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NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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INSTRUCTIONS

MODEL AVB3-TA-PS-PEB2 BUNCHING PULSER

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 TEST ARRANGEMENT
(EXTERNAL LOAD)

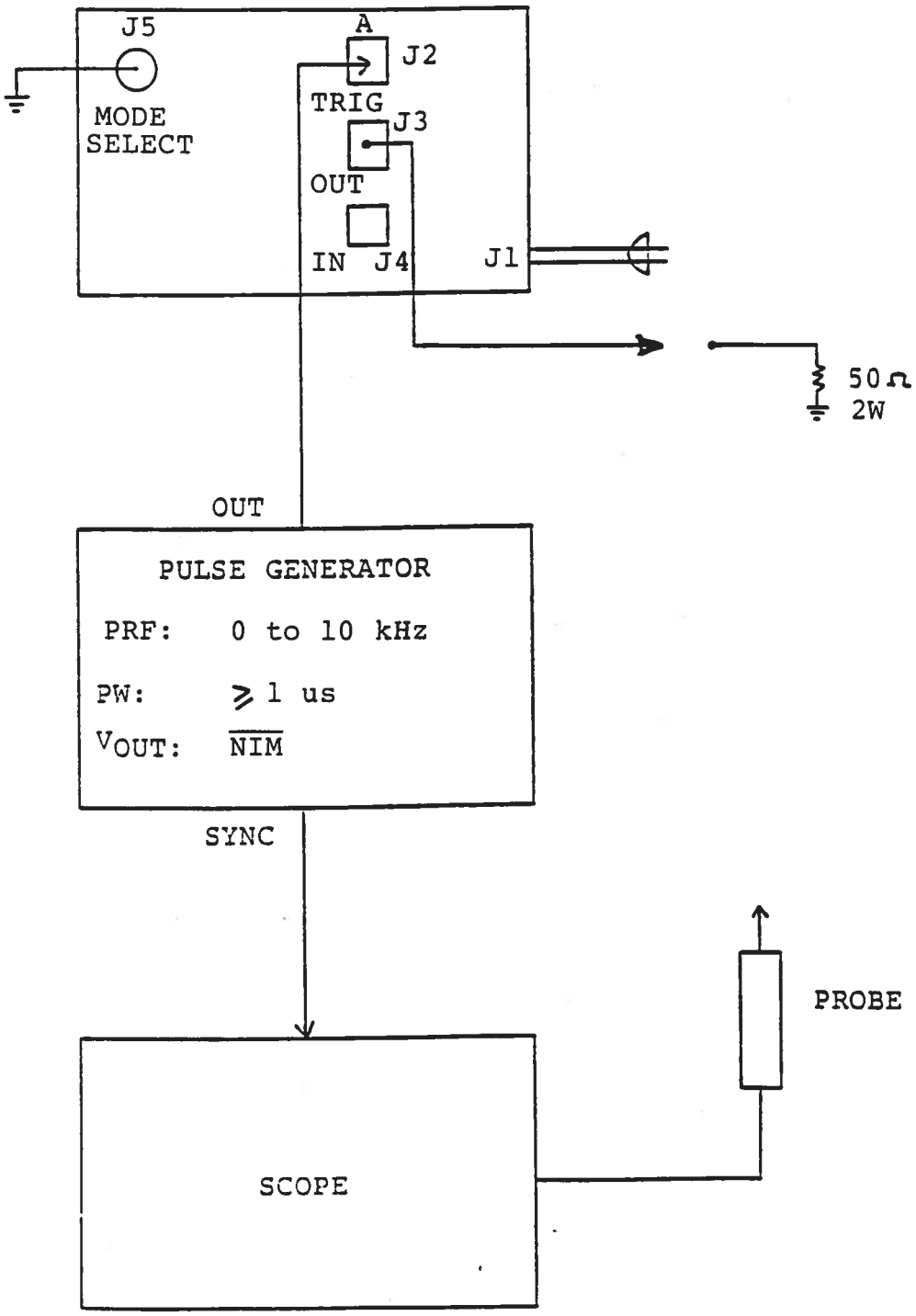
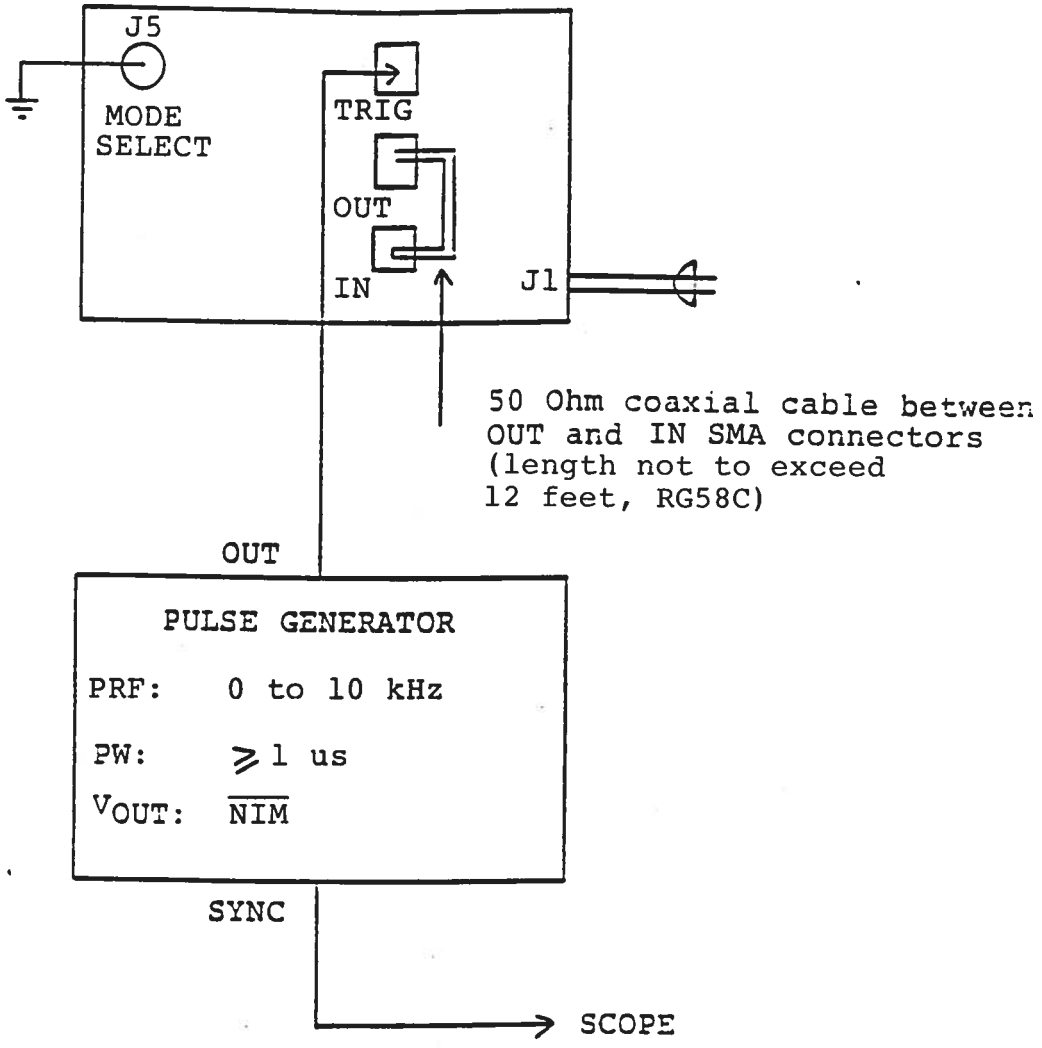


Fig. 2

TEST ARRANGEMENT

(INTERNAL LOAD)



GENERAL OPERATING INSTRUCTIONS

1) The arrangement shown in Fig. 1 may be used to check the basic waveforms using an oscilloscope.

2) The buncher is enabled when the MODE SELECT level is LOW and disabled when the MODE SELECT level is HIGH.

3) The buncher is triggered on the rising edge of a $\overline{\text{NIM}}$ signal (when it goes from -.8 Volts to 0 Volts). The buncher trigger must be brought low for at least 1.0 microseconds before the trigger point. Trigger signals must then remain high (at 0 Volts) for the rest of the cycle until just before the next trigger point. The buncher propagation delay is about 90 ns.

4) The output waveform is of the general form shown in Fig. 3. A warm-up period of about 5 minutes should be allowed.

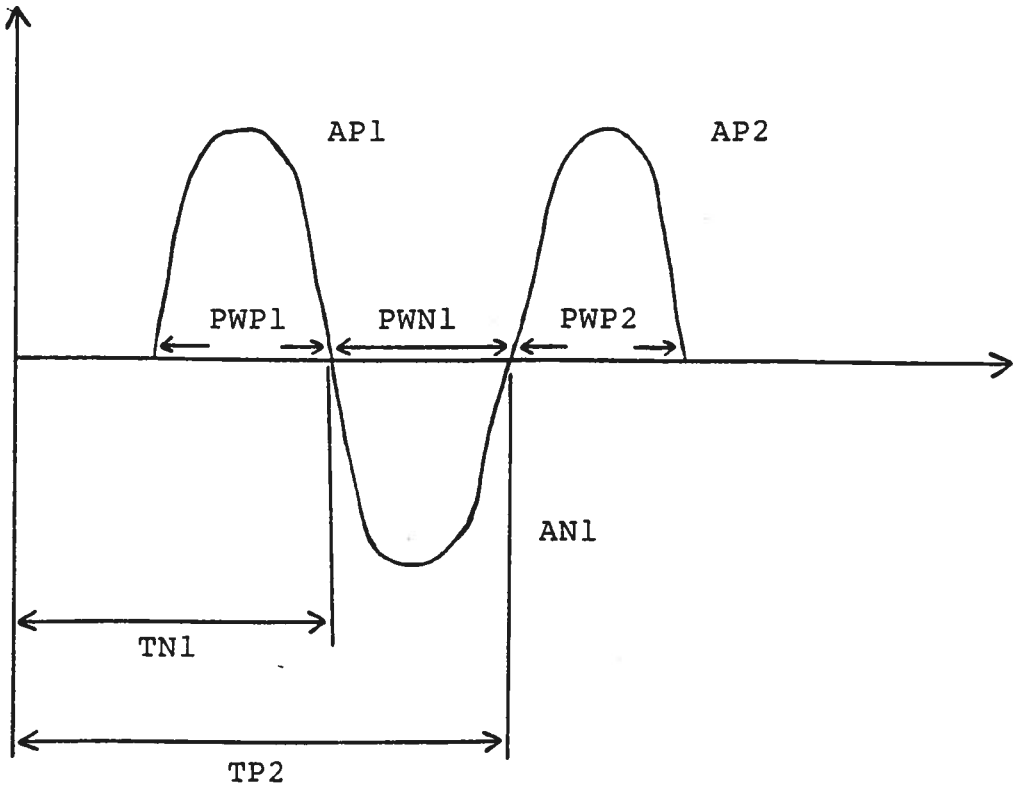


Fig. 3 OUTPUT WAVEFORM FORMAT AND VARIABLE PARAMETERS

5) The following waveform parameters can be adjusted using one turn controls:

AP1
AP2
AN1
PWP1
PWP2
PWN1
TP2
TN1

The eight one turn controls may be accessed by removing the four PHILLIPS screws on the back panel. The top cover may then be slid back (and off). Only very minor adjustments to the controls should be necessary. While adjusting the controls, the output waveform may be monitored on an oscilloscope using the arrangement shown in Fig. 1 or, if the bunching plate load is connected (as per Fig. 2), the output waveform may be observed using the monitor SMA output in the interior of the instrument (on the inside of the back panel). The monitor output provides an attenuated (x10 to 50 Ohms) replica of the output waveform.

6) For additional assistance:

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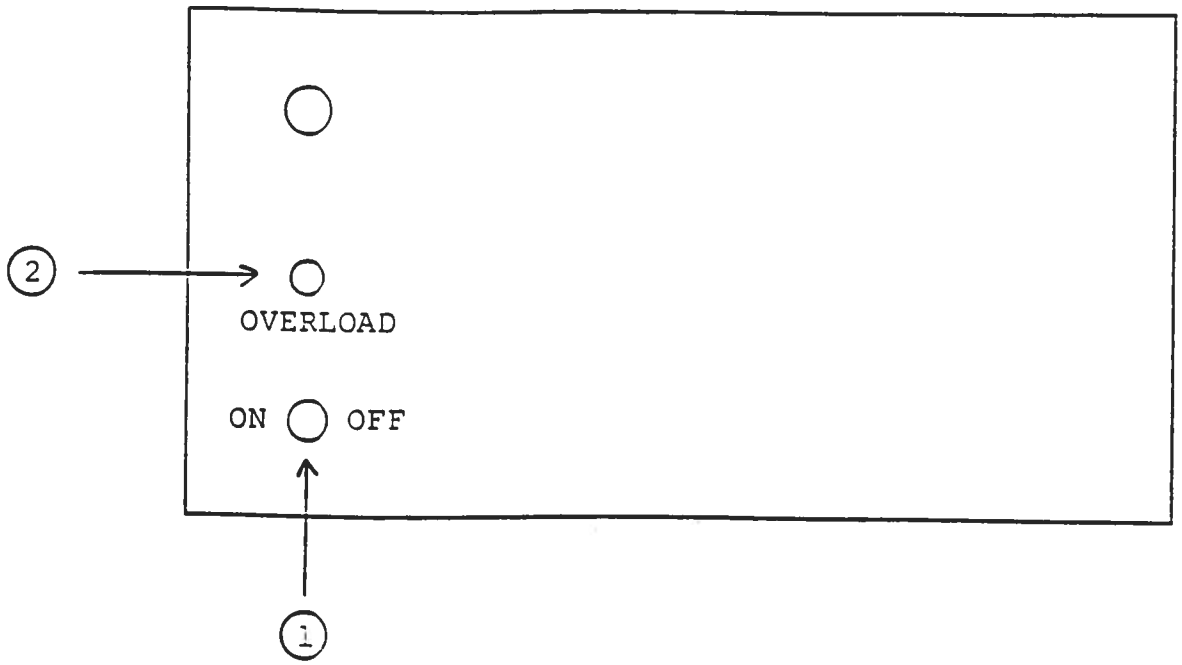
Fig. 4 FRONT PANEL CONTROLS



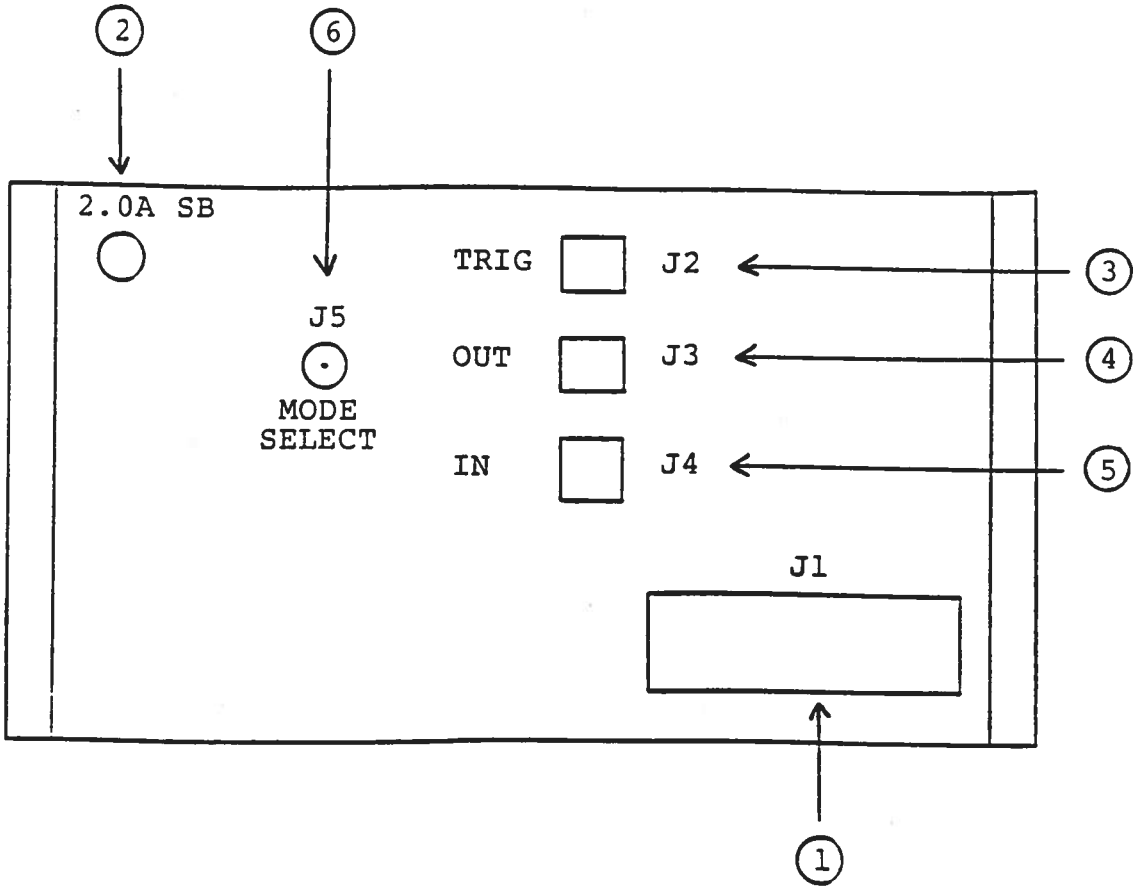
(1) ON-OFF Switch. Applies prime power to all stages.

(2) OVERLOAD INDICATOR. AVB3 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) Removing output load short circuit (if any)

Fig. 5

REAR PANEL CONTROLS



(1) FUSED CONNECTOR, VOLTAGE SELECTOR (J1). 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 (1.0 A SB).

(2) 2.0A SB. Fuse which protects the output stage if the output duty cycle rating is exceeded.

(3) TRIG (J2). SMA connector to which 1 us (or wider) $\overline{\text{NIM}}$ pulse is applied. The buncher is triggered on the rising edge of a NIM signal (when it goes from -.8 Volts to 0 Volts). The buncher trigger must be brought low for at least 1.0 microseconds before the trigger point. Trigger signals must then remain high (at 0 Volts) for the rest of the cycle until just before the next trigger point. The buncher propagation delay is about 90 ns.

(4) OUT (J3). SMA output connector provides output waveform shown in Fig. 3.

(5) IN (J4). SMA connection to internal termination as per Fig. 2.

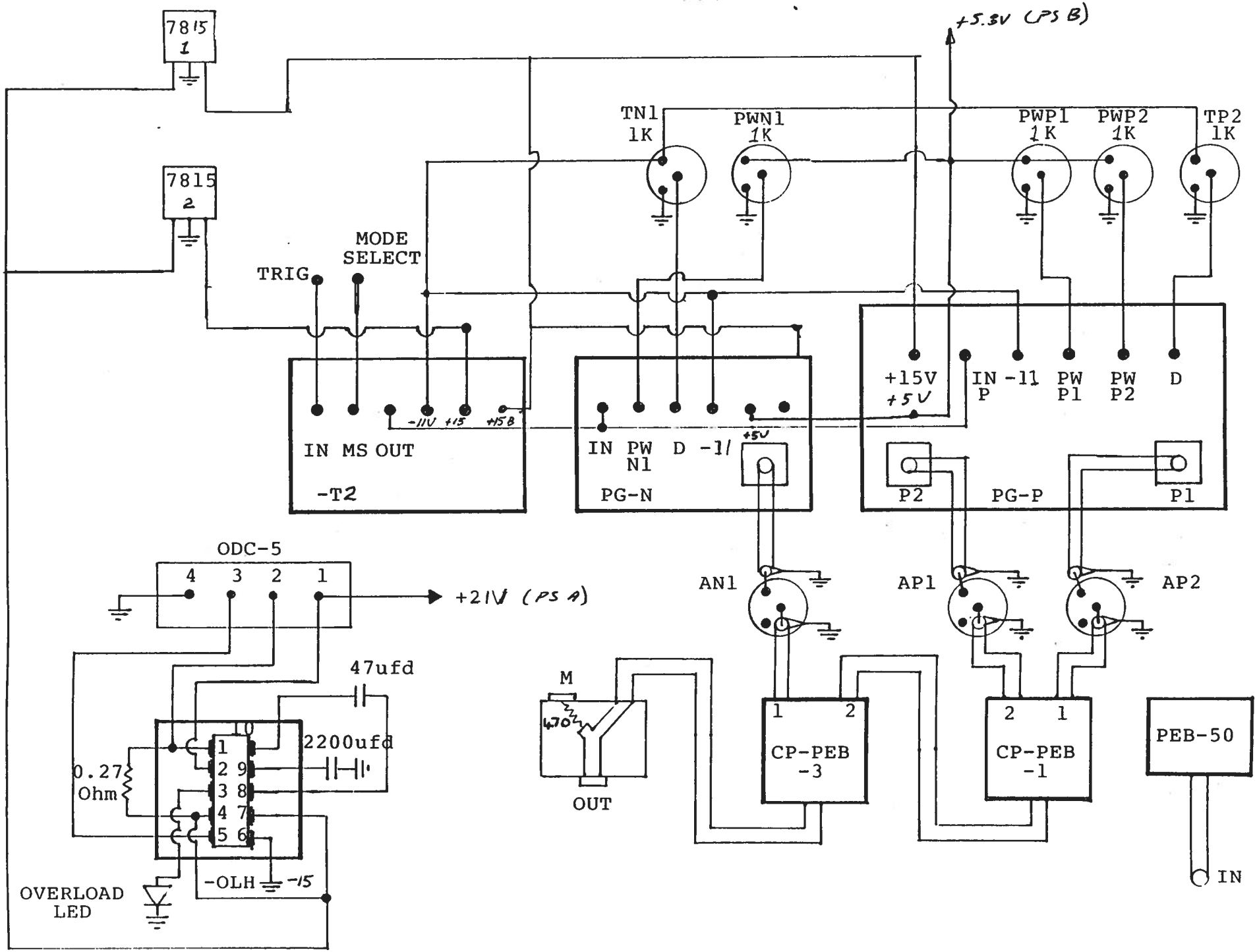
(6) MODE SELECT (J5). The buncher is enabled when the MODE SELECT level is LOW ($\leq$ +0.5 Volts) and disabled when the MODE SELECT level is HIGH ($\geq$ +2.4 Volts).

TOP COVER REMOVAL AND RACK MOUNTING

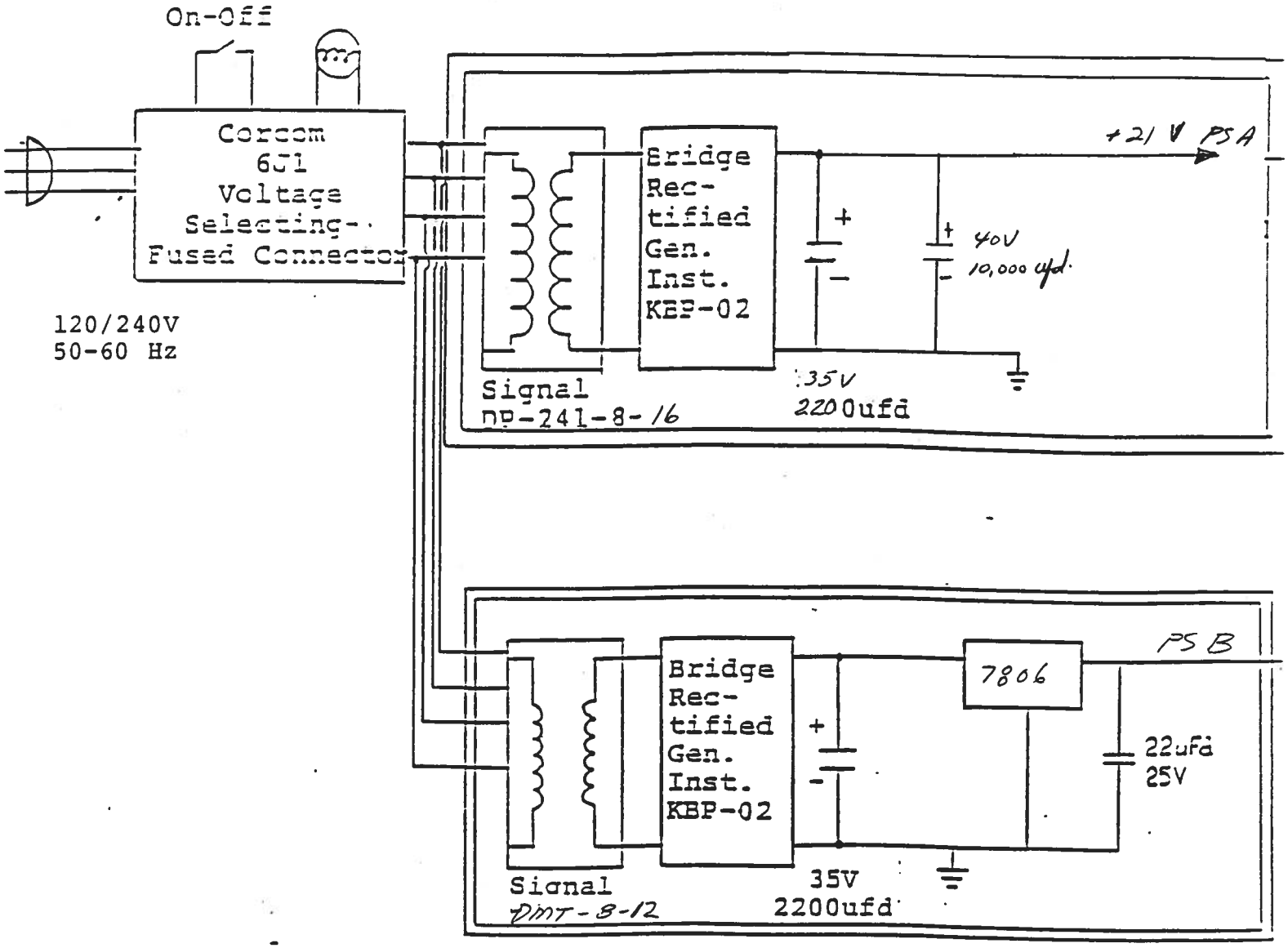
1) The interior of the instrument may be accessed by removing the four Phillips screws on the top panel. With the four screws removed, the top cover may be slid back (and off).

2) The -R5 rack mount kit may be installed after first removing the one Phillips screw on the side panel adjacent to the front handle.

AVB3-TA-PS-PEB2



POWER SUPPLY



SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVB3-TA-PS-PEB2 consists of the following basic modules (see Fig. 6):

a) AVB3-PG-P module. This module generates two positive impulses having an amplitude of over 570 Volts and a pulse width of about 9 ns.

b) AVB3-PG-N module. This module generates a negative impulse having an amplitude of over 570 Volts and a pulse width of about 9 ns.

c) AVB3-T2 module. This translation module converts the $\overline{\text{NIM}}$ input pulse to TTL levels (to trigger the -PG modules) and also includes the mode select electronics. This module also supplies -11V to the other modules.

d) CP-PEB-1 module. This power combiner module accepts the two 570 Volt impulses from the -PG-P module and provides two 550 Volt consecutive impulses over a single output line.

e) CP-PEB-3 module. This power combiner module accepts the output of the -PG-N module and the CP-PEB-1 module and outputs the basic waveform shown in Fig. 3.

f) PEB-50 module. This module seems as a 50 Ohm termination on the output of the buncher plate.

g) PEB-OLH-15 module. This module protects the buncher from overload conditions by limiting the average current supplied to the -PG modules.

h) +15 and +5.8 Volt power supply boards. These boards generate the DC voltages (from the 60 Hz line) used to power the remaining modules.

In the event that the unit does not provide an output, check the rear panel 1.0 Amp and 2.0 Amp SB fuses. If the fuses are not blown then check the +15 Volt, -11 Volt and +5.8 Volt power supply levels (see Fig. 6). If the DC levels are within specifications, then check the outputs of the -PG and -CP modules. If the modules are defective, they should be returned to AVTECH for repair or replacement.

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Dec. 24/93

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