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SINCE 1975

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INSTRUCTIONS

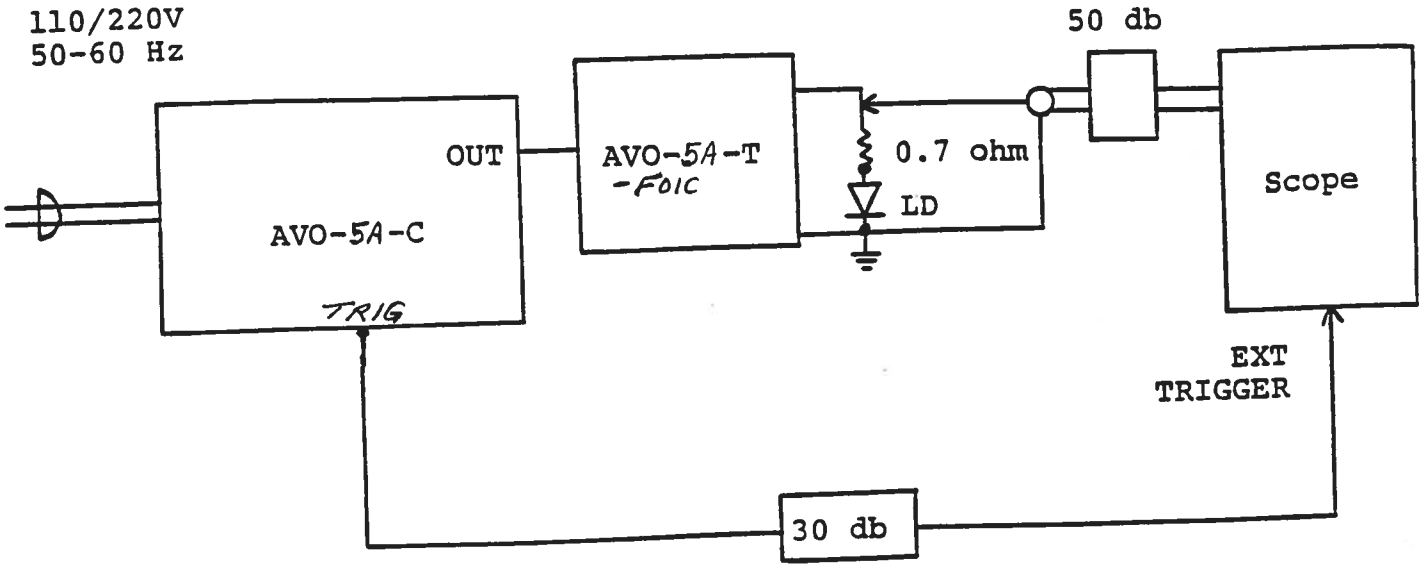
MODEL AVO-5A-C-FOICA-OP2 PULSE GENERATOR

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:

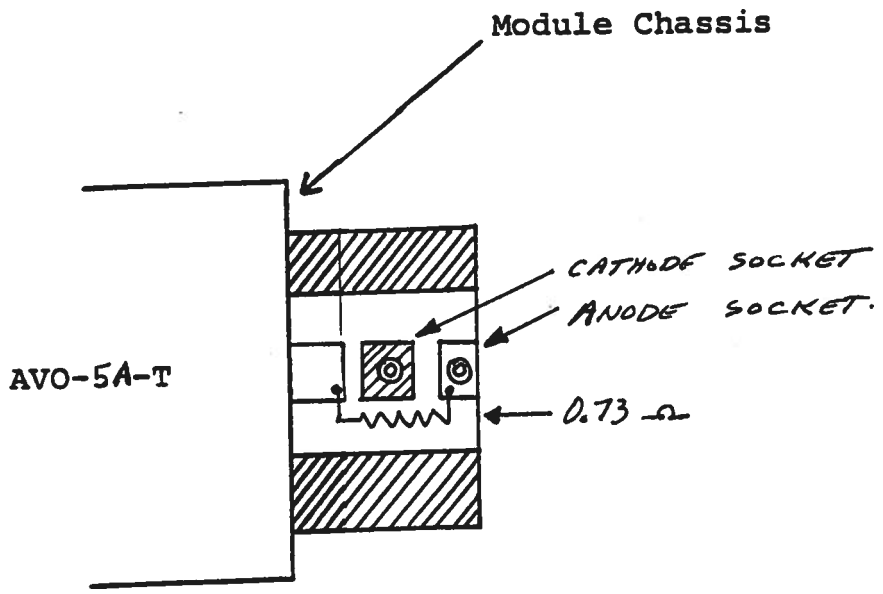
1) For front panel manual control of the output parameters the rear panel LOCAL-REMOTE switch must be in the LOCAL position. For remote control using the PINNACLE INSTRUMENTS PC-1 controller, the switch should be in the REMOTE position. See the PC-1 instruction manual for this mode of operation.

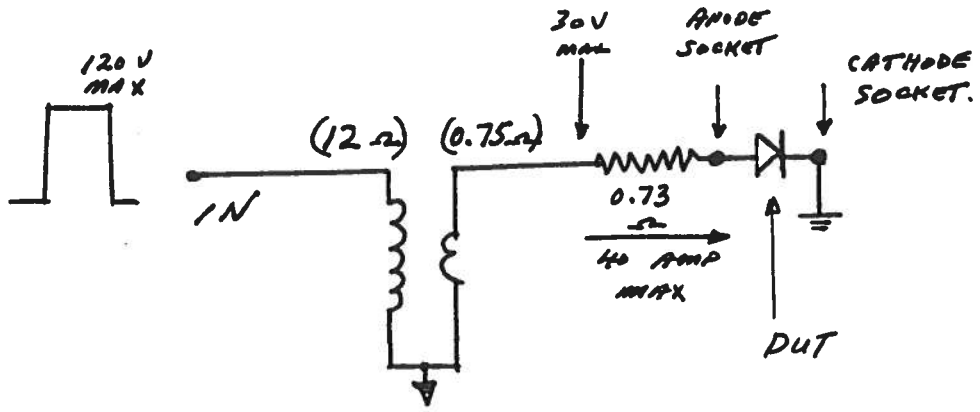
2) The equipment should be connected in the general fashion shown above. Since the AVO unit provides an output pulse rise time as low as 10 nsec a fast oscilloscope (at least 50 MHz and preferably 200 MHz) should be used to display the waveform. If a sampling scope is used, a 50 db (or greater) attenuator should be used to insure a peak input to the scope of less than 0.5 volts.

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 TRIG output precedes the main output when the front panel ADVANCE-DELAY switch is in the ADVANCE position. The TRIG output lags the main output when the switch is in the DELAY position.

4) To obtain a stable output display the PRF controls on the front panel should be set mid-range. The front panel TRIG toggle switch should be in the INT position. The front panel DELAY control 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 AVO-5A-T transformer module transforms the 120 volt output of the AVO-5A mainframe to 30 volts to 0.75 ohm. The AVO-5A-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. An anode pin socket and a cathode pin socket are provided on the protruding board. A resistance of 0.73 Ohms is connected to the anode pin socket. The diode leads are to be inserted from the ground side of the board and the leads must be fully inserted into the sockets. The voltage across the resistor may be monitored (via scope probes) and the diode current deduced from this voltage drop. The value of the 0.73 Ohm resistor may be reduced if the diode resistance limits the maximum current to less than 40 Amps. The equivalent circuit of the AVO-5A-T module is shown below.


Module Chassis
AVO-5A-T
CATHODE SOCKET
ANODE SOCKET.
0.73 Ω


120 V MAX
IN
(12 Ω)
(0.75Ω)
30V MAX
ANODE SOCKET
CATHODE SOCKET.
0.73 Ω
40 AMP MAX
DUT

6) The output pulse width is controlled by means of the front panel one turn PW control.

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

8) AVO-5A-C units with a serial number higher than 6500 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)

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
Fax: (613) 226-2802

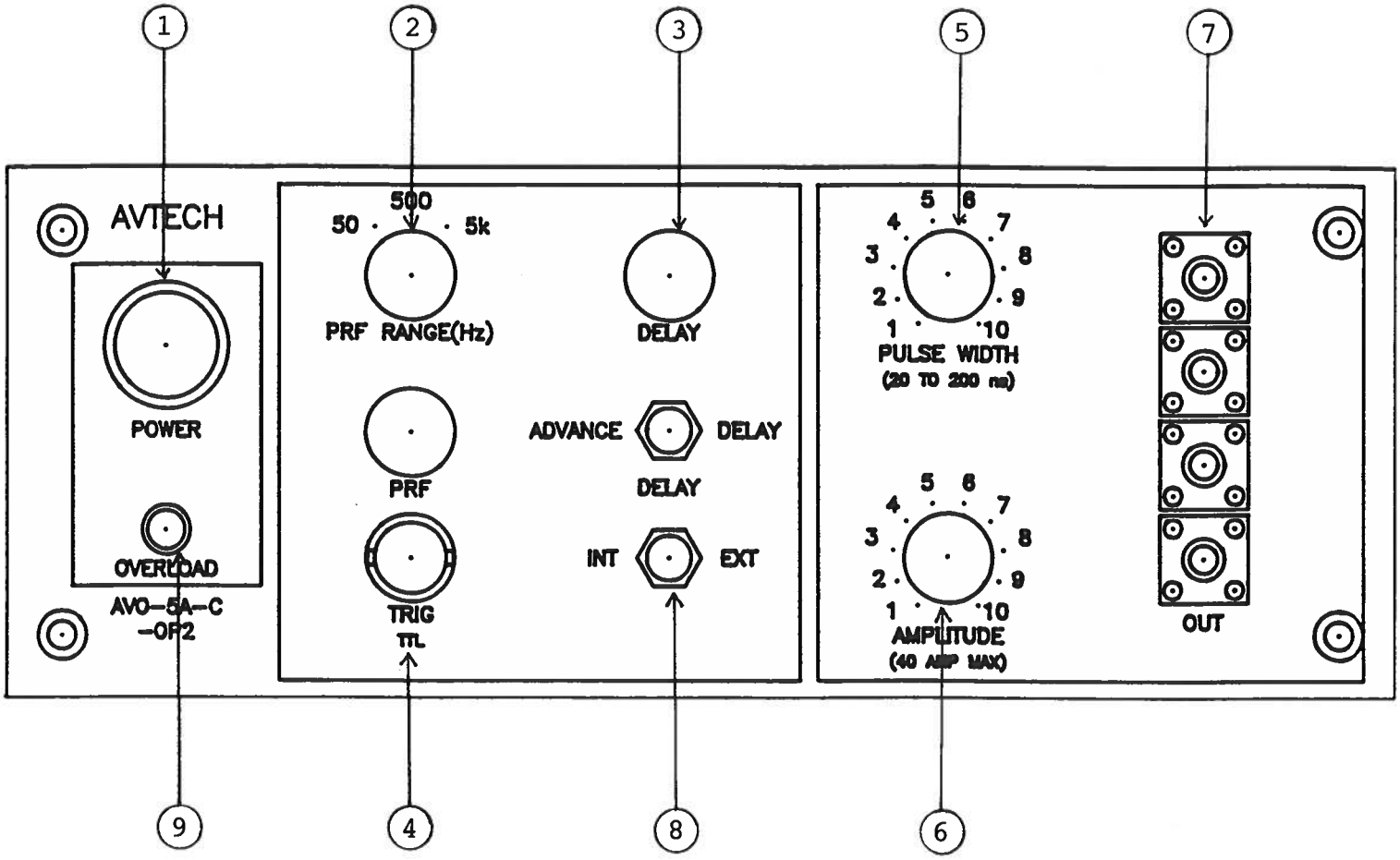


Fig. 2: FRONT PANEL CONTROLS

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

(2) PRF Control. Varies PRF as follows:

RANGE 1	5 Hz	-	50 Hz
RANGE 2	50 Hz	-	500 Hz
RANGE 3	500 Hz	-	5 kHz

(3) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (4) and the main output (7). This delay is variable over the range of 0 to about 0.5 us. The TRIG output precedes the main output when the ADVANCE-DELAY switch is in the ADVANCE position and lags when the switch is in the DELAY position.

(4) TRIG Output. This output precedes the main output (7) and is used to trigger the sampling scope time base. The output is a TTL level 100 ns (approx) pulse capable of driving a fifty ohm load.

(5) PW Control. A one turn control which varies the output pulse width from 20 to 200 ns.

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

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

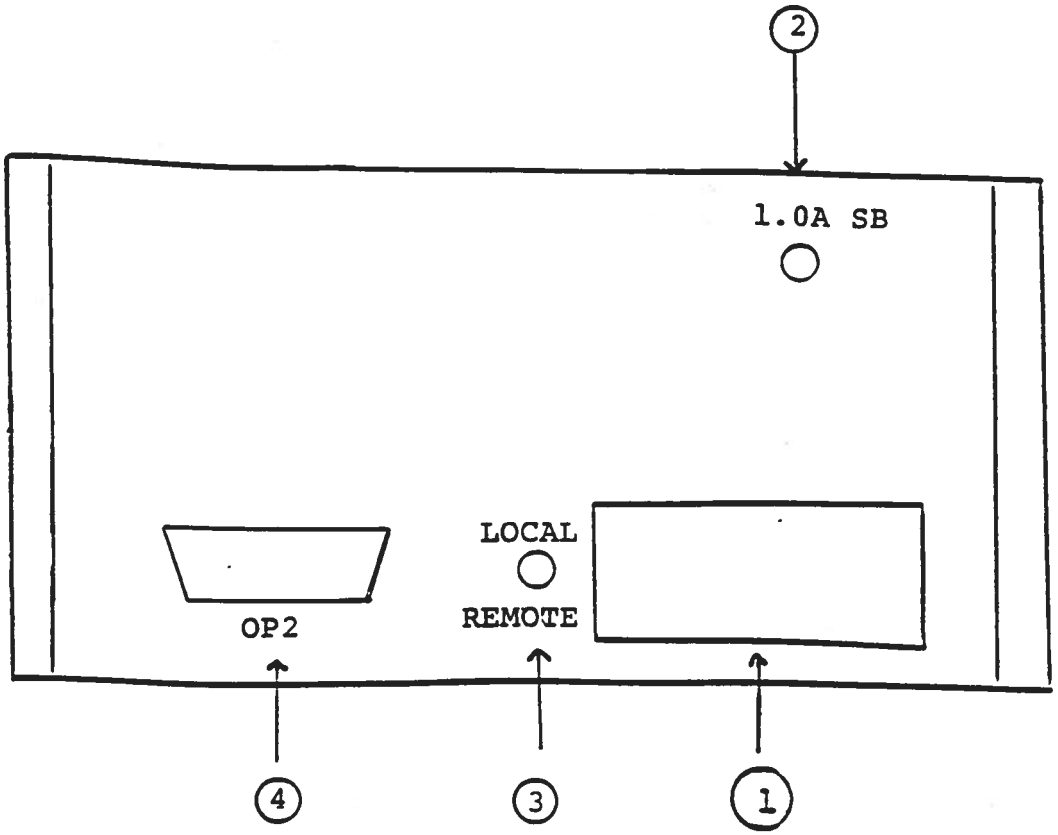
(8) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVO unit is controlled via an internal clock which in turn is controlled by the PRF controls. With the toggle switch in the EXT position, the AVO unit requires a 50 ns (or wider) TTL level pulse applied at the TRIG input in order to trigger the output stages.

(9) AVO-5A-C 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)

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 (0.5A SB).

(2) 1.0A SB. Fuse which protects the output stage if the output duty cycle rating is exceeded.

(3) LOCAL REMOTE SWITCH. This two-position switch must be in the LOCAL position to operate the instrument from the front panel controls. To control the instrument using the PINNACLE INSTRUMENTS Model PC-1, the switch must be in the REMOTE position.

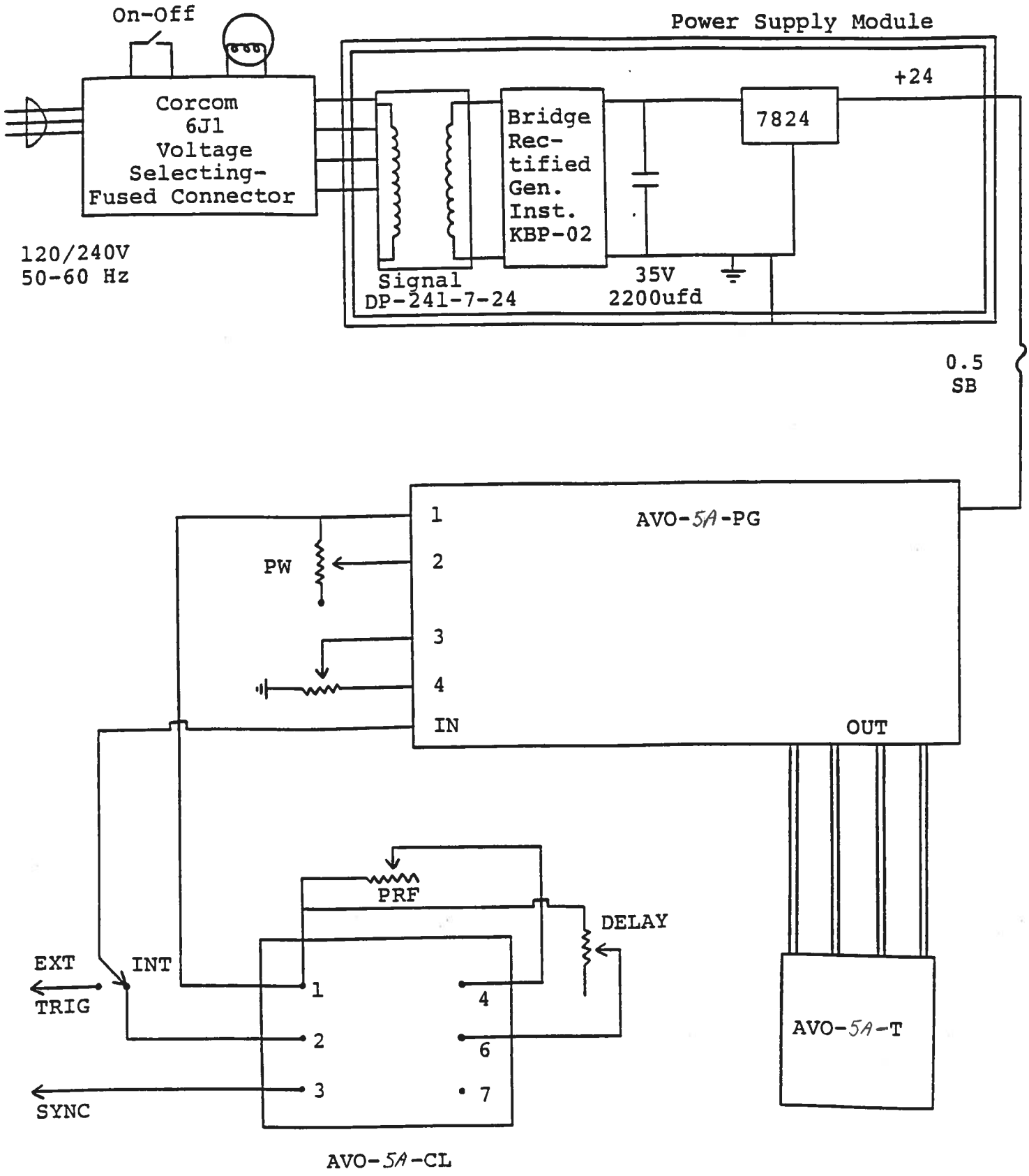
(4) OP2 CONNECTOR. 36 conductor CENTRONICS CAT. NO. 45-4395 cable (supplied) connects between this connector and the PINNACLE INSTRUMENTS Model PC-1.

TOP COVER REMOVAL AND RACK MOUNTING

1) The interior of the instrument may be accessed by removing the four Phillips screws on the top panel. With the four screws removed, the top cover may be slid back (and off).

Fig. 4

SYSTEM BLOCK DIAGRAM



SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVO-5A-C unit consists of the following basic modules:

1) AVO-5A-PG pulse generator module
2) AVO-5A-CL clock module
3) +24V power supply board

The modules are interconnected as shown in Fig. 4. The clock module controls the output PRF and the relative delay between the main output and the TRIG output. The PG pulse generator module generates the output pulse. In the event of an instrument malfunction, it is most likely that the rear panel 1.0A SB fuse may have failed due to an output short circuit condition or to a high duty cycle condition. If the fuse has not blown, 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 clock and power supply modules checked. The clock module is functioning properly if:

a) 0.1 us TTL level outputs are observed at pins 2 and 3.

b) The PRF of the outputs can be varied over the range of 5 Hz to 5.0 kHz using the PRF controls.

c) The relative delay between the pin 2 and 3 outputs can be varied by at least 200 ns by the DELAY control.

The sealed clock module must be returned to Avtech for repair or replacement if the above conditions are not observed. 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.

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