

AVTECH ELECTROSYSTEMS LTD.

**NANOSECOND WAVEFORM ELECTRONICS
ENGINEERING . MANUFACTURING**

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INSTRUCTIONS

Model AVL-AV-1-PS-S1-A-PW 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 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.

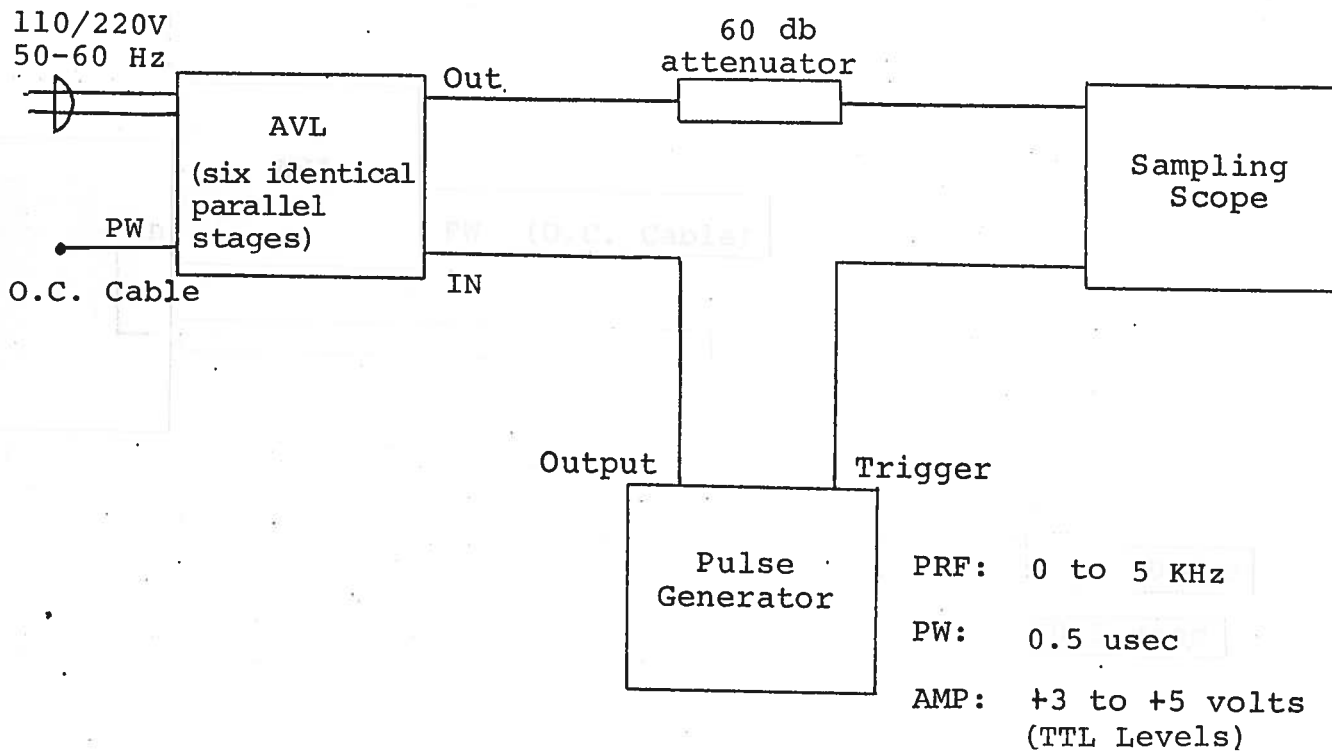
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MODEL AVL PULSE GENERATOR TEST ARRANGEMENT



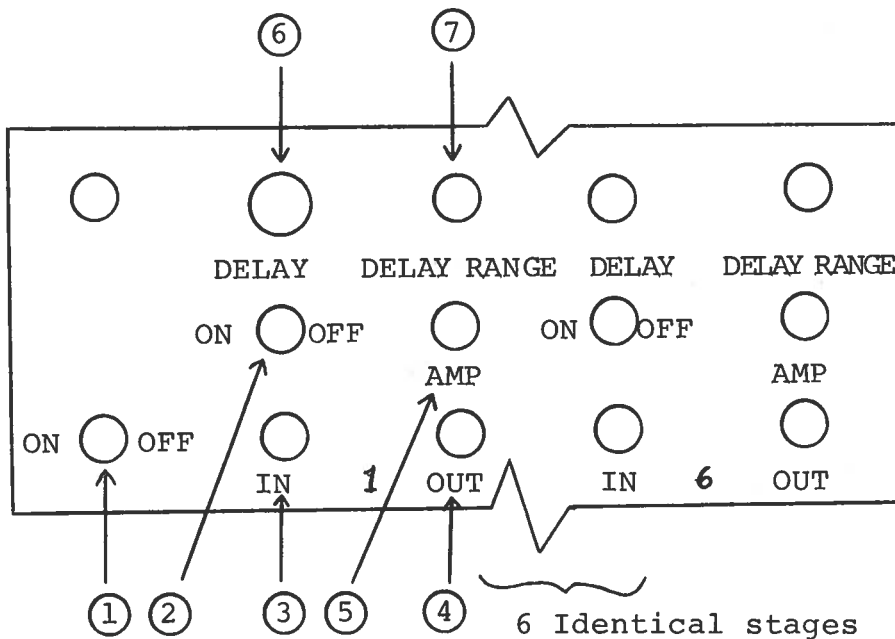
Notes:

- 1) The following notes apply equally to each of the six separate identical pulse generator stages.
- 2) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed several gigahertz.
- 3) The use of a 60 db attenuator will insure a peak input signal to the sampling scope of less than one volt.
- 4) The output amplitude is controlled by the one turn AMP control. Note the unit requires a 50 ohm load.

- 5) The Model AVL output pulse width is a linear function of the length of open circuited 50 ohm coaxial cable connected to the rear panel PW port. RG 58 cable is recommended but miniature flexible coaxial cable such as RG 173 may be used. The output pulse width increases about 3 nsec for each foot of cable added. In the absence of an external cable connected to the PW port, Model AVL outputs a 10 nsec pulse.
WARNING: The unit should be turned OFF when connecting cables to the PW ports since potentials as high as 330 volts may exist on the center conductor.
- 6) The Model AVL pulse generator can withstand an infinite VSWR on the output port.
- 7) The through put time (from IN to OUT) is controlled by the 4 position DELAY RANGE switch and the 10 turn DELAY control as follows:

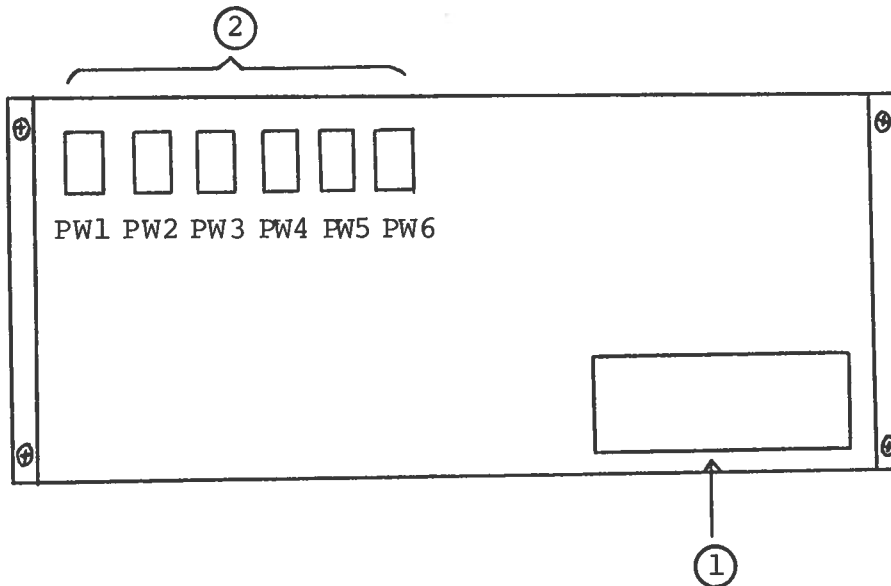
RANGE 1: 15 nsec to 100 nsec
RANGE 2: 0.1 usec to 1.0 usec
RANGE 3: 1.0 usec to 10 usec
RANGE 4: 10 usec to 100 usec
- 8) The input trigger pulse width should be set at 0.5 usec. Significantly wider pulse widths may result in damage to the unit while with narrower widths, the unit may not trigger when set in RANGE 1. All six stages may be triggered in parallel from a common signal by connecting all IN ports in parallel. ($R_{IN} \geq 1K$).
- 9) Each of the six separate stages can be turned on or off by means of the ON-OFF switch provided in each stage.

FRONT PANEL CONTROLS



- ① MAIN ON-OFF Switch. Applies prime power to internal DC power supplies. Must be in ON position for unit to operate.
 - ② INDIVIDUAL ON-OFF Switch. Applies DC power to each stage. Set to ON to turn each stage on.
 - ③ IN. Applies 0.5 usec TTL level trigger signal (+3 to +5V) to trigger each stage (BNC connectors).
 - ④ OUT. BNC connector which provides the rated output (0 to +100V) to a fifty ohm load.
 - ⑤ AMP. A one turn control which varies the output amplitude at ④ from 0 to +100 volts to a fifty ohm load.
 - ⑥ DELAY, DELAY RANGE. A 10 turn control and a 4 position range switch to vary the through put time as follows:
 - ⑦
- RANGE 1: 15 nsec to 100 nsec
 RANGE 2: 0.1 usec to 1.0 usec
 RANGE 3: 1.0 usec to 10 usec
 RANGE 4: 10 usec to 100 usec

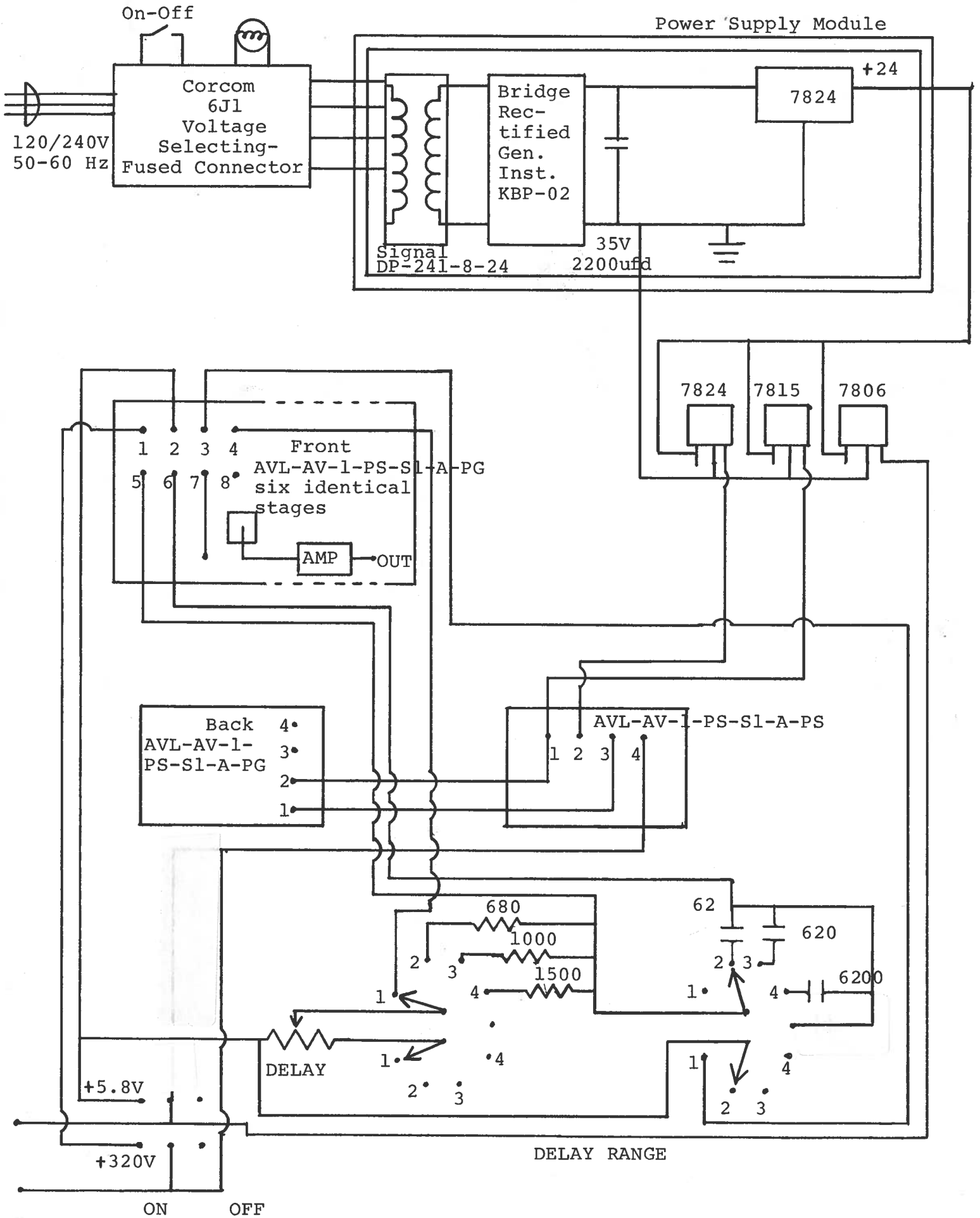
REAR PANEL CONTROLS



- 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 PW1 - PW6. The output pulse width for each stage is a linear function of the length of open-circuited 50 ohm coaxial cable connected to the PW ports. RG 58 cable is recommended but RG 174 cable may be used but with increased droop and degraded fall time. The output pulse width increases by about 3 nsec for each foot of cable added. In the absence of an external cable connected to the PW port, the unit outputs a 10 nsec wide pulse. **WARNING:** The unit should be turned off when connecting cables to the PW ports since DC voltages as high as 330 volts may exist on the center conductor.

Fig. 4

SYSTEM BLOCK DIAGRAM



SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVL-AV-1-PS-S1-A-PW consists of the following basic modules:

- 1) AVL-AV-1-PS-S1-A-PG pulse generator-delay module (six parallel stages)
- 2) AVL-AV-1-PS-S -A-PS power supply module to generate -15V and +320 volts
- 3) Power supply board to generate +24, +15V and +5.8 volts

The modules are interconnected as shown on the preceding drawing.

In the event of an instrument malfunction, remove the four Phillips screws on the back of the instrument. The top cover may then be slid off. Check the DC output voltages at the 7824, 7815 and 7806 outputs. Repair or replace if these voltages are less than +24, +15 and +5.8 volts respectively. Next, turn all six stages to OFF position and check the output voltage at Pin 4 on the AVL-AV-1-PS-S-A-PS module. This voltage should be about +330 volts. If the voltage is less then the -PS module must be replaced (order from Avtech). If the voltage is about 330 volts but drops significantly when any of the stages are turned on, then the sealed AVL-AV-1-PS-S1-A-PG module is defective and must be replaced (order from Avtech). Note that the sealed modules can be repaired at the factory and that field repair should not be attempted.

Schroff

June 29/84

