AVTECH ELECTROSYSTEMS LTD.
NANOSECOND WAVEFORM ELECTRONICS

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

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

INSTRUCTIONS

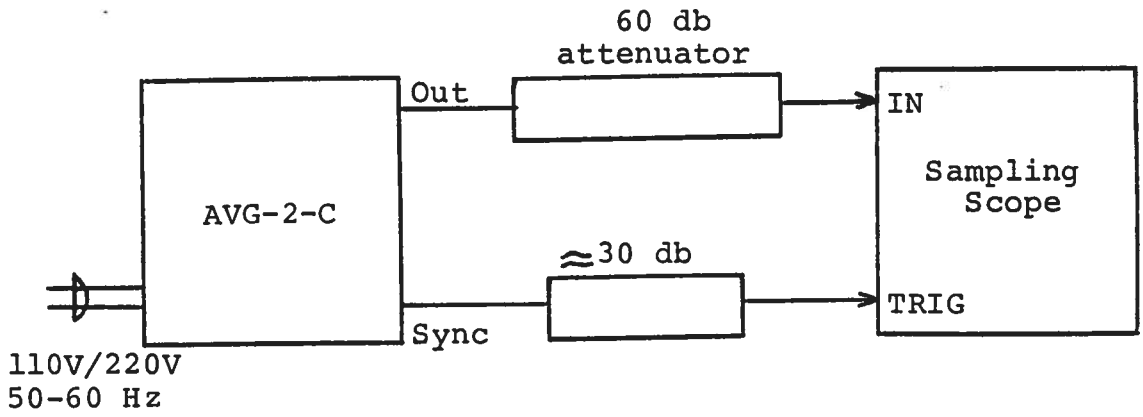
MODEL AVG-2-C-SNL1-TP1-R4 IMPULSE GENERATOR

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 or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

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 one gigahertz.

2) The use of 60 db attenuator at the sampling scope vertical input channel will insure a peak input signal to the sampling scope of less than one volt.

3) The sync output channel provides TTL level signals. To avoid overdriving the TRIG input channel of some sampling scopes, a 30 db attenuator should be placed at the input to the sampling scope trigger channel.

4) To obtain a stable output display the PRF control on the front panel should be set mid-range while the PRF switch may be in either 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.

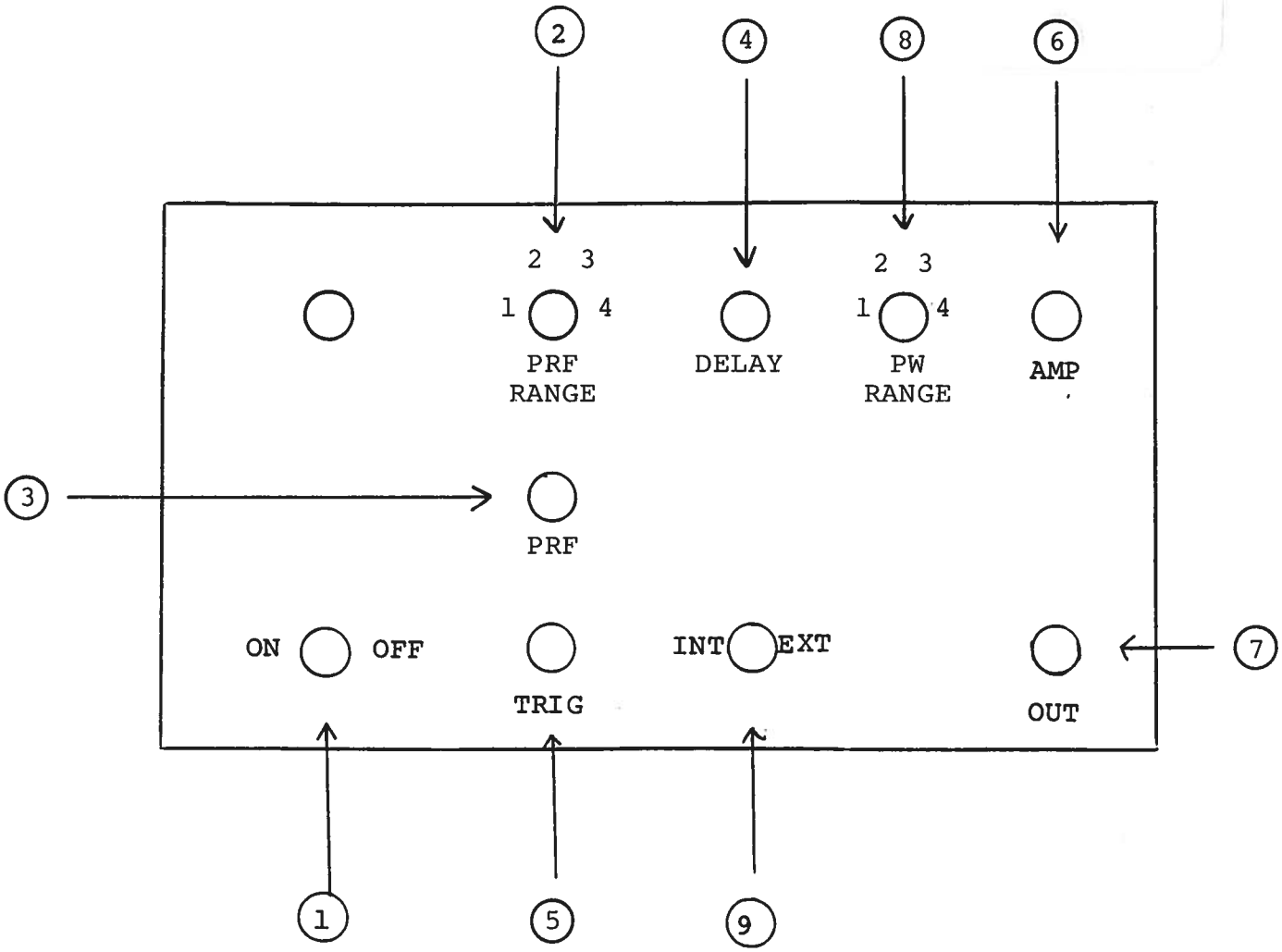
5) The output pulse amplitude is controlled by means of the front panel one turn AMP control.

6) The output pulse width is controlled by the 4 position PW range switch as follows:

    1) 2.0 ns
    2) 4.0 ns
    3) 10 ns
    4) 20 ns

7) An external clock may be used to control the output PRF of the AVG unit by setting the front panel TRIG toggle switch in the EXT position and applying a 0.2 us (approx.) 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.

FRONT PANEL CONTROLS



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

(2) PRF Control. The PRF RANGE and PRF controls determine
(3) output PRF as follows:

	PRF MIN	PRF MAX
Range 1	10 Hz	100 Hz
Range 2	100 Hz	1 KHz
Range 3	1 KHz	10 KHz

(4) DELAY Controls. Controls the relative delay between the reference output pulse provided at the TRIG output (5) and the main output (7). This delay is variable over the range of 0 to at least 500 ns.

(5) 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. The external trigger signal is applied at this input when the EXT-INT toggle switch is in the EXT position.

(6) AMP Control. A one turn control which varies the output pulse amplitude (to a fifty ohm load).

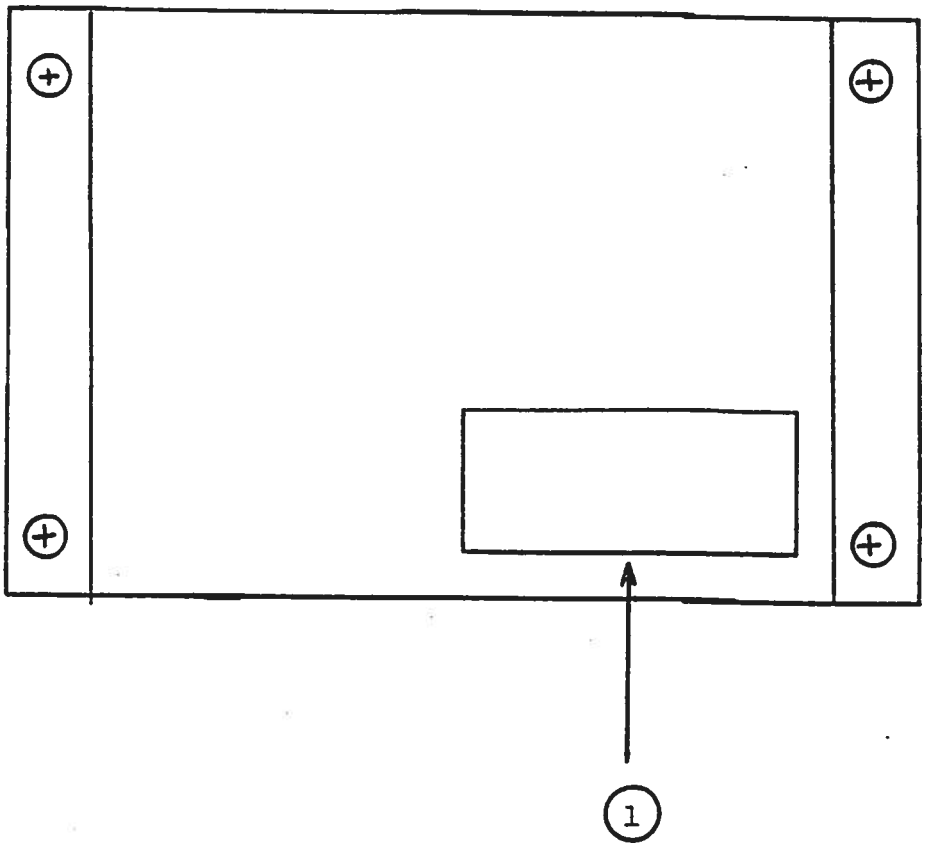
(7) OUT. BNC connector applies output to 50 ohm load.

(8) PW RANGE. Controls the output pulse width as follows:

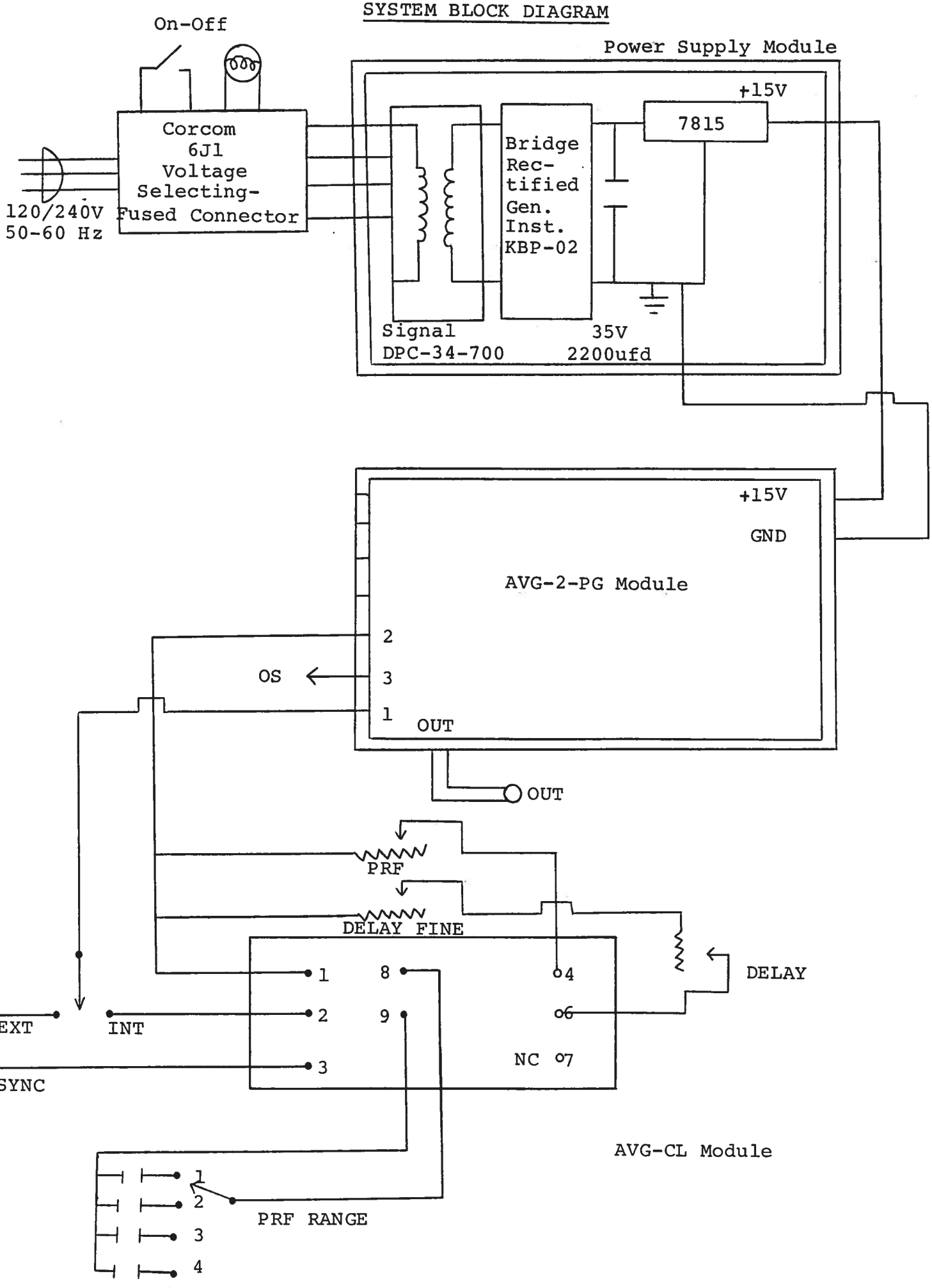
1) 2 ns
2) 4 ns
3) 10 ns
4) 20 ns

(9) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVG unit is controlled via an internal clock which in turn is controlled by the PRF controls. With the toggle switch in the EXT position, the AVG unit requires a 0.2 us TTL level pulse applied at the TRIG input in order to trigger the output stages. In addition, in the mode, the scope time base must be triggered by the external trigger source.

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 (0.25 A SB).


SYSTEM BLOCK DIAGRAM
On-Off
Power Supply Module
+15V
7815
Corcom
6J1
Voltage
Selecting-
Fused Connector
120/240V
50-60 Hz
Bridge
Rec-
tified
Gen.
Inst.
KBP-02
Signal
DPC-34-700
35V
2200ufd
+15V
GND
AVG-2-PG Module
2
OS
3
1
OUT
OUT
PRF
DELAY FINE
DELAY
1
8
4
EXT
INT
2
9
6
NC
7
SYNC
3
AVG-CL Module
1
2
PRF RANGE
3
4

SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVG-2-C consists of four pulse generator modules (AVG-2-PG), a combiner module, a clock module (AVG-2-CL) and a power supply board which supplies +15 volts (600 mA max) to the pulse generator module. In the event that the unit malfunctions, remove the instrument cover by removing the four Phillips screws on the back of the unit. The top cover may then be slid off. Measure the voltage at the +15V pin of the PG module. If this voltage is substantially less than +15 volts, unsolder the line connecting the power supply and PG modules and conncet 50 ohm 10 W load to the PS output. The voltage across this load should be about +15 V DC. If this voltage is substantially less than 15 volts the PS module is defective and should be repaired or replaced. If the voltage across the resistor is near 15 volts, then the PG module should be replaced or repaired. The sealed PG module must be returned to Avtech for repair (or replacement). The clock module provides a 0.1 usec TTL level trigger pulse at pin 2 to trigger the PG module and a 0.1 usec TTL level synch pulse at pin 3 to trigger the sampling scope display device. The output at pin 3 precedes the output at pin 2 by almost 0 to 100 nsec depending on the DELAY control setting. The clock module is powered by +5.8 V supplied by the PG module (from pin 2 to pin 1). With the INT-EXT switch in the EXT position, the clock module is disconnected from the PG module. The clock module is functioning properly if:

a) 0.1 us TTL level outputs are observed at pins 2 and 3.

b) The PRF of the outputs can be varied over the range of 10 Hz to 10 KHz using the PRF and PRF RANGE controls.

c) The relative delay between the pin 2 and 3 outputs can be varied by at least 500 ns by the DELAY controls.

The sealed clock module must be returned to Avtech for repair or replacement if the above conditions are not observed.

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

November 12, 1991.

Doug Reynolds
MS 9342
Sandia National Lab
P.O. Box 5800
Albuquerque, NM 87123

Dear Doug:

Following our phone conversation of November 11, 1991, I am pleased to provide a price and delivery quotation for a 4-range impulse generator meeting the following specifications:

Model designation:	AVG-2-C-P-SNL1.
Output amplitude:	0 to +100 volts to 50 ohms. One turn control.
Output pulse width: (4 position selector switch) (PW at 10% rise time)	Range A: 2 ns. Range B: 4 ns. Range C: 10 ns. Range D: 20 ns.
Rise, fall time:	Range A: ≈0.7 ns. Range B: ≈1.4 ns. Range C: ≈ 3 ns. Range D: ≈ 7 ns.
PRF:	10 Hz to 10 KHz. 3 position range switch and one turn control.
Connectors:	BNC.
Chassis size:	4" x 16" x 12".
Other:	See Model AVG-2-C, pages 84 and 85, Catalog No. 8.

.../2

Price: $4,395.00 US each,
FOB destination.

Delivery: 30 days ARO.

Thank you for your interest in our products. Please call me again if you require any additional information or modifications to the above quotation.

Yours truly,

Walter J. Chudobiak
Chief Engineer

WJC:ch
Encl. Catalog No. 8
Price list

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

December 5, 1991.

Doug Reynolds MS 9342
Sandia National Lab
P.O. Box 5800
Albuquerque, NM 87123

Tel: 505-845-7764
Fax: 505-845-7650

Dear Doug:

With reference to my quote of November 12 and our subsequent telephone conversation, I am pleased to enclose the following:

1) Typical waveform for waveform generator which would be used in Range A (PW 2 ns, approx. 100 volts out).

2) Typical waveforms for generator which would be used in Range B (PW 4 ns, approx. 100 volts). Note that we could provide a sharper peak for this waveform (and for A as well) but this would be attained by decreasing the rise time so the resultant waveform would be less symmetrical than those shown here. Note that the spurious at $t \geqslant 2.5$ PW is less than 24 db down for both cases.

3) A copy of my quote of November 12.

To specify a propagation delay of less than 40 ns, add the suffix -TP1 to the model number and add $250.00 US to the price. In addition, to specify the 19" rack mounting option, add the suffix -R4 and add $95.00 US to the price.

Thank you for your interest in our products. Please call me again if you require any additional information or modifications to this quotation.

Yours truly,

Walter J. Chudobiak
Chief Engineer

WJC:pr
Encl.

Schroff 02.19.92