD position and lags when the switch is in the LAG position

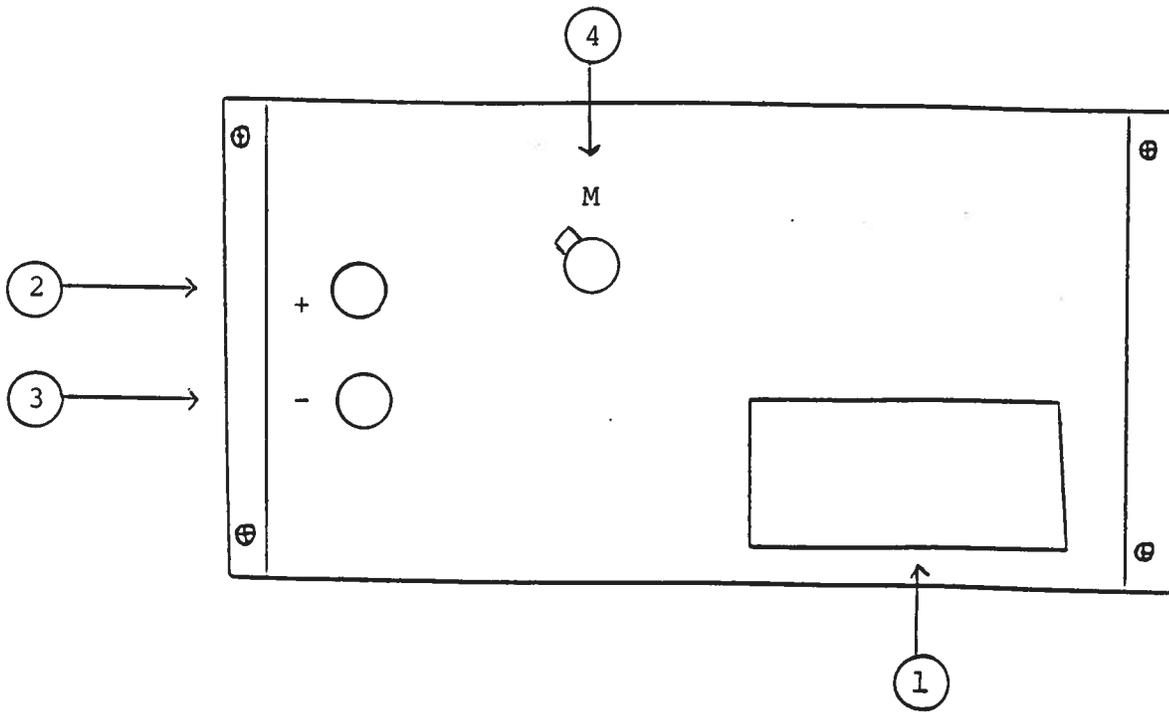
- (4) TRIG Output. This output is used to trigger the scope time base. The output is a TTL level 100 nsec (approx.) pulse capable of driving a fifty ohm load.
- (5) PW Control. A one turn control and two position range switch which varies the output pulse width as follows:

LOW	2.0 us	to	20 us
HIGH	20 us	to	200 us

- (6) OUT Connector. A multi pin connector which attaches the 2 foot cable from the pulse generator module to the main frame.
- (7) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVO 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 AVO unit requires a 0.2 usec 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.
- (8) PW MODE. With the MODE switch in the A position the PW is controlled by the front panel controls whether the unit is triggered internally or externally. When the switch is in the B position, the PW is controlled by the TTL PW applied externally to the TRIG input (when the INT-EXT switch is in the EXT position).

Fig. 3

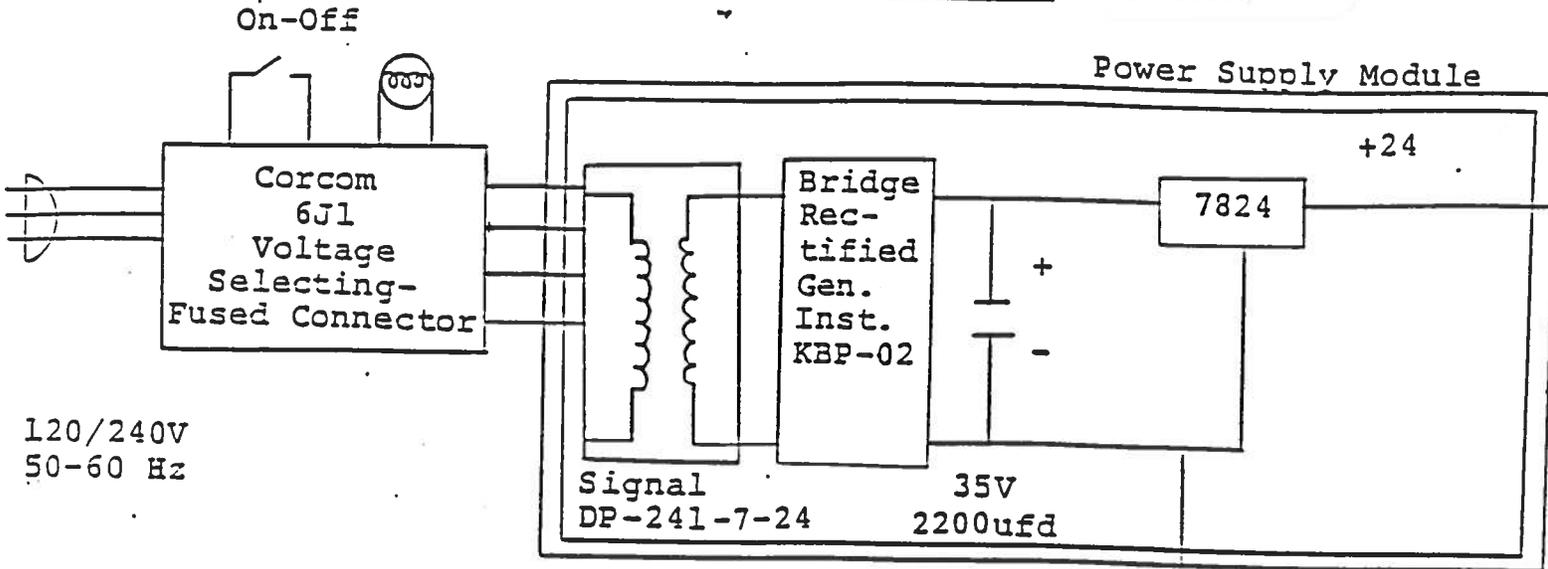
BACK PANEL CONTROLS



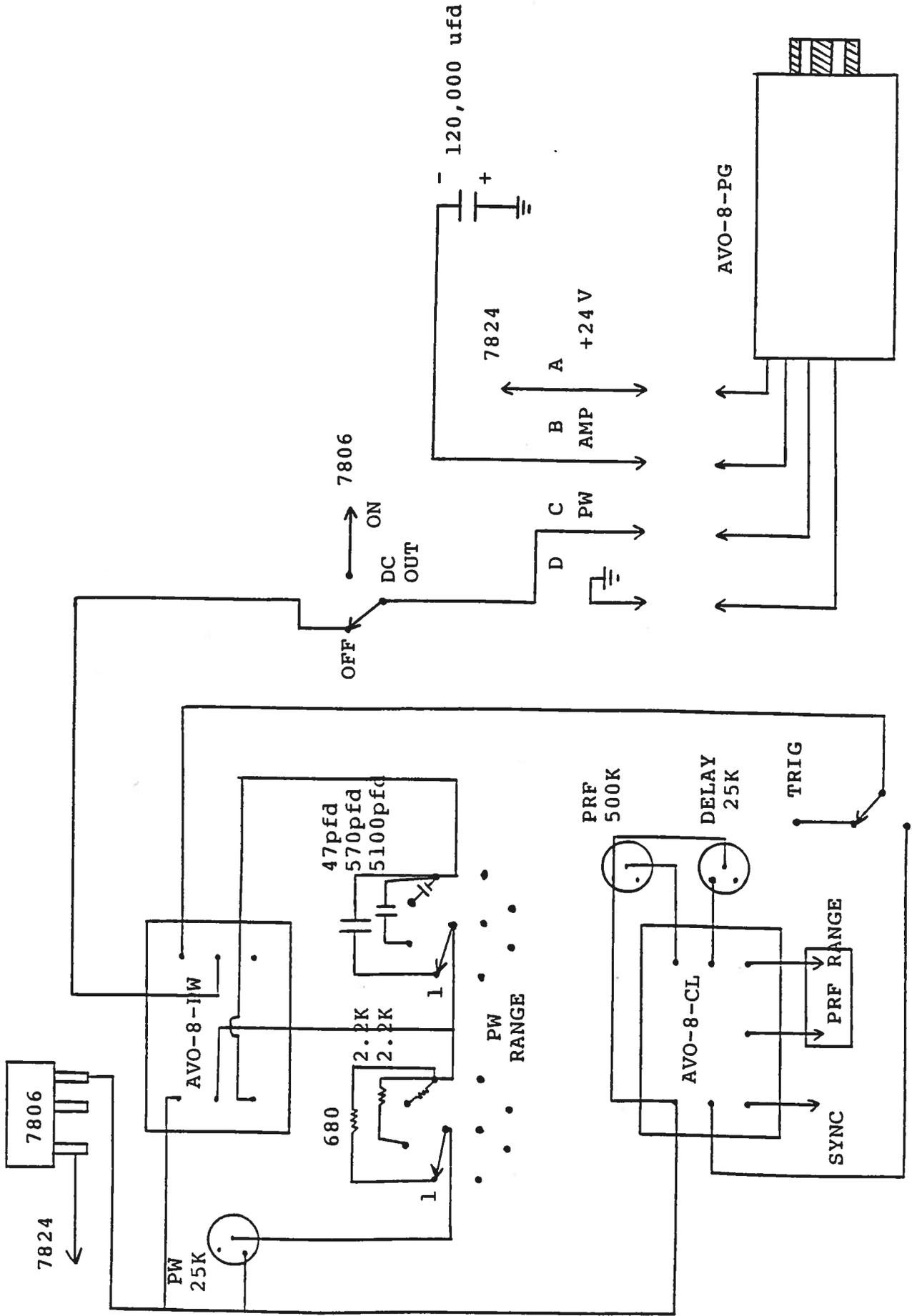
- (1) FUSED CONNECTOR, VOLTAGE SELECTOR. The detachable power cord is connected at this point. In addition, the removable cord is adjusted to select the desired input operating voltage. The unit also contains the main power fuse (0.25 A 5B).
- (2) RED BANANA. RED lug on 1/2" BLACK cable from PG module connects to this terminal. CAUTION: Potentials as high as 100 volts DC exists on this cable.
- (3) BLACK BANANA. BLACK lug on 1/2" BLACK cable from PG module connects to this terminal.
- (4) M OUT. BNC connector provides output voltage (to $R_L \gg 50$ ohms) which is proportional to load current through microstrip output terminals ($180 \text{ mV} \simeq 5 \text{ Amp}$).

Fig. 4

SYSTEM BLOCK DIAGRAM (P-W ONLY)



AVO-8-C BLOCK DIAGRAM



Schroff

02.12.91