



AVTECH ELECTROSYSTEMS LTD.
NANOSECOND WAVEFORM ELECTRONICS

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INSTRUCTIONS

MODEL AVO-3B-C-IA1 PULSE GENERATOR

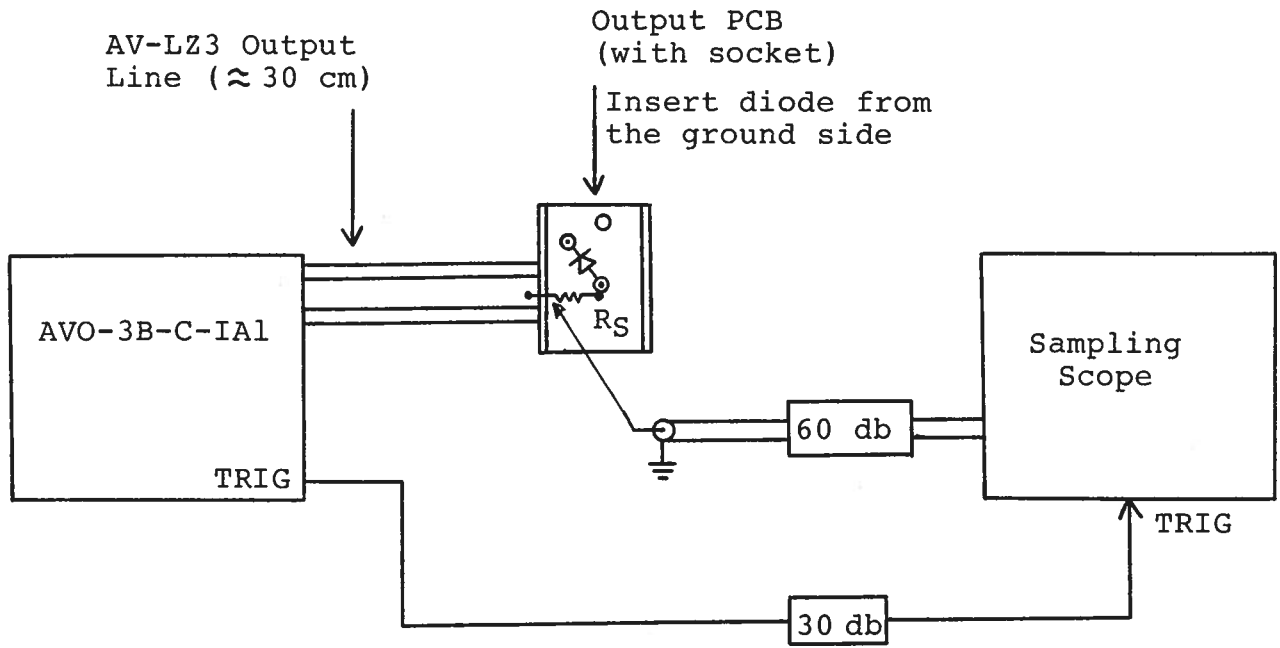
S.N.:

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 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.

Fig. 1

AVO-3B-C-IA1 TEST ARRANGEMENT



Notes:

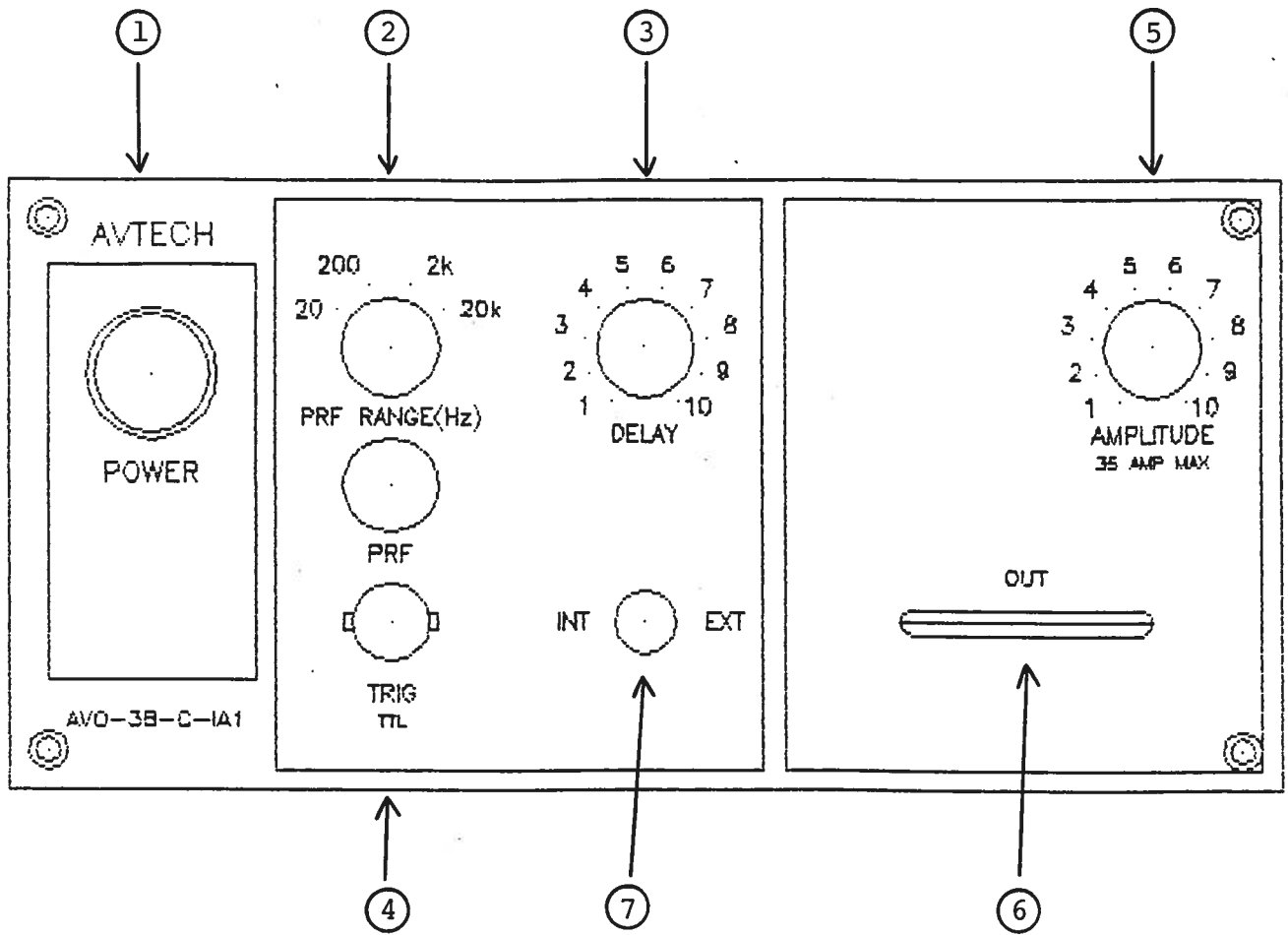
- 1) The equipment should be connected in the general fashion shown above. Since the AVD unit provides an output pulse rise time as low as 1 ns a fast oscilloscope (at least 1 GHz) should be used to display the waveform. If a sampling scope is used, a 50 db (or greater) attenuator should be used to insure a peak input to the scope of less than 0.5 volts.
- 2) The TRIG 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.
- 3) To obtain a stable output display the PRF and PRF RANGE controls on the front panel should be set mid-range. The front panel TRIG toggle switch should be in the INT position. The front panel DELAY control 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 using the PRF and PRF RANGE controls. The main output is delayed with respect to the TRIG output by about 0 to 200 ns depending on the DELAY control setting.
- 4) The laser diode is connected in series with a current limiting resistor ($1 \ll R_s < 3 \text{ Ohm}$) between the AV-LZ3 line center conductor output and the diode anode. In order to monitor the diode current, a 50 Ohm (or 500 Ohm) voltage probe may be connected at the input to the R_s resistor. With this arrangement some ringing will be observed following the output impulse. This ringing is largely the consequence of the exceedingly low probe load impedance.
- 5) The amplitude of the diode current is determined by the setting of the AMP pot control, the series resistor R_s and by the series resistance of the laser diode. A peak current of 35 Amp should result when the total rise time is 3 Ohms and the Amp pot is set fully clockwise.
- 6) **WARNING:** The unit may fail if triggered at a PRF exceeding 20 kHz. Use moderate heat when soldering to the OUT terminal.
- 7) For additional assistance:

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Fig. 2

FRONT PANEL CONTROLS

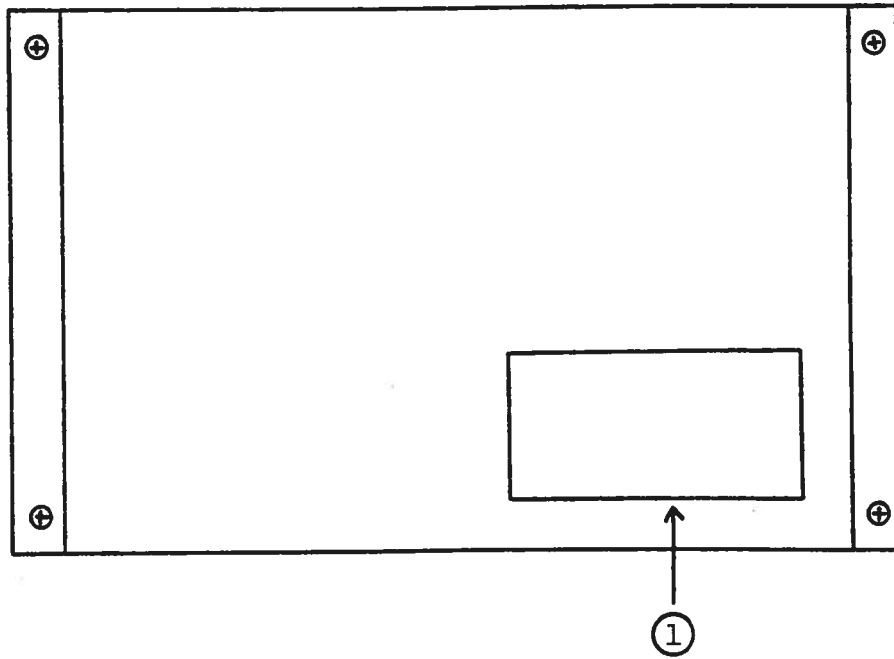


- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. Varies the pulse repetition frequency as follows:

Range 1	20 Hz	-	200 Hz
Range 2	200 Hz	-	2 kHz
Range 3	2 kHz	-	20 kHz
- (3) DELAY Control. Controls the relative delay between the reference output pulse provided at the TRIG output (4) and the main output (6). This delay is variable over the range of 0 to at least 500 ns.
- (4) TRIG Output. This output precedes the main output 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.
- (5) AMP Control. A one turn control which varies the output pulse amplitude in combination with the diode series resistor.
- (6) OUT Connector. AV-LZ3 3 Ohm flexible cable from diode socket to mainframe at this point.
- (7) EXT-INT Control. With this toggle switch in the INT position, the PRF of the AVO unit is controlled via an internal clock which in turn is controlled by the PRF control. With the toggle switch in the EXT position, the AVO unit requires a 0.2 us 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.

Fig. 3

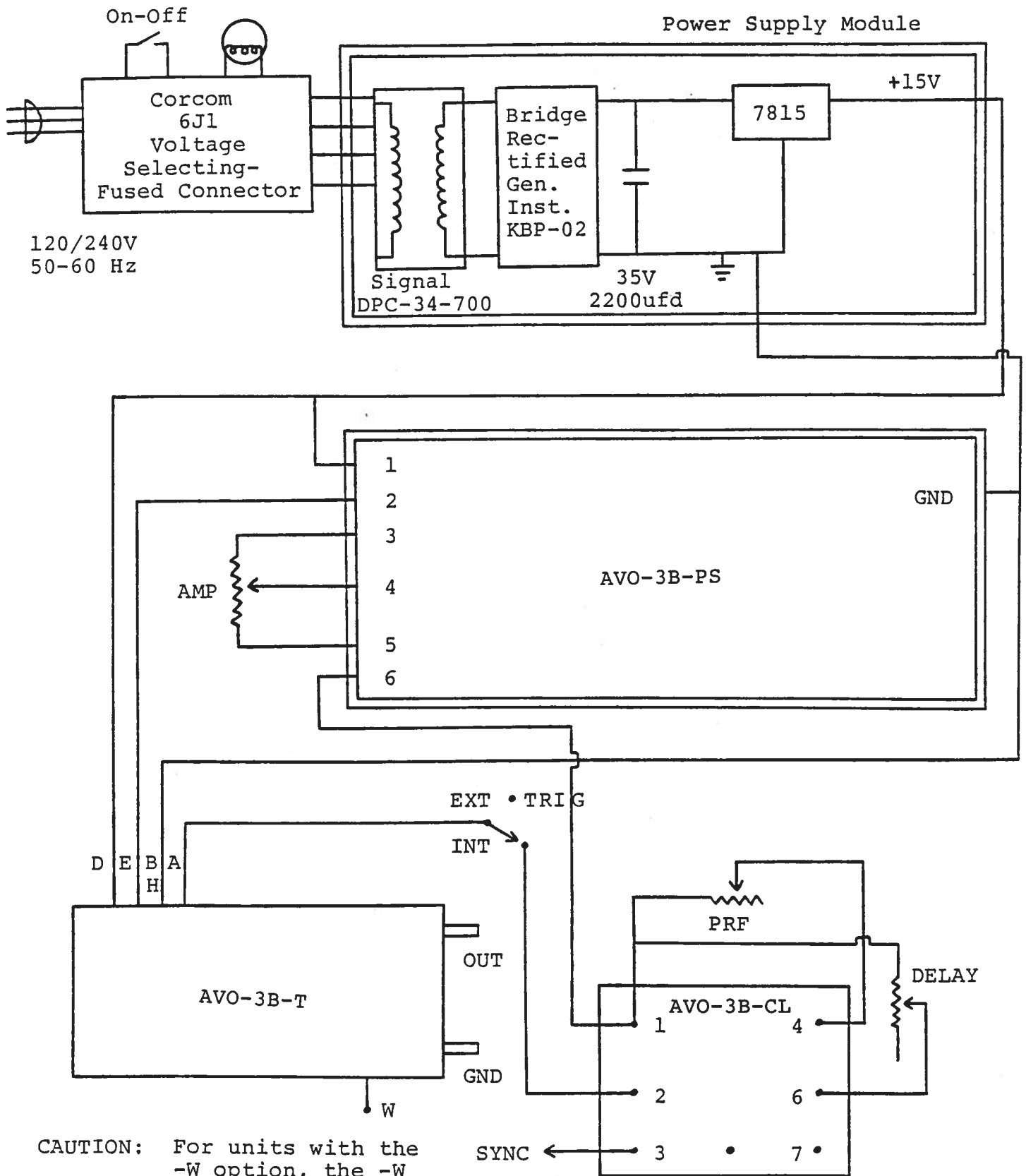
BACK PANEL CONTROLS



- (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 (0.25 A SB).

Fig. 4

SYSTEM BLOCK DIAGRAM



CAUTION: For units with the -W option, the -W terminal is at a DC potential as high as 400V when the prime power is on.

- 1) The AVO-3B-C unit consists of four basic components or modules:
 - a) Metal chassis
 - b) AVO-3B-PS module (Power Supply)
 - c) AVO-3B-T module (Pulse Generator)
 - d) +15V power supply board

The modules are interconnected as shown above.

- 2) If the unit malfunctions, disconnect from the 60 Hz supply and the trigger source and remove the two screws on each side of the unit. With the screws removed, the chassis cover consisting of the top and two sides will lift upwards exposing the modules shown above.
- 3) Reconnect to the 60 Hz source and check the voltage on the line connecting the 7815 output to pin 1 of the AVO-3B-PS module. A voltage of +15 volts should be recorded. If the voltage is substantially less than +15 volts, disconnect the 60 Hz source and disconnect the line from pin 1. Connect a 100 ohm 5 watt resistance to the output of the 7815. Reconnect to the 60 Hz source and measure the voltage across this resistor. A voltage of +15 volts should be indicated. If the voltage is substantially less than 15 volts the power supply module is defective and should be either repaired or replaced. If the measured voltage is equal to +15 volts then either the -PS or -T modules have failed. Disconnect the AVO-3B-T module from the AVO-3B mainframe and apply prime power and measure the voltage at pin 3. If this voltage is about 360 volts then the -T module has failed and should be returned to Avtech for repair or replacement. If the voltage is substantially less than 360 volts then the PS module has failed and should be returned to Avtech for repair.

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April 20, 1993.

Mark Bendett
Imra America
1044 Woodridge Avenue
Ann Arbor, MI 48105

Tel: 313-930-2560
Fax: 313-930-9957

Dear Mark:

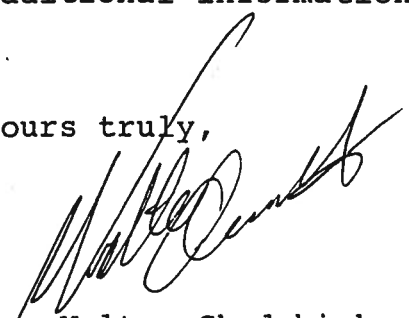
Following our recent telephone conversations, I am pleased to offer the following price and delivery quotation:

Model designation:	AVO-3B-C-P-IA1.
Output amplitude:	10 to 35 Amperes.
Pulse width:	1.5 \pm 0.5 ns.
Output connector:	Plug in socket for 5.6 mm TO package. Socket is on a 2.0 cm x 1 cm 1/16" glass epoxy PCB which is connected to the end of a 30 cm length of AV-LZ1 flexible low impedance line protruding from the front panel of the AVO-3B-C mainframe. Series resistor (at socket) is accessible and can be changed by end-user.
Other:	As per standard AVO-3B-C.
Price:	\$3,490.00 US each, FOB destination (i.e. delivered on your doorstep).
Delivery:	30 to 45 days.

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Thank you for your continuing interest in our products.
Please call me again if you require any additional information.

Yours truly,



Dr. Walter Chudobiak
Chief Engineer

WC:pr

July 30/93