



# AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS  
SINCE 1975

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## INSTRUCTIONS

MODEL AVR-A-1-PS-S1-PN-D-NIST1 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 assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

### TECHNICAL SUPPORT

Phone: 613-226-5772 or 1-800-265-6681

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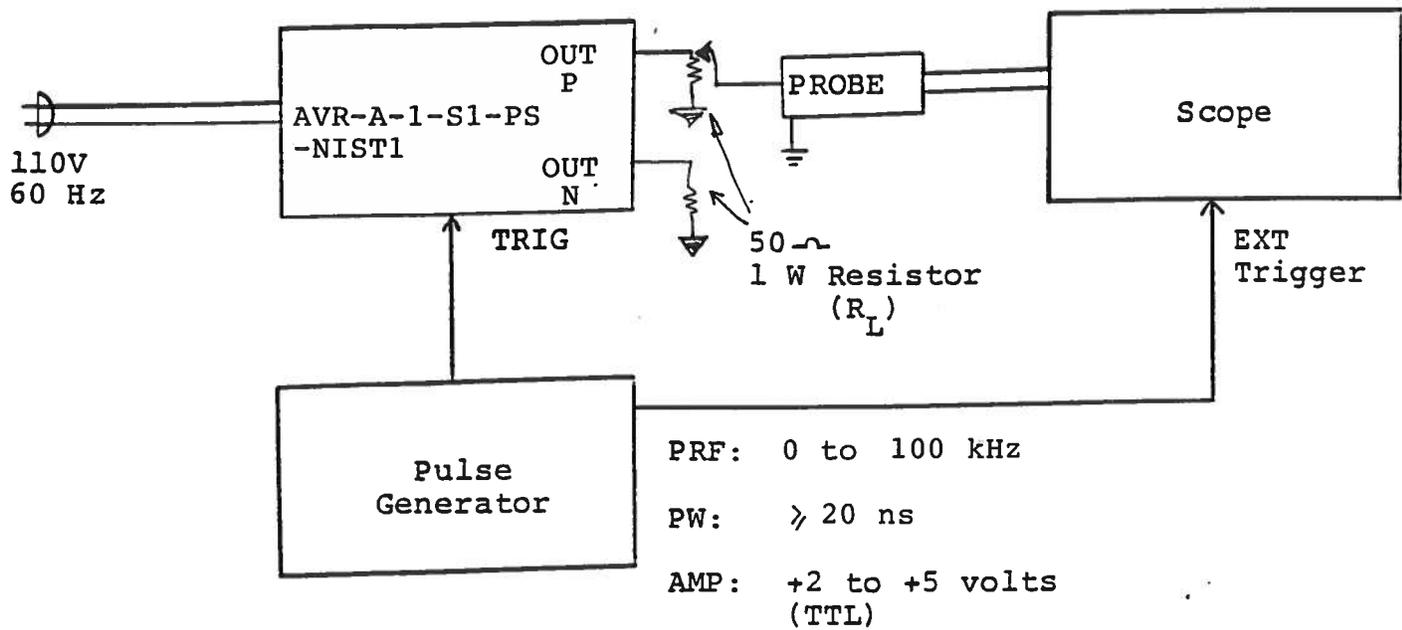
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FIG. 1: TEST ARRANGEMENT

## GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above. Since the AVR unit provides an output pulse rise time as low as 2 ns, a fast oscilloscope (at least 200 MHz and preferably 1000 MHz) should be used to display the waveform.
- 2) The output PRF is equal to the input trigger pulse PRF.
- 3) The output pulse width is controlled (from 50 to 500 ns) by the front panel one turn PW control.
- 4) The output pulse amplitude is controlled (from 0 to  $\pm 200$  Volts) by means of the front panel one turn AMP control.
- 5) The propagation delay is controlled (from 150 ns to 1.5  $\mu$ s) by the front panel one turn delay control.
- 6) This unit is protected by an automatic overload protective protective circuit which controls the front panel overload light. If the unit is overloaded (by operating at an exceedingly high duty cycle), 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)

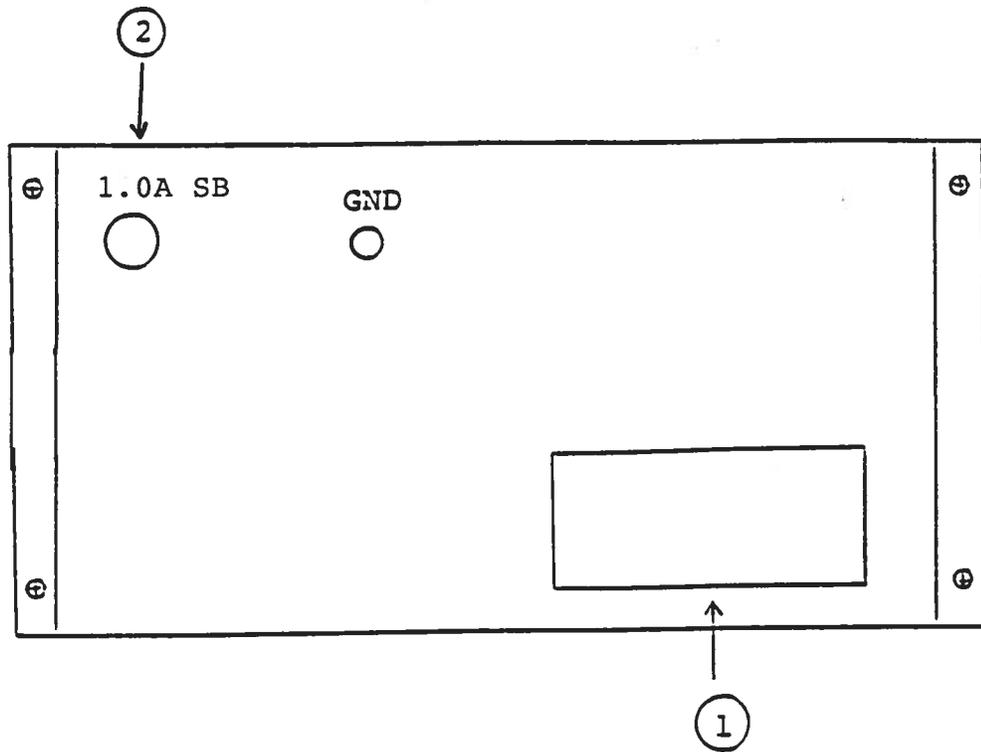
Note that the overload light may come on when the prime power is applied. The light will extinguish after a few seconds and the unit will then function normally.

- 7) 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.
- 8) For additional assistance:

Tel: (613) 226-5772

Fax: (613) 226-2802

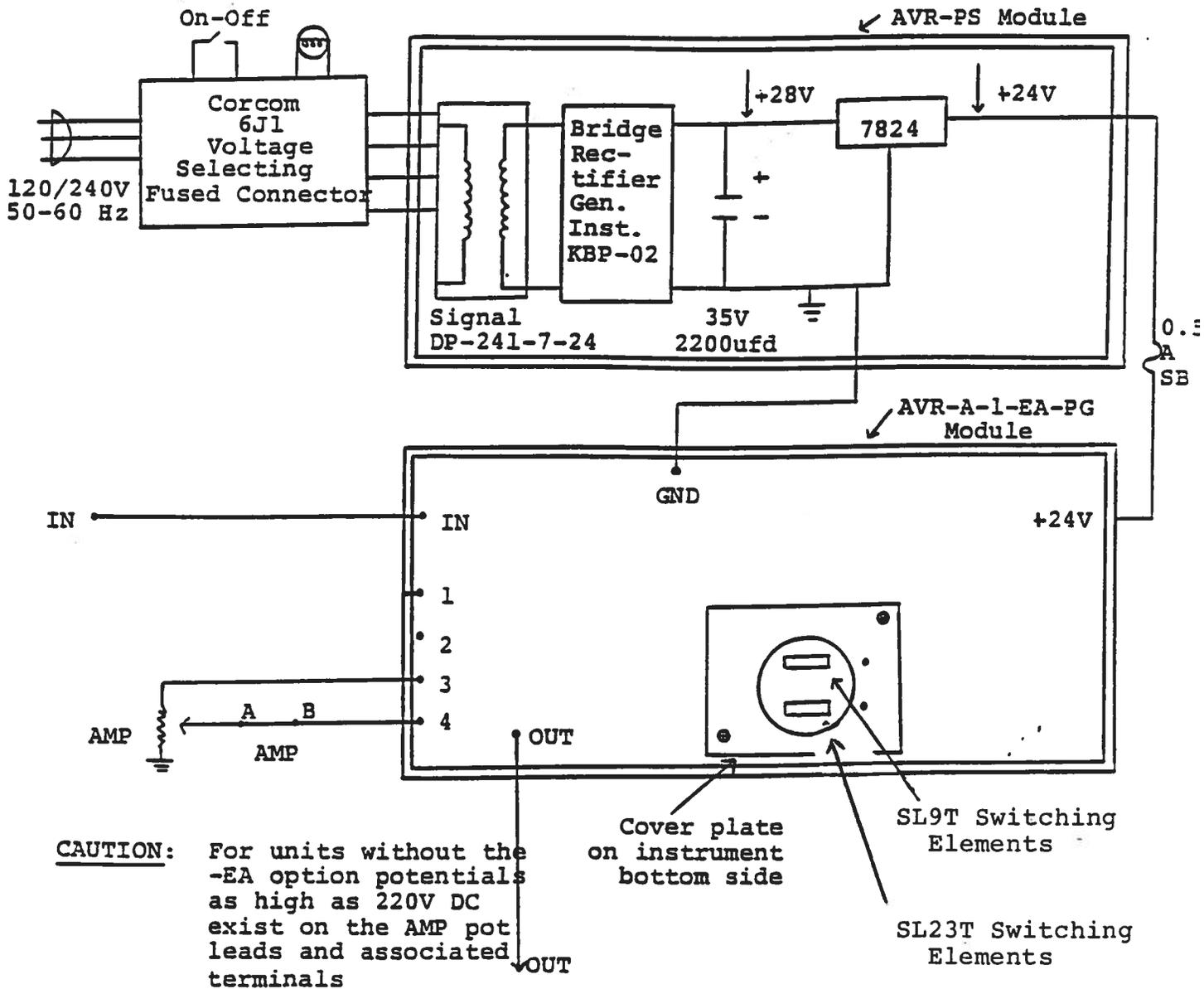
FIG. 3: BACK PANEL CONTROLS



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

**FIG. 4: SYSTEM BLOCK DIAGRAM AND REPAIR PROCEDURE**



## SYSTEM DESCRIPTION AND REPAIR PROCEDURE

- 1) The AVR unit consists of three basic components or modules:
  - a) Metal chassis
  - b) AVR-PS module (Power Supply)
  - c) AVR-PG module (Pulse Generator)
  - d) OL-471 overload module

The modules are interconnected as shown above.

- 2) If the unit malfunctions, first check the rear panel 1.0 SB fuse and then disconnect from the 60 Hz supply and the trigger source and remove the four Phillips screws on the top panel of the unit. With the screws removed, the top cover may be slid off.
- 3) Reconnect the 60 Hz source and check the voltage on the line connecting the -PS output to the +24 V pin of the -PG module. A voltage of +24 Volts should be recorded. If the voltage is substantially less than +24 Volts, disconnect the 60 Hz source and disconnect the line from the +24 Volt pin. Connect a 50 Ohm 8 Watt resistance to the output of the -PS module. Reconnect to the 60 Hz source and measure the voltage across the resistor. A voltage of +24 Volts should be indicated. If the voltage is substantially less than +24 Volts the -PS module is defective and should be either repaired or replaced. If the measured voltage is equal to +24 Volts then the SL9T (or SL23T) switching elements in the -PG module have probably failed. The SL9T switching elements are easily replaced by removing the cover plate on the instrument bottom side and extracting the SL9T switching elements from their sockets using a pair of needle nose pliers. Before attempting this first insure that the prime power is off and also briefly ground the metal tabs on the SL9T elements to the chassis as the bypass capacitors may be charged to 60 Volts. Replacement SL9T units must be ordered directly from Avtech. When reinstalling the SL9T units in their sockets, insure that the shortest of the three terminals is adjacent to the black dot on the -PG chassis.



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June 16, 1997.

Dr. Rao Mangina  
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Gaithersburg, MD 20899-0001

Tel: 301-975-2436  
Fax: 301-948-5796

Dear Rao:

Following our telephone conversation of June 13th, I am pleased to provide the following revised quotation:

- Model designation: AVR-A-1-PS-S1-PN-D-NIST1.
- Price: \$5,119.00 US each, FOB destination.
- Delivery: 60 days ARO.

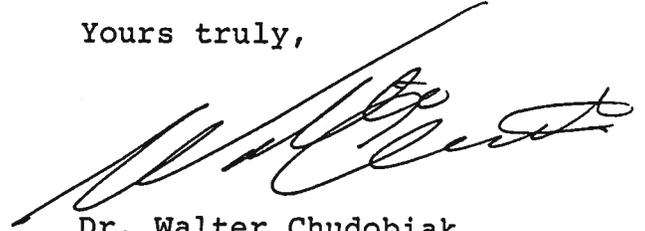
The -NIST1 suffix provides simultaneous positive and negative outputs (two separate connectors but with one common pulse width control and one common amplitude control). The -D suffix provides a one turn control which varies the propagation delay from 150 ns to 1.5 us. The relative delay between the positive and negative outputs is constant within  $\pm 2$  ns (measured over an eight hour period). The absolute propagation delay is constant within  $\pm 5$  ns (measured over an eight hour period).

The rise and fall times are both less than 2 ns and the fall time is normally shorter than the rise time.

From your fax, it would appear that you do not require a -OS option.

Thank you for your continuing interest in our products.  
Please call me again (1-800-265-6681) if you require any  
additional information.

Yours truly,

A handwritten signature in black ink, appearing to read 'Walter Chudobiak', written in a cursive style.

Dr. Walter Chudobiak  
Chief Engineer

WC:pr

November 10 / 97

In Word

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