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INSTRUCTIONS

MODEL AVOZ-A1A-C-PN 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 dissembled, 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

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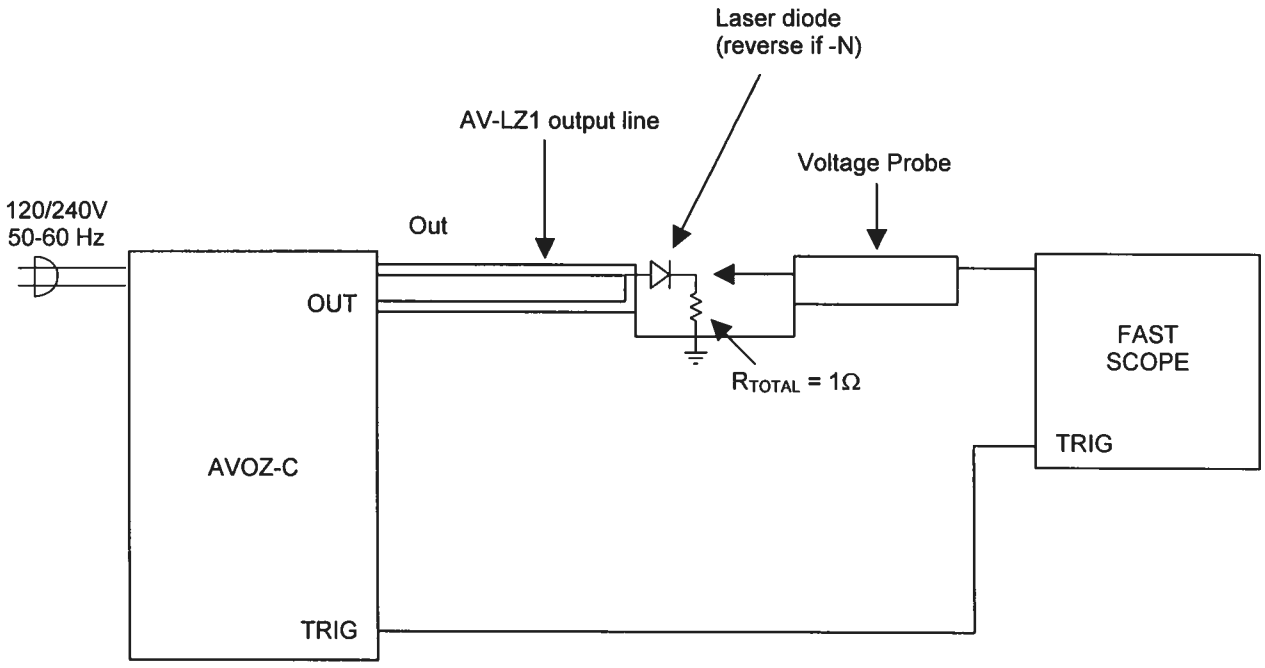
Manual Reference: Q:\office\instructword\Avoz\AVOZ-A1A-C-PN-eda-fig.doc, created February 23, 2001

FIG. 1: MODEL AVOZ-C PULSE GENERATOR TEST ARRANGEMENT

(RESISTIVE LOAD, NO DIODE)



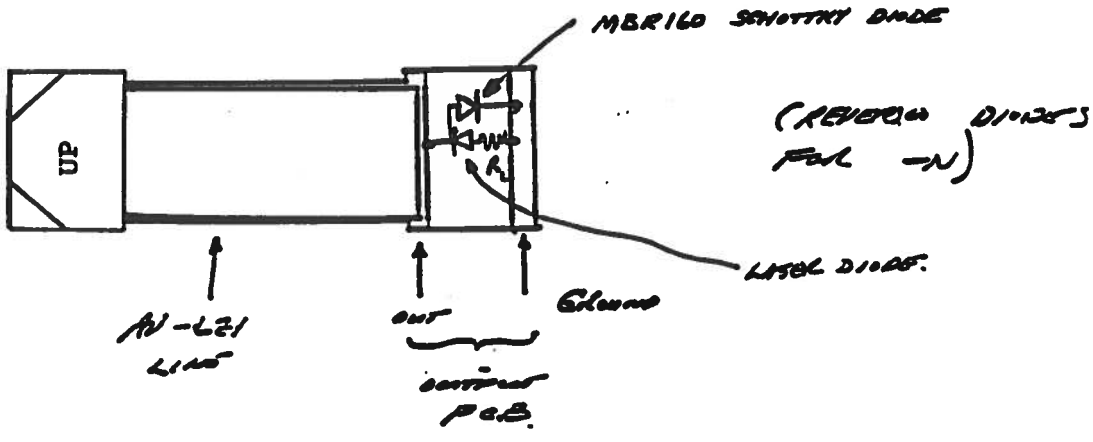
GENERAL OPERATING INSTRUCTIONS

1) The equipment should be connected in the general fashion shown above. Since the AVOZ unit provides an output pulse rise time as low as 10 ns a fast oscilloscope (at least 50 MHz and preferably 200 MHz) should be used to display the waveform. If a sampling scope is used, a 40 dB (or greater) attenuator should be used to insure a peak input to the scope of less than 0.5 Volts.

2) The TRIG output channel provides TTL level signals. The TRIG output precedes the main output when the front panel ADVANCE-DELAY switch is in the ADVANCE position. The TRIG output lags the main output when the switch is in the DELAY position.

3) To obtain a stable output display the PRF controls on the front panel should be set mid-range. The front panel mode switch should be in the INT position. The front panel DELAY control 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 controls.

4) The detachable AV-LZ1 flexible output line which protrudes from the front panel of the mainframe has a characteristic impedance of one Ohm. The diode load and a non-inductive load resistor should be solder connected to the end of the line as shown below (using extremely short lead lengths (e.g. 0.2 cm) so as to reduce inductance). The series combination of the laser diode and the load resistor R_L should present one Ohm to the end of the line. For many diodes, a load resistor of one Ohm may be selected as a first choice. The diode current may be monitored by monitoring the voltage across the resistor (or by means of a current probe). An ultra fast rectifier diode (e.g. MBR160) may be placed across the laser diode to protect against reverse transients.



The AV-LZ1 cable inserts into the female out connector on the front panel. It is critically important that the "up" side of the line be visible.

5) The output polarity switch is controlled by the front panel two-position polarity switch. OUT P is activated when the switch is in the POS position and OUT N is activated when the switch is in the NEG position.

6) The output pulse width is controlled by means of the front panel ten-turn PW control.

7) The output pulse amplitude is controlled by means of the front panel ten-turn AMP control.

8) An external clock may be used to control the output PRF of the unit by setting the front panel MODE switch in the EXT position and applying a 50 ns (or wider) TTL level pulse to the TRIG BNC connector input.

9) For single pulse manual operation, set the front panel MODE switch in the MAN position and push the SINGLE PULSE button.

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 or by operating into a very low impedance), 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)
    4) Reducing the output amplitude (i.e. switch to a lower range).

11) The unit can be converted from 120 to 240 Volts, 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
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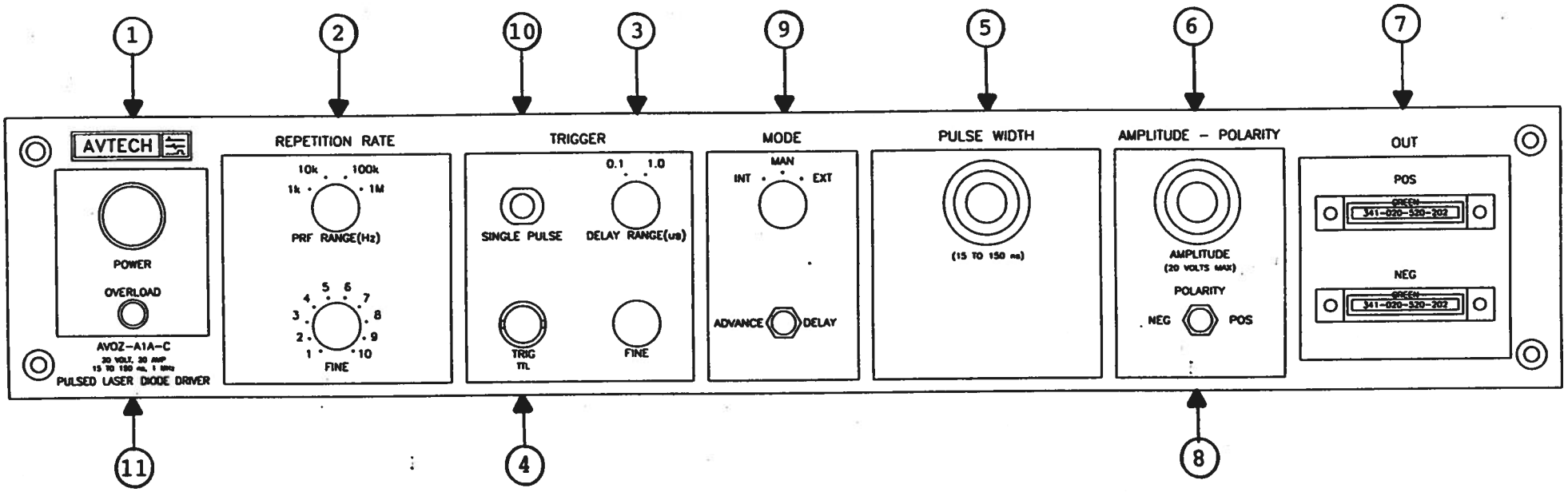


FIG. 2: FRONT PANEL CONTROLS

FRONT PANEL CONTROLS

(1) ON-OFF Switch. Applies basic prime power to all stages.

(2) PRF Control. Varies PRF as follows:

RANGE 1	100 Hz - 1 kHz
RANGE 2	1 kHz - 10 kHz
RANGE 3	10 kHz - 100 kHz
RANGE 4	100 kHz - 1 MHz

(3) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (4) and the main output (7). This delay is variable over the range of 0 to about 1.0 us. The TRIG output precedes the main output when the ADVANCE-DELAY switch is in the ADVANCE position and lags when the switch is in the DELAY position.

(4) TRIG Output. This output precedes the main output (7) and is used to trigger the sampling scope time base. The output is a TTL level 100 ns (approx) pulse capable of driving a fifty Ohm load.

(5) PW Control. A ten-turn control which varies the output pulse width from 15 ns to 150 ns.

(6) AMP Control. The output pulse amplitude is controlled by means of the ten-turn potentiometer (AMP).

(7) OUT. Detachable 1 meter long AV-LZ1 flexible output line inserts into female connector from the front panel. Diode load and series matching resistor to be solder connected to end of line. Total resistance to equal one Ohm to obtain 20 amperes when mainframe outputs 20 Volts.

(8) POLARITY. The output polarity is controlled by the two-position polarity switch. OUT P is activated when the switch is in the POS position and OUT N is activated when the switch is in the NEG position.

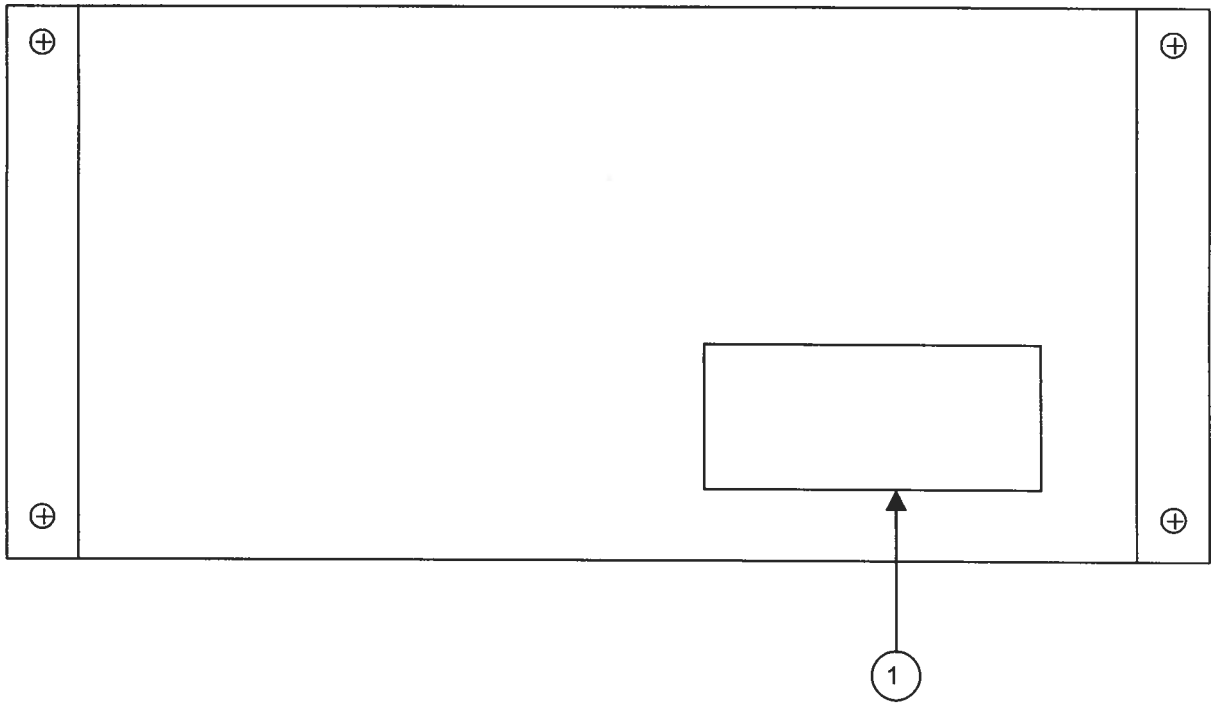
(9) EXT-INT Control. With this switch in the INT position, the PRF of the unit is
(10) controlled via an internal clock which in turn is controlled by the PRF controls. With the switch in the EXT position, the unit requires a 50 ns (or wider) TTL level pulse applied at the TRIG input in order to trigger the output stages. For a single pulse output, the switch should be in the "MAN" position and then push single pulse (10).

(11) AVOZ 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) until the overload is 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)

In extreme cases it may be necessary to briefly (e.g. 10 seconds) remove the prime power to the instrument.

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.

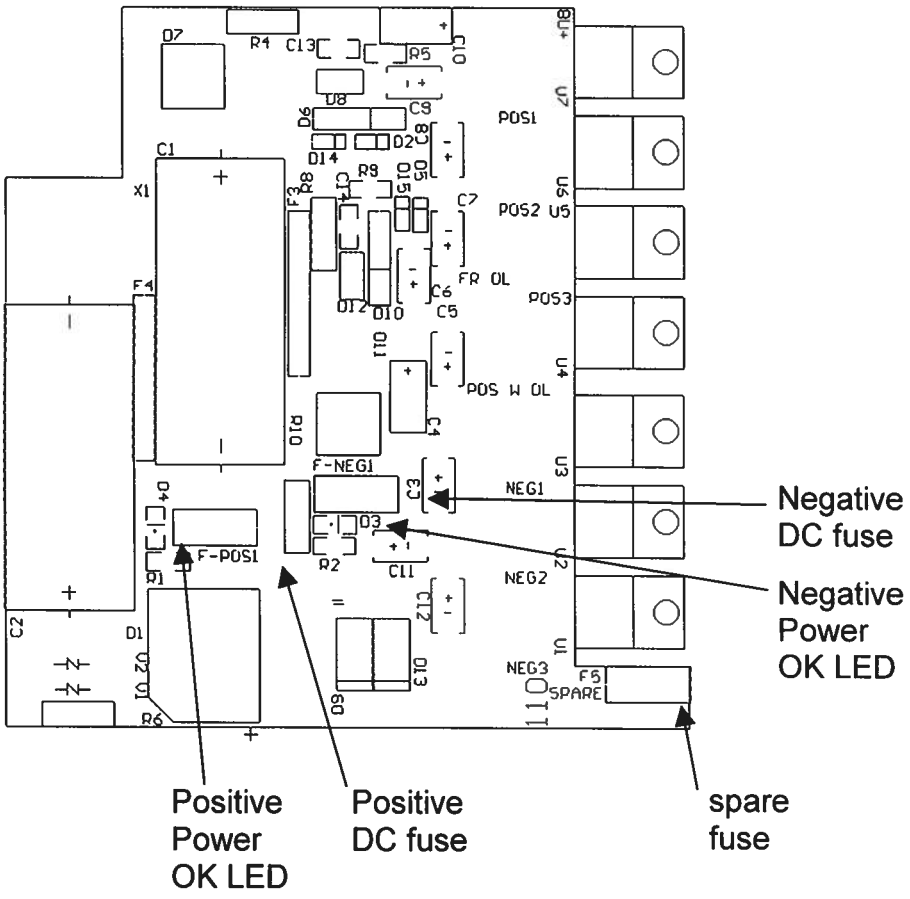
If it is not set for the proper voltage, remove the fuse and then grasp the card with a pair of pliers and remove it. Rotate horizontally through 180 degrees. Reinstall the card and the correct fuse.

In the 120V setting, a 0.5A slow blow fuse is required. In the 240V setting, a 0.25A slow blow fuse is required.

POWER SUPPLY AND FUSE REPLACEMENT

This instrument has three fuses (plus one spare). One, which protects the AC input, is located in the rear-panel power entry module, as described in the "Rear Panel Controls" section of this manual. If the power appears to have failed, check the AC fuse first.

The other two fuses (plus one spare) are located on the internal DC power supply, as shown below:



The positive fuse and the spare fuse on this circuit board are 1A slow-blow fuses, Littlefuse part number R452001. (This fuse can be ordered from Digikey, www.digikey.com. The Digikey part number is F1343CT-ND). The negative fuse is a 0.5A slow-blow fuse (Littlefuse R452.500, Digikey part number F1341CT-ND).

If you suspect that the DC fuses are blown, follow this procedure:

1. Remove the top cover, by removing the four Phillips screws on the top cover and then sliding the cover back and off.

2. Locate the two "Power OK" LEDs on the power supply circuit board, as illustrated above.

3. Turn on the instrument.

4. Observe the "Power OK" LEDs. If the fuses are not blown, the two LEDs will be lit (bright red). If one of the LEDs is not lit, the fuse next to it has blown.

5. Turn off the instrument.

6. If a fuse is blown, use needle-nose pliers to remove the blown fuse from its surface-mount holder.

7. Replace the fuse.

Feb. 23/2001
(ed. A)