

# 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 AV-107E-PS-IBM3 PULSE GENERATOR

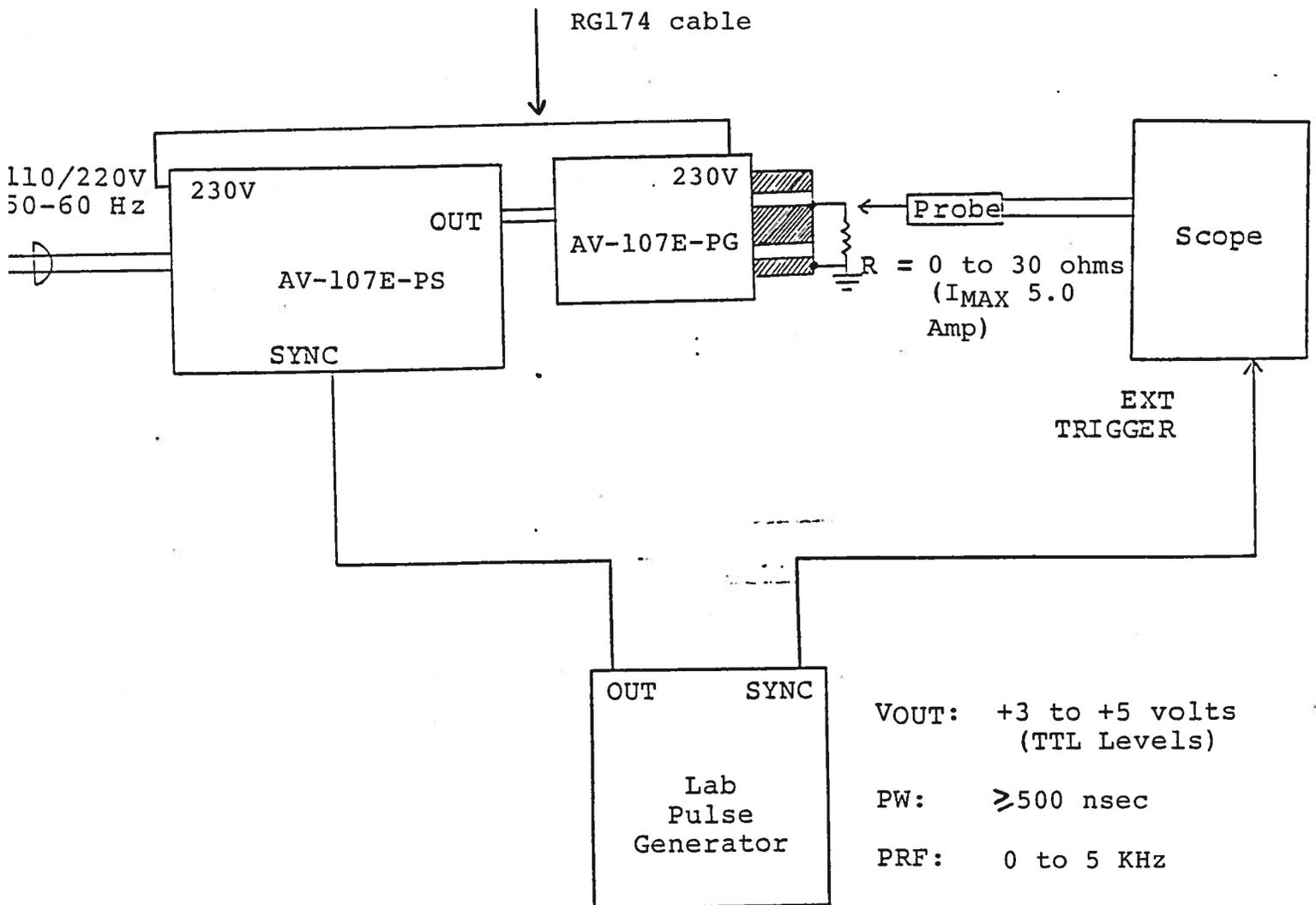
S.N. :

## 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 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.

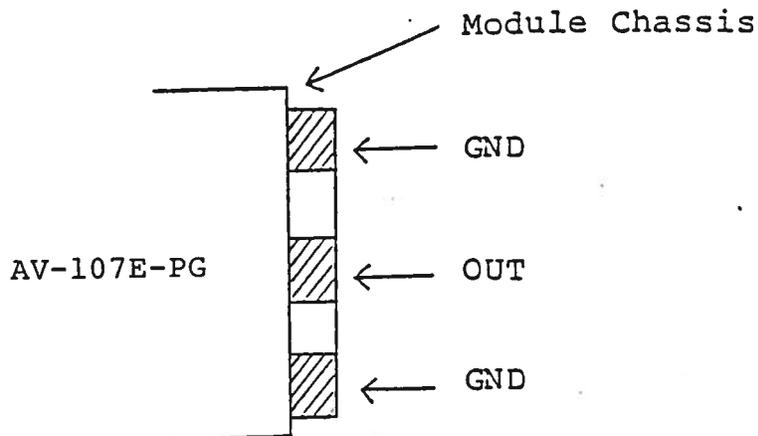
Fig. 1

PULSE GENERATOR TEST ARRANGEMENT

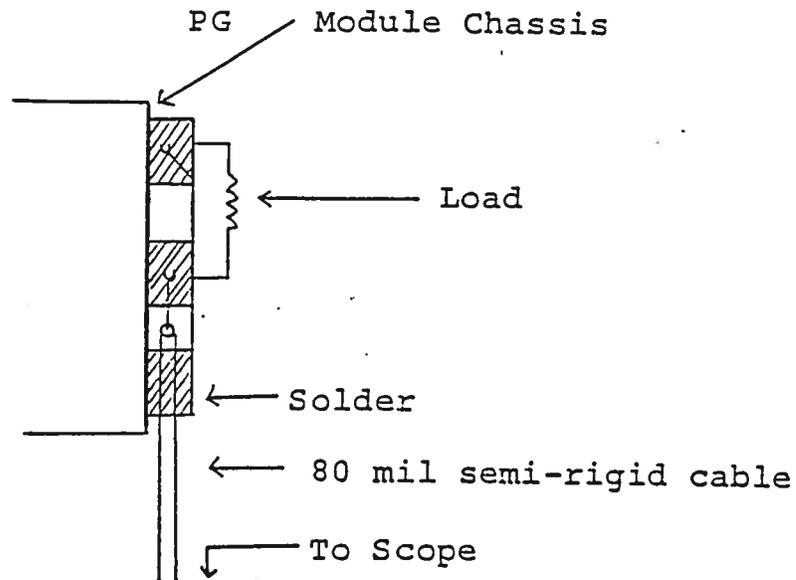


## GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above.
- 2) The output pulse width is controlled by means of the front panel one turn PW control.
- 3) The output pulse amplitude is controlled by means of the front panel one turn AMP control.
- 4) 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 ( $\ll 2.0$  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). The current may be monitored using a current probe such as the TEKTRONIX Model CT-2.



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

- 5) MI Option. The MI output port on the AV-107-PG module provides a replica of the output current pulse when connected to a 50 ohm load. The output pulse load current (Amps) and the M output voltage (Volts) are related as follows:

$$I_{LOAD} = 10 V_{MI}$$

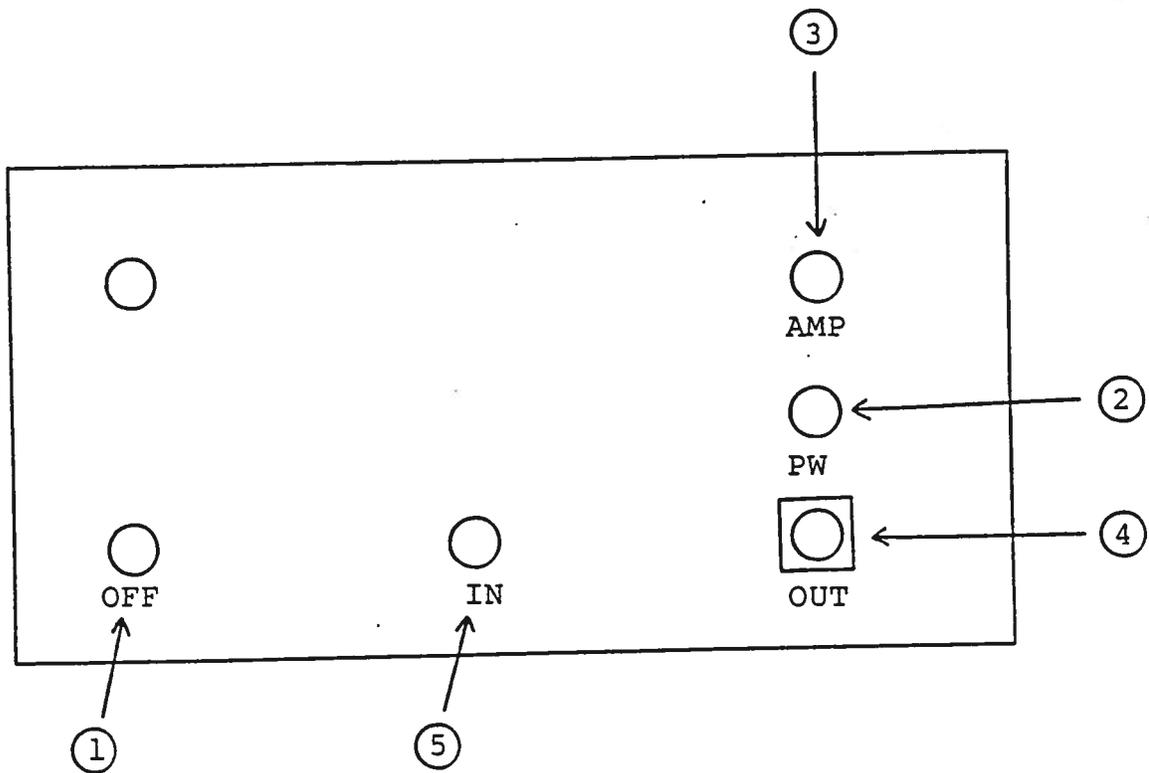
- 6) MV Option. The MV output port on the AV-107-PG module provides a replica of the output voltage pulse when connected to a 50 ohm load as follows:

$$V_{LOAD} = 10 V_{MV}$$

- 7) Model AV-107E-PS-IBM3 was specifically designed to yield a low overshoot even when driving loads with related high series inductance. In some cases a low-level high-frequency oscillation may be evident on the output pulse top. This can normally be eliminated by placing a small capacitor (eg. 200 pfd) across the output terminals.
- 8) The shape or droop on the top of the output pulse can be varied slightly by means of the two position switch on the side of the output module. Switching from position A to position B tends to raise the leading edge portion of the pulse top.

Fig. 2

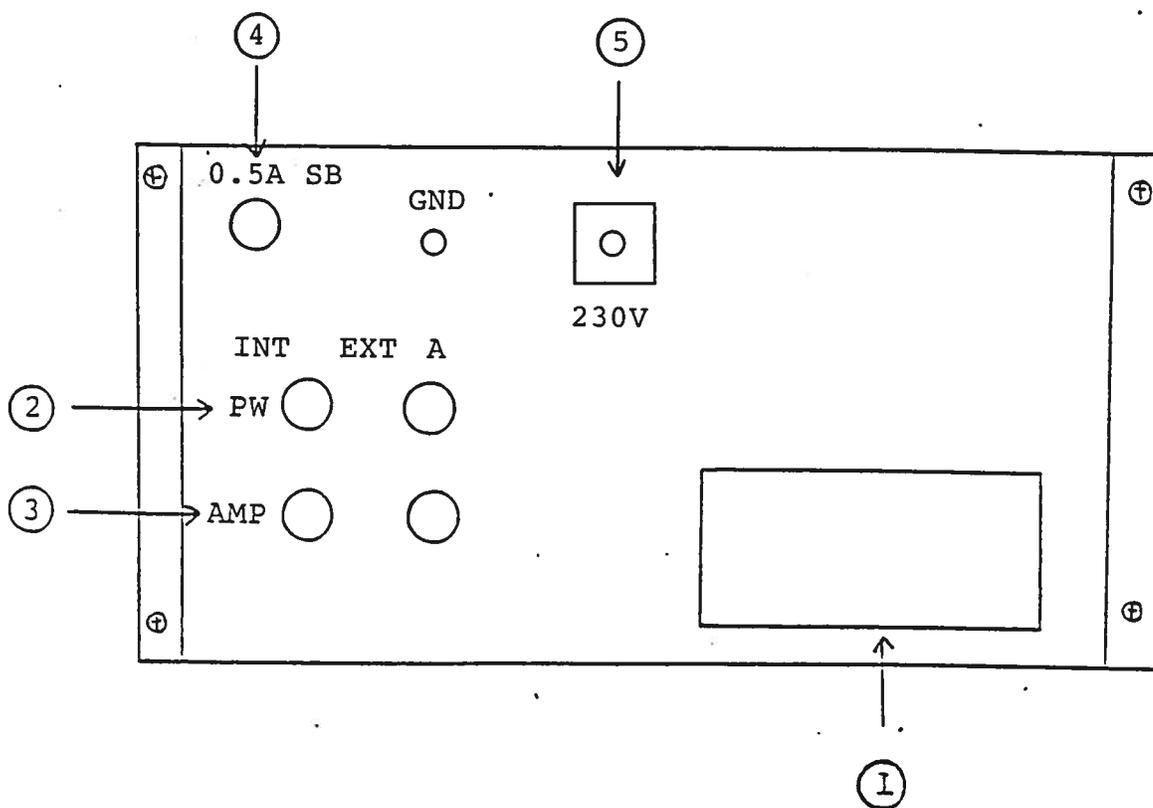
FRONT PANEL CONTROLS



- (1) ON-OFF\_Switch. Applies basic prime power to all stages.
- (2) PW\_Control. A one turn control which varies the output pulse width.
- (3) AMP\_Control. The output pulse amplitude is controlled by means of the one turn potentiometer (AMP).
- (4) OUT\_Connector. A multi pin connector which attaches the 2 foot cable from the pulse generator module to the main frame.
- (5) IN. The external trigger signal is applied at this input.

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.
- (2) To voltage control the output pulse width, set the switch in the EXT position and apply 0 to +10V between terminal A and ground ( $R_{IN} \gg 10K$ ). (option).
- (3) To voltage control the output amplitude, set the switch in the EXT position and apply 0 to +10V between terminal A and ground ( $R_{IN} \gg 10K$ ). (option).
- (4) 0.5A SB FUSE. Fuse limits DC current available to the output stage.
- (5) 230V. SMA output port supplies +230V DC to SMA 230V input port on output module. Connectors are joined by 3 foot long RG174 coaxial cable.

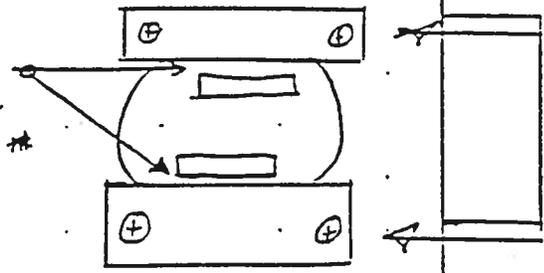
AV-107E-C SL18T HEAT SINKING

BACK

-P-P6

FRONT

155  
HEAT SINK  
ADHESIVE\*



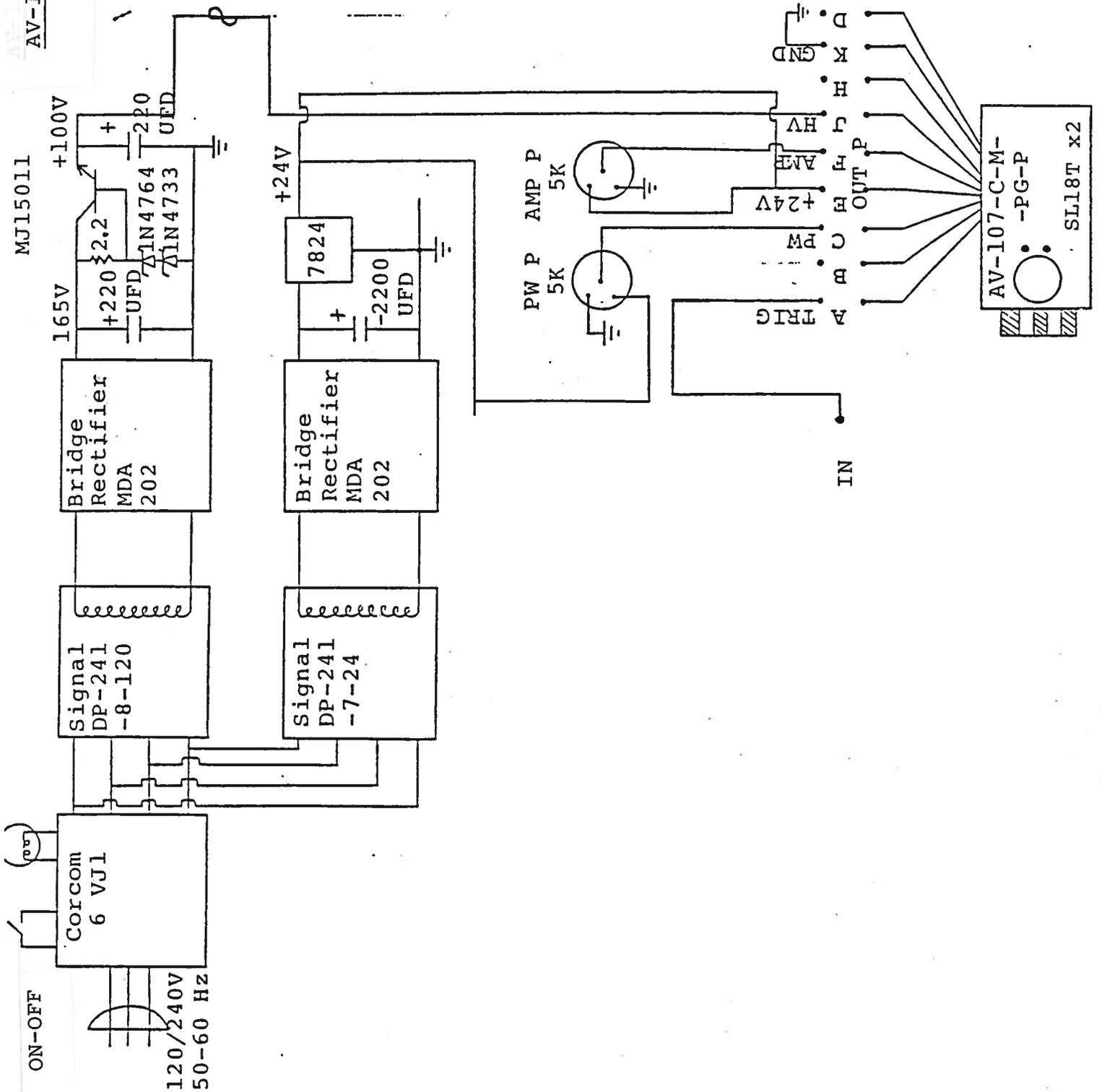
SHOWN  
LEFT



AV-107B-PS-P

MJ15011

ON-OFF



120/240V  
50-60 Hz

Corcom  
6 VJ1

Signal  
DP-241  
-8-120

Bridge  
Rectifier  
MDA  
202

+220  
UFD  
2.2  
1N4764  
1N4733

165V

+100V

0.5A SB

Signal  
DP-241  
-7-24

Bridge  
Rectifier  
MDA  
202

7824  
+24V  
-2200  
UFD

PW P AMP P  
5K

A TRIG

IN

B  
C  
PW  
+24V

H  
H  
H  
AMB

U  
U  
HV

D  
K  
GND

AV-107-C-M  
-PG-P  
SL18T x2

## SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AV-107E-PS unit consists of the following basic modules:

- 1) AV-107E-PG pulse generator module
- 2) +24V power supply board
- 3) +230V power supply module

The modules are interconnected as shown in Fig. 4.

In the event of an instrument malfunction, it is most likely that either of the rear panel fuses have blown or that some of the output switching elements (SL18T) 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 SL18T tabs to discharge the 230 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 aluminum heat sinks to the body of the AV-107-PG module. The SL18T 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 SL18T switching elements, take care to insure that the short lead (of the three leads) is adjacent to the black dot on the chassis. The SL18T elements are electrically isolated from the small aluminum heat sinks but are bonded to the heat sinks using WAKEFIELD TYPE 155 HEAT SINK ADHESIVE.

Schroff

01.24.90

-EW

-EA