



**AVTECH ELECTROSYSTEMS LTD.**

NANOSECOND WAVEFORM ELECTRONICS  
SINCE 1975

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

TEL: 1-800-265-6681  
FAX: 1-800-561-1970

e-mail: [info@avtechpulse.com](mailto:info@avtechpulse.com)  
<http://www.avtechpulse.com>

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

*Visio drawings  
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mf 01-22-02*

**MODEL AVB2-TB-C-CCA MONOCYCLE 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

Phone: 613-226-5772 or 1-800-265-6681

Fax: 613-226-2802 or 1-800-561-1970

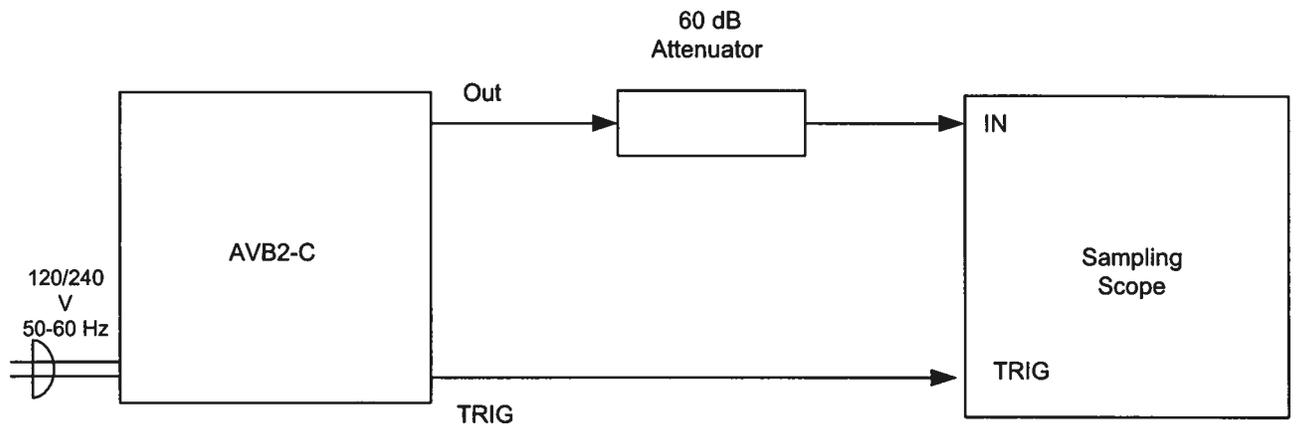
E-mail: [info@avtechpulse.com](mailto:info@avtechpulse.com)

World Wide Web: <http://www.avtechpulse.com>

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FIG. 1: PULSE GENERATOR TEST ARRANGEMENT



## 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 one gigahertz.
- 2) This unit requires a 50-Ohm load impedance. 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. If a high impedance scope is used the attenuator must be replaced by a shunt 50-Ohm load resistor.
- 3) The TRIG output channel provides TTL level signals (100ns).
- 4) The output frequency is controlled by the front panel ten-turn FREQUENCY control. Clockwise rotation of the control increases the frequency of the output monocyte (or decreases the pulse width of the output waveform). The unit may require a short warm-up period ( $\leq 5$  mins) before the output frequency stabilizes.
- 5) To obtain a stable output display the PRF control on the front panel should be set mid range. The front panel MODE switch should be in the INT position. The 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 controls.
- 6) The output pulse amplitude is controlled by means of the front panel ten-turn AMP control.
- 7) An external clock may be used to control the output PRF of the AVR unit by setting the front panel MODE switch in the EXT position and applying a 50 ns (or wider) TTL level pulse to the TRIG BNC connector input.
- 8) For single pulse manual operation, set the front panel MODE switch in the MAN position and push the SINGLE PULSE button.
- 9) MONITOR Output. The rear panel monitor output provides an attenuated replica (20 db down) of the output. The monitor output is designed to operate into a 50-ohm load. (option).
- 10) The 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.

11) CAUTION. DC potentials as high as 375 Volts exist in the interior of the instrument. For this reason it is recommended that the top cover of the unit should not be removed and that the unit should be returned to the factory for servicing (when necessary).

12) For additional information:

Tel: (613) 226-5772

Fax: (613) 226-2802

Email: [info@avtechpulse.com](mailto:info@avtechpulse.com)



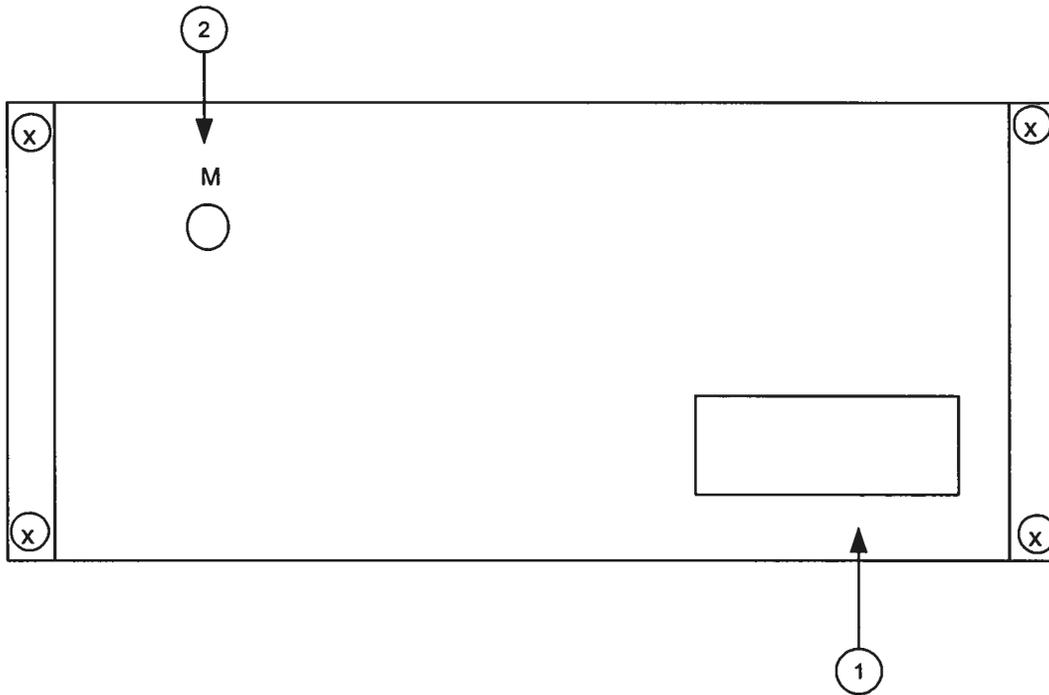
## FRONT PANEL CONTROLS

- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. The PRF RANGE and PRF controls determine output PRF as follows:

	PRF MIN	PRF MAX
Range 1	2 Hz	20 Hz
Range 2	20 Hz	200 kHz
Range 3	200 Hz	2 kHz
Range 4	2 kHz	20 kHz

- (3) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (4) the main output (5). This delay is variable over the range of 0 to about 1.0  $\mu$ s. Delay LEADS and LAGS depending on the position of the ADVANCE-DELAY switch.
- (4) TRIG Output. This output 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. This output precedes the output at (5) if the two position ADVANCE-DELAY switch is in the ADVANCE position. This output follows the output at (5) if the switch is in the DELAY position. The external trigger signal is applied at this input when the MODE switch is in the EXT position.
- (5) OUT. BNC connector applies output to 50-ohm load.
- (6) AMP Control. The output pulse amplitude is controlled by means of the ten-turn control.
- (7) FREQUENCY: Ten-turn control varies the frequency from 10 to 100 MHz.
- (8) MODE. With this switch in the INT position, the PRF of the AVB2 unit is controlled via an internal clock, which in turn is controlled by the PRF controls. With the switch in the EXT position, the AVB2 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.
- (9) SINGLE PULSE. For single pulse manual operation, set the front panel MODE switch in the MAN position and push the SINGLE PULSE button.

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 1.0A slow blow fuse is required. In the 240V setting, a 0.5A slow blow fuse is required.

- (2) MONITOR OPTION. Provides an attenuated (x10) coincident replica of the main output. Must be terminated in 50 Ohms when in use.

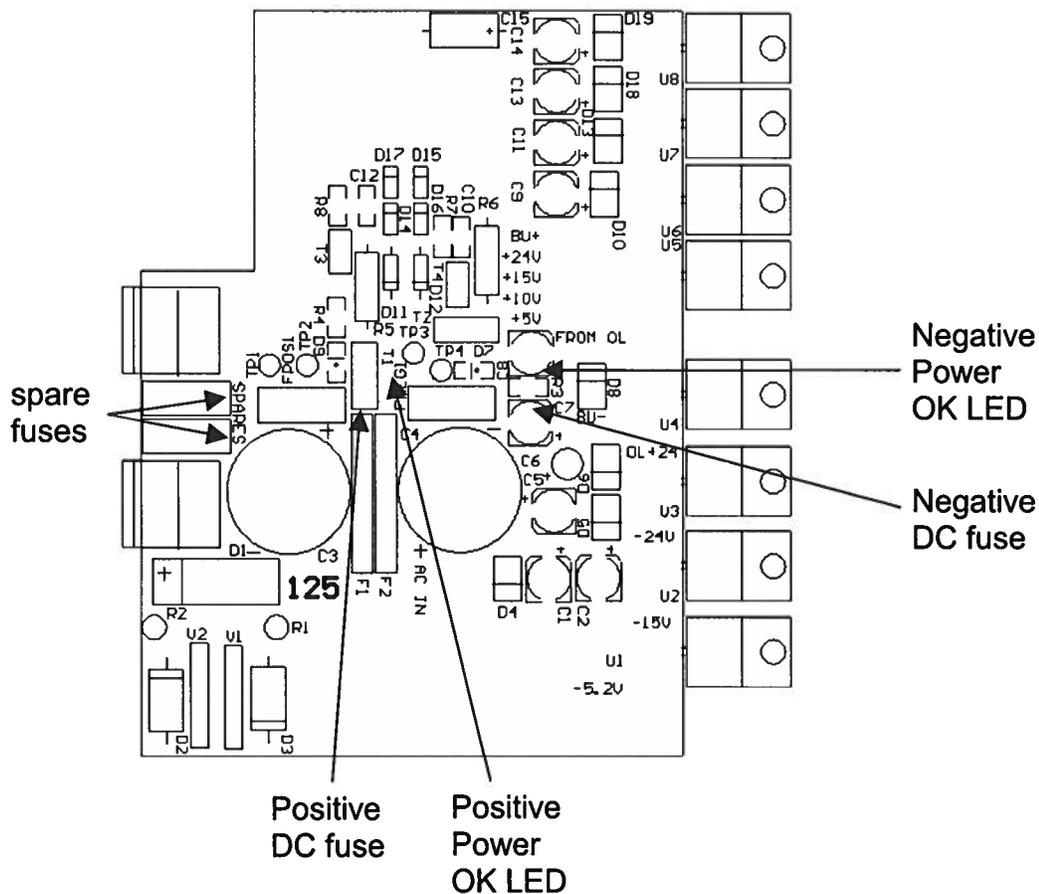
## TOP COVER REMOVAL AND RACK MOUNTING

- 1) The interior of the instrument may be accessed by removing the four Philips screws on the top panel. With the four screws removed, the top cover may be slid back (and off).
- 2) The -R5 rack mount kit may be installed after first removing the one Philips screw on the side panel adjacent to the front handle.

## 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 positive fuse and one of the spare fuses on this circuit board are 1.5A slow-blow fuses, Littlefuse part number R45201.5. (This fuse can be ordered from Digikey, [www.digikey.com](http://www.digikey.com). The Digikey part number is F1344CT-ND). The negative fuse and the second spare fuse are 0.5A slow-blow fuses (Littlefuse R452.500, Digikey part number 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. (Spare 1.5 Amp and 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**Walter Chudobiak**

**From:** Avtech Sales  
**Sent:** Thursday, March 01, 2001 9:42 AM  
**To:** 'fleisca@bme.ri.ccf.org'  
**Subject:** Price and Delivery Quotation

March 1, 2001

Dr. Aaron Fleischman  
 The Cleveland Clinic Foundation  
 Dept. of Biomedical Engineering  
 9500 Euclid Avenue  
 Cleveland, OH 44195

Dear Aaron,

- 1) Following our recent phone conversation, I am pleased to quote as follows:

Quote No: 10286-A  
 Model Designation: AVB2-TB-C-CCA  
 GPIB Control: No  
 Frequency: 10 to 100 MHz (ten-turn control)  
 Amplitude: 0 to 200 Volts (peak to peak)  
 (to 50 Ohms) (ten-turn control)  
 PRF: 0 to 20 KHz  
 Other: See the standard AVB2-TB-C, page 85,  
 Cat. 10  
 Price: \$6,998.00 US, FOB Destination  
 Delivery: 60-75 days, after receipt of

order

Quote No: 10286-B  
 Model Designation: AVB2-TB-B-CCA  
 GPIB Control: Yes  
 Frequency: 10 to 100 MHz  
 Amplitude: 0 to 200 Volts (peak to peak)  
 PRF: 0 to 20 KHz  
 Price: \$9,698.00 US, FOB Destination  
 Delivery: 60-75 days, after receipt of

order

- 2) I hope that the above information is helpful. Please call me again if you require any additional information or modifications.

Regards,

Dr. Walter Chudobiak  
 Chief Engineer

--- Avtech Electrosystems Ltd. ----- since 1975 ---

PO Box 265 ph: 1-800-265-6681 or 613-226-5772 Box 5120 Stn. F  
 Ogdensburg, NY fax: 1-800-561-1970 or 613-226-2802 Ottawa, Ontario  
 USA 13669-0265 email: info@avtechpulse.com Canada K2C 3H4  
<http://www.avtechpulse.com/>

Nanosecond Waveform Generators  
 for general purpose, R&D and OEM applications

Pulse Generators - Laser Diode Drivers - Pulse Amplifiers

August 29/01  
(edition 1)