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INSTRUCTIONS

MODEL AVR-A-1-PS-SNL1-M PULSE GENERATOR

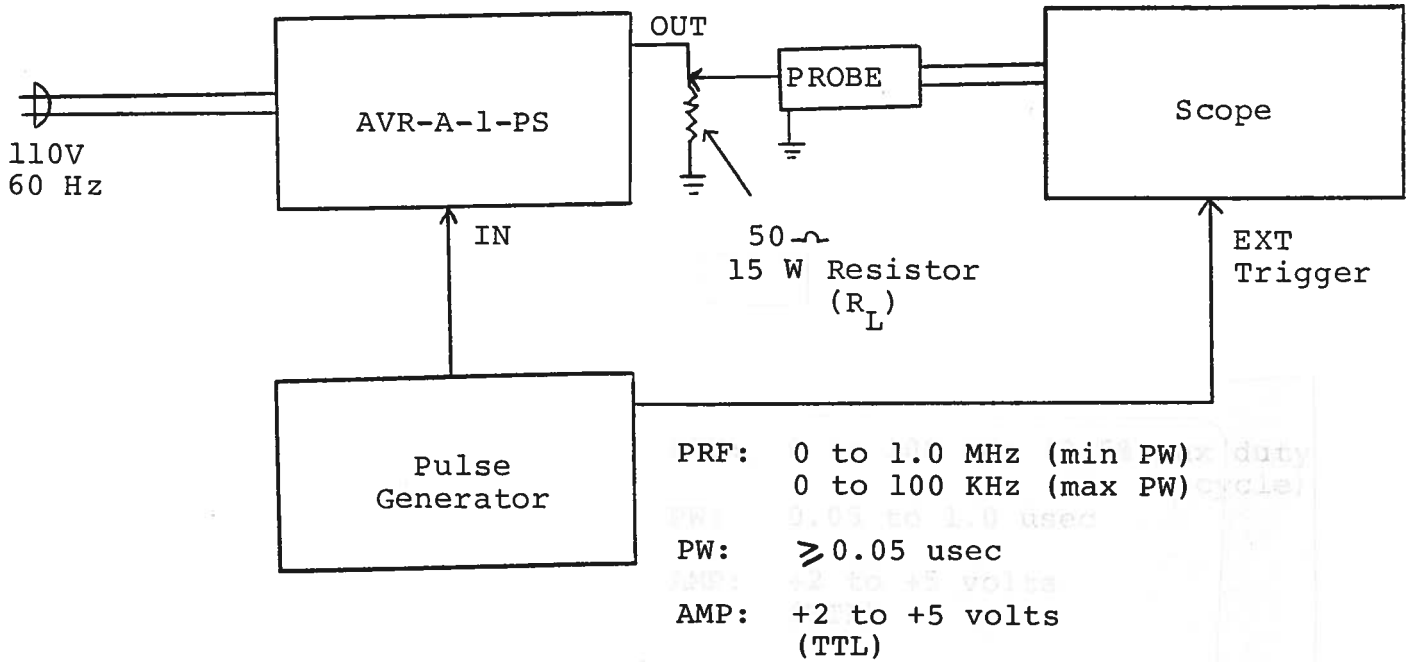
S.N. :

## 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.

A.

TEST ARRANGEMENT



## GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above. Since the AVR unit provides an output pulse rise time as low as 7 nsec a fast oscilloscope (at least 50 MHz and preferably 200 MHz) should be used to display the waveform. CAUTION: Note that at maximum duty cycle the load must dissipate at least 15 watts average power.
- 2) The output PRF is equal to the input trigger pulse PRF.
- 3) The output pulse width is controlled by means of the one-turn potentiometer (PW). The pot should initially be set mid-range and the pulse width adjusted using an oscilloscope. The output will degenerate to an impulse and eventually vanish as the pot is turned fully counter-clockwise.
- 4) The output pulse amplitude is variable by about  $\pm 5\%$  by means of the rear panel one turn AMP control.
- 5) The output amplitude is fixed at -230 volts to a 50 ohm load. An offset of +30 volts is applied to the output by placing the rear panel switch in the +30 volt position. The +30 volt supply is limited to a maximum current of 1 mA. Therefore a DC blocking capacitor should be used to insulate the DC offset from the 50 ohm load impedance. In the absence of a blocking capacitor, a constant DC current of 1 mA will flow to the 50 ohm load. The following circuit illustrates how a -230 pulse with a +30 volt offset may be applied to a low-capacitance plate load. Note that all leads should be as short as possible ( $\ll 0.1$  inch).
- 6) CAUTION: The unit may fail if triggered at PRF exceeding 1.0 MHz or if the output PW at a PRF of 1.0 MHz exceeds 15 nsec or if the PRF at max output PW exceeds 100 KHz. Note that at maximum duty cycle the load resistor must dissipate at least 15 watts.

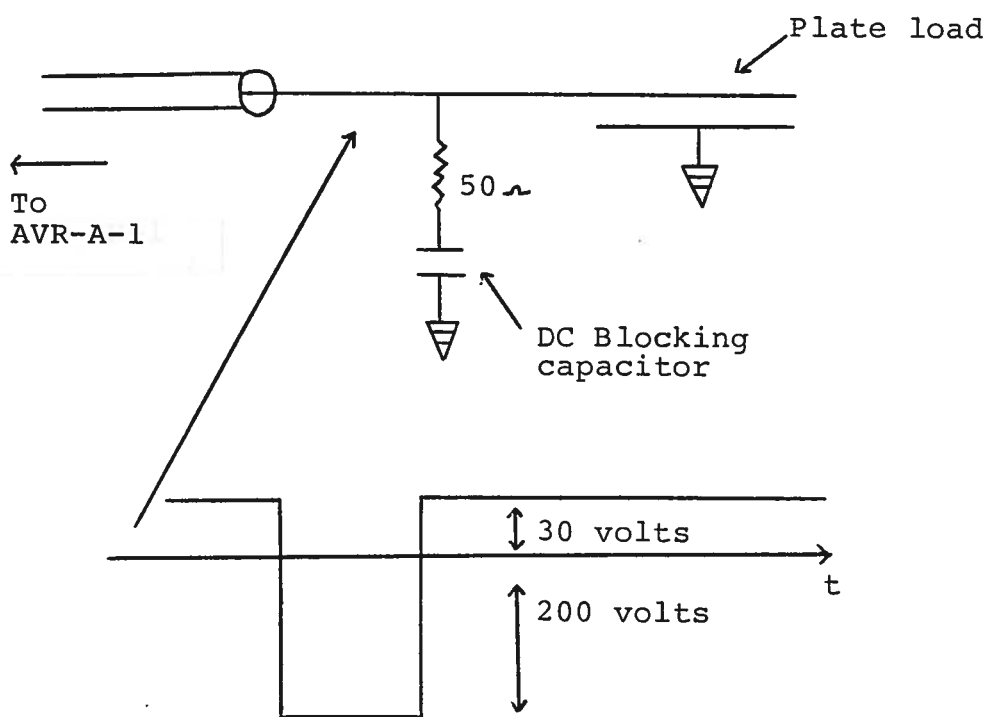
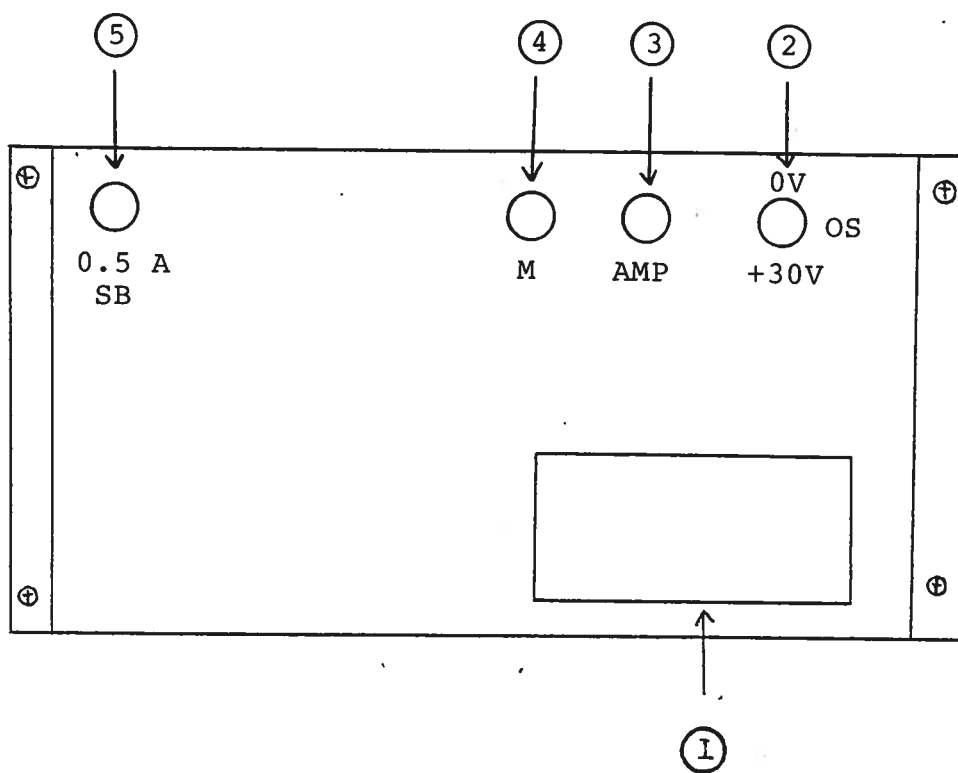


Fig. 3

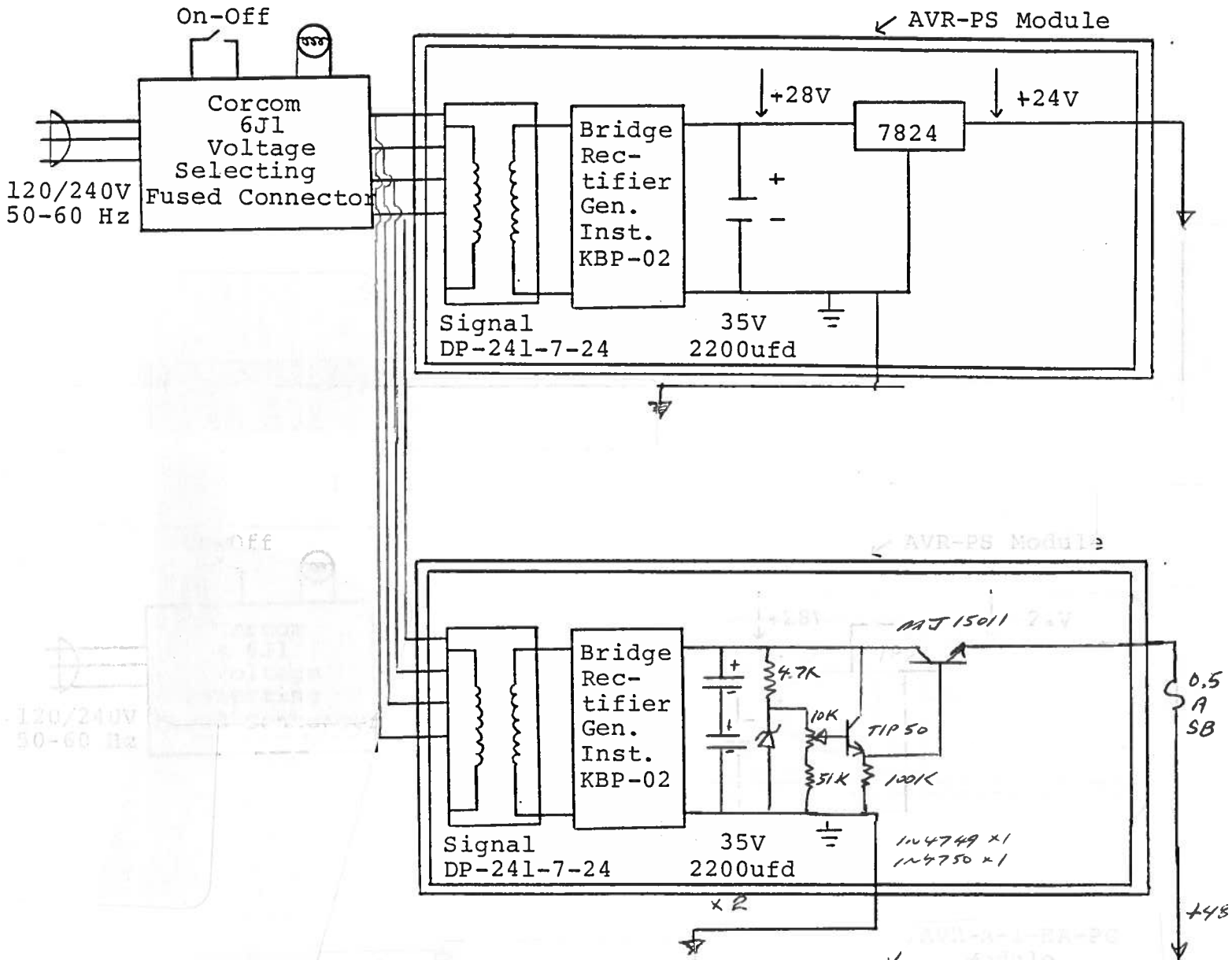
BACK PANEL CONTROLS



- (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) 0 to +30 VOLT OFFSET. A +30 volt DC offset is applied to the output when the switch is in the +30 volt position. Max output current about 1 mA so must use DC blocking capacitor in series with 50 ohm load.
- (3) AMP Control. One turn control varies output pulse amplitude by about  $\pm 5\%$ . At PRF below about 200 KHz pot is normally in max CCW position to yield 230 volts out. At PRF near 1 MHz, pot should be max CW.
- (4) M Output. Provides attenuated replica of output pulse (approx. 5 volts to 50 ohms).
- (5) 0.5 AMP SB FUSE. Fuse limits DC current to output power stage to protect SL4T elements. Fuse rating may be less than 0.5 Amp (sugg. 0.25 or 0.1 Amp) to enhance degree of protection to SL4T elements.

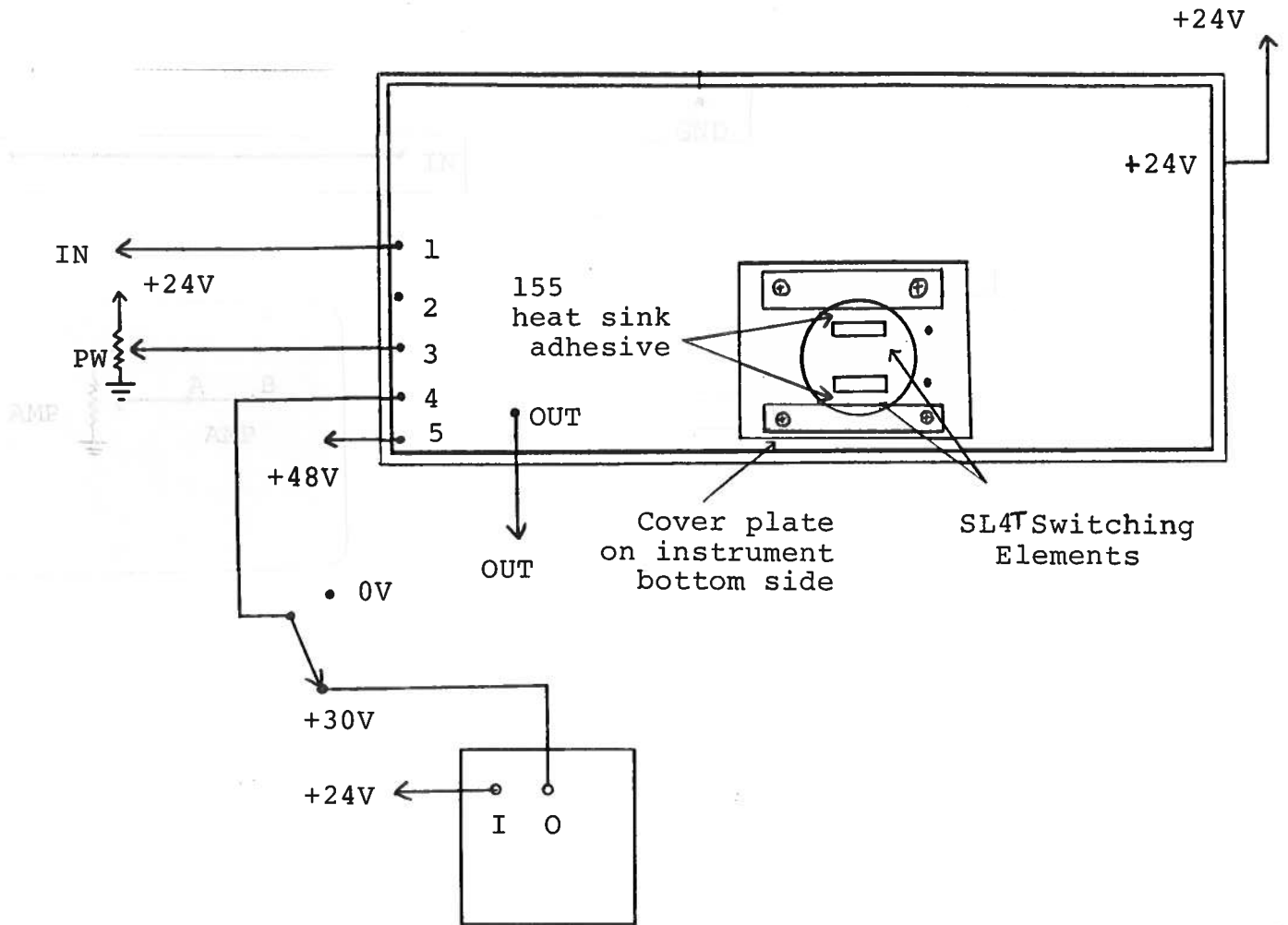
C.

SYSTEM BLOCK DIAGRAM AND REPAIR PROCEDURE





SYSTEM BLOCK DIAGRAM



## SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVR-A-1-PS-SNL1 unit consists of the following basic modules:

- 1) AVR-A-1-SNL1 pulse generator module
- 2) +24V power supply board
- 3) +48V power supply board
- 4) AVR-SNL1-PS +30 volt module

The modules are interconnected as shown in Fig. 4.

In the event of an instrument malfunction, it is most likely that some of the output switching elements (SL4T) or the 0.5 A SB fuse may have failed due to an output short circuit condition or to a high duty cycle condition. First check the fuse. The switching elements may be accessed by removing the cover plate on the bottom side of the unit. The cover plate is removed by removing the two 2-56 Phillips screws. NOTE: First turn off the prime power. CAUTION: Briefly ground the SL4T tabs to discharge the 250 volts power supply potential. The elements may be removed from their sockets by means of a needle nosed pliers after removing the four 2-56 Phillips screws which attach the small aluminum heat sinks to the body of the AVR-PG module. The SL4T 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 SL4T switching elements, take care to insure that the short lead (of the three leads) is adjacent to the back of the chassis. The SL4T elements are electrically isolated from the small aluminum heat sinks but are bonded to the heat sinks using WAKEFIELD TYPE 155 HEAT SINK ADHESIVE.

The 0.5 Amp SB fuse limits the DC current available to the output power stage. Reducing the fuse rating (to say 0.25 or 0.1 Amp) lessens the possibility of the SL4T elements failing due to an accidental increase in output duty cycle.

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