AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS ENGINEERING · MANUFACTURING

> BOX 5120 STN. "F" OTTAWA, ONTARIO Č CANADA K2C 3H4 (613) 226-5772 TELEX 053-4591

P.O. BOX 265 OGDENSBURG NEW YORK 13669 (315) 472.5270

INSTRUCTIONS

MODEL AVR-B2-C-W-OS PULSE GENERATOR

S.N.:

WARRANTY

Electrosystems Ltd. Avtech 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 dissembled, modified or which have been 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

¢

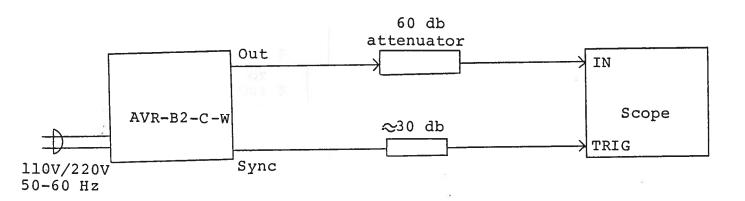


Fig. l

1

Notes:

- The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed 0.1 GHz.
- 2) The use of 50 db attenuator at the scope vertical input channel will insure a peak input signal to the scope of less than one volt (necessary only if sampling scope used). If a high impedance real time scope is used, the pulse generator should be terminated using a shunt 50 ohm resistor.
- 3) The sync output channel provides TTL level signals. To avoid overdriving the TRIG input channel of some scopes, a 30 db attenuator should be placed at the input to the scope trigger channel.
- 4) To obtain a stable output display the PW, PRF and PRF FINE controls on the front panel should be set mid range. The front panel TRIG toggle 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 and PRF FINE controls.
- 5) The output pulse width is controlled by means of the front panel one turn PW control.
- 6) The output pulse amplitude is controlled by means of the front panel one turn AMP control.
- 7) To voltage control the output pulse width, remove the jumper wire between banana plugs A and B on the back panel and apply 0 to +10V to connector B ($R_{IN} \ge 10K$). (option).
- B) To voltage control the output amplitude, remove the jumper wire between banana plugs A and B on the back panel and apply O to +10V to connector B ($R_{IN} > 10K$). (option).
- 9) An external clock may be used to control the output PRF of the AVR unit by setting the front panel TRIG toggle switch in the EXT position and applying a 0.2 usec (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 rather than from the SYNC output.

FRONT PANEL CONTROLS

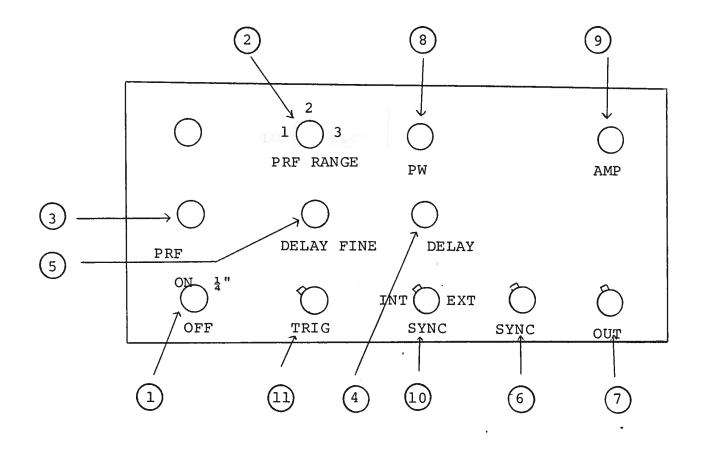


Fig. 2

(1) <u>ON-OFF Switch</u>. Applies basic prime power to all stages.

(2) <u>PRF Control</u>. Varies PRF from 10 Hz to 20 KHz as
 (3) follows:

Range 120Hzto200HzRange 20.2KHzto2KHzRange 32KHzto20KHz

- (4) <u>DELAY Control</u>. Controls the relative delay between the
 (5) reference output pulse provided at the SYNC output (6) the main output (7). This delay is variable over the range of 0 to about 1.0 usec.
- (6) <u>SYNC Output</u>. This output precedes the main output (7) and is used to trigger the scope time base. The output is a TTL level 100 nsec (approx.) pulse capable of driving a fifty ohm load.
- (7) <u>DUT Connector</u>. BNC connector provides output to a fifty ohm load.
- (8) <u>PW Control</u>. A one turn control which varies the output pulse width from 0.1 usec to 5 usec.
- (9) <u>AMP Control</u>. A one turn control which varies the output pulse amplitude from 0 to +50V to a fifty ohm load.
- (10) <u>EXT-INT Control</u>. With this toggle switch in the INT position, the PRF of the AVR 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 AVR unit requires a 0.2 usec 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.
- (11) <u>TRIG Input</u>. The external trigger signal is applied at this input when the EXT-INT toggle switch is in the EXT position.

BACK PANEL CONTROLS

٢

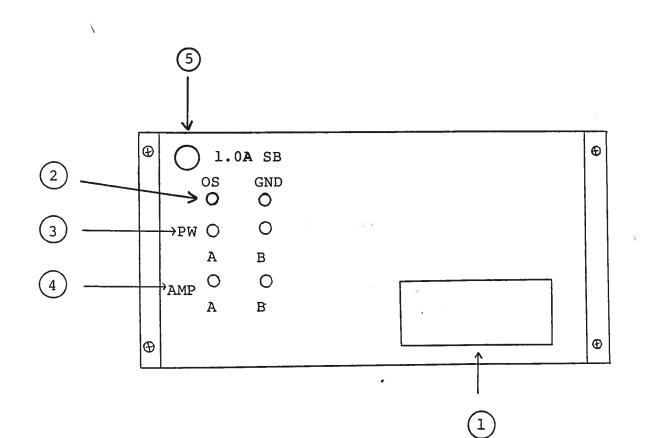


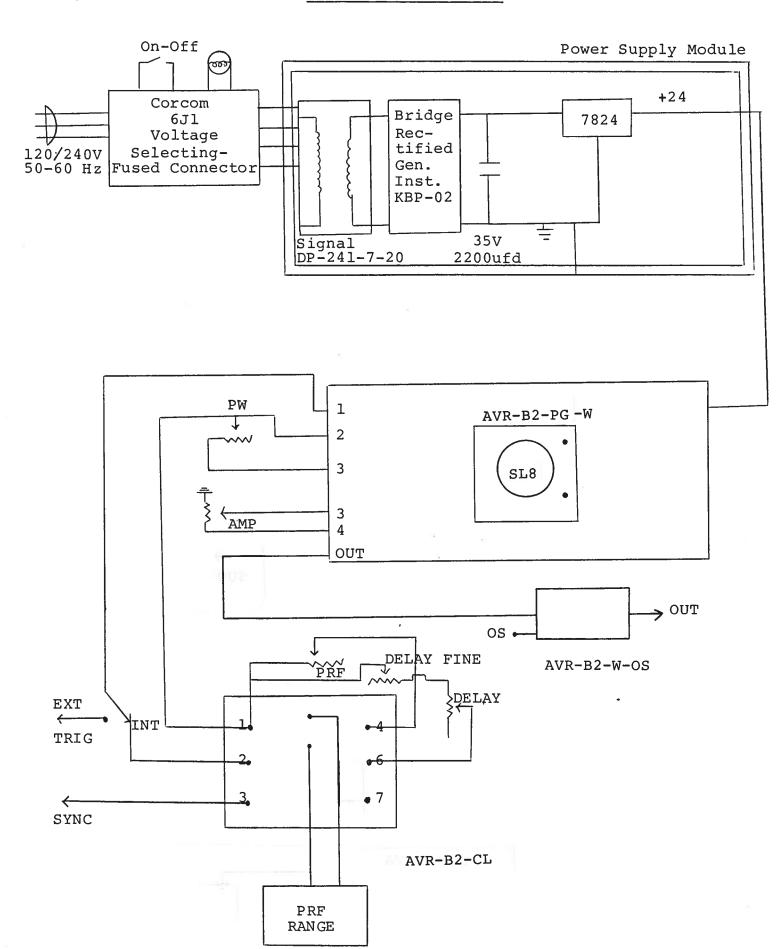
Fig. 3

1

- (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.
- (2) <u>DC OFFSET Input</u>. To DC offset the output pulse, connect a DC power supply set to the desired offset value to these terminals. The maximum allowable DC offset voltage is ±50 volts (100 mA).
- (3) To voltage control the output pulse width, remove the jumper wire between banana plugs A and B and apply 0 to +10V to connector B ($R_{IN} > 10K$). (option).
- (4) To voltage control the output amplitude, remove the jumper wire between banana plugs A and B and apply 0 to +10V to connector B ($R_{IN} > 10K$). (option).
- (5) <u>1.0A SB</u>. This fuse limits the DC prime power supplied to the output stage and will blow in the case of severe overloading.

Fig. 4

SYSTEM BLOCK DIAGRAM



SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AVR-B2-C consists of the following basic modules:

- 1) AVR-B2-PG pulse generator module
- 2) AVR-B2-CL clock module
- 3) +24V power supply board

The modules are interconnected as shown in Fig. 4. The clock module controls the output PRF and the relative delay between the main output and the SYNC outputs. The PW pulse generator module generate the output pulse. In the event of an instrument malfunction, it is most likely that the rear panel 1.0A SB fuse or some of the output switching elements (SL8) may have failed due to an output short circuit condition or to a high duty cycle condition. The switching elements may be accessed by removing the cover plate on the bottom side of the instrument. NOTE: First turn off the prime power. The elements may be removed from their sockets by means of a needle nosed pliers. The SL8 is a selected VMOS power transistor in a TO 220 packages and may be checked on a curve tracer. If defective, replacement units should be ordered directly from Avtech. When replacing the SLB switching elements, take care to insure that the short lead (of the three leads) is adjacent to the black dot on the chassis. If the switching elements are not defective. then the four Phillips screws on the back panel should be removed. The top cover may then be slid off and operation of the clock and power supply modules should be checked. The clock module is functioning properly if:

- a) 0.1 usec TTL level outputs are observed at pins 2 and 3.
- b) The PRF of the outputs can be varied over the range of 20 Hz to 20 KHz using the PRF, PRF FINE and PRF RANGE controls.
- c) The relative delay between the pin 2 and 3 outputs can be varied by at least 500 nsec by the DELAY controls.

The sealed clock module must be returned to Avtech for repair or replacement if the above conditions are not observed. The power supply board generates +24V DC to power the other modules. If the voltage is less than +24V, turn off the prime power and unsolder the lead from the 7824 regulator chip on the power supply board. Solder a 100 ohm 5 watt resistor to the 7824 output to ground and turn on the prime power. A voltage of +24 volts should be read. If the voltage is less then the power supply board is defective and should be repaired or replaced.

S.chroff 08.24.89

an 1930 Market State to a suma in ta Philipped in the state

ri Anto-101-Weiperse generation module 27 Alt-101-101 Elizatio monorme 27 Alterest Europity Down I

its mountary on a trining moneted as them in Fire as the detay between much the controls the sample FoR and the relative detay between the main output and the Bröc outputs. The FW pulle generates another each address the smooth output and the react of the isord SO made on mome of the output and thing presence the asy have satisfied due to an output short recruit condition of the accessed by removing the rower plane or the potential asy as accessed by removed from their content of the better rule of the instrument. NOTE: First the rower plane or the potential asy alements have be removed from their content of mades or a demants have be removed from their content of means or a resolute moment. NOTE: First the content of means or a demants have be removed from their content of means or a transition of the strength on the there are better the branets and on a first or all the sected vMOS power transition of the there the the sected vMOS power transition of the there the the sected vMOS power atometics, take care to income that the should be related to the satisfies of the back parts that the should be related on the section of the back parts that the should be related to the first of the back parts to the the should the first line of the back parts to the the should the relation power supply mount to the back parts the defective, the the power supply mount to the back parts the output and power supply medulor should be thered. The resolution of the back parts the defective the the the power supply mount should be thered. The resolution of the the theory of the the the the state of the power supply mount to the the should the resolution.

- are 0.1 cases FTL 1.4701 parapress are observed at purch 1.4400 J, at The PRP of the output two be wareed ever the recept of 20 Hz to 20 FR data the PRP, PWP FUE and PRP Former controls.
- c) the relative aday between the plot 2 and 5 outents can be varied by all isser build need by bie Moule confirmate.

The second choic actuals ages, bo restained to inviech nor reporin resident of the above condition on an categories. Nor mover supply hourd demendes 290 to incoment the differ and takes. If the category house the mess that the 200, incoment the prime present of an object the case of an -200, incoment the prime present of an object the case of an -200, incoment the entry on the provet sized been been of an incoment the form the restance of the category board, and the form the prime mentator of the provet sized been been and the restance of the proves. It restance of the case of an and the restance of the proves of restance of the sized of the second of the restance and the restance of the proves significance of the restance is and the restance of restance of the restance of the restance is with the restance of restance of the restance of the restance of sized be reported of restance.

-EN