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INSTRUCTIONS

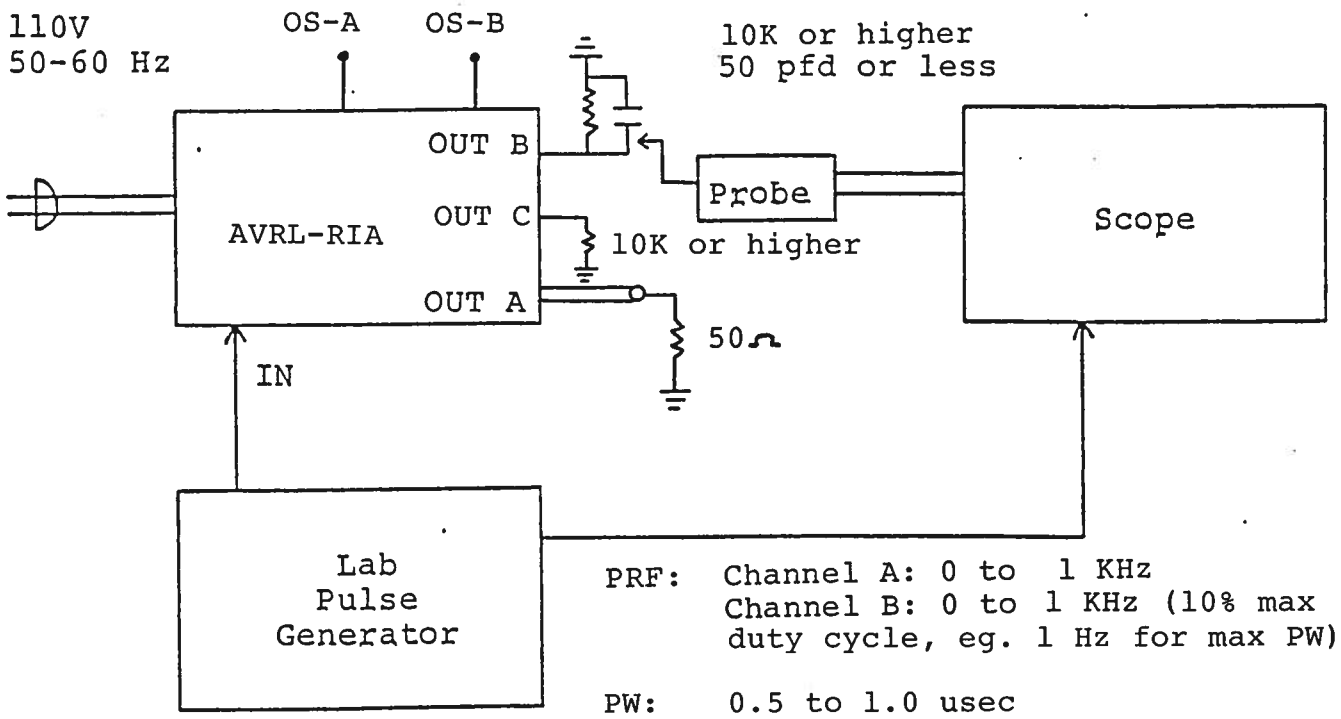
MODEL AVRL-RIA PULSE GENERATOR

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.

TEST ARRANGEMENT



PRF: Channel A: 0 to 1 KHz
Channel B: 0 to 1 KHz (10% max duty cycle, eg. 1 Hz for max PW)

PW: 0.5 to 1.0 usec

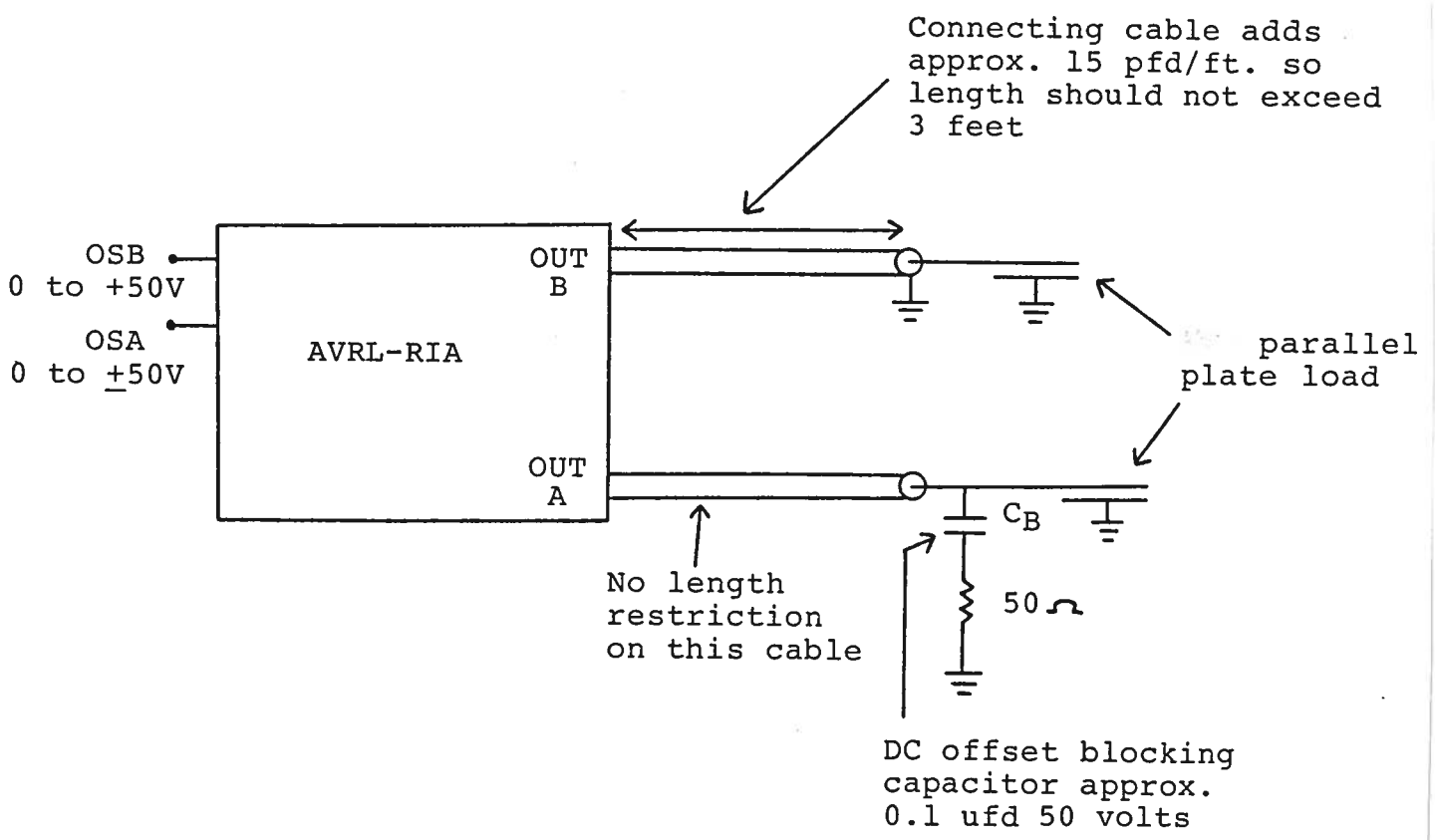
AMP: +2 to +5V (TTL Levels)

Notes:

1) The equipment should be connected in the general fashion shown above. A scope with a bandwidth of at least 50 MHz should be used to view the outputs.

2) All output amplitudes are variable from 0 to -200 volts. Care should be taken to insure that the scope and the load resistor can withstand this high voltage (and high output power for wide output pulse widths).

3) The recommended arrangements for connecting to a high impedance load (eg. parallel plate) are as follows:



4) The output pulse width for output A is variable from 5 nsec to 100 nsec by means of the PW A control.

5) The output PW for output B is variable from 100 nsec to 100 msec via the 6 position range switch and one turn control (PW B).

6) The output PRF is equal to the input PRF applied to the IN port. The propagation delay for channels A and B is less than 100 nsec.

7) To offset output A connect the desired offset voltage (0 to ±50 volts) to the OS A terminals on the back panel.

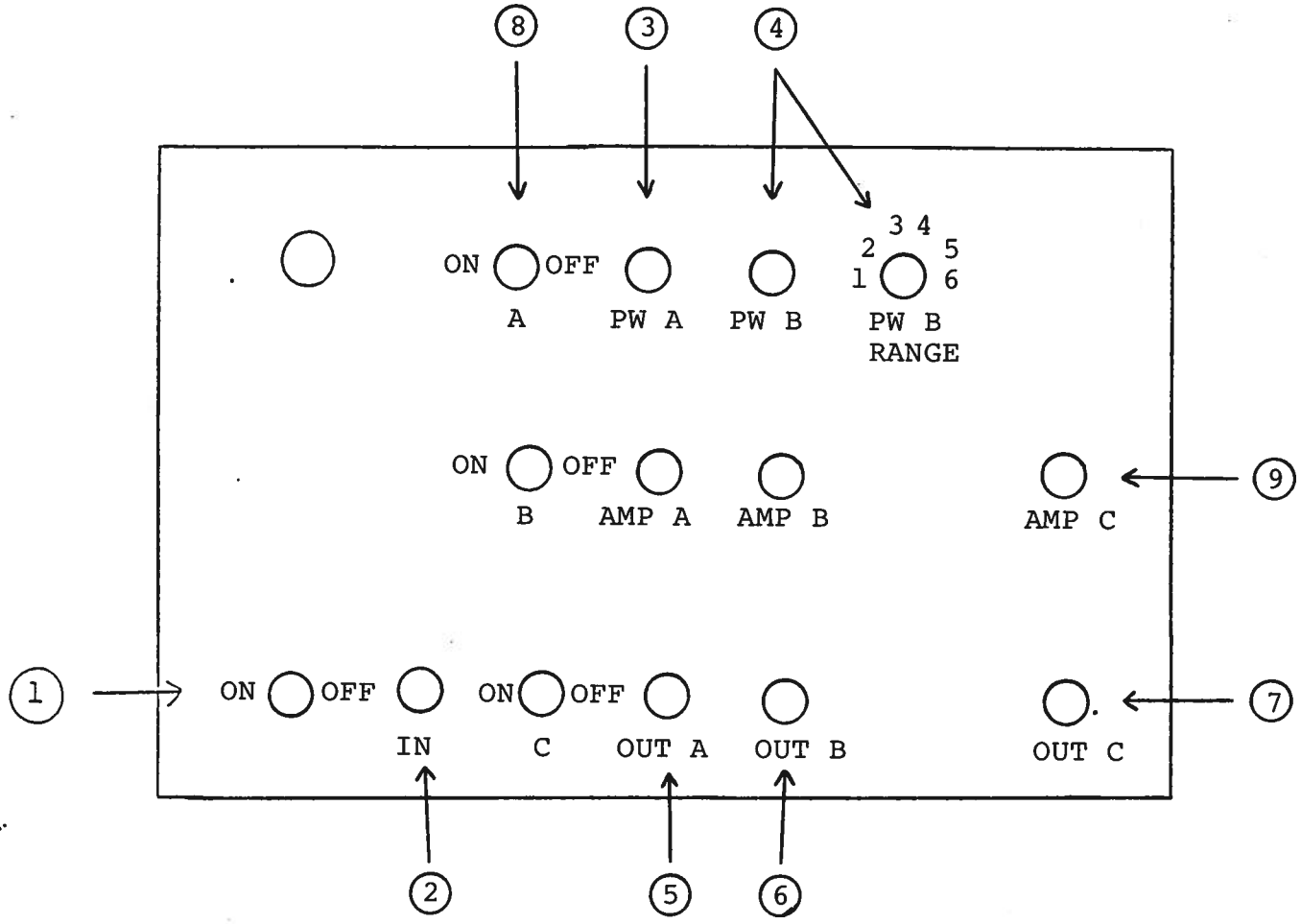
8) To offset output B connect the desired offset voltage (0 to +50 volts) to the back panel OS B terminals.

9) The output switching elements (SL4) for output B will probably fail if the output of the unit is accidentally short-circuited or operated into 50 ohms or if the unit is operated at high output pulse width - high PRF combinations. The switching elements are easily replaced following the instructions given in the REPAIR Section.

10) Channel A will safely operate over the PRF range of 0 to 1 KHz. Channel B is designed to operate to PRF of 1 KHz but with a maximum duty cycle of 10%. For example:

PW MAX	PRF
100 msec	1 Hz
10 msec	10 Hz
1 msec	100 Hz
100 usec	1 KHz
10 usec	1 KHz
1 usec	1 KHz

FRONT PANEL CONTROLS



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

(2) IN. Input trigger for A and B outputs applied here (TTL levels, 0.5 to 1.0 usec).

(3) PW A. One turn control will vary PW of A output from 5 to 180 nsec.

(4) PW B. One turn control and 6 position range switch used to vary pulse width of output B from 80 nsec to 5.0 msec as follows:

RANGE 1:	100	nsec	to	1.0 usec
RANGE 2:	1.0	usec	to	10 usec
RANGE 3:	10	usec	to	100 usec
RANGE 4:	100	usec	to	1 msec
RANGE 5:	1	msec	to	10 msec
RANGE 6:	10	msec	to	100 msec

(5) OUT A Connector. BNC connector used to connect output A to 50 ohm load.

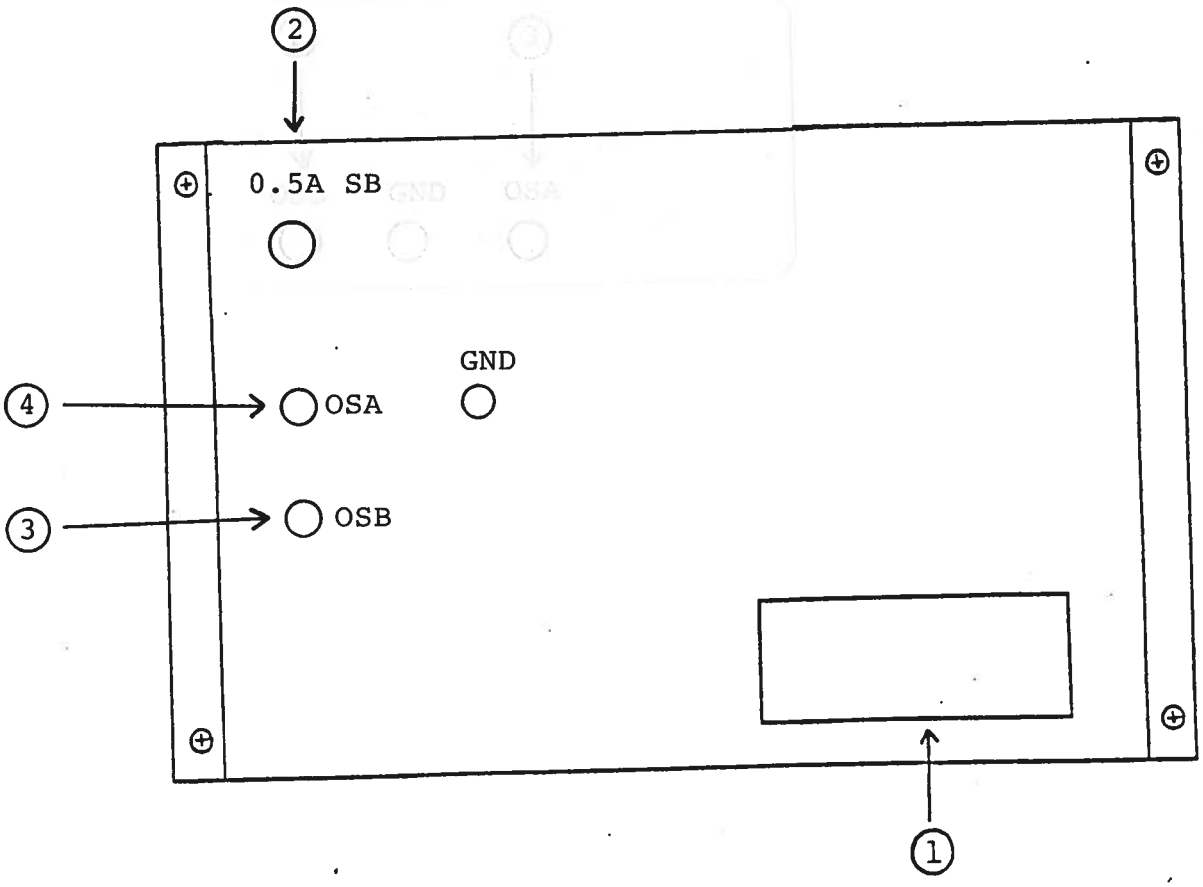
(6) OUT B Connector. BNC connector used to connect output of B to high impedance load.

(7) OUT C Connector. BNC connector used to connect output C to high impedance load.

(8) ON-OFF, A, B, C. ON-OFF switch to selectively turn channels A, B and C ON or OFF.

(9) AMP A, B, C. One turn control to selectively control output amplitude of channels A, B and C.

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) 0.5A SB. This fuse limits the DC prime power supplied to the output stage and will blow in the case of severe overloading.

(3) OS-B. To offset output B, apply desired DC offset (0 to +50 volts) to OS-B solder terminals.

(4) OS-A. To offset output A, apply desired DC offset (0 to ±50 volts) to OSA solder terminals. Note that a DC blocking capacitor (approx. 0.1 ufd 50 volts) must be placed in series with 50 ohm load termination.

REPAIR PROCEDURE

1) WARNING: Before attempting any repairs, note that potentials as high as 380 volts are employed in the chassis structure.

2) The pulse generator is constructed from the following subsystems or modules:

   a) Metal chassis
   b) A pulse generator module (RIA-PGA)
   c) B pulse generator module (RIA-PGB)
   d) Delay module (-TA)
   e) +24V power supply board
   f) B pulse generator power supply (RIA-PSB)
   g) A pulse generator power supply (RIA-PSA)
   h) Output B PW control module (RIA-PWB)
   i) -15 volts supply module (RIA-PS-15)
   j) Delay module (RIA-DL)

   The modules are interconnected as shown in the following diagram.

3) If no output is provided by the B output then it is most likely that the SL4 switching elements in the output stages have been damaged and should be replaced using the following procedure:

   i) Turn off prime power and remove cover plate on bottom of instrument (two 2-56 screws).

   ii) By means of a screwdriver, briefly ground the tabs of the two SL4 transistors to discharge the bypass capacitors.

   iii) Extract the old SL4 transistors from their socket by means of needle-nosed pliers.

   iv) Install replacement SL4 transistors and install cover plate.

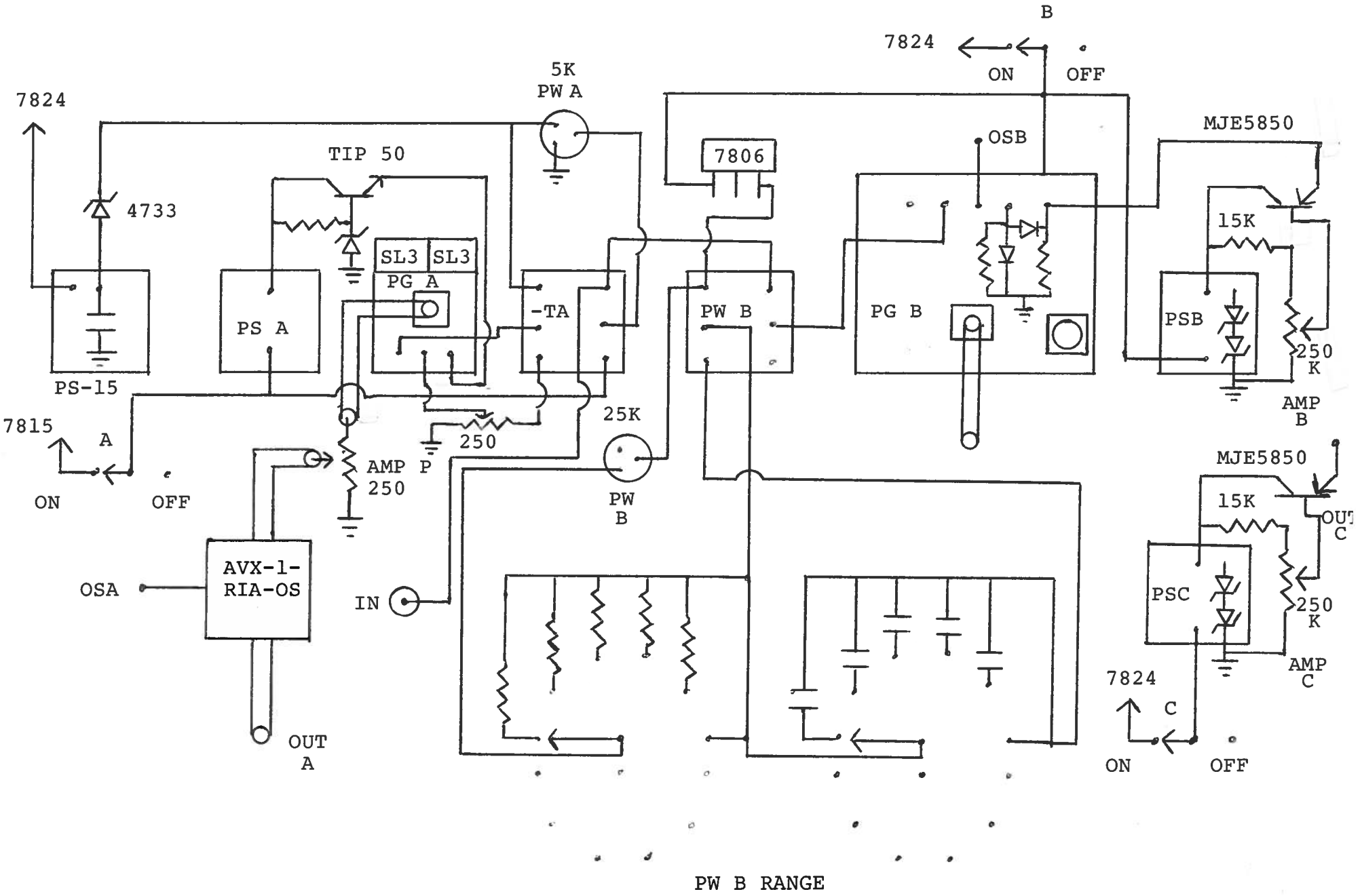
4) If no output is provided by the A output then it is most likely that the SL3 switching elements in the output stages have been damaged and should be replaced using the following procedure:

   i) Turn off prime power and remove the four Phillips screws on the back panel of the instrument. The front cover may then be slid off.

   ii) By means of a screwdriver, briefly ground the cases of the two SL3 transistors to discharge the bypass capacitors.

iii) Extract the old SL3 transistors from their sockets after removing the 4 2-56 screws.

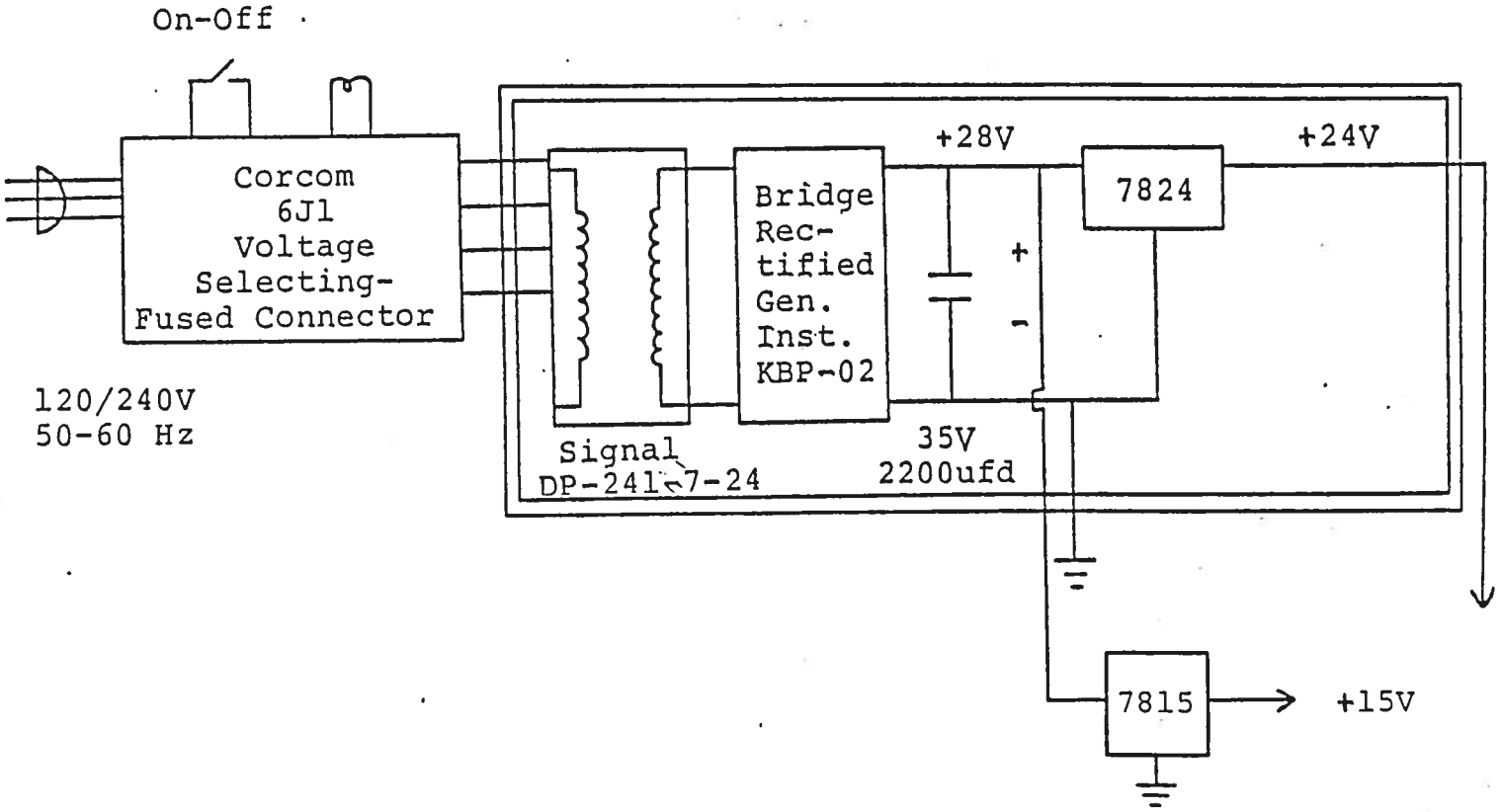
iv) Install replacement SL3 transistors and install cover plate.



PW B RANGE

AVRL-RIA

POWER SUPPLY BOARD



+24 VOLT POWER SUPPLY

The AVRL-RIA consists of the six standard modules and a power supply board which supplies +24 volts (600 mA max) to the modules. In the event that the unit malfunctions, remove the instrument top cover, thereby exposing the modules. Measure the voltage at the +24 V pin of the PS module. If this voltage is substantially less than +24 volts, unsolder the line connecting the power supply board output and connect a 50 ohm 10 W load to the power supply output. The voltage across this load should be about +24 V DC. If this voltage is substantially less than 24 volts the power supply board is defective and should be repaired or replaced. If the voltage is near +24V then see instructions in preceding section.

Schroff 09.28.89