INSTRUCTIONS

MODEL AVO-9F-C-UCB 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

Phone: 613-226-5772 or 1-800-265-6681
Fax: 613-226-2802 or 1-800-561-1970

E-mail: info@avtechpulse.com
World Wide Web: http://www.avtechpulse.com

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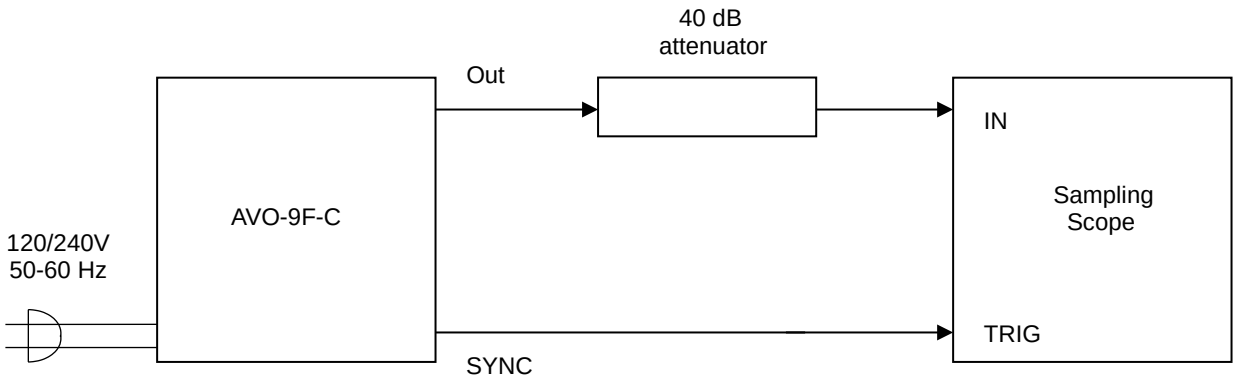
Manual Reference: /fileserver1/officefiles/instructword/avo-9/AVO-9F-C-UCB, edition a.doc, created January 17, 2002

FIG. 1: PULSE GENERATOR TEST ARRANGEMENT
(AVX-S1 MODULE DISCONNECTED)



GENERAL OPERATING INSTRUCTIONS

1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed ten gigahertz.

2) The use of 40 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) 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 scope triggering controls are then adjusted to obtain a stable output.

4) The output pulse shape is determined by the two front panel pot controls TR and TF. TR controls the leading edge of the pulse while TF controls the falling edge. Clockwise rotation of TR and TF increases the output pulse width. Initially rotate the TF pot fully clockwise and set the TR pot at mid-range. The output amplitude is controlled by the front panel AMP control and by the input signal level. Initially the AMP control should be set maximum clockwise. The CRT display will resemble the following:

5) Having obtained a display of the form shown above, the desired pulse width is then obtained by adjusting the two front panel pots TR and TF. Rotate TR counter clockwise from the positive set in step 2) until a sharp 100 ps leading edge is observed. Then rotate TF counterclockwise until the desired pulse width and fall time are obtained.

Further iterative adjustments of TR and TF will be necessary to simultaneously obtain the lowest rise time, lowest fall time, the desired pulse width, and pulse top shape and low spurious signal level. In addition some additional adjustment of signal level may be necessary to obtain the desired amplitude. If the input frequency is then changed it will be necessary to readjust AMP, TR and TF to establish the required pulse shape. Following the above sequence it is possible to generate output pulses having amplitudes of at least +10 Volts with variable pulse width (at least from 400 to 1000 ps) with pulse repetition frequencies in the range of 25 to 50 MHz.

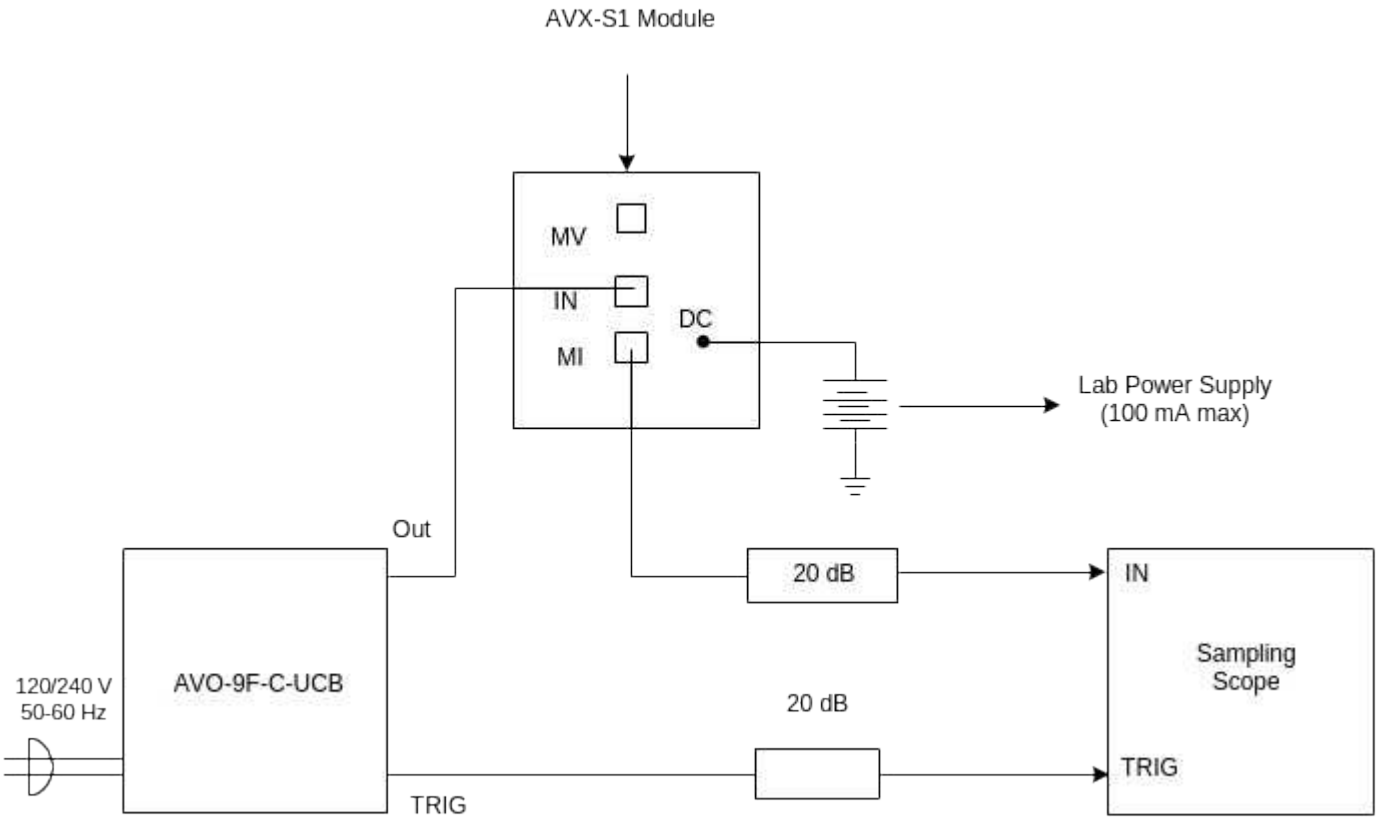
6) To trigger externally, set the INT-EXT switch to EXT and connect a sine wave generator to the TRIG connector. The output PRF will equal the sine wave PRF. The sine wave amplitude should be set at 0.3 VRMS.

7) The AVO-9F-C unit can be converted from 120 to 240V 50-60 Hz operation by adjusting the voltage selector card in the rear panel fused voltage selector-cable connector assembly.

8) For additional assistance:

Tel: (613) 226-5772
Fax: (613) 226-2802
Email: info@avtechpulse.com

FIG. 2: PULSE GENERATOR TEST ARRANGEMENT (AVX-S1 Module Connected)



CONNECTING THE AVO-9F-C TO THE AVX-S1

1) A general description of the AVX-S1 module is given in the enclosed data sheet.

2) The AVX-S1 module should be connected to the AVO-9C-C mainframe via the supplied 24" RG174 cable. The diode current may be monitored by connecting the MI and MV output ports to the sampling scope via 20 dB attenuators. The output amplitude (V_{MI} and V_{MV} Volts) and the diode current (I_D Amp) are related as follows:

$$I_D = 0.2\ (V_{MI} - V_{MV})$$

The laser diode voltage is given by the following:

$$V_D = 10\ V_{MV}$$

3) The laser diode plugs directly into the socket on the side of the AVX-S1 module.

4) A forward DC bias may be applied to the laser diode by connecting a DC potential of 0 to +5 Volts to the DC solder terminal. The application of a small forward bias often yields a more ideal diode current waveform (as observed on the MI port). Note that the DC port must be shorted to ground if a bias is not applied.

5) A IN6263 hot carrier diode is included at the input to the AVX-S1 unit to clip any negative potential swings.

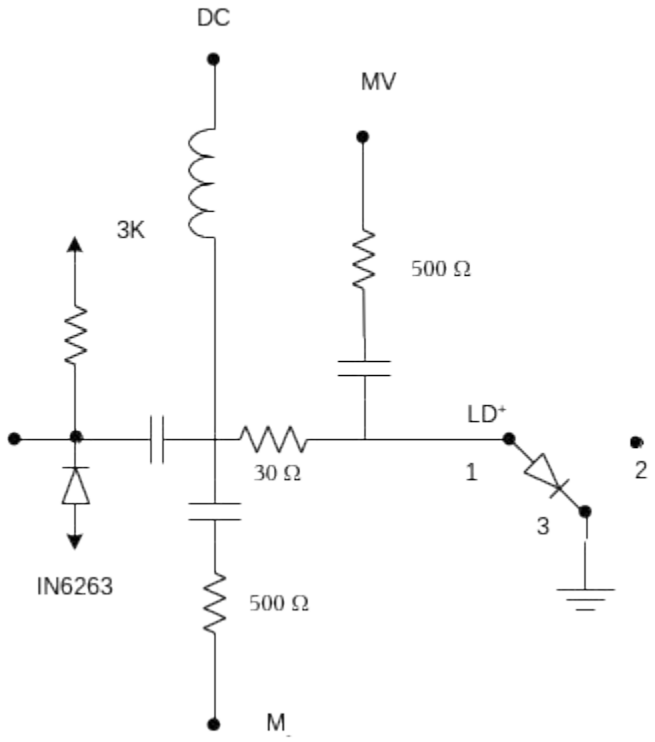
6) A IN459A diode in series with a 20 Ohm chip resistor was used as a test load.

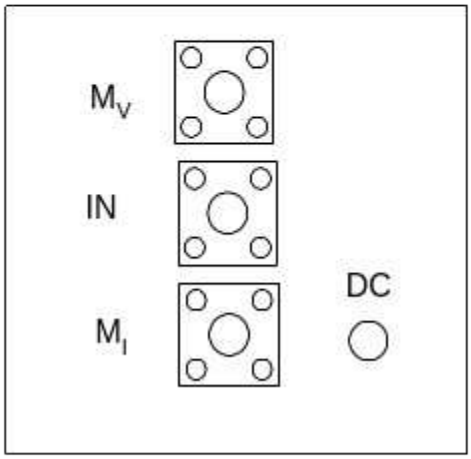
AVX-S1, S/N 10052

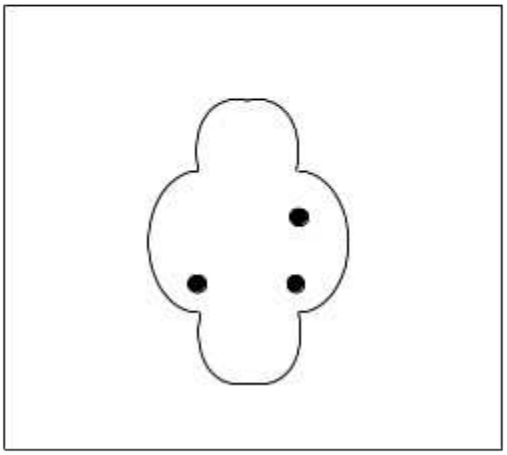
FUNCTIONAL EQUIVALENT CIRCUIT

PACKAGE

AVX-S LASER DIODE BIAS INSERTION UNITS DATA SHEET







SPECIFICATIONS

FIG. 3 FRONT PANEL CONTROLS

FRONT PANEL CONTROLS

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

2) PRF Control. Varies PRF from 25 to 50 MHz.

3) SYNC Output. This output is approximately coincident with the main output (7) and is used to trigger the sampling scope time base. The output is a 30 mV sine wave capable of driving a fifty Ohm load.

4) PW Control. One turn controls which vary the output pulse width. The output pulse shape is determined by the two front panel pot controls TR and TF. TR controls the leading edge of the pulse while TF controls the falling edge. Clockwise rotation of TR and TF increases the output pulse width.

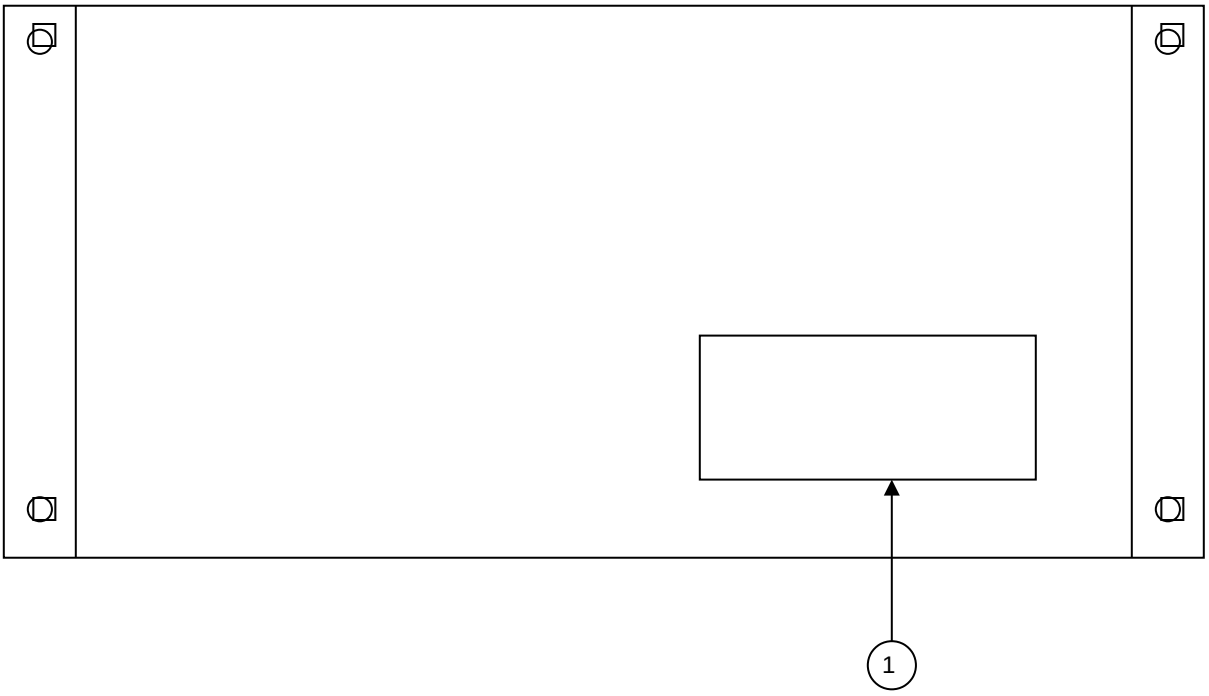
5) AMP Control. A one turn control which varies the output pulse amplitude from 0 to max output to a fifty Ohm load.

6) OUT Connector. SMA connector provides output to a fifty Ohm load.

7) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVN unit is controlled via an internal clock which in turn is controlled by the PRF and PRF FINE controls. With the toggle switch in the EXT position, the AVN unit requires a 0.3 V RMS sine wave 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.

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

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.

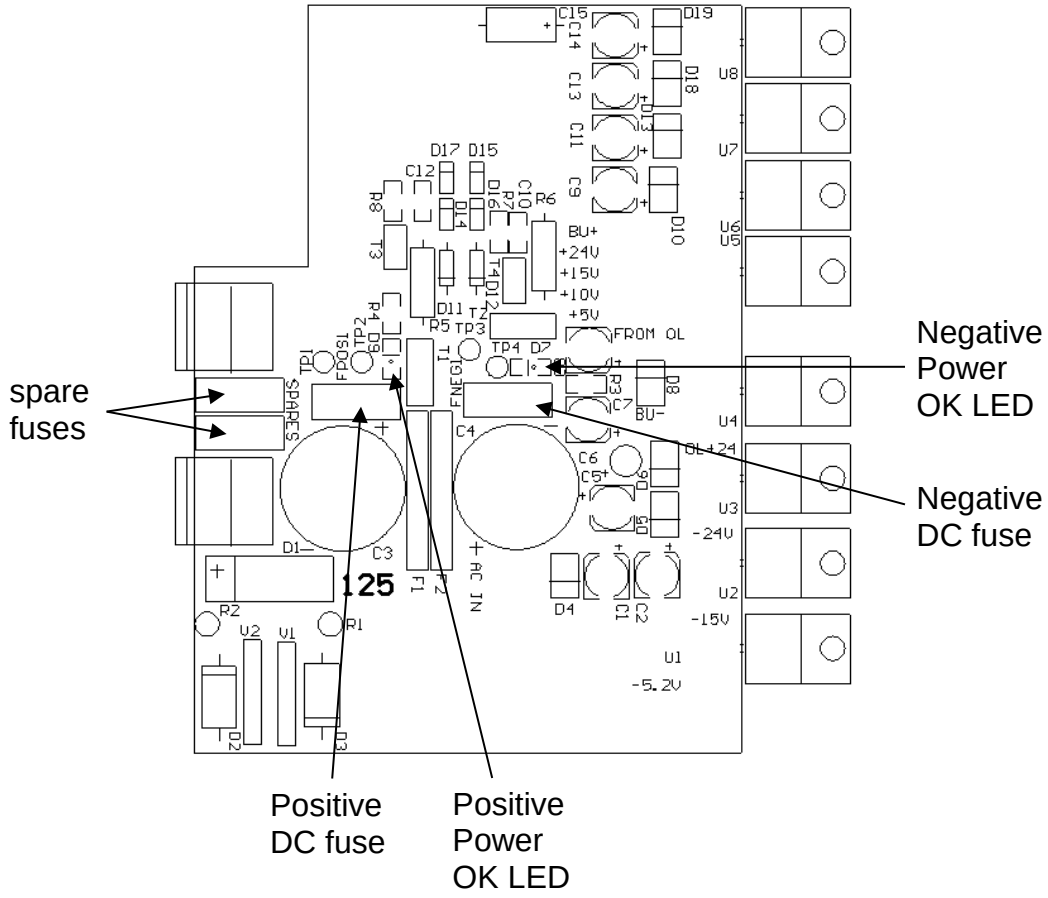
   If it is not set for the proper voltage, remove the fuse and then grasp the card with a pair of pliers and remove it. Rotate horizontally through 180 degrees. Reinstall the card and the correct fuse.

   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 main fuses, plus two spares. 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 two spares) are located on the internal DC power supply, as shown below:



The four fuses on this circuit board are 0.5A slow-blow fuses, Littlefuse part number R452.500. (This fuse can be ordered from Digikey, www.digikey.com. The Digikey part number is 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. (Two spare 0.5 Amp fuses are provided on the circuit board. They may be transferred to the active fuse locations using needle-nose pliers.)

ORIGINAL QUOTATION

PERFORMANCE CHECK SHEET