



# AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS  
SINCE 1975

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## INSTRUCTIONS

**MODEL AVR-3-PW-PS-PN-LUC2 PULSE GENERATOR**

**S.N.:**

## EC Declaration of Conformity

We

Avtech Electrosystems Ltd.  
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Ottawa, Ontario  
Canada K2C 3H4

declare that the AVR-3-PW-PS-PN-LUC2  
pulse generator meets the intent of Directive 89/336/EEC for  
Electromagnetic Compatibility. Compliance pertains to the following  
specifications as listed in the official Journal of the European  
Communities:

EN 50081-1 Emission

EN 50082-1 Immunity



### 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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FIG. 1: PULSE GENERATOR TEST ARRANGEMENT

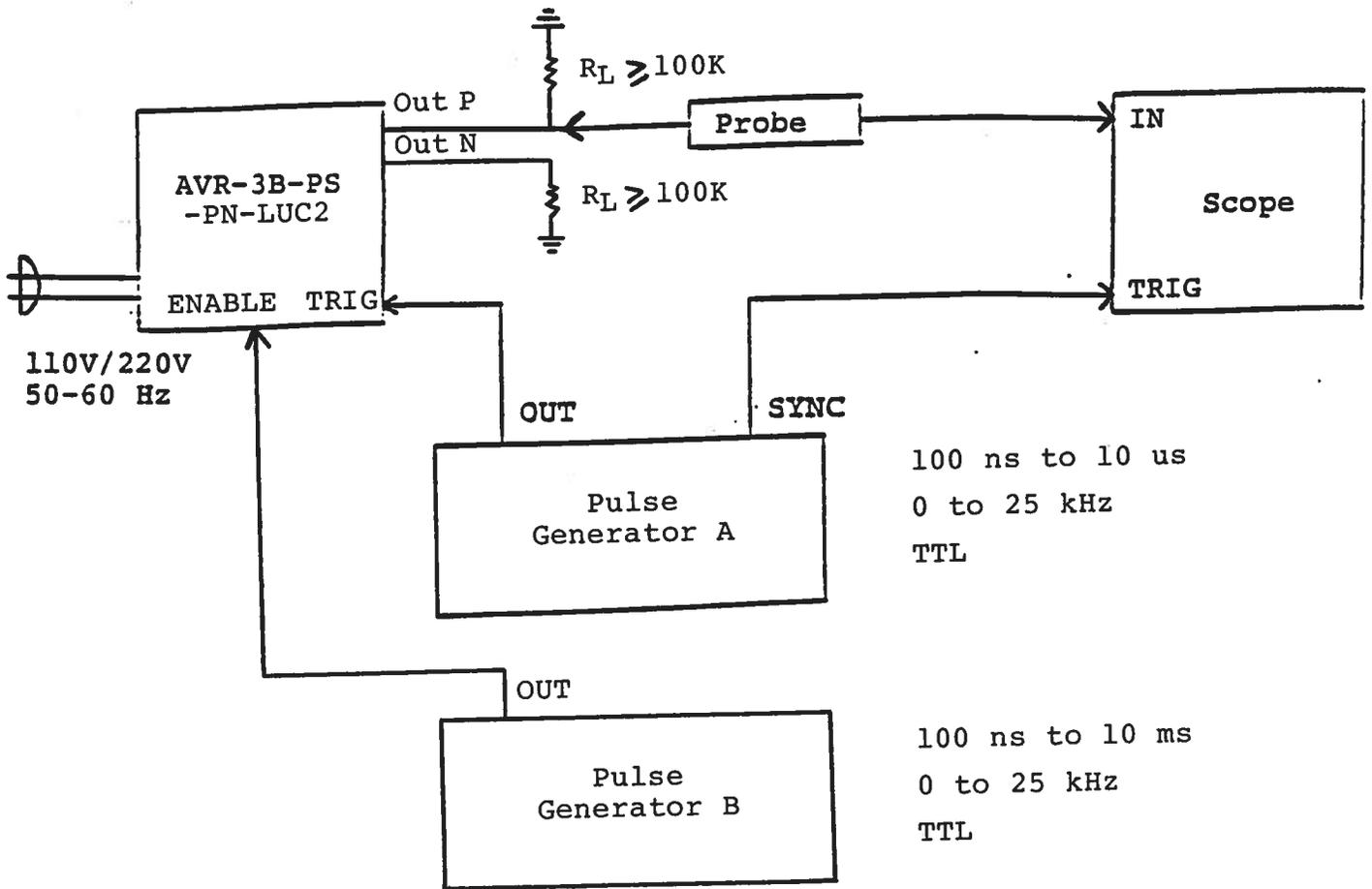
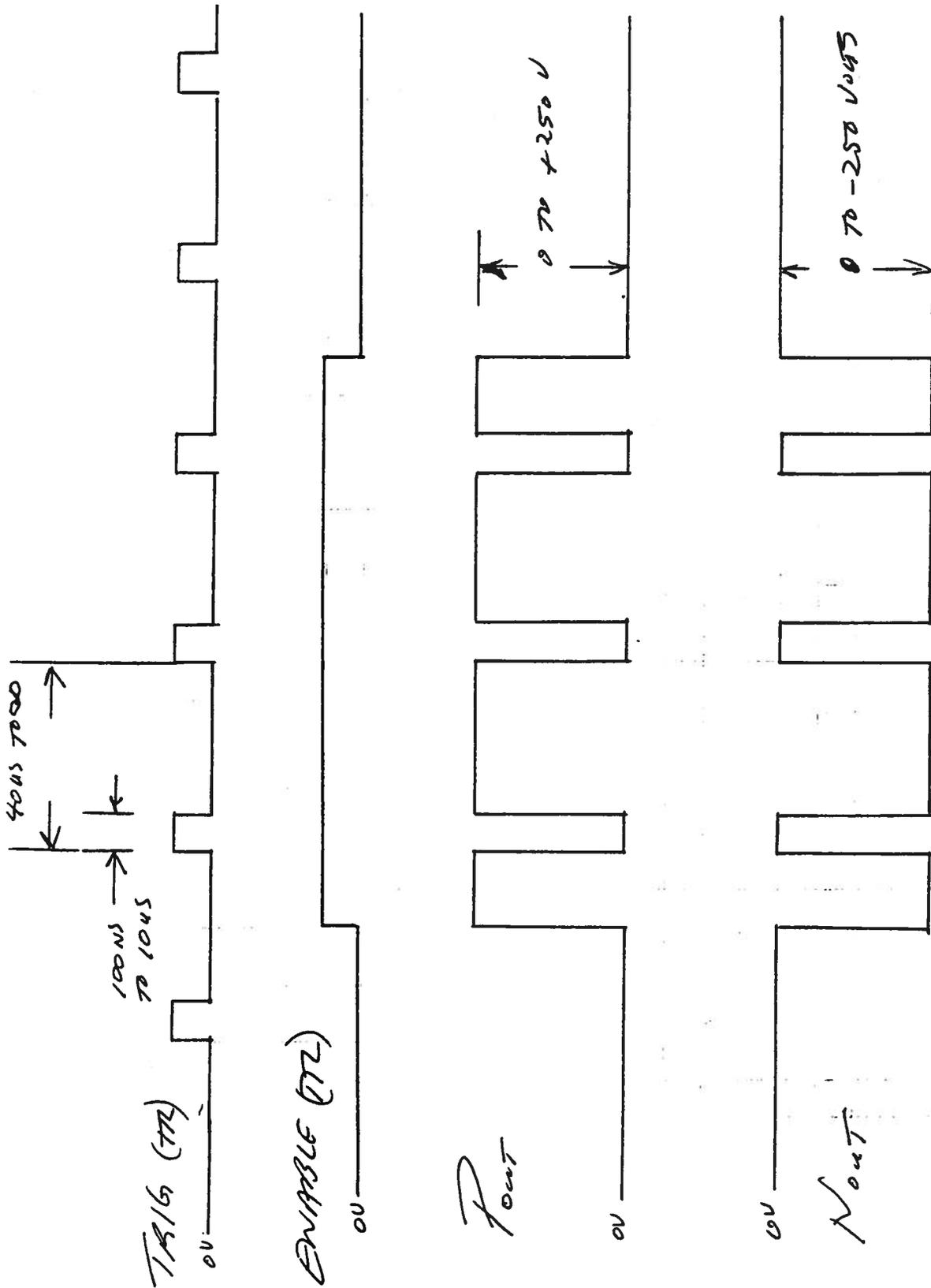


FIG. 1A: MODEL AVR-3-PS-PN-LUC2 WAVEFORMS

4a



## GENERAL OPERATING INSTRUCTIONS

- 1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed 100 MHz. The load resistance should be 100K or higher.
- 2) The basic functions (i.e. input and output waveforms for the unit are illustrated in Fig 1A).
- 3) The output pulse width is controlled by the input trigger pulse width.
- 4) The output pulse amplitude is controlled by means of the front panel ten turn AMP control.
- 5) **CAUTION:** The output stage is protected against overload condition by a 1.0 A slow blow fuse on the main frame back panel. However, the output switching elements may fail if the unit is triggered at a PRF exceeding 10 kHz or at duty cycles resulting in an average output power in excess of 4 Watts. Heating and subsequent likely failure of the output stage is reduced if the following action is taken where possible:
  - a) PRF is kept to a minimum, i.e. operate in a low PRF range when possible rather than in a high PRF range.
  - b) Keep the output PW to a minimum.
- 6) **OVERLOAD INDICATOR.** AVR-3 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) Reducing pulse width (i.e. switch to a lower range)
  - 3) Removing output load short circuit (if any)

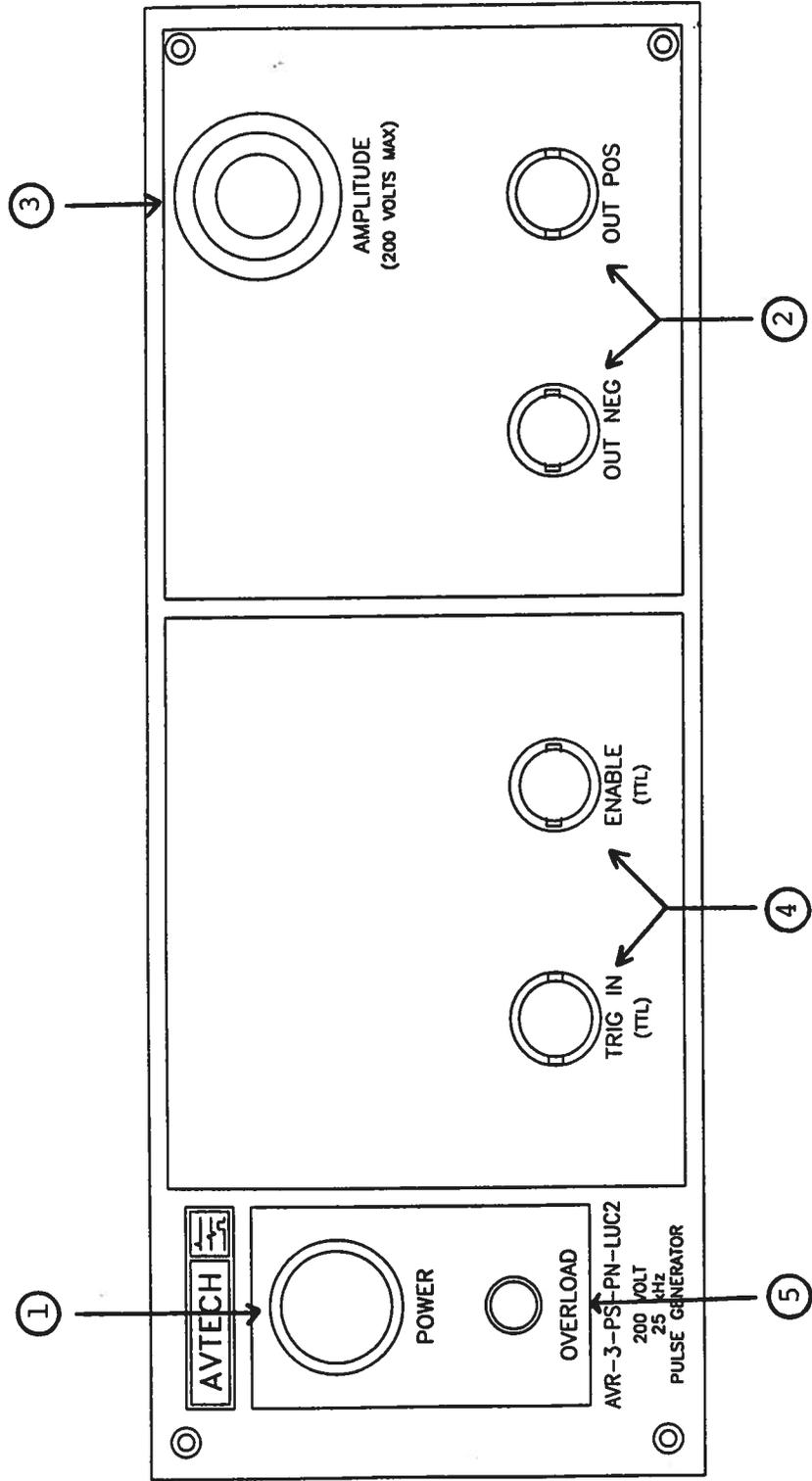
Note that the overload light may illuminate when the prime power is first applied. The light will extinguish after a few seconds and the instrument will then function normally.

Note that the output stage will safely withstand a short circuited load condition.

- 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. 2: FRONT PANEL CONTROLS



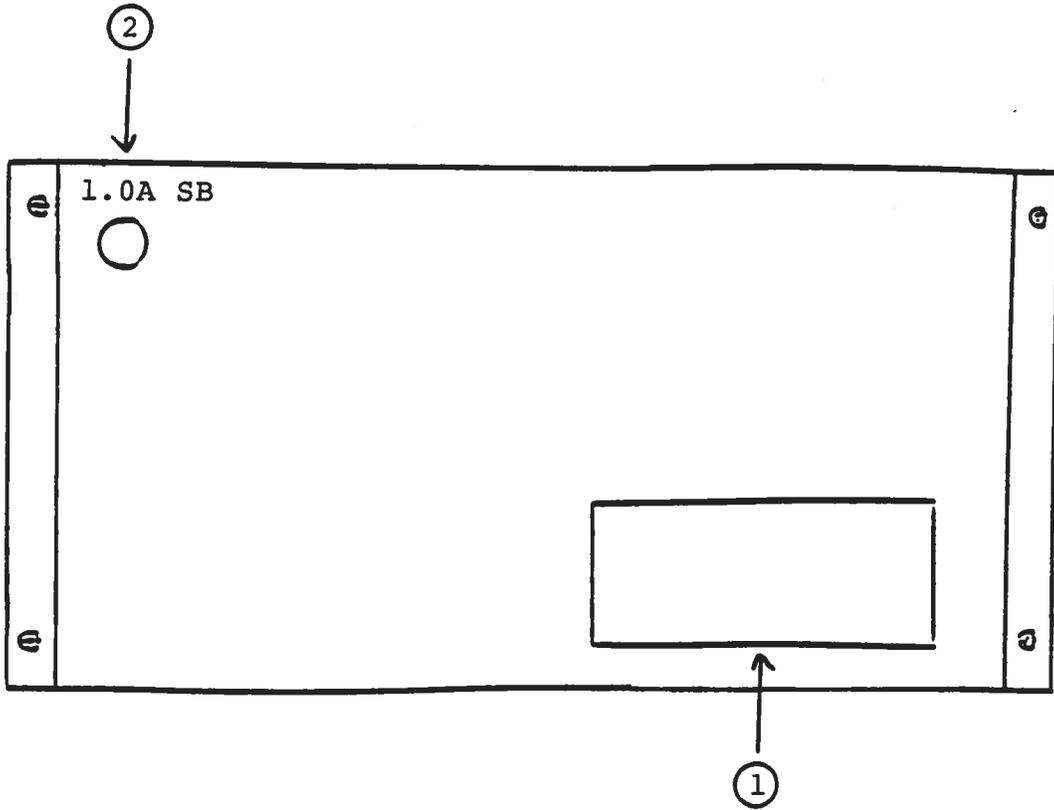
## FRONT PANEL CONTROLS

- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) OUT Connectors. BNC connectors provide output to the load ( $R_L \geq 100K$ ).
- (3) AMP Control. A ten turn control which varies the output pulse amplitude from 0 to  $\pm 200$  V.
- (4) TRIG and ENABLE Input. The external trigger signals are applied at these inputs (TTL).
- (5) OVERLOAD INDICATOR. AVR-3 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) Reducing pulse width (i.e. switch to a lower range)
  - 3) Removing output load short circuit (if any)

Note that the overload light may illuminate when the prime power is first applied. The light will extinguish after a few seconds and the instrument will then function normally.

Note that the output stage will safely withstand a short circuited load condition.

FIG. 3: BACK PANEL CONTROLS (EA, EW OPTION UNITS)



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

## SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVR-3-PW-PN consists of the following basic modules:

- 1) AVR-3-PW-PG pulse generator modules (-P and -N)
- 2) +24V power supply board
- 3) AVR-3-PS power supply modules (-P and -N)

In the event of an instrument malfunction, it is most likely that one of the rear panel fuses or some of the output switching elements (SL22T) may have failed due to an output short circuit condition or to a high duty cycle condition. The switching elements may be accessed by removing the cover plates on the bottom side of the instrument. **NOTE:** First turn off the prime power. The elements may be removed from their sockets by means of a needle nosed pliers. The SL22T is a selected VMOS power transistor in a TO 220 packages and may be checked on a curve tracer. If defective, replacement units should be ordered directly from Avtech. When replacing the SL22T switching elements, take care to insure that the short lead (of the three leads) is adjacent to the black dot on the chassis.

PERFORMANCE CHECK SHEET



Aug 14/98

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