

AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
ENGINEERING - MANUFACTURING

□ P.O. BOX 265
OGDENSBURG
NEW YORK
13669
(315) 472-5270

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

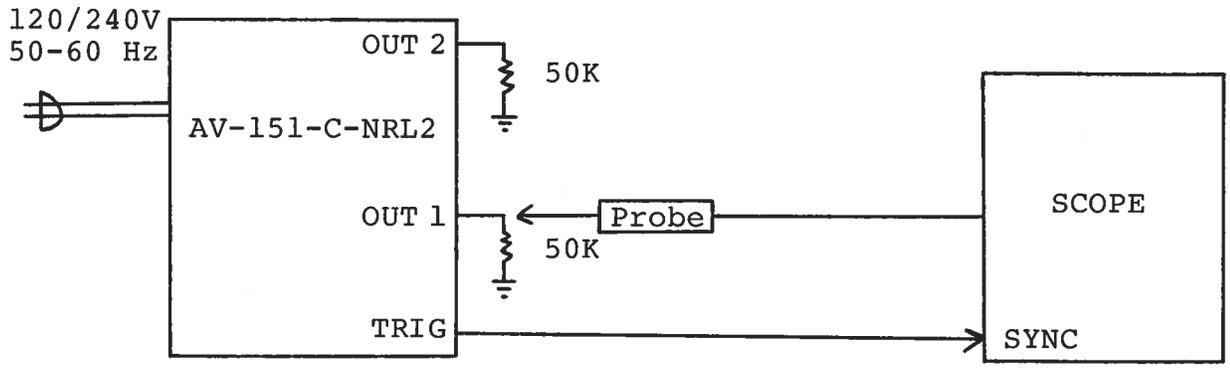
INSTRUCTIONS

MODEL AV-151-C-NRL2 FUNCTION GENERATOR

S.N. :

WARRANTY

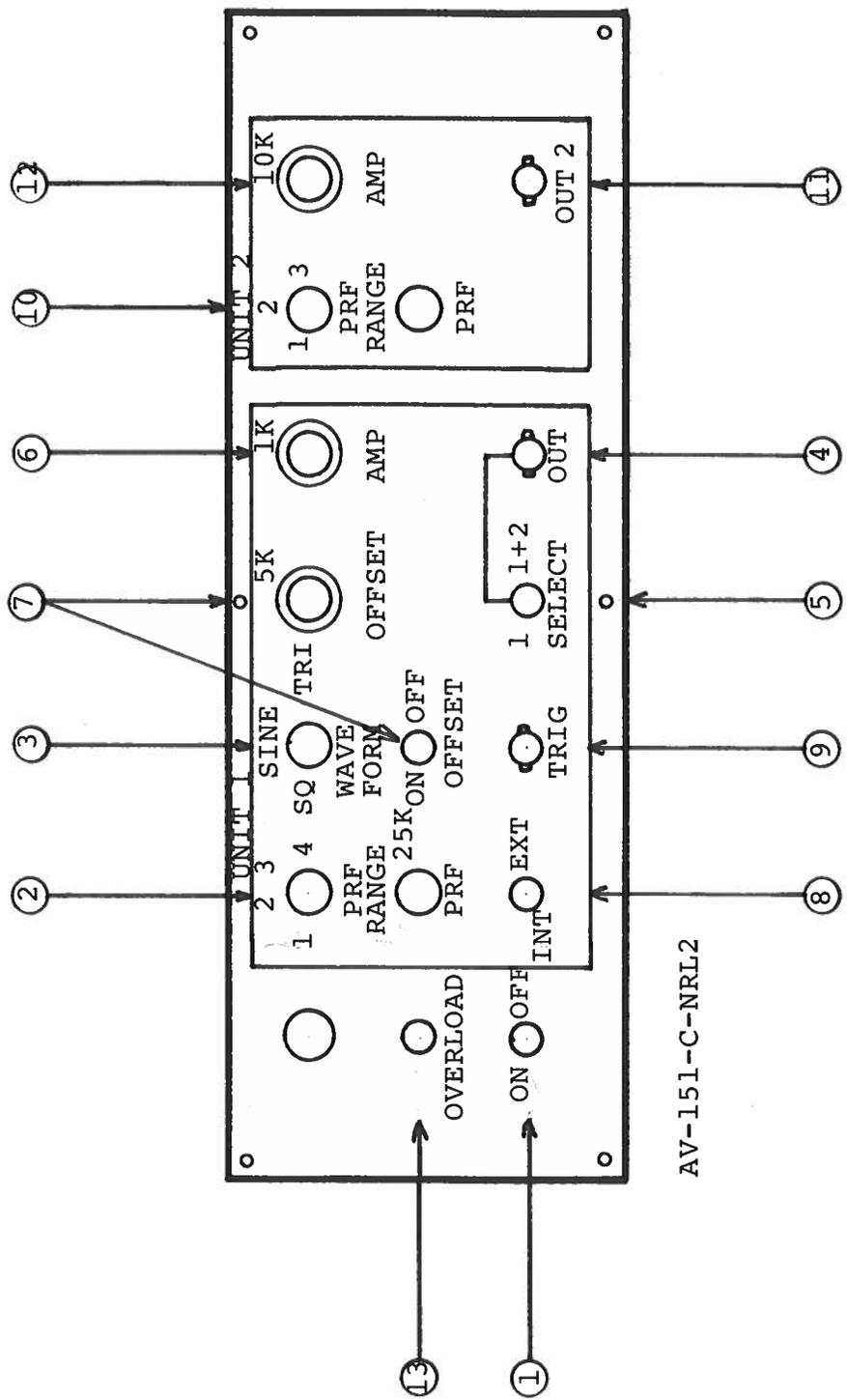
Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech 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 or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.



GENERAL OPERATING PROCEDURE

- 1) Connect the instrument as shown above. Do not apply prime power.
- 2) Terminate OUT 1 and OUT 2 in a load impedance of 50K (or higher).
- 3) Set both amplitude controls to maximum counter clockwise.
- 4) Set the offset amplitude control at 5.0 and the offset ON-OFF switch in the OFF position.
- 5) Set the SELECT switch in the 1 position.
- 6) Set the INT-EXT switch in the INT position and the WAVEFORM selector switch in the SINE position.
- 7) Set the PRF range switch for UNIT 1 in position 3 (mid range) and the PRF range switch for UNIT 2 in position 2 (mid range).
- 8) Set the scope time base on about 50 us/div and the vertical on about 50 volts/div and set the scope time base to trigger on EXT (+).
- 9) Turn on the prime power and adjust scope trigger controls to obtain a trace.
- 10) Rotate the amplitude control for UNIT 1 clockwise to obtain the desired output amplitude (as high as 400 volts peak to peak).
- 11) Set the OFFSET ON-OFF switch in the ON position and rotate the OFFSET amplitude control to obtain the desired offset (0 to ± 50 volts).
- 12) Set the SELECT switch in the 1+2 position and rotate the UNIT 2 amplitude control clockwise. The scope should now display the combined sum of the UNIT 1 output, the DC offset and the UNIT 2 output.
- 13) To display only the UNIT 2 output, turn off the DC offset, rotate the UNIT 1 amplitude control to zero and set the scope to trigger internally. Adjust the scope time base to display several cycles of the UNIT 2 output. Alternatively, the UNIT 2 output may be observed at the OUT 2 port but the amplitude here will be 1/2 that obtained at the OUT 1+2 port.

- 14) CAUTION: Take great care not to operate output 1 or output 2 into a low impedance (i.e. $< 50K$) or into a short circuit as this may result in damage to the output stage.
- 15) 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) Removing output load short circuit (if any)
 - 2) Reducing the output amplitude
- 16) To trigger UNIT 1 externally, set the INT-EXT switch in the EXT position and apply the signal to be amplified to the TRIG port ($V_{pp} \leq 10$ volts, DC to 100 KHz). The AV-151-C unit then operates as a variable gain amplifier with a maximum gain of $\times 20$ and a maximum output of ± 200 volts.



FRONT PANEL CONTROLS

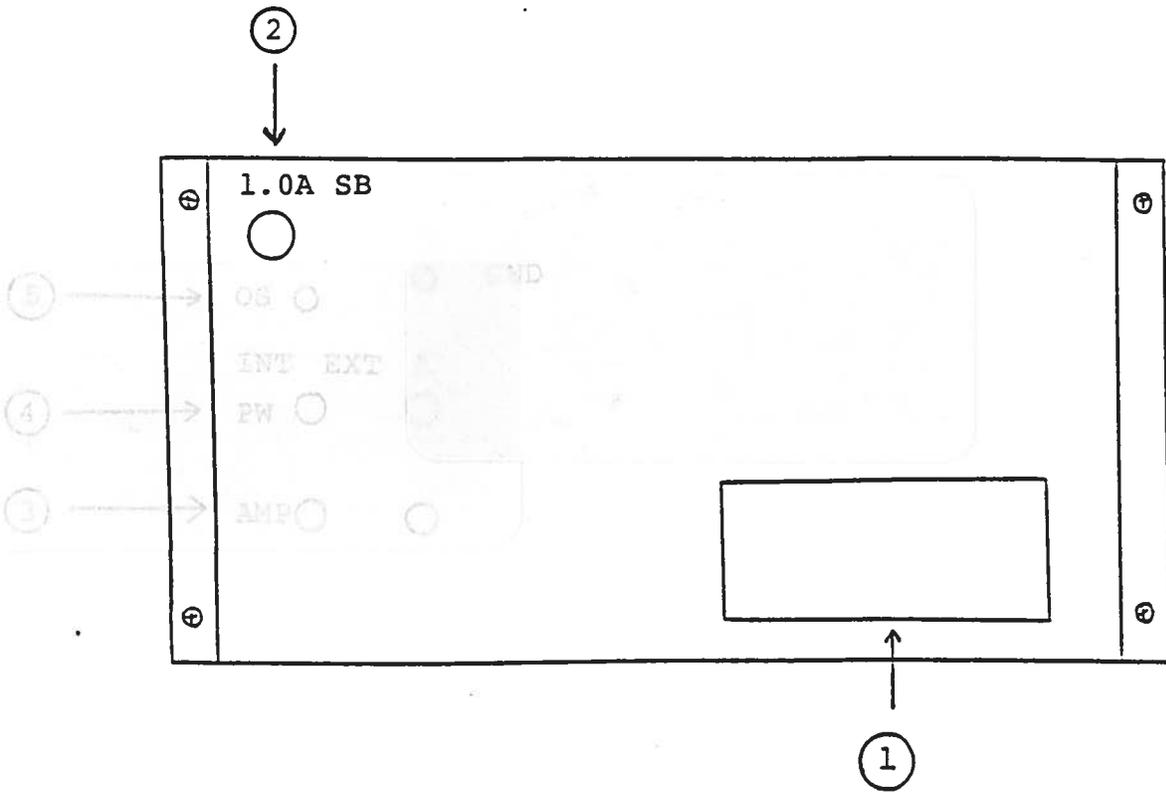
- (1) ON-OFF Switch. Applies prime power to all stages.
- (2) PRF Control (UNIT 1). Varies output PRF as follows:
- | | | |
|---------|--------|---------|
| Range 1 | 10 Hz | 100 Hz |
| Range 2 | 100 Hz | 1 KHz |
| Range 3 | 1 KHz | 10 KHz |
| Range 4 | 10 KHz | 100 KHz |
- (3) WAVEFORM (UNIT 1). 3 position switch selects between square, sine or triangular output at (4).
- (4) OUT (UNIT 1). BNC connector provides output to high impedance load ($\geq 50K$). Output may include 10 Hz to 100 KHz component, DC offset component and UNIT 2 component.
- (5) SELECT. Two position switch allows only UNIT 1 output to be provided at (4) or both UNIT 1 and UNIT 2.
- (6) AMPLITUDE (UNIT 1). Ten turn control determines amplitude of 10 Hz to 100 KHz component at (4).
- (7) OFFSET (UNIT 1). Ten turn control allows DC offset at (4) to be varied from 0 to ± 50 volts.
- (8) INT-EXT, TRIG. With this two position switch in the INT position, the frequency and shape of the 10 Hz to 100 KHz component at (4) is determined by controls (2) and (3). Also, in this position a 5 volt square wave is provided at (9) for the purpose of triggering a scope. When the two position switch is in the EXT position, the UNIT 1 stage may be used as a DC-100 KHz variable gain ($\times 20$ max) amplifier. The required input signal is applied at (9) for this mode of operation.
- (10) PRF (UNIT 2). Varies the sine wave output frequency of UNIT 2 at (11) as follows:
- | | |
|---------|------------------|
| Range 1 | 0.01 Hz - 1 Hz |
| Range 2 | 0.125 Hz - 14 Hz |
| Range 3 | 10 Hz - 1 KHz |
- (11) OUT 2. BNC connector provides 0 to 20 volts (peak to peak) to $R_L > 50$ KHz.
- (12) AMPLITUDE (UNIT 2). Ten turn control varies the output amplitude at (11) from 0 to 20 volts peak to peak and at (4) from 0 to 40 volts peak to peak.
- (13) OVERLOAD. 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) Removing output load short circuit (if any)
- 2) Reducing the output amplitude

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 (0.5A SB).
- (2) 1.0A SB. Fuse which protects the output stage if the output duty cycle rating is exceeded.

Schroff

08.27.91

[Faint, illegible text, possibly bleed-through from the reverse side of the page]