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SINCE 1975

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## INSTRUCTIONS

### MODEL AVX-D-2-PS DELAY 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

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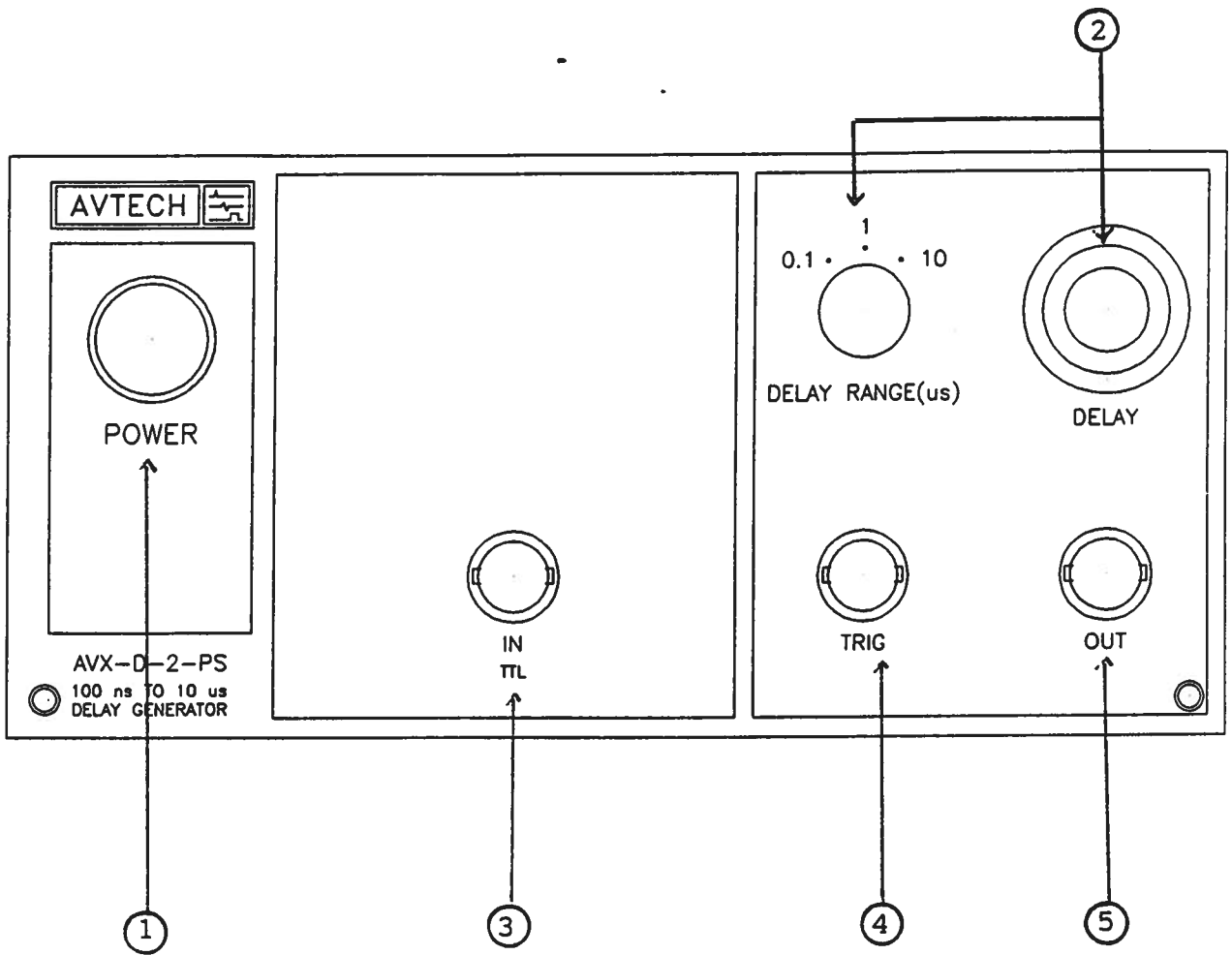
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SPECIFICATIONS  
MODEL AVX-D-2-PS

Model designation:	AVX-D-2-PS
Delay range:	100 ns to 10 us  Low range: 30 ns to 100 ns Med. range: 100 ns to 1 us High range: 1 us to 10 us  10 turn DL pot control determines delay within each range.
PRF range:	0 to 1 MHz Note that at given PRF, max delay cannot exceed one half of period of PRF.
Jitter:	$\pm 10$ ps at min DELAY to be confirmed using AVH-S-1 130 ps impulse generators and sampling scope display. Jitter increases to $\pm 60$ ps at maximum delay.
Input PW:	50 to 500 ns
Output PW:	200 to 300 ns
Trig. PW:	Equals input PW
Prop delay, IN to TRIG port:	$\leq 10$ ns
Signal amplitudes:	TTL levels Outputs will drive 50 ohm loads
Power requirements:	110/220V, 50-60 Hz
Connectors:	BNC

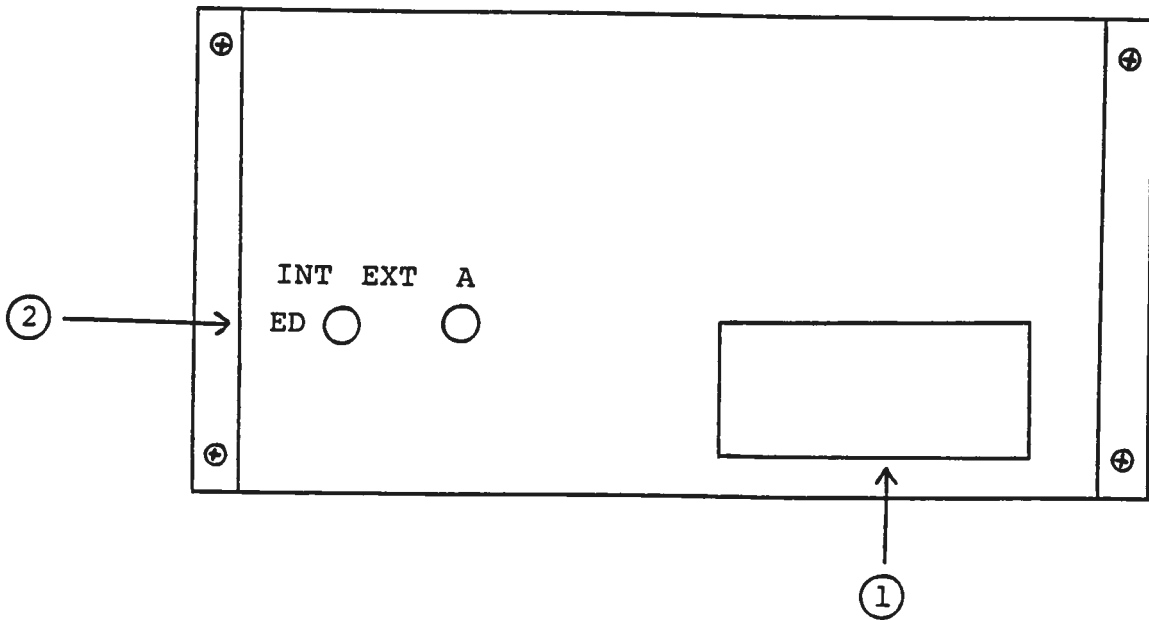
FIG. 1: FRONT PANEL CONTROLS



## FRONT PANEL CONTROLS

- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) DELAY Control. Controls the relative delay between the output pulse provided at OUT (5) and IN (3). This delay is variable over the range of 30 ns to about 10 us as follows:
  - 30 ns to 100 ns
  - 100 ns to 1.0 us
  - 1.0 us to 10 ns
- (3) IN. Apply TTL input at this terminal (PW > 50 ns).
- (4) TRIG. Replica of IN pulse delayed by 30 ns appears here. Will drive 50 ohms.
- (5) OUT. +5 Volt output to 50 ohms. This output is delayed 30 ns to 10 us with respect to the IN pulse.

FIG. 2: BACK PANEL CONTROLS

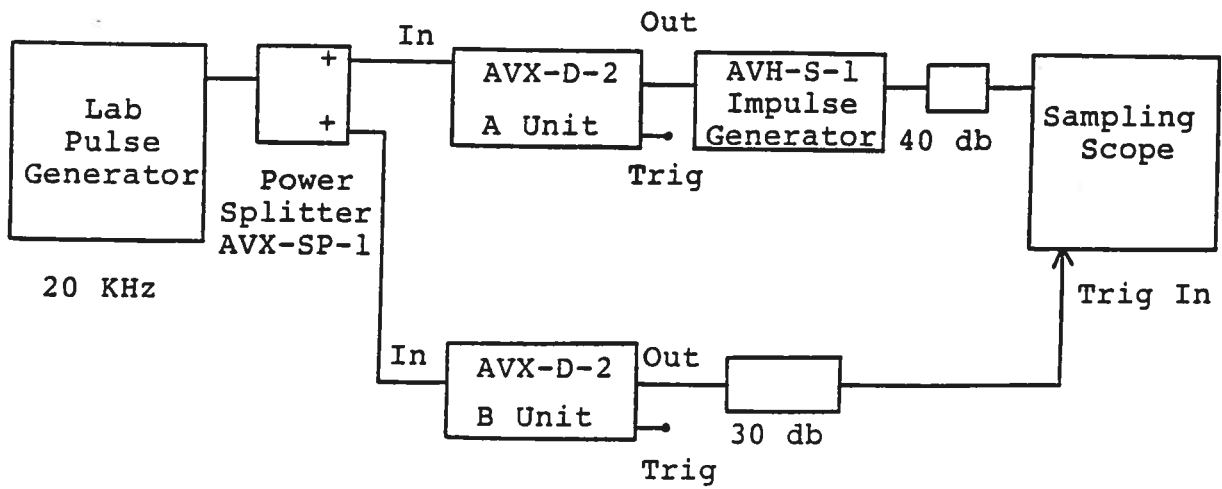


## BACK PANEL CONTROLS

- 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 (0.25 A SB).
- 2) To voltage control the delay, set the switch in the EXT position and apply 0 to +10V to the "A" BNC connector ( $R_{IN} \geq 10K$ ). (option).



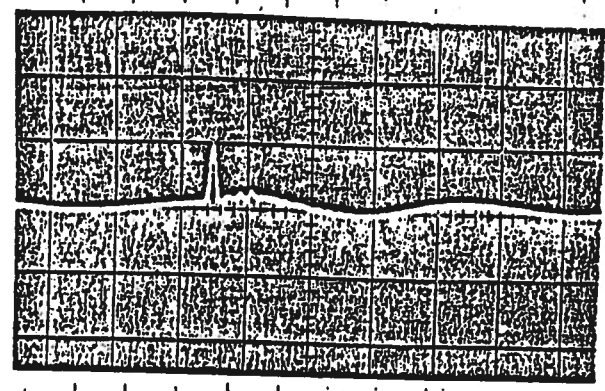
**FIG. 3: MODEL AVX-D-2  
JITTER AND DELAY TEST ARRANGEMENT**



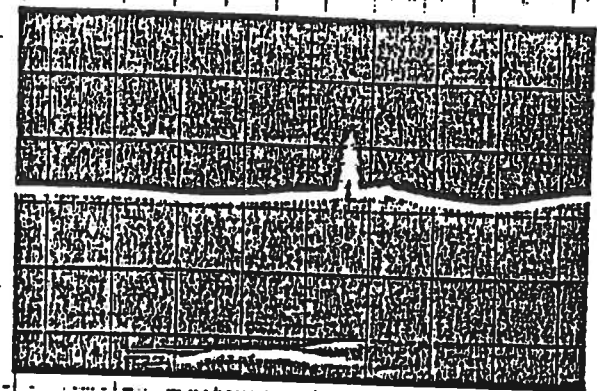
## GENERAL OPERATING INSTRUCTIONS

- 1) A worse-case jitter test of the AVX-D-2 unit was conducted using the above arrangement. The use of two delay generators serves to:
  - a) Aggravate the jitter since the resultant jitter is the consequence of two units.
  - b) Allow triggering of the sampling scope with long delays (e.g. 100 us) on the AVX-D-2 units.
- 2) The delays of the A and B units should be such that the time base of the sampling scope is triggered slightly ahead (e.g. 20-100 ns) of the application of the impulse to the vertical amplifier.
- 3) The photos on the following sheet illustrates the AVH-S-1 output waveform for the following 3 cases:
  - a) No delay, i.e. AVX-D-2 A and B units removed.
  - b) Delay of about 9 us.
  - c) Delay of about 2 us.
  - d) Delay of about 0.4 us.
- 4) The AVX-D-2 delay can be calibrated by means of a real time scope monitoring the time delay between the IN (or TRIG) and OUT ports.

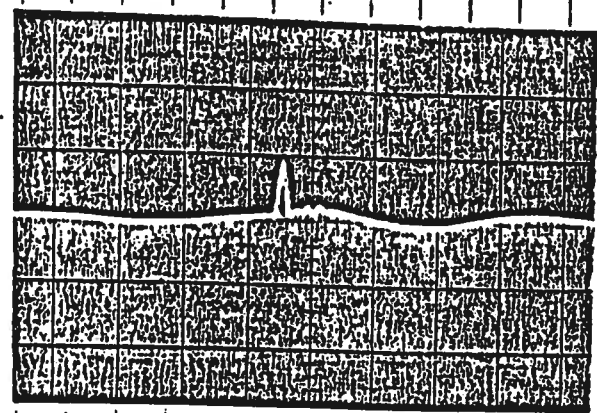
FILTER TEST RESULTS



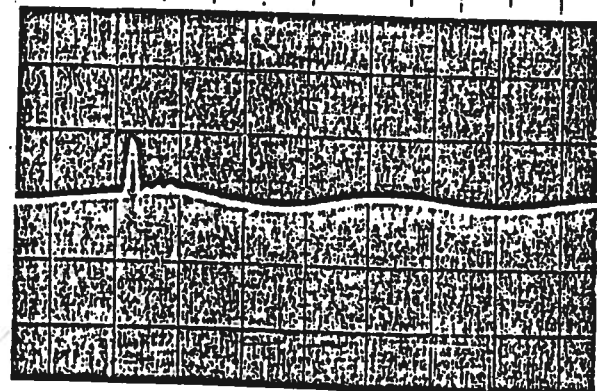
a) AUX-1-1 OUTPUT  
NO DELAY,  
LE NO AUX-D-2  
UNITS



b) 9 msec  
DELAY



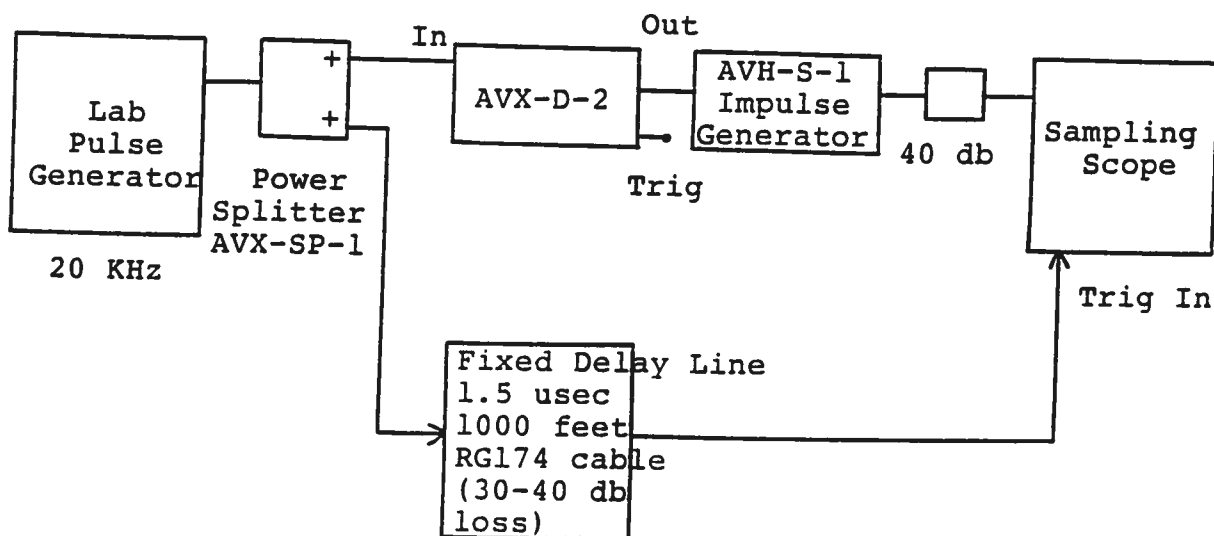
c) 2 msec  
DELAY



d) 0.4 msec  
DELAY

ALL PHOTOS  
1.0 msec/DIV  
10 VOLTS/DIV  
20 KHz.

FIG. 4: MODEL AVX-D-2  
LONG TERM DRIFT TEST ARRANGEMENT

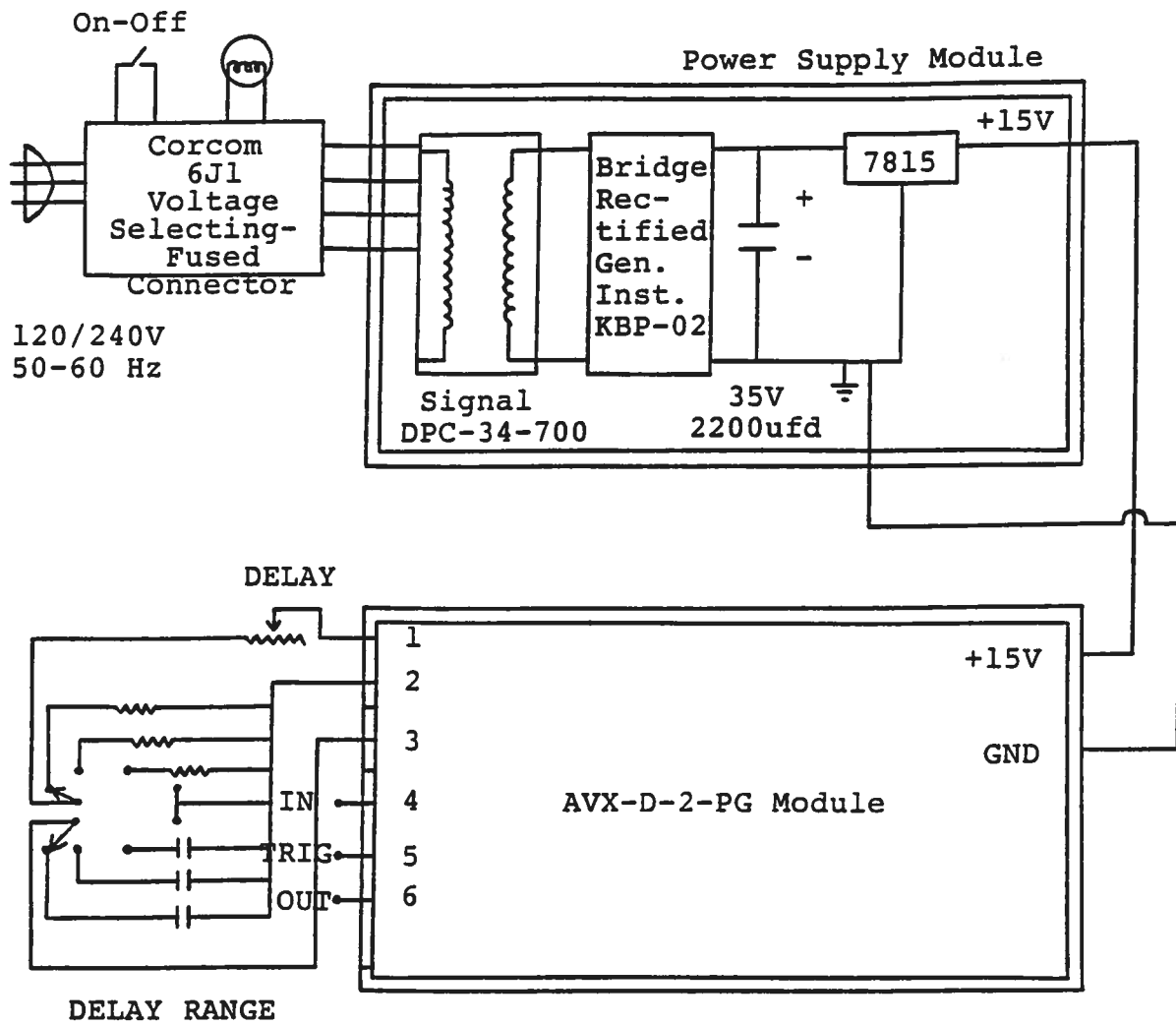


Following a warm-up period of 5 minutes, the AVX-D-2 delay is constant within  $\pm 2$  ns

## SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVX-D-2-PS consists of a pulse delay module (AVX-D-2-PG), 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 lid 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 connect 50 ohm 10 W load to the PS DC. The voltage across this load should be about +15V 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).

FIG. 5: SYSTEM BLOCK DIAGRAM



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