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
(613) 226-5772
TELEX 053-4591

INSTRUCTIONS

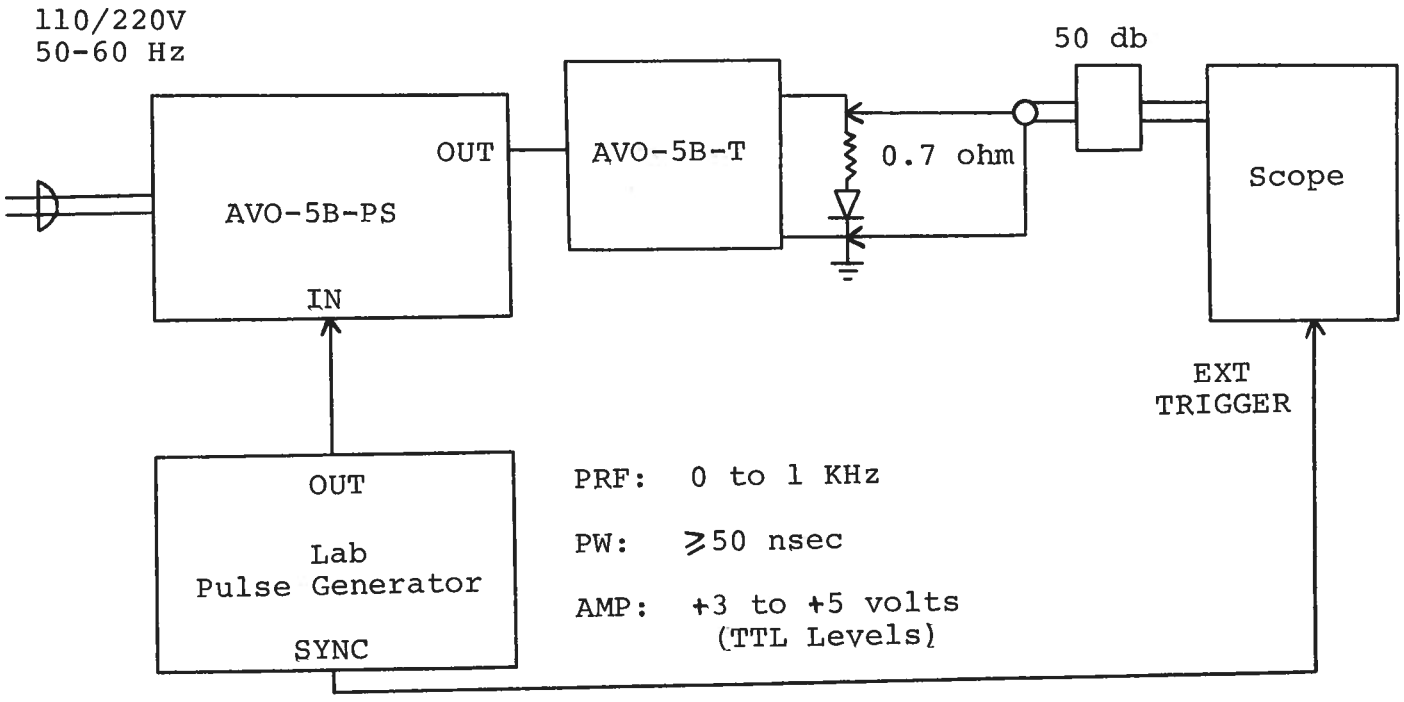
MODEL AVO-5B-PS PULSE GENERATOR

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 or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

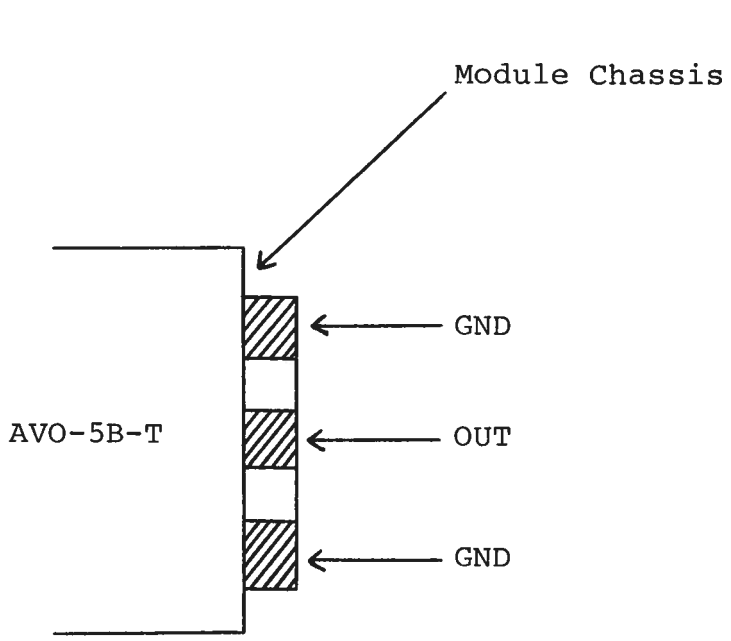
Fig. 1 PULSE GENERATOR TEST ARRANGEMENT



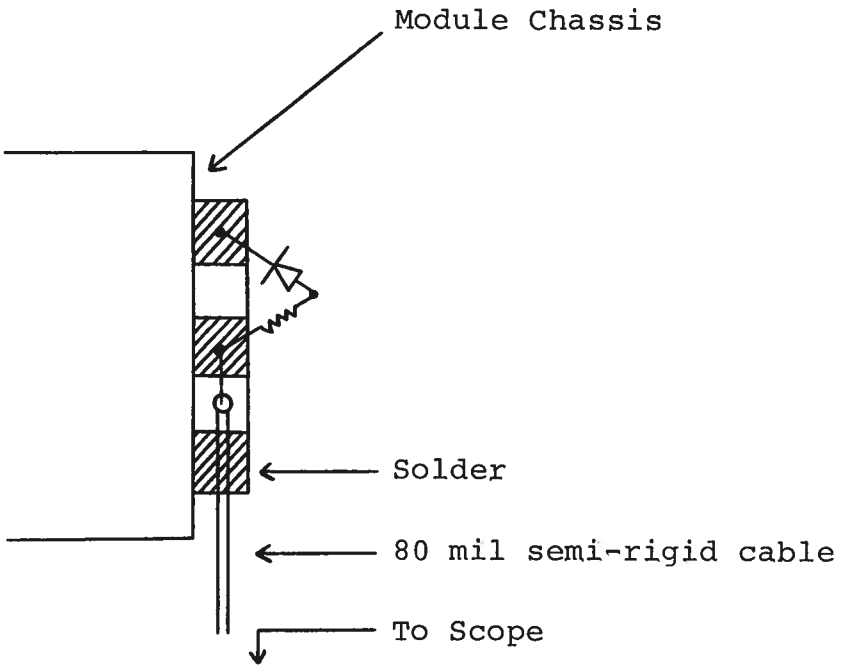
Notes:

1) The equipment should be connected in the general fashion shown above. Since the AVO unit provides an output pulse rise time as low as 1 nsec a fast oscilloscope (preferably 200 MHz) should be used to display the waveform. If a sampling scope is used, a 50 db (or greater) attenuator should be used to insure a peak input to the scope of less than 0.5 volts.

2) The AVO-5B-T transformer module transforms the 200 volt output of the AVO-5B mainframe to 40 volts to 0.75 ohm. The AVO-5B-T module connects to the mainframe via four parallel 50 ohm miniature coaxial cables approx. 2 feet in length. The output terminals of the transformer 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 diode load and series resistor (carbon composition resistors) should be connected between the OUT and GND terminals using very short leads (≤ 0.2 cm). The voltage across the resistor-diode load may be monitored by connecting a length of 80 mil semi-rigid 50 ohm cable as shown below:



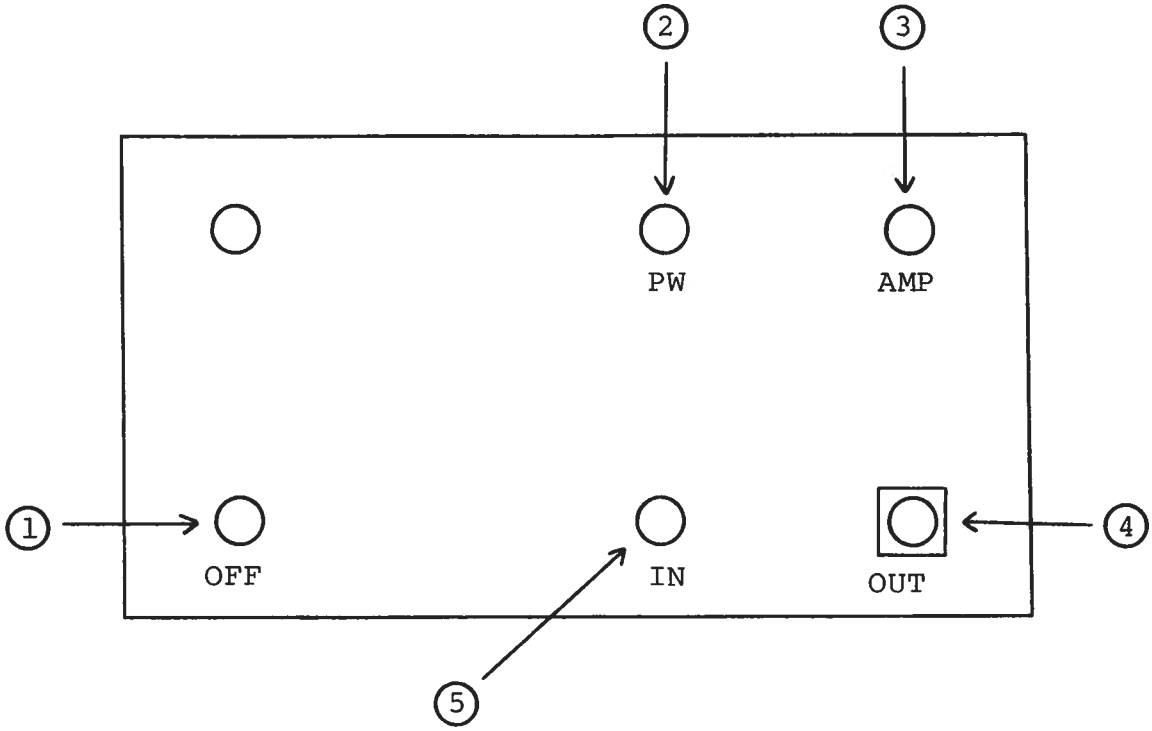
Take care to insure that during soldering the OUT conductor is not shorted to the chassis. Also, use minimal heat when soldering. The voltage may also be monitored using a high impedance scope probe.

3) The output pulse amplitude is controlled by the one turn AMP control.

4) The output pulse width is controlled by the one turn PW control.

5) CAUTION: The unit may fail if operated at a PRF exceeding 1 KHz at maximum output pulse width. The output switching transistor can be replaced following the procedure outlined in the Repair Procedure Section.

Fig. 2 FRONT PANEL CONTROLS



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

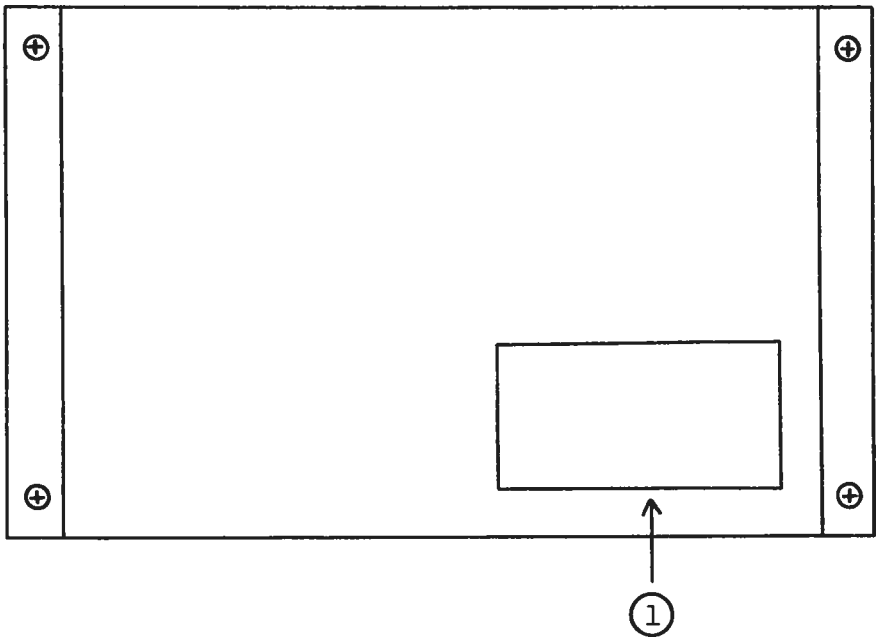
(2) PW Control. A one turn control which varies the output pulse width from 25 to 500 nsec.

(3) AMP Control. The output pulse amplitude is controlled by means of the one turn potentiometer (AMP).

(4) OUT Connectors. Four SMA connectors for four miniature coaxial cables connected to the AVO-5B-T module.

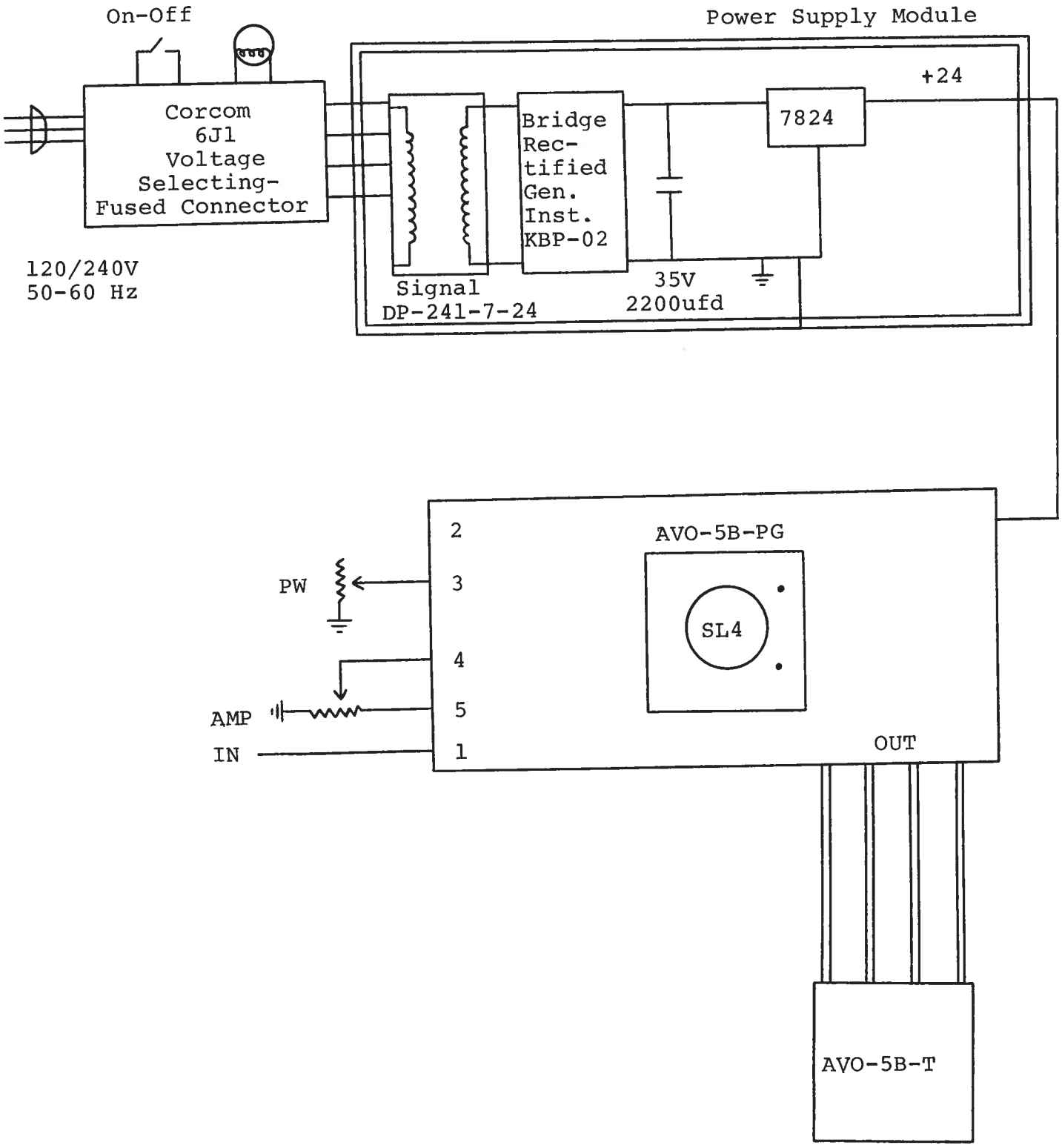
(5) IN. The external trigger signal is applied at this input.

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.

Fig. 4 SYSTEM BLOCK DIAGRAM



SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVO-5B-PS unit consists of the following basic modules:

1) AVO-5B-PG pulse generator module
2) AVO-5B-T transformer module
3) +24V power supply board

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 (SL4) 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 instrument. NOTE: First turn off the prime power. The elements may be removed from their sockets by means of a needle nosed pliers. The SL4 is a selected VMOS power transistor in a TO 220 packages and may be checked on a curve tracer. If defective, replacement units should be ordered directly from Avtech. When replacing the SL4 switching elements, take care to insure that the short lead (of the three leads) is adjacent to the black dot on the chassis. If the switching elements are not defective, then the four Phillips screws on the back panel should be removed. The top cover may then be slid off and the operation of the power supply module checked. The power supply board generates +24V DC to power the other modules. If the voltage is less than +24V, turn off the prime power and unsolder the lead from the 7824 regulator chip on the power supply board. Solder a 100 ohm 5 watt resistor to the 7824 output to ground and turn on the prime power. A voltage of +24 volts should be read. If the voltage is less then the power supply board is defective and should be repaired or replaced.

Schroff 04.10.85