



AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

P.O. BOX 265
OGDENSBURG, NY
U.S.A. 13669-0265
TEL: (315) 472-5270
FAX: (613) 226-2802

TEL: 1-800-265-6681
FAX: 1-800-561-1970

e-mail: info@avtechpulse.com
<http://www.avtechpulse.com>

P.O. BOX 5120 STN. F
OTTAWA, ONTARIO
CANADA K2C 3H4
TEL: (613) 226-5772
FAX: (613) 226-2802

*word diagrams
all correct
trf. 01-22-02*

INSTRUCTIONS

MODEL AV-106A-PS-KMPIA 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

Fax: 613-226-2802 or 1-800-561-1970

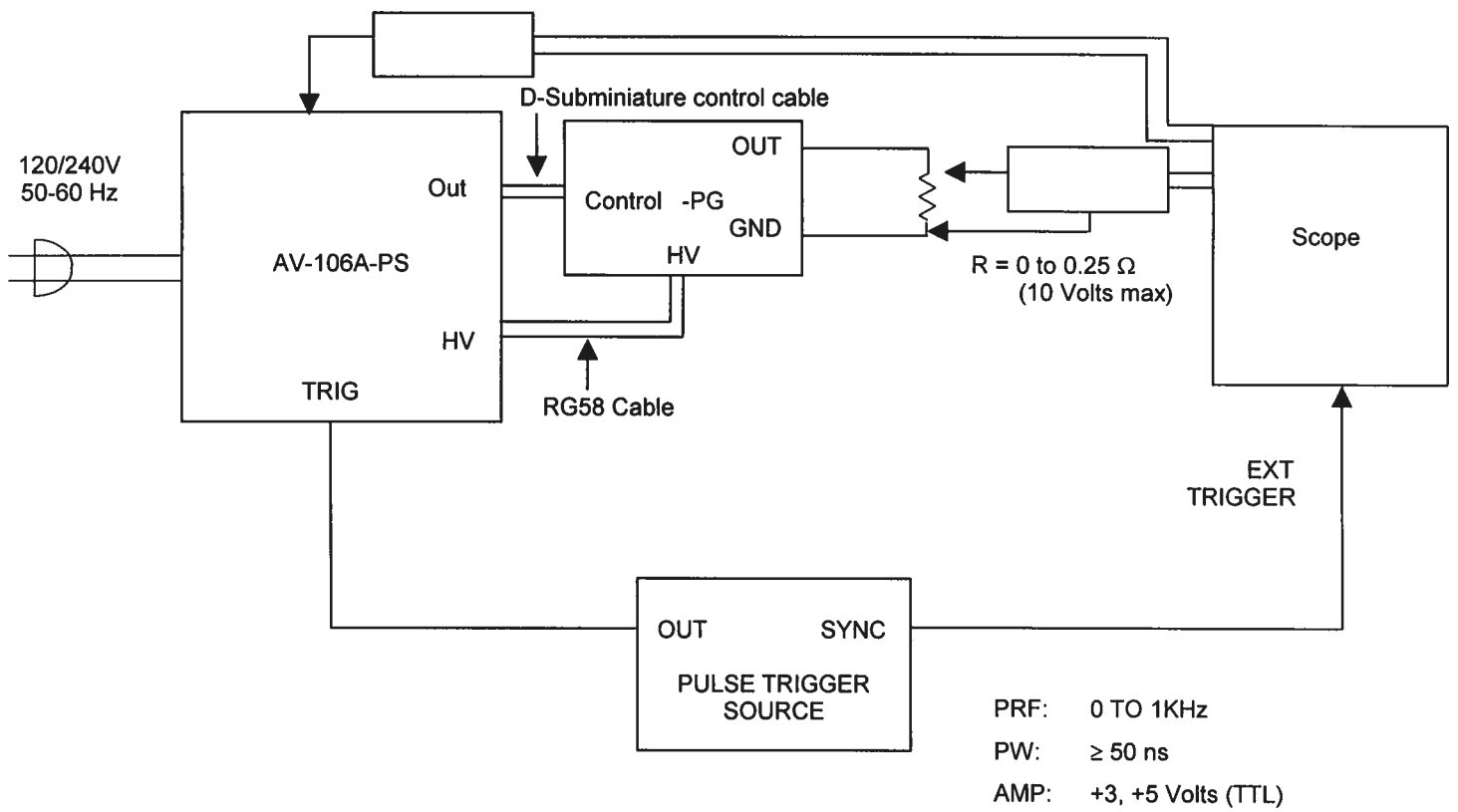
E-mail: info@avtechpulse.com

World Wide Web: <http://www.avtechpulse.com>

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FIG. 1 : PULSE GENERATOR TEST ARRANGEMENT



GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above. Since the unit provides an output pulse rise time as low as 200 ns a fast oscilloscope (at least 50 MHz) should be used to display the waveform.
- 2) The -PG module is connected to the mainframe as shown in Fig. 1. The 25-pin D-subminiature cable must be connected between the "OUT" connector on the rear-panel of the mainframe and the "Control" connector on the -PG module. (The output module should always be connected to the mainframe BEFORE power is applied).
- 3) The 5-foot long RG58 cable must be connected between the BNC "HV" connectors on the mainframe back panel and the output module.
- 4) When the Mode switch is in the A position, the output pulse width is controlled by means of the front panel ten-turn PW control and two-position range position.

When the Mode switch is in the B position, the output pulse width is controlled by the pulse width of a TTL pulse applied to the TRIG BNC.

CAUTION: The applied pulse width must not exceed 100 us.

- 5) The output pulse amplitude is controlled by means of the front panel AMP control in two ranges, as follows:

0 to 4.0 Amp
0 to 40 Amp

- 6) The load should be connected between the OUT and GND terminals using very short leads (≤ 0.5 cm).
- 7) **CAUTION:** When driving fragile loads (such as laser diodes) it is recommended that the front panel "Operate-Standby" switch be placed in the "Standby" position before turning on or turning off the prime power. When the switch is in the "Standby" position a short circuit is placed across the OUT terminals.
- 8) **M Option.** The SMA output port (M) on the back panel provides a replica of the output current pulse. The output pulse load current (Amps) and the M output voltage (Volts) are related as follows:

$$I_{\text{LOAD}} = 114 V_M$$

For example, for a V_M output of 0.2V, the load current would be 22.8 Amperes. Note that the calibration of the M outputs is valid only when terminated into a

high impedance ($R_L \geq 1K$). Also note that the monitor function rise time is about 2.0 μ s.

- 9) **CAUTION:** The AV-106A unit is designed to provide 0 to 40 Ampere pulses to a load voltage in the range of 0 to 10 Volts. Insure that the load can dissipate up to 400 Watts peak power.
- 10) **OVERLOAD.** An automatic overload protective circuit 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)
 - 3) Reducing the output amplitude (i.e. switch to a lower range)

The overload light may illuminate when the prime power is first applied. The light will extinguish after a few seconds and the unit will then operate normally.

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

- 11) The unit can be converted from 120 to 240V 50-60 Hz operation by adjusting the voltage selector card in the rear panel fused voltage selector cable connector assembly.
- 12) For additional assistance:

Tel: (613) 226-5772
Fax: (613) 226-2802
Email: info@avtecpulse.com

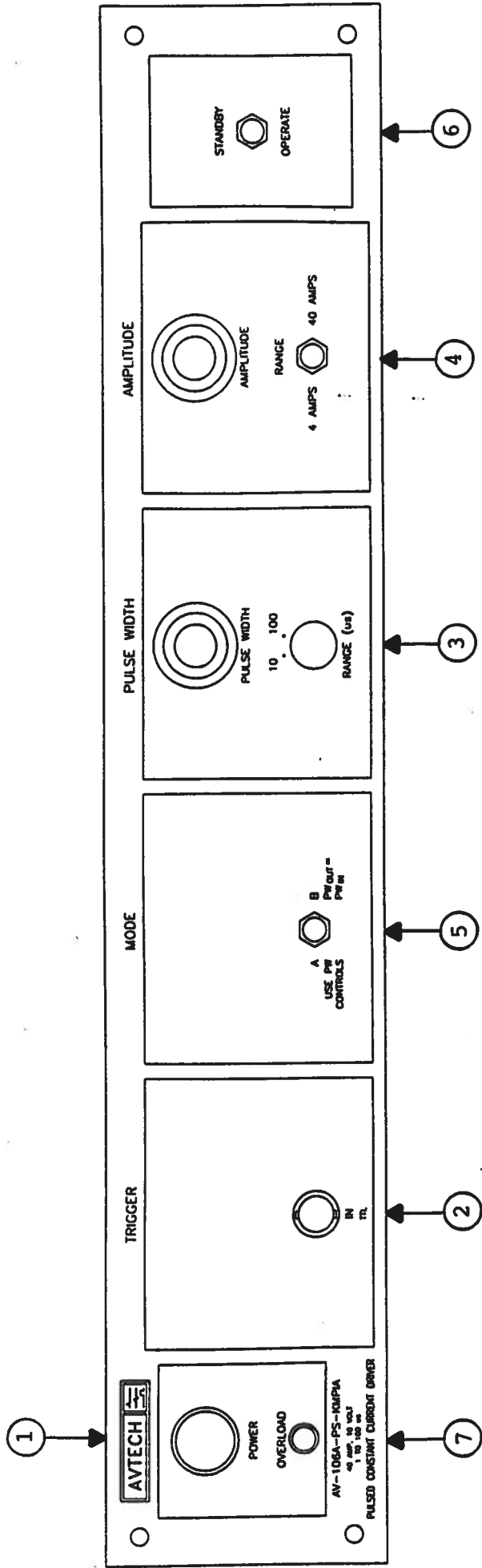


FIG. 2: FRONT PANEL CONTROLS

FRONT PANEL CONTROLS

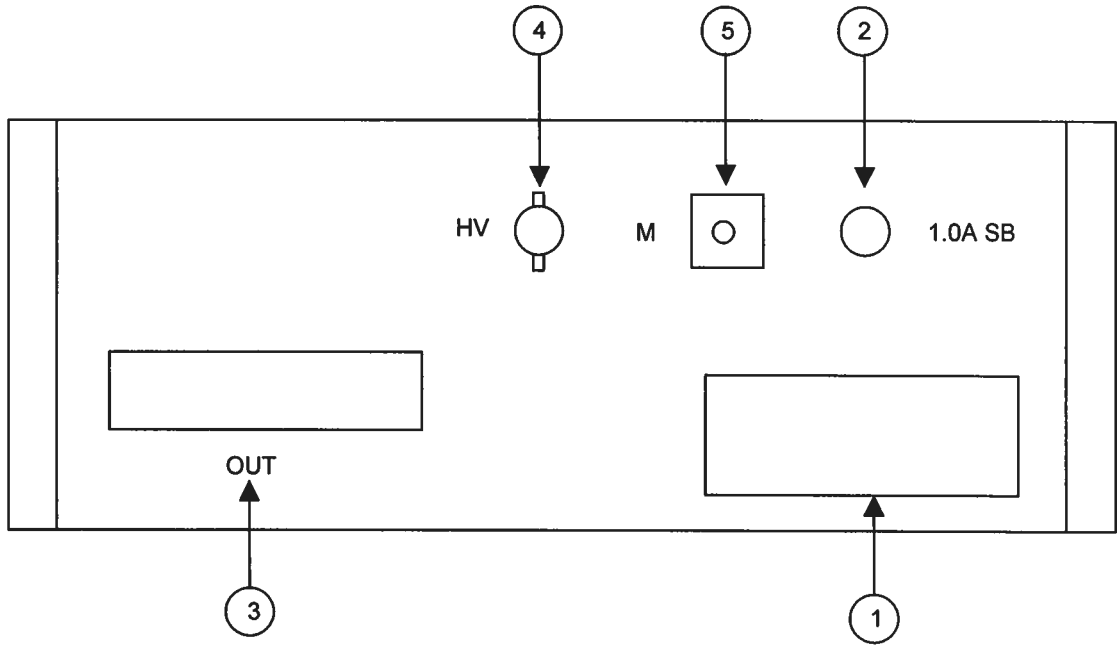
- 1) **ON-OFF Switch.** Applies basic prime power to all stages.
- 2) **IN.** The TTL level external trigger signal is applied at this input when the EXT toggle switch is in the EXT position. The output pulse appears about 150 ns after the application of the TRIG pulse.
- 3) **PW Control.** A ten-turn control and two-position range switch which vary the output pulse width from 1 μ s to 10 μ s and from 10 μ s to 100 μ s.
- 4) **AMP Control.** The output pulse amplitude is controlled by means of the ten-turn potentiometer and the two-position range switch as follows:

0 to 4.0 Amp
0 to 40.0 Amp
- 5) **MODE Switch.** With the MODE switch in the A position, the output pulse width is controlled by the PW controls. With the MODE switch in the B position, the output pulse width equals the input trigger pulse width applied to the "IN" BNC.
- 6) **Operate-Standby.** When driving fragile loads (such as laser diodes) it is recommended that the front panel "OPERATE-STANDBY" switch be placed in the STANDBY position before turning on or turning off the prime power. When the switch is in the STANDBY position a short circuit is placed across the OUT terminals.
- 7) **OVERLOAD.** An automatic overload protective circuit 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)
 - 3) Reducing the output amplitude (i.e. switch to a lower range)

The overload light may illuminate when the prime power is first applied. The light will extinguish after a few seconds and the unit will then operate normally.

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

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.

For AC line voltages of 110-120V, the power selector card should be installed so that the "120" marking is visible from the rear of the instrument.

For AC line voltages of 220-240V, the power selector card should be installed so that the "240" marking is visible from the rear of the instrument.

If it is not set for the proper voltage, remove the fuse and then grasp the card with a pair of pliers and remove it. Rotate horizontally through 180 degrees. Reinstall the card and the correct fuse.

In the 120V setting, a 1.0A slow blow fuse is required. In the 240V setting, a A slow blow fuse is required.

- 2) 1.0A SB. This fuse limits the current supplied to the output module.
- 3) OUT. The -PG module is connected to the mainframe as shown in Fig. 1. The 25-pin D-subminiature cable must be connected between the "OUT" connector on the rear-panel of the mainframe, and the "Control" connector on the -PG module. The output module should always be connected to the mainframe BEFORE power is applied).
- 4) HV. The 5-foot long RG58 cable must be connected between the BNC "HV" connectors on the mainframe back panel and the output module.
- 5) M Option. The BNC output port (M) on the back panel provides a replica of the output current pulse. The output pulse load current (Amps) and the M output voltage (Volts) are related as follows:

$$I_{LOAD} = 114 V_M$$

For example, for a V_M output of 0.2V, the load current would be 22.8 Amperes. Note that the calibration of the M outputs is valid only when terminated into a high impedance ($R_L \geq 1K$). Also note that the monitor function rise time is about 2.0 μ s.

March 15/01
(Wed. A)