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NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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INSTRUCTIONS

MODEL AVB2-C-OCIC PULSE GENERATOR

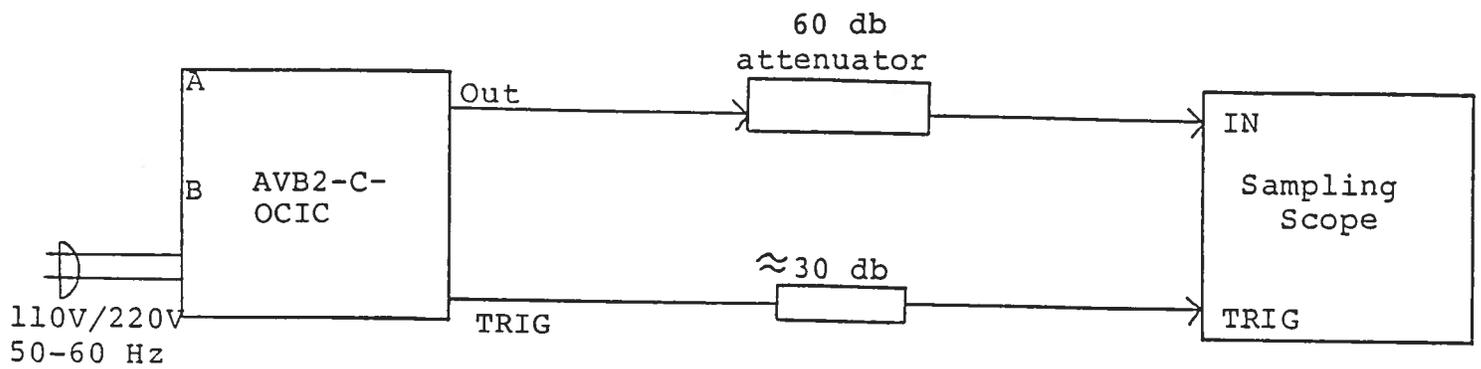
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WARRANTY

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.

Fig. 1

PULSE GENERATOR TEST ARRANGEMENT



Notes:

- 1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed one gigahertz.
- 2) The use of 60 dB attenuator at the sampling scope vertical input channel will insure a peak input signal to the sampling scope of less than one Volt.
- 3) The TRIG output channel provides TTL level signals. To avoid overdriving the TRIG input channel of some sampling scopes, a 30 dB attenuator should be placed at the input to the sampling scope trigger channel.
- 4) To obtain a stable output display the PRF control on the front panel should be set mid-range while the PRF range switch may be in either range. The front panel TRIG toggle switch should be in the INT position. The front panel DELAY controls 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 control and by means of the PRF range switch.
- 5) MONITOR Output. The front panel monitor output provides an attenuated replica (20 dB down) of the output. The monitor output is designed to operate into a 50 Ohm load.
- 6) The output frequency is controlled by the PULSE WIDTH A (POSITIVE), PULSE WIDTH B (NEGATIVE) and TPN one turn controls. To establish the desired operating frequency the following sequence is recommended:
 - a) Set TPN max clockwise.
 - b) Adjust PULSE WIDTH A control to attain desired pulse width for positive-going swing (see Fig. 2).
 - c) Rotate TPN counter-clockwise to reduce TPN to zero.
 - d) Adjust PULSE WIDTH B control to attain desired pulse width for negative-going swing (see Fig. 2).
 - e) Some final iterative adjustments of the three controls may be necessary to fine-tune the output frequency.
- 7) The output amplitude is fixed at about 425 Volts.

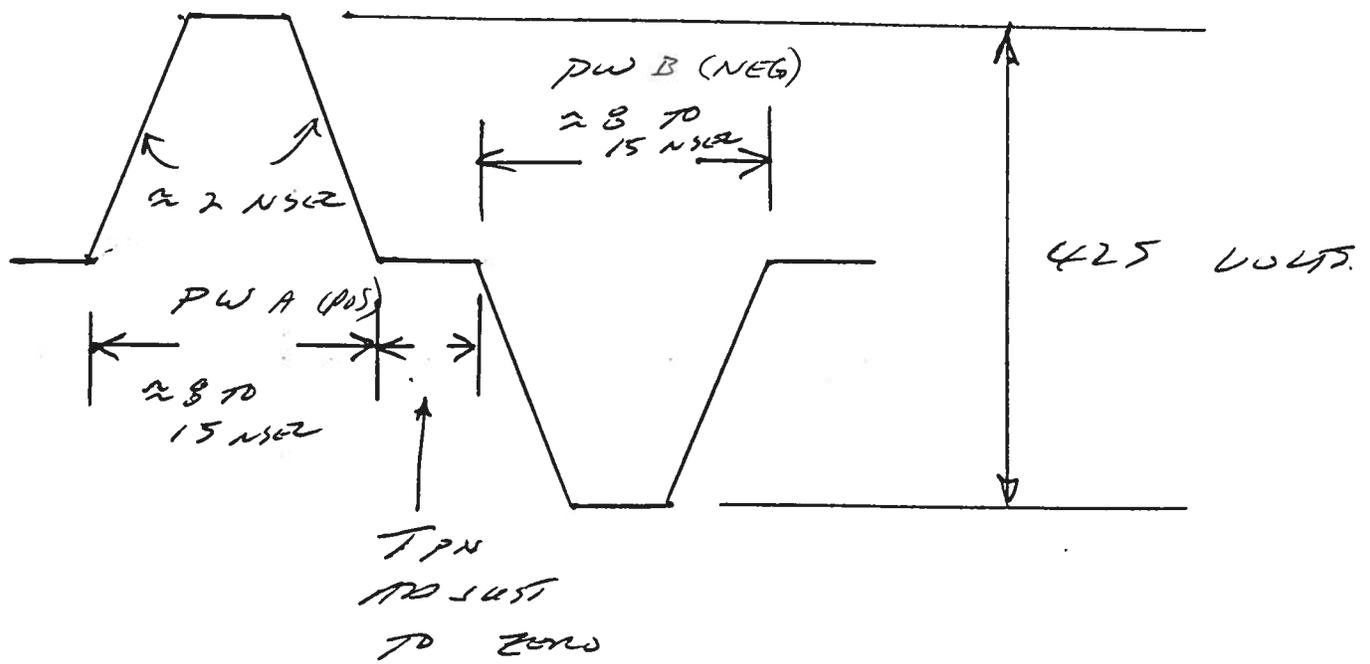


Fig 2: AVB2 - C - OCIC OUTPUT WAVEFORM.

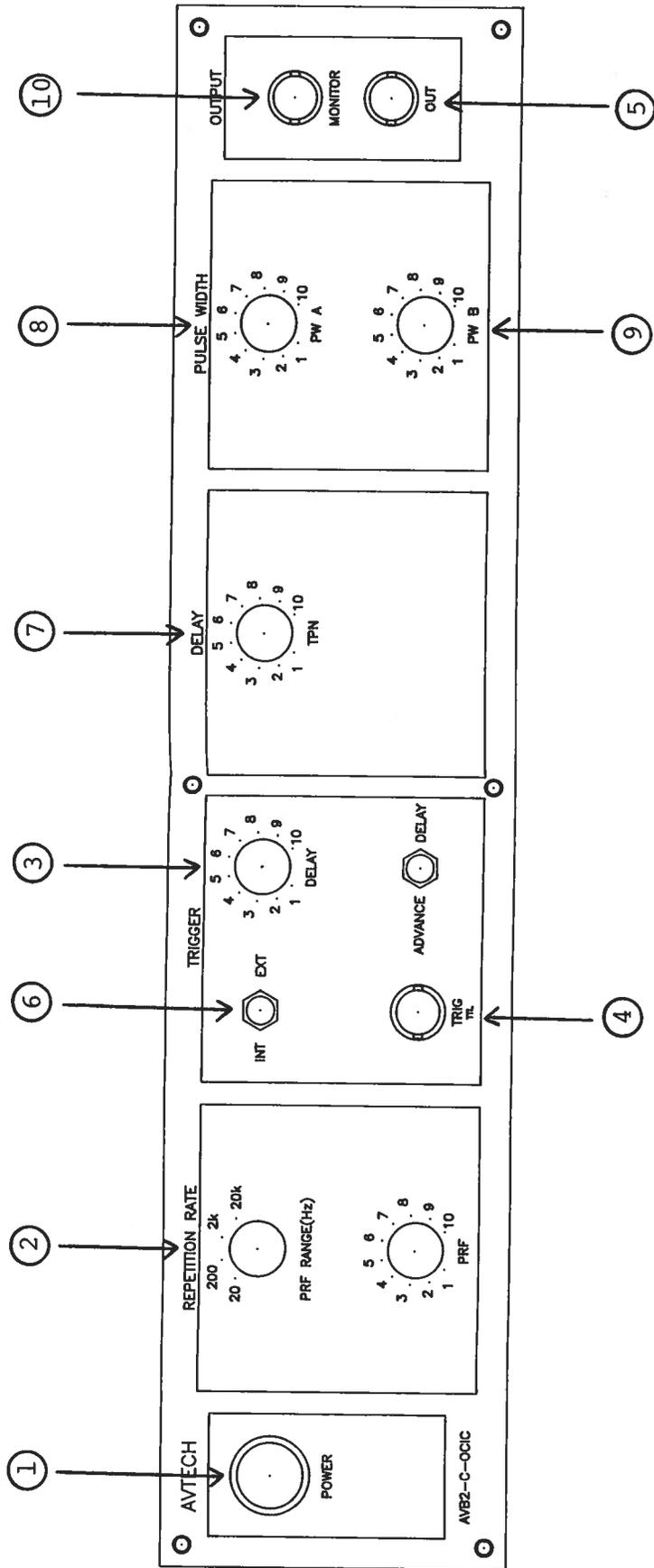


Fig. 2 FRONT PANEL CONTROLS

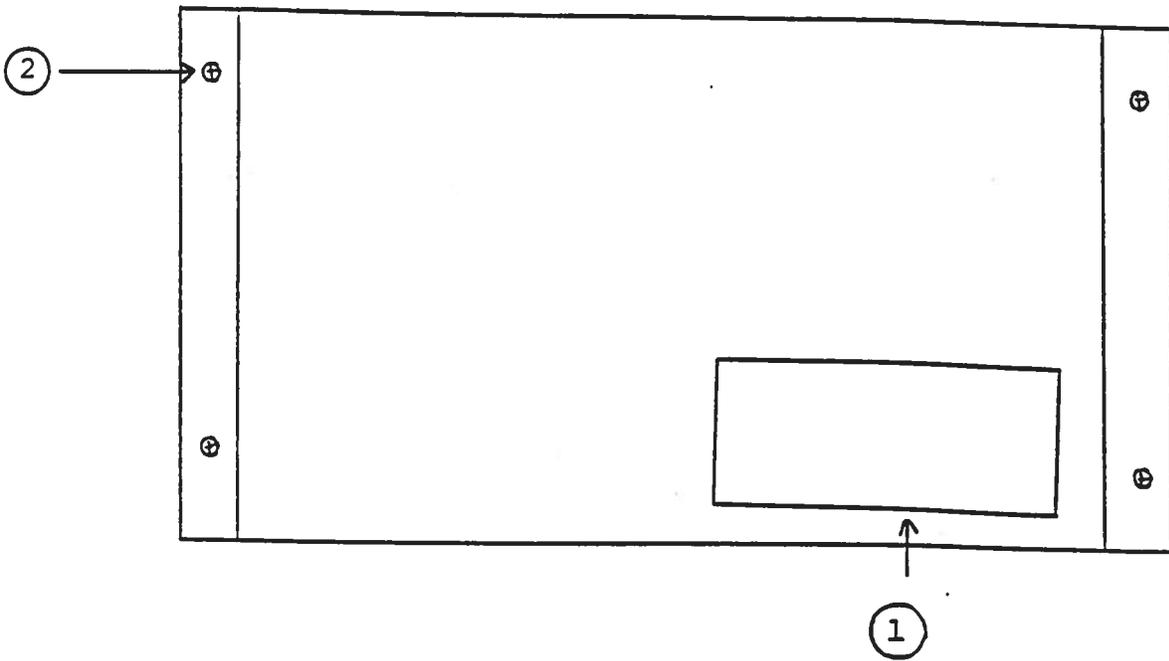
- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. The PRF RANGE and PRF controls determine output PRF as follows:

	PRF MIN	PRF MAX
RANGE 1	2 Hz	20 Hz
RANGE 2	20 Hz	200 Hz
RANGE 3	200 Hz	2 kHz
RANGE 4	2 kHz	20 kHz

- (3) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (4) and the main output (5). This delay is variable over the range of 0 to about 200 ns. Delay LEADS and LAGS depending on the position of the ADVANCE-DELAY switch.
- (4) TRIG Output. This output is used to trigger the scope time base. The output is a TTL level 100 ns (approx.) pulse capable of driving a fifty Ohm load. This output precedes the output at (5) if the two position ADVANCE-DELAY switch is in the ADVANCE position. This output follows the output at (5) if the switch is in the DELAY position. The external trigger signal is applied at this input when the EXT-INT toggle switch is in the EXT position.
- (5) OUT. BNC connector applies output to 50 Ohm load.
- (6) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVB2 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 AVB2 unit requires a TTL level pulse ($PW \geq 50$ ns) applied at the TRIG input in order to trigger the output stages. In addition, in this mode, the scope time base must be triggered by the external trigger source.
- (7) TPN. One turn pot controls time separation between positive and negative voltage swing.
- (8) PULSE WIDTH A. Controls width of positive-going voltage swing.
- (9) PULSE WIDTH B. Controls width of negative-going voltage swing.
- (10) MONITOR OUT. BNC connector provides attenuated (x10) coincident replica of output (to 50 Ohms).

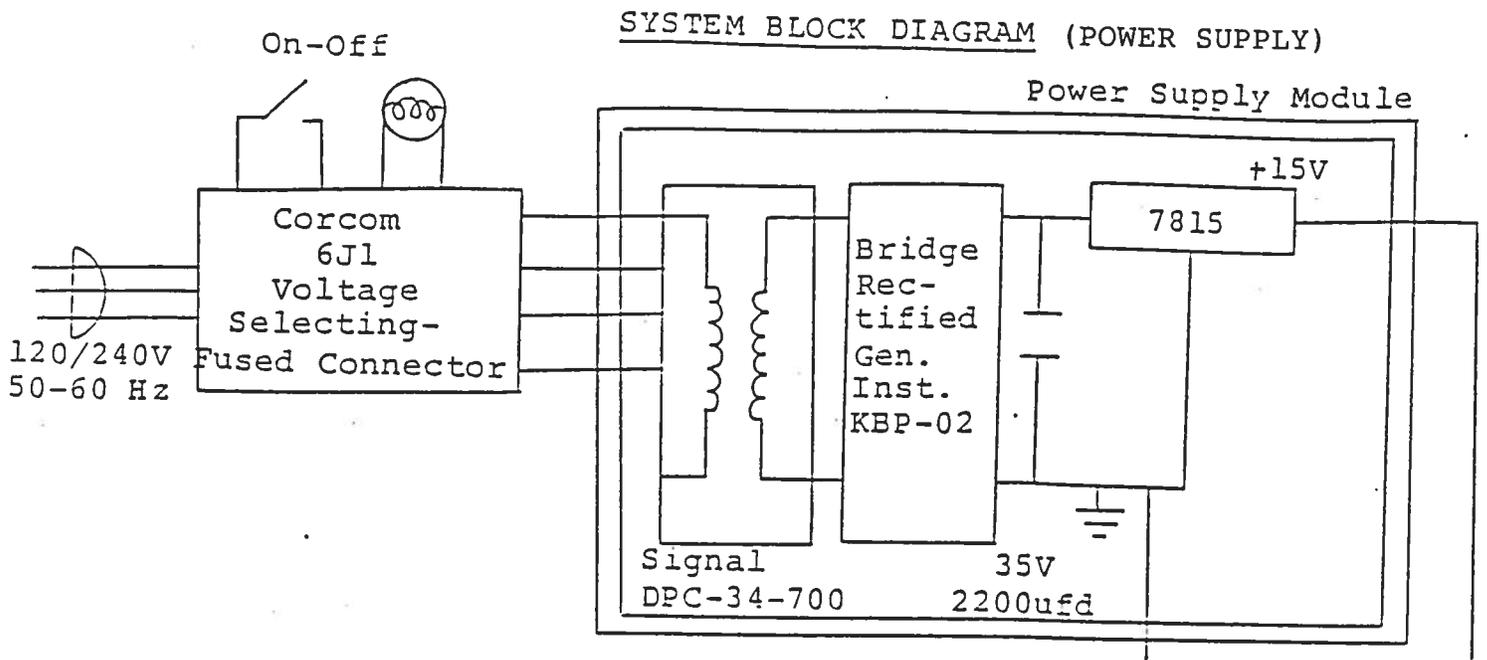
Fig. 3

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 (0.5 A SB).
- (2) TOP COVER REMOVAL. Remove the 4 Phillips screws on the back cover. The top cover may then be slid back (and off).

Fig. 5



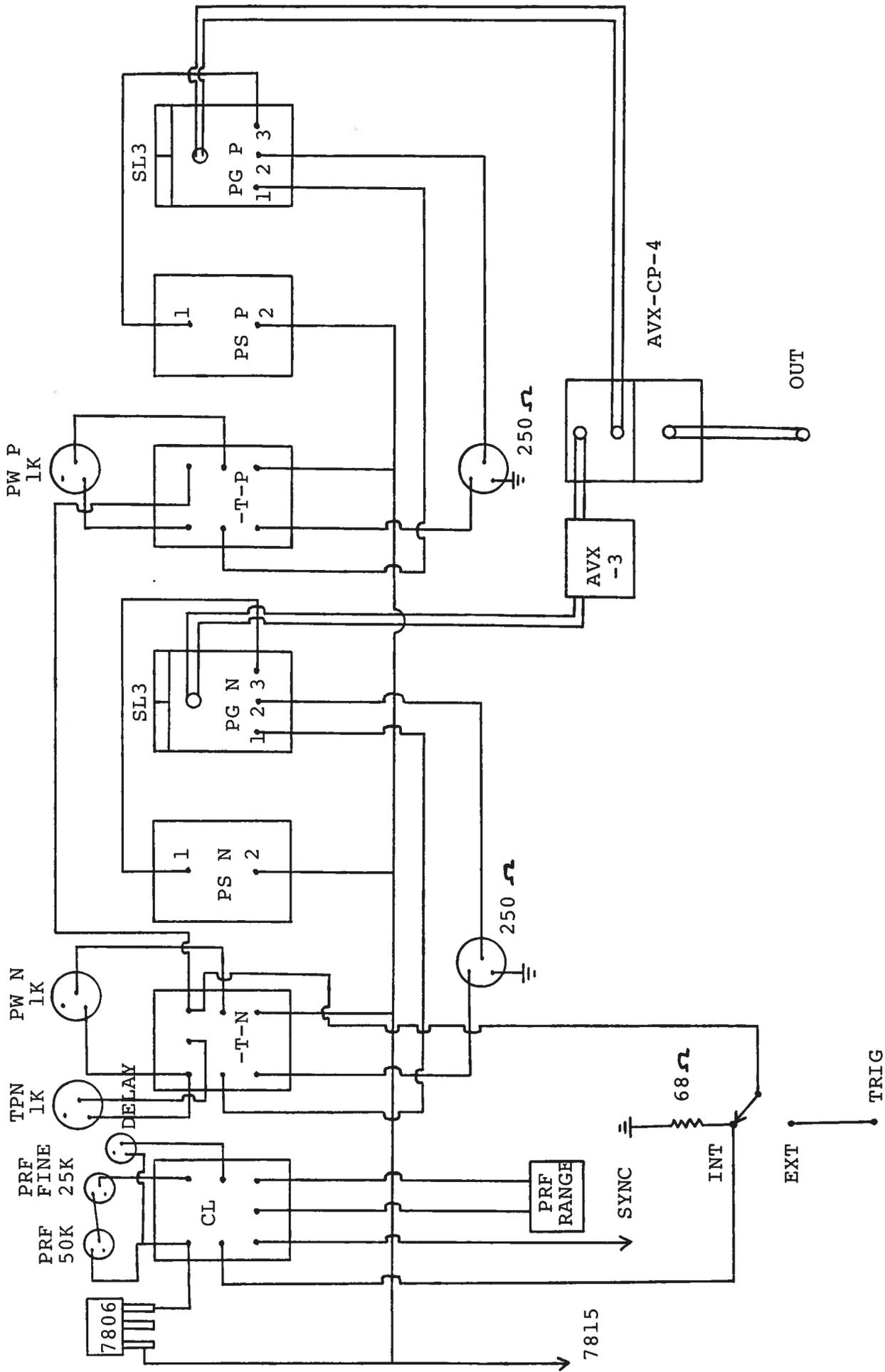


Fig. 6: BLOCK DIAGRAM

WARNING: The lines connecting pin 1 of the -PS modules to pin 3 of the -PG modules is at a potential of 360 to 380 volts. Also, the SL3 cases are at a potential of 360 to 380 volts.

REPAIR PROCEDURE

- 1) **WARNING:** Before attempting any repairs, note that potentials as high as 400 Volts are employed in the chassis structure.

- 2) The pulse generator is constructed from the following basic subsystems or modules:
 - a) Metal chassis
 - b) Pulse generator modules (OCIC-PG), two
 - c) Delay line modules (-DL), two
 - d) Timing modules (-T), two
 - e) Power supply modules (-PS), two
 - f) Clock module (-CL), one
 - g) Power combiner, AVX-CP-4-IT

The 9 modules are interconnected as shown in Fig. 6.

- 3) If no output pulse is provided by the unit, turn off the prime power supply and remove the top cover panel by removing the four Phillips screws on the back of the instrument. Apply a scope probe or voltmeter to pin 3 of the -PG unit. With the unit untriggered, turn on the prime power supply. A voltage of about 360 to 380 Volts should be read at pin 3. Alternatively, the voltage may be measured on the cases of the SL3 switching elements. If the voltage is zero or much less than 360 Volts, then one of the switching transistors (Part No. SL3) in the -PG module has probably failed. With the prime power supply off remove one of the transistors by removing the two 2-56 screws which secure the transistor in its socket.
CAUTION: Before touching or removing the transistor, the cases should be briefly shorted to the instrument case to discharge charged capacitors (as high as 400 Volts). Pull the transistor out of the socket. With the unit untriggered turn on the prime power supply and measure the voltage from the case of the remaining transistor to ground. If this voltage is about 360 to 380 Volts then the transistor which was removed is defective and should be replaced. If the voltage which is measured is less than 360 Volts then the transistor still in position is defective and should be replaced. Note that the two transistors are completely interchangeable (Order Avtech Part No. SL3). Note that with both transistors removed, the voltage at pin 3 on the -PG module should be in the range of 360 to 380 Volts. If the voltage is less then the -PS module must be replaced. If both the -PS module and the -PG module are not found to be defective then the -T module is suspect.

April 25/95

Edition B

-M

Disk: AVA, AVB

Name: B2COCICB.INS