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INSTRUCTIONS

MODEL AVO-7A-PS 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 assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

TECHNICAL SUPPORT

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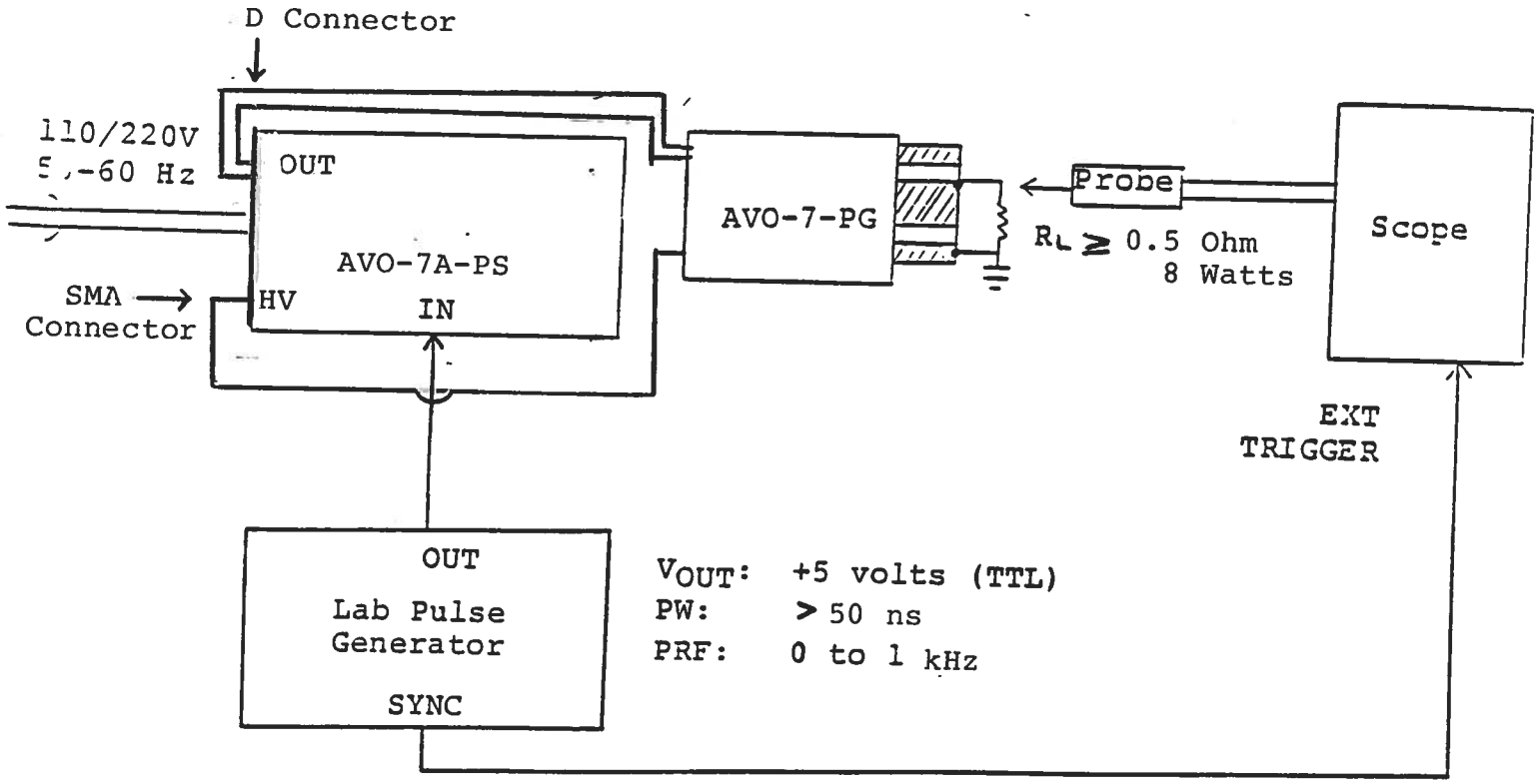
Fig. 1

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 100 MHz.

2) The black RG174 cable (from the -PG module) must be connected to the rear panel HV SMA connector and the tan cable (from the -PG module) must be connected to the rear panel out D connector.

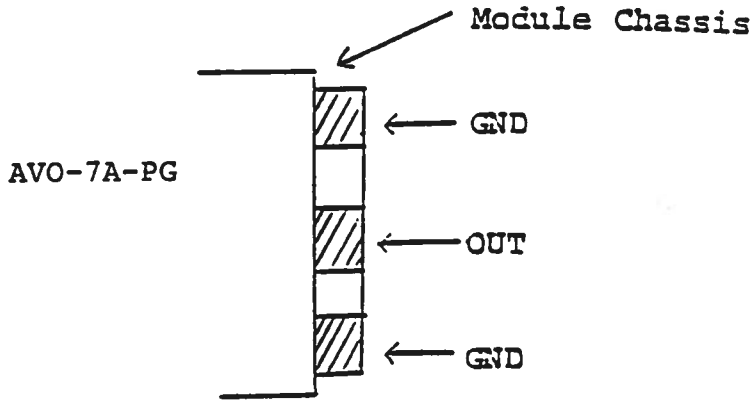
3) With the AB mode switch in the A position, the output pulse width is controlled by the 3 position PW range switch and the one turn PW control (10 turn control for units with the -PWT option). The minimum and maximum PW for each range and the corresponding maximum PRF are as follows. Note that the unit may fail if operated at duty cycles exceeding 1.0%.

	PW min	PW max
1)	0.2 us PRF max 1 kHz	2.0 us PRF max 1 kHz
2)	2.0 us PRF max 1 kHz	20 us PRF max 500 Hz
3)	20 us PRF max 500 Hz	200 us PRF max 50 Hz

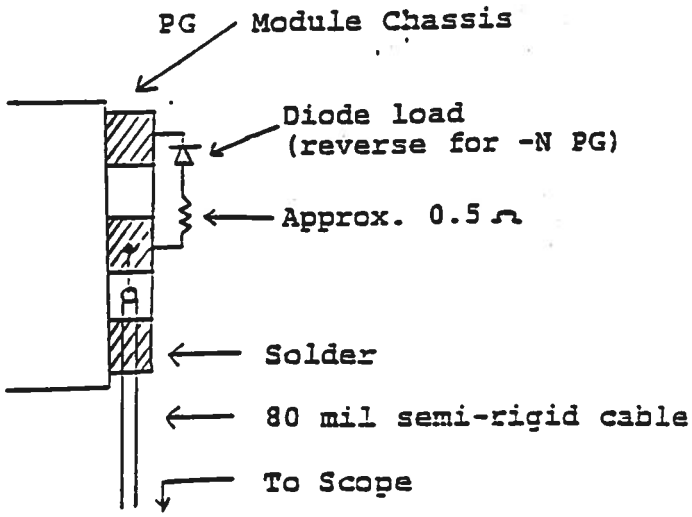
4) With the AB mode switch in the B position, the output pulse width is equal to the input trigger pulse width.

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

6) 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):



The load should be connected between the OUT and GND terminals using very short leads (≤ 0.5 cm). The voltage across the load may be monitored by connecting a length of 80 mil semi-rigid 50 ohm cable as shown below (or by means of a high impedance scope probe):



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

7) CAUTION: The output stage is protected against overload condition by a 0.5 A slow blow fuse on the main frame back panel. However, the output switching elements may fail if the unit is triggered at a PRF exceeding 10 kHz or at duty cycles resulting in an average output power in excess of 8 Watts. Heating and subsequent likely failure of the output stage is reduced if the following action is taken where possible:

a) PRF is kept to a minimum, i.e. operate in a low PRF range when possible rather than in a high PRF range.
b) Keep the output PW to a minimum.

8) OVERLOAD INDICATOR. AVO-7A units with a serial number higher than 5600 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 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 PRF (i.e. switch to a lower range)
2) Reducing pulse width (i.e. switch to a lower range)
3) Removing output load short circuit (if any)

Note that the overload light may illuminate when the prime power is first applied. The light will extinguish after a few seconds and the instrument will then function normally.

9) 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.

10) For additional assistance:

Tel: (613) 226-5772
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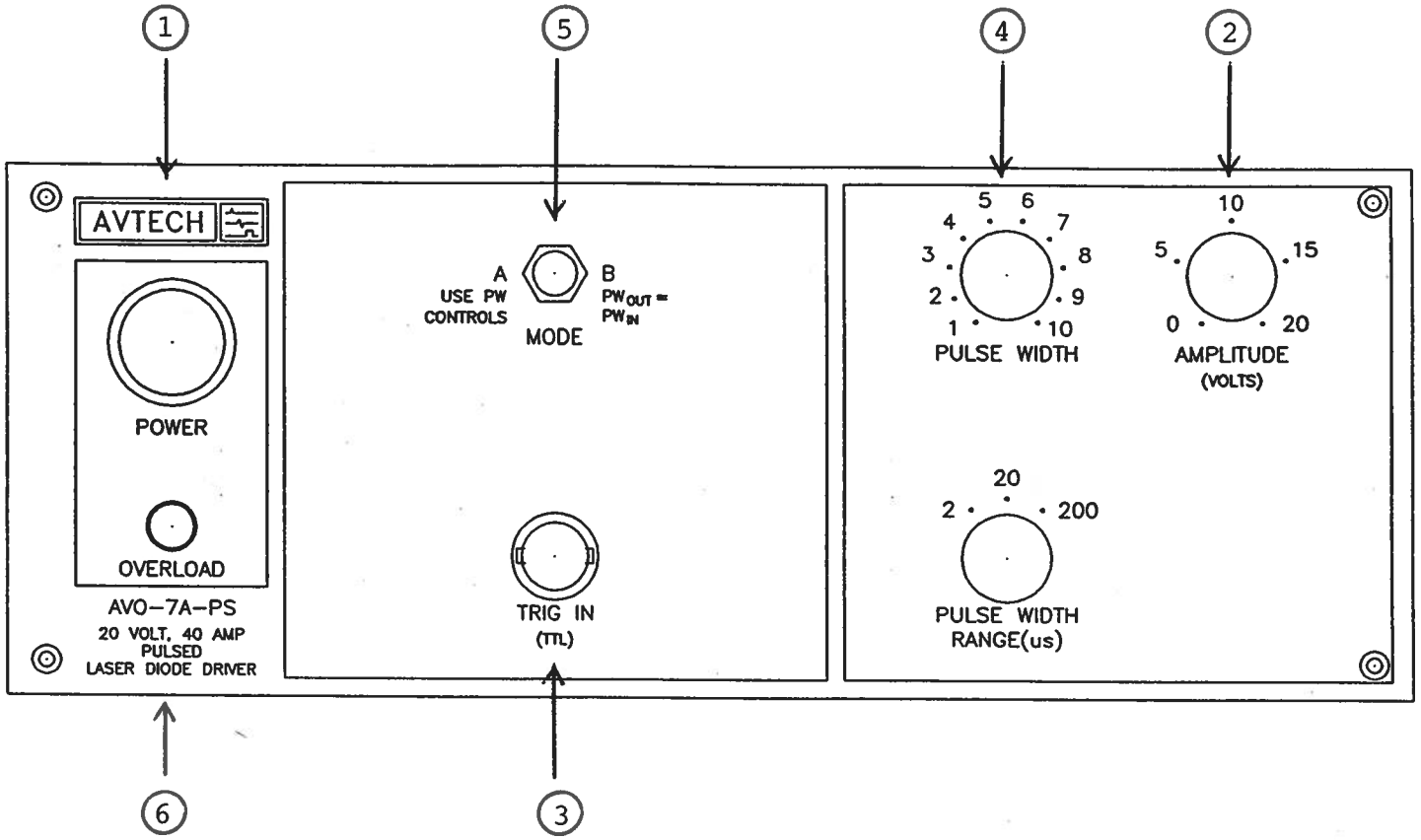


Fig. 2

FRONT PANEL CONTROLS

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

(2) AMP Control. A one turn control which varies the output pulse amplitude from 0 to 20 V (ten turn control for -AT option units).

(3) TRIG Input. The external trigger signal is applied at this input (TTL).

(4) PW Control. A one turn control (ten turn control for -PWT option units) and 3 position range switch which varies the output pulse width from 0.2 us to 200 us. The minimum and maximum PW for each range and the corresponding maximum PRF are as follows. Note that the unit may fail if operated at duty cycles exceeding 1.0%.

	PW min	PW max
Range 1	0.2 us PRF max 1.0 kHz	2.0 us PRF max 1 kHz
Range 2	2.0 us PRF max 1 kHz	20 us PRF max 500 Hz
Range 3	20 us PRF max 500 Hz	200 us PRF max 50 Hz

(5) AB MODE. When switch is in the A position output pulse width is controlled by PW controls (6) while if switch is in the B position, the output pulse width equals the input trigger pulse width.

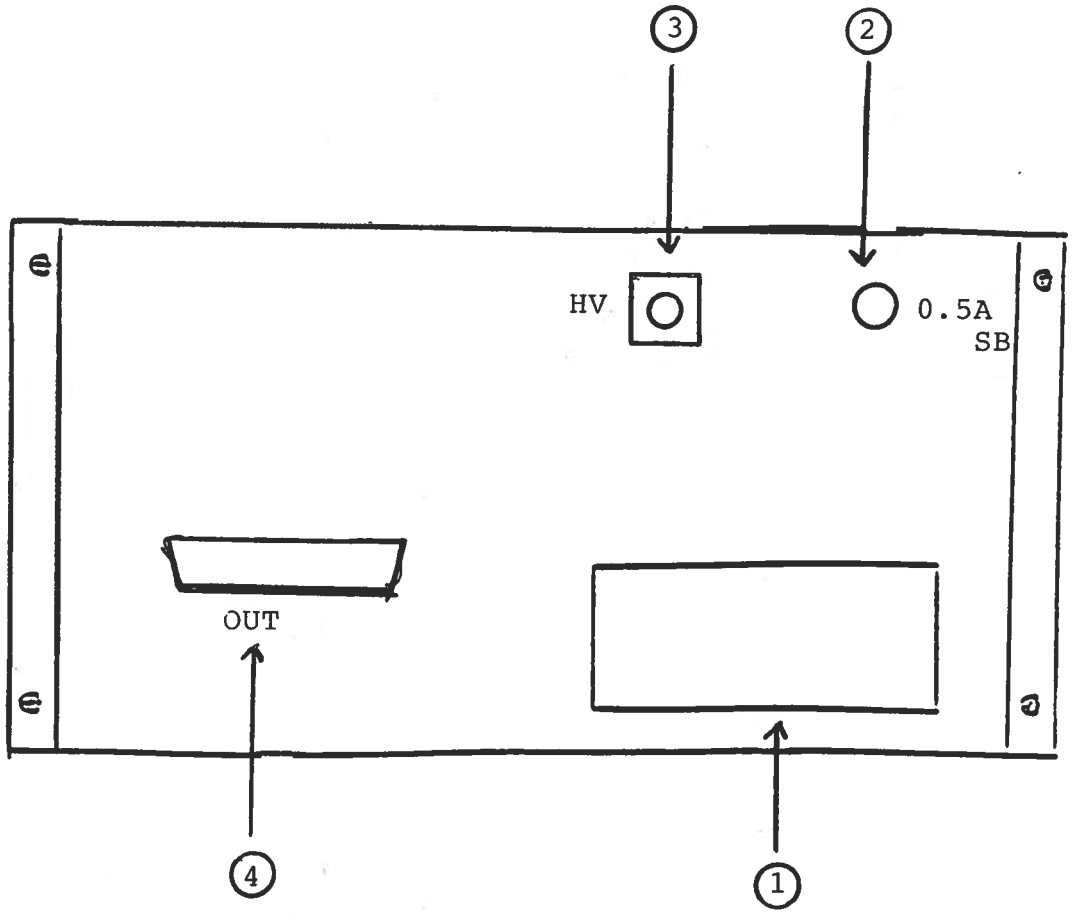
(6) OVERLOAD INDICATOR. AVO-7A units with a serial number higher than 5600 are protected by an automatic overload protective circuit which controls the front panel overload light. If the unit is overloaded (by operating at an exceedingly high duty cycle or by operating into a short circuit), the protective 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 PRF (i.e. switch to a lower range)
2) Reducing pulse width (i.e. switch to a lower range)
3) Removing output load short circuit (if any)

Note that the overload light may illuminate when the prime power is first applied. The light will extinguish after a few seconds and the instrument will then function normally.

Note that the output stage will safely withstand a short circuited load condition.

Fig. 3 BACK PANEL CONTROLS (EA, EW OPTION UNITS)



(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) 0.5A SB. Fuse which protects the output stage if the output duty cycle rating is exceeded.

(3) HV SMA CONNECTOR. The black RG174 cable (from the output module) must be connected to this connector.

(4) OUT D CONNECTOR. The tan cable (from the output -PG module) must be connected to this D connector.

Fig. 3a

POWER SUPPLY

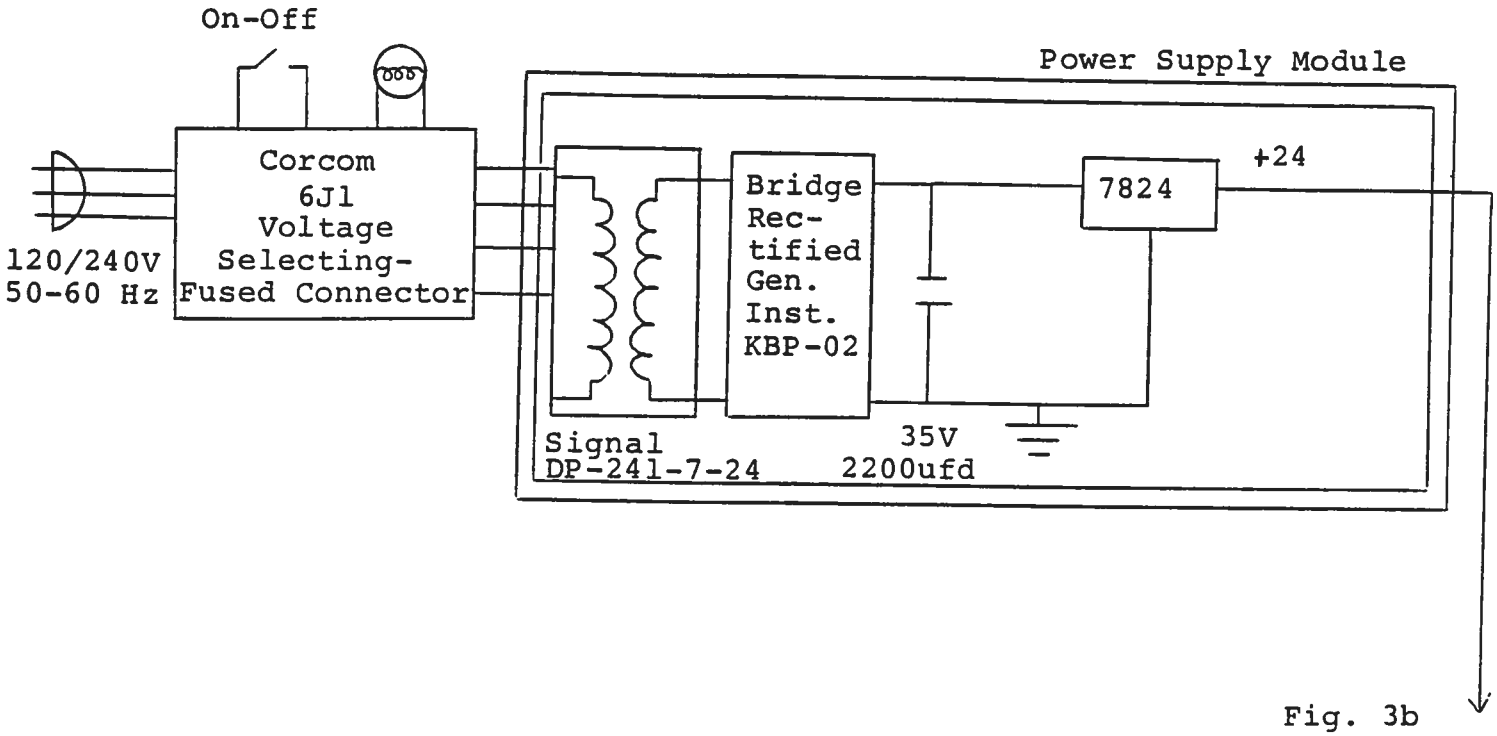
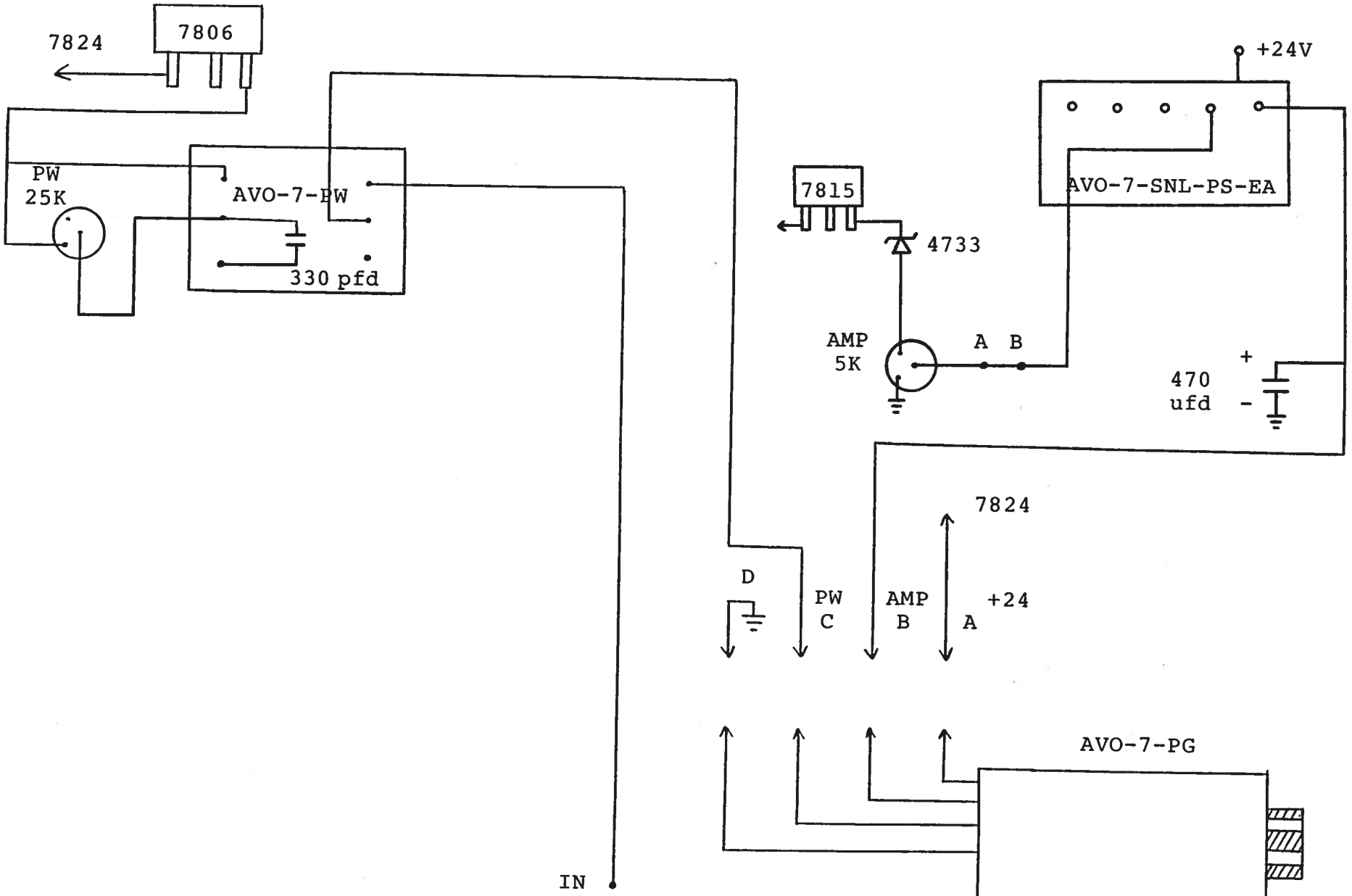


Fig. 3b

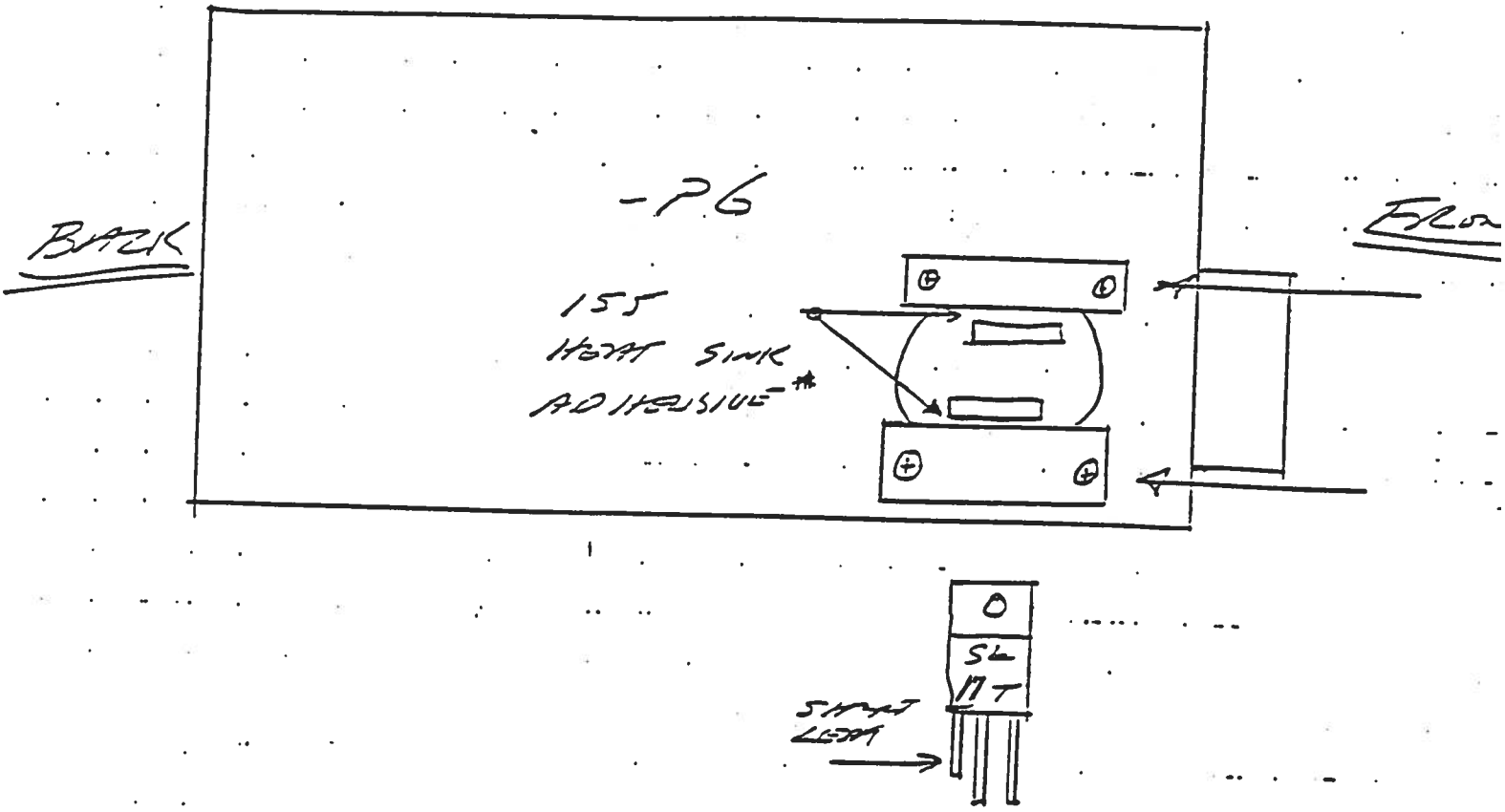


AVO-7A-PS-P-EA-SNL1 BLOCK DIAGRAM

SYSTEM DESCRIPTION AND REPAIR PROCEDURE

In the event of an instrument malfunction, it is most likely that the 0.5 A slow blow fuse or the main power fuse on the rear panel has blown. Replace if necessary. If the unit still does not function, it is most likely that some of the output switching elements (SL17T) may have failed due to an output short circuit condition or to a high duty cycle condition. The switching elements may be accessed by removing the cover plate on the bottom side of the -PG module. The cover plate is removed by removing the four counter sunk 6-32 Phillips screws. NOTE: First turn off the prime power. CAUTION: Briefly ground the SL17T tabs to discharge the 40 volts power supply potential. The elements may be removed from their sockets by means of a needle nosed pliers after removing the four counter sunk 2-56 Phillips screws which attach the small copper heat sinks to the body of the AVO-7A-PG module. The SL17T is a selected VMOS power transistor in a TO 220 package and may be checked on a curve tracer. If defective, replacement units should be ordered directly from Avtech. When replacing the SL17T switching elements, take care to insure that the short lead (of the three leads) is adjacent to the back of the chassis. (See following Fig.). The SL17T elements are electrically isolated from the small copper heat sinks but are bonded to the heat sinks using WAKEFIELD TYPE 155 HEAT SINK ADHESIVE.

AVO-7A SL17T HEAT SINKING



January 14/98

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