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SINCE 1975

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INSTRUCTIONS

MODEL AV-155-C-AE1 PULSE GENERATOR

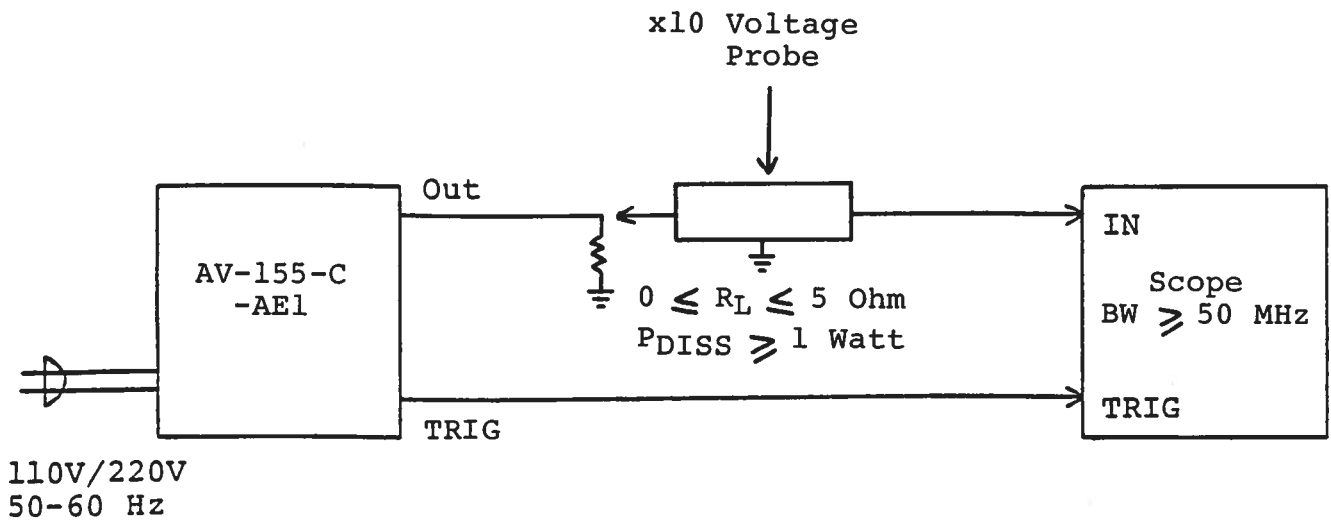
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WARRANTY

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.

Fig. 1

PULSE GENERATOR TEST ARRANGEMENT



Notes:

- 1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed 50 MHz.
- 2) The pulse generator should be terminated in a low impedance load ($0 \leq R_L \leq 5 \text{ Ohm}$). The unit will not function as a pulsed constant current source if the load voltage exceeds five Volts.
- 3) The TRIG output channel provides TTL level signals when the ADVANCE-DELAY switch is in the ADVANCE position. The TRIG output precedes the main output when the front panel ADVANCE-DELAY switch is in the ADVANCE position. This delay is variable by about 0 to 1 us using the one turn DELAY control. The TRIG output is a coincident replica of the main output when the switch is in the DELAY position and so the user may find it easier to trigger the display scope in this configuration.
- 4) The PULSE thumbwheel switch should be set on any number between 2 and 9. A bipolar output is not provided if set on one or zero.
- 5) To obtain a stable output display the PRF control on the front panel should be set mid-range. The front panel TRIG toggle switch should be in the INT position. The front panel DELAY controls 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 control.
- 6) The output pulse width is controlled by means of the front panel ten turn pulse width control.
- 7) The output pulse amplitude is controlled by means of the front panel ten turn AMP control.
- 8) The output rise and fall times may be varied from 0.2 to 2.0 us using the one turn rise time and fall time controls.
- 9) An external clock may be used to control the output PRF of the AV-155 unit by setting the front panel TRIG toggle switch in the EXT position and applying a 50 ns (or wider) TTL level pulse to the TRIG BNC connector input. For operation in this mode, the scope time base must also be triggered by the external clock.

10) AV-155 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)

Note that the overload LED may light when the 60 Hz prime power is turned on. If this occurs, the LED should go out after several seconds and then the output should appear. If the output does not appear, simply turn the 60 Hz off and on once and the output will appear.

11) The AV-155 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.

12) For additional assistance:

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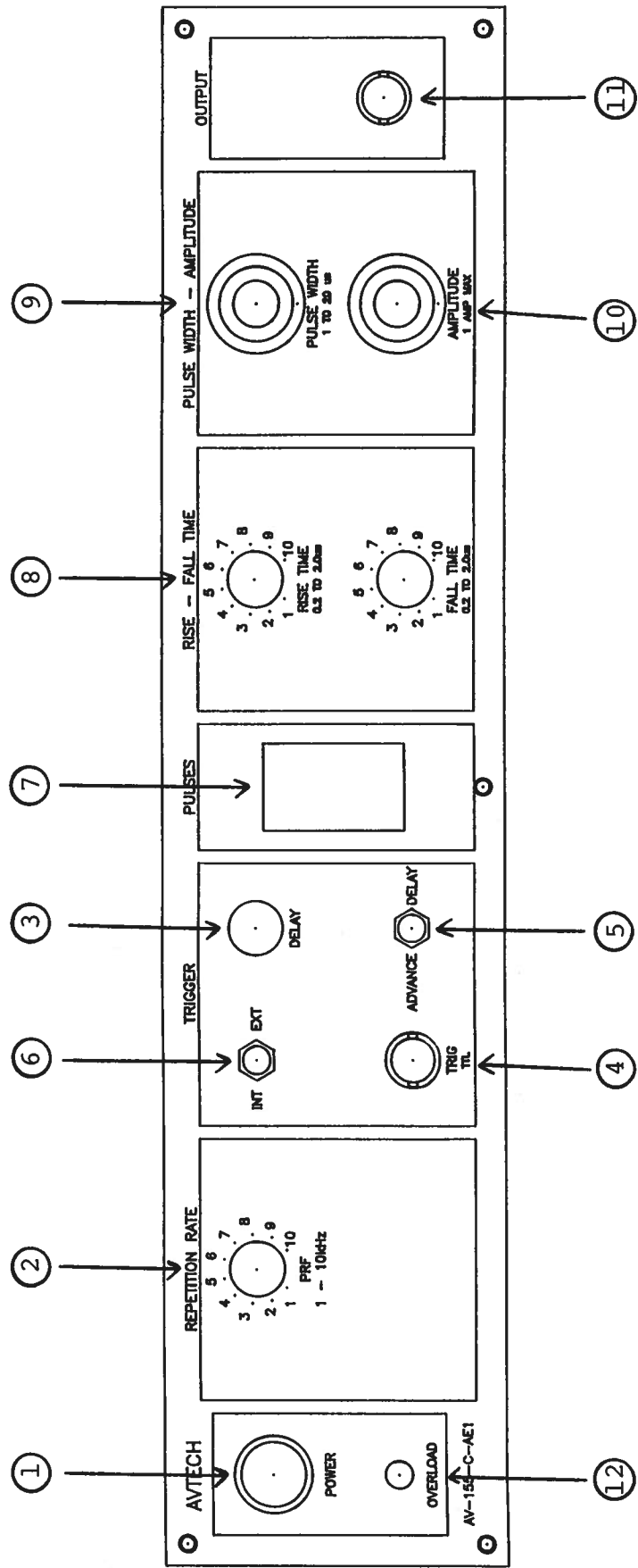


Fig. 2 FRONT PANEL CONTROLS

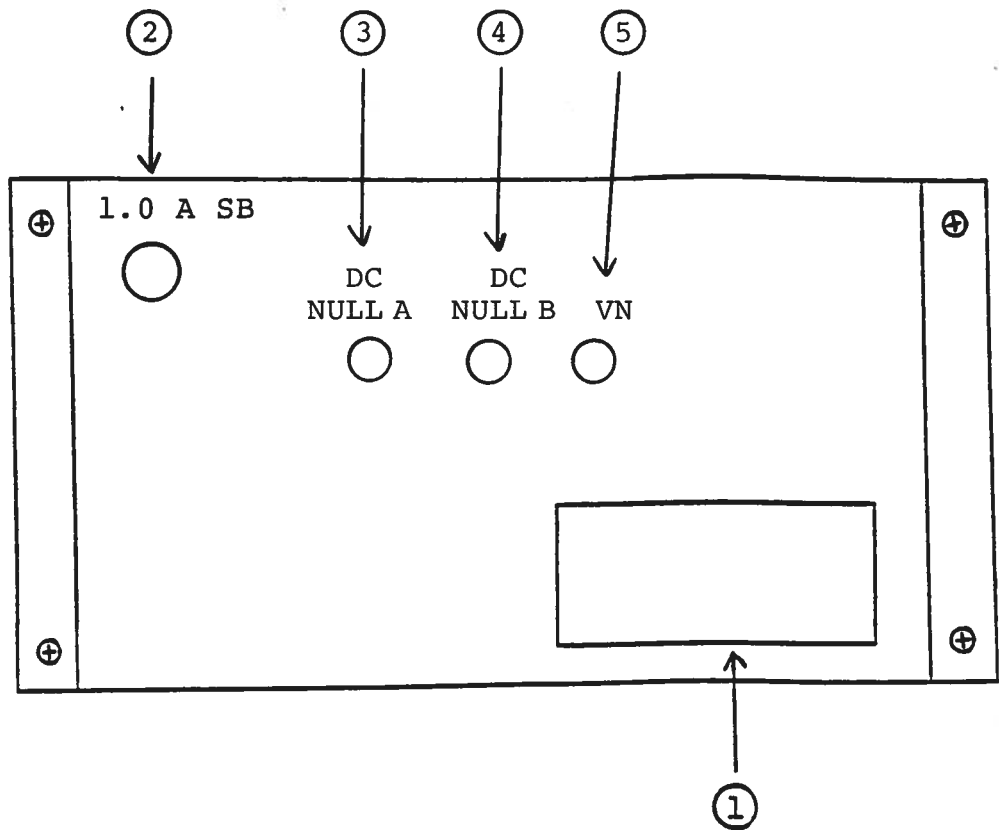
- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. Varies output PRF from 1 kHz to 10 kHz.
- (3) DELAY Control. When the ADVANCE-DELAY switch (5) is in the ADVANCE position, controls the relative delay between the reference TTL output pulse provided at the TRIG output (4) and the main output (11). This delay is variable over the range of 10 ns to 1.0 us.
- (4) TRIG Output. When the ADVANCE-DELAY switch (5) is in the ADVANCE position, this output precedes the main output (11) and is used to trigger the scope time base. The output is a TTL level 100 ns (approx) pulse capable of driving a fifty Ohm load. When the ADVANCE-DELAY switch (5) is in the DELAY position, the TRIG output is a coincident replica of the main output (11).
- (5) ADVANCE-DELAY. See (4).
- (6) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AV-155 unit is controlled via an internal clock which in turn is controlled by the PRF control. With the toggle switch in the EXT position, the AV-155 unit requires a 50 ns (or wider) TTL level pulse applied at the TRIG input in order to trigger the output stages. In addition, in this mode, the scope time base must be triggered by the external trigger source.
- (7) PULSE. A thumbwheel switch varies the number of output pulses per cycle from 2 to 9.
- (8) RISE, FALL TIME. Two one turn controls which independently vary the rise and fall time from 0.2 to 2.0 us.
- (9) PW Control. A 10 turn control which varies the output pulse width from 1 to 20 us.
- (10) AMP Control. A ten turn control which varies the output pulse amplitude from 0 to 1.0 Ampere (for a maximum load voltage of 5 Volts).
- (11) OUT. Connector provides output to low impedance load ($0 \leq R_L \leq 5 \text{ Ohm}$).

(12) OVERLOAD INDICATOR. AV-155 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)

Fig. 3

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 Amp).
- 2) 1.0 A SB. Fuse limits the current supplied to the output stage in cases of severe overloading.
- 3) DC NULL A. A one turn control used to obtain a zero mean DC offset.
- 4) DC NULL B. A one turn control used to obtain a zero DC offset during the pulse burst.
- 5) VN. A one turn control used to equalize the positive and negative pulse amplitudes.

SYSTEM DESCRIPTION AND REPAIR

The AV-155-C-AE1 consists of:

- AV-155-AE1-PG pulse generator module
- AV-155-CL2 clock module
- AV-155-PW2 pulse width module
- AV-155-OL overload module
- PS-15 -15 Volt power supply module
- +24 power supply board

The -CL2 module controls the pulse repetition frequency while the -PW2 module controls the output pulse width. The -PG module acts as a voltage to current converter.

If no output is obtained, first check the two rear panel fuses. If the fuses are OK then remove the top cover (by removing the four Phillips screws on the back panel). The top cover may then be slid back and off. Then check the voltage at PINS 6 & 7 on the -PG module (should be -15V and +15V). Also, check the waveform at PIN 1 of the -PG module. This should be a TTL level pulse of the desired pulse width. If the correct waveforms and power supply levels are obtained then the -PG module is probably defective and the unit should be returned to Avtech for repair.

Sept. 11/95

Disk: AV-150

Name: 155CAE1.INS