

AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
ENGINEERING - MANUFACTURING

P.O. BOX 265
OGDENSBURG
NEW YORK
13669
(315) 472-5270

BOX 5120, STN. "F"
OTTAWA, ONTARIO
CANADA K2C 3H4
TEL: (613) 226-5772
FAX: (613) 226-2802
TELEX: 053-4591

INSTRUCTIONS

MODEL AVO-7A-C-P-LWA PULSE GENERATOR

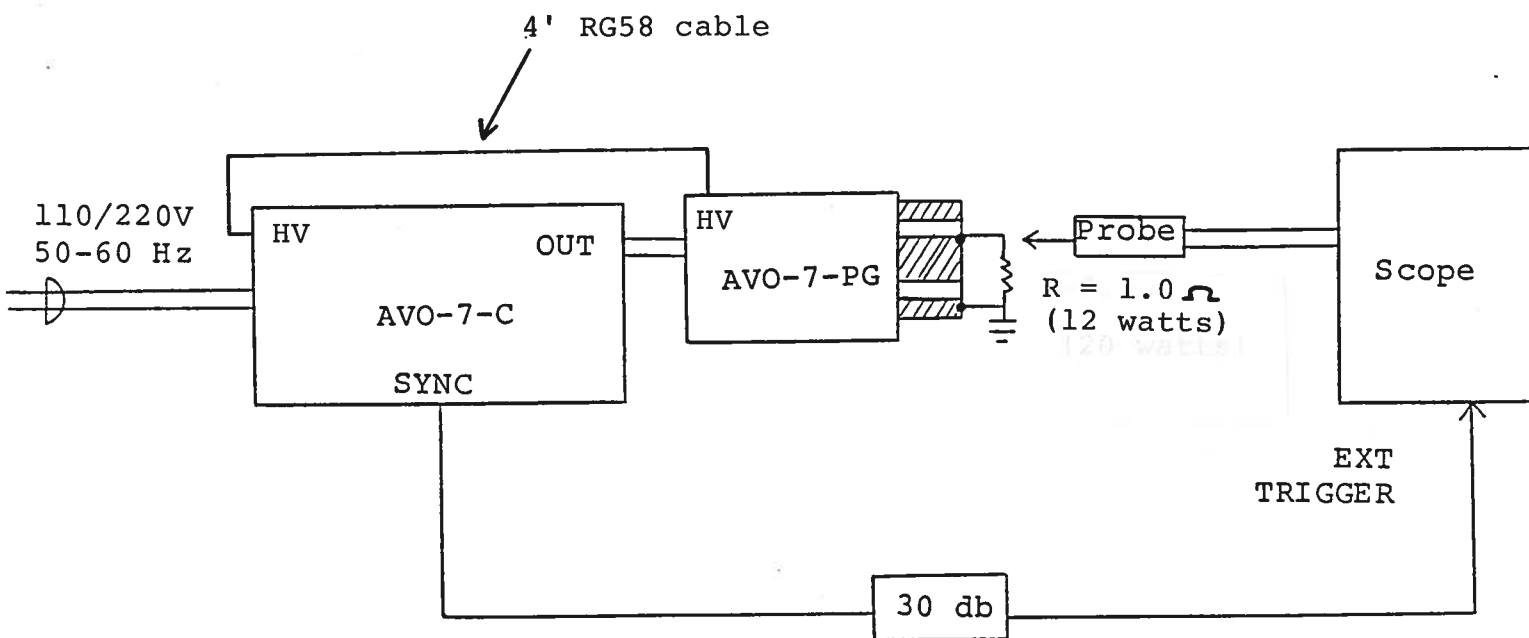
S.N. :

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.

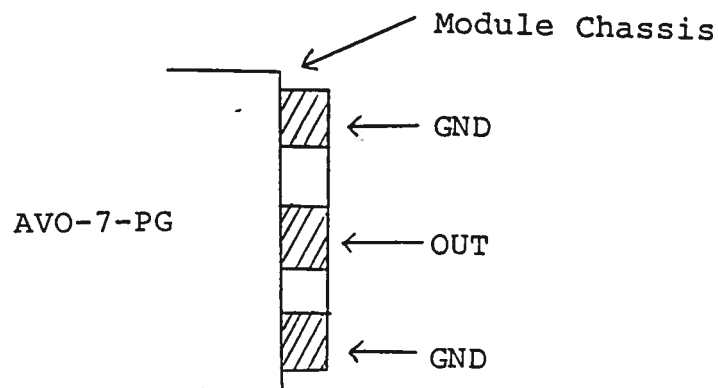
Fig. 1

PULSE GENERATOR TEST ARRANGEMENT

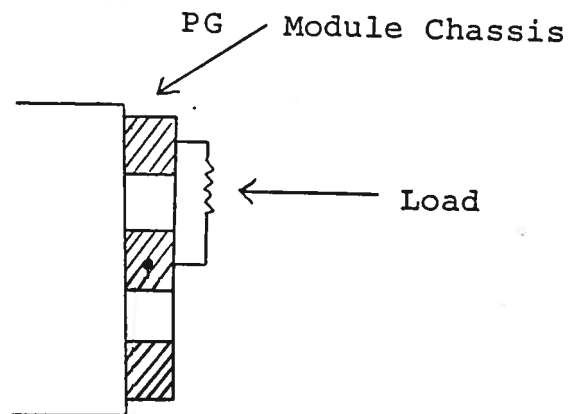


GENERAL OPERATING INSTRUCTIONS

- 1) The equipment should be connected in the general fashion shown above. Since the AVO unit provides an output pulse rise time as low as 500 nsec a fast oscilloscope (at least 50 MHz) should be used to display the waveform.
- 2) The sync 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 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 rotating the PRF controls. The main output is delayed with respect to the SYNC output by about 0 to 1 usec depending on the DELAY control setting.
- 4) The main output terminals of the pulse generator module consists of a short length of microstrip transmission line protruding from the module chassis. The OUT terminal is the center conductor which is bounded on both sides by the ground plane (see below):



The load should be connected between the OUT and GND terminals. The voltage across the load may be monitored by means of a high impedance scope probe.



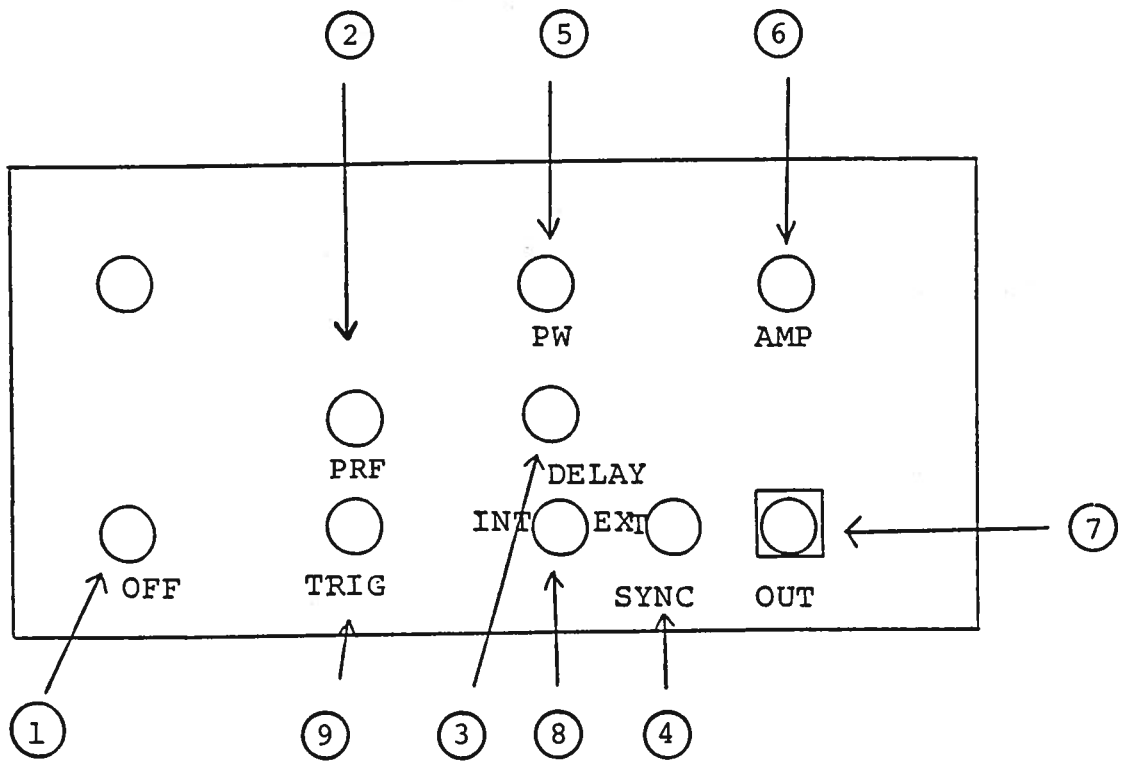
Take care to insure that during soldering the OUT conductor is not shorted to the chassis. Also, use minimal heat when soldering. A BNC output connector (in parallel with the microstrip output) is also provided.

- 5) An external clock may be used to control the output PRF of the 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.
- 6) The AVO-7 is designed to supply up to 160 amperes to a maximum load voltage of 160 volts. Factory tests are conducted with a 1.0 ohm load capable of dissipating at least 12 watts. Higher load resistance values may be used but the output voltage will be limited to 160 volts.

- 7) CAUTION: The AVO-7-C is designed to operate with a maximum duty cycle of 2%. For example at PRF up to 10 Hz, the full 2 msec PW may be employed. At 1 KHz PRF, the maximum allowable PW is reduced to 20 usec.
- 8) CAUTION: The output stage is protected against overload condition by a 1.0 A slow blow fuse on the main frame back panel. However, the output switching elements may fail if the duty cycle rating is exceeded. Heating and subsequent likely failure of the output stage is reduced if the following action is taken where possible:
 - a) PRF is kept to a minimum.
 - b) Keep the output PW to a minimum.
 - c) Keep the load resistance as high as possible.
- 9) The unit can be converted from 110 to 220V 50-60 Hz operation by adjusting the voltage selector card in the rear panel fused voltage selector cable connector assembly.

Fig. 2

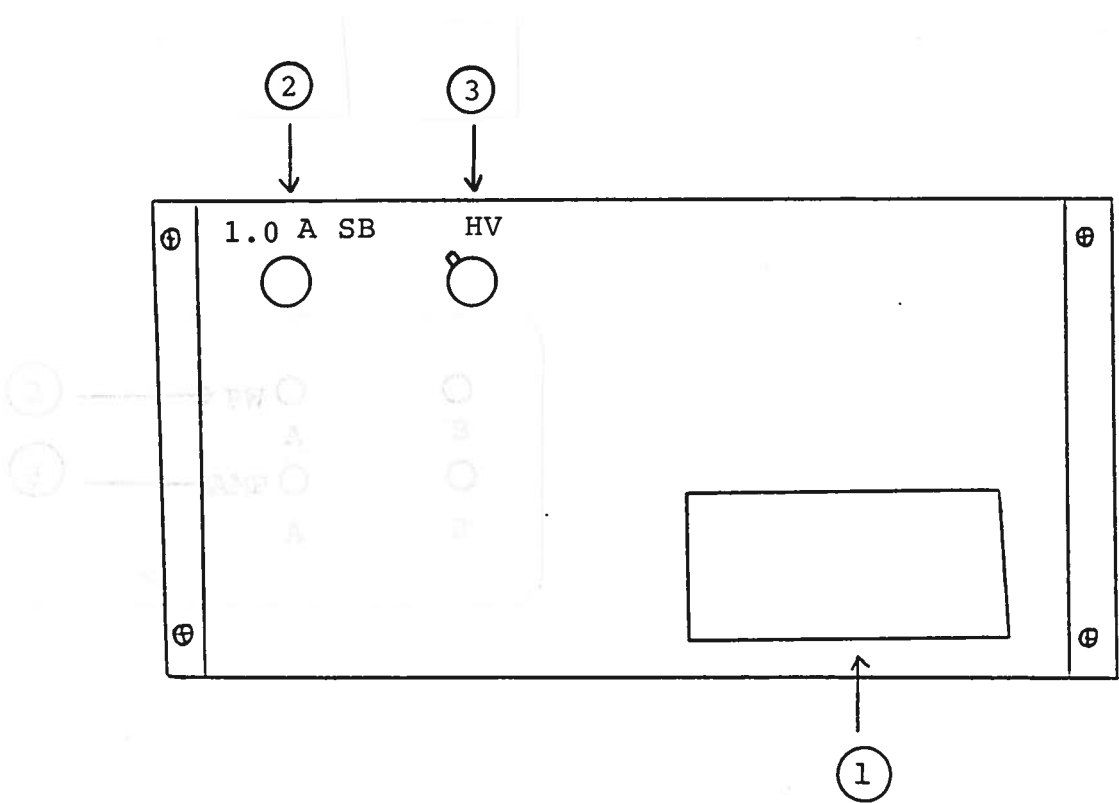
FRONT PANEL CONTROLS



- (1) ON-OFF Switch. Applies basic prime power to all stages.
- (2) PRF Control. Varies PRF from about 1 Hz to 100 Hz. The operating PRF should be set using a scope.
- (3) DELAY Control. Controls the relative delay between the reference output pulse provided at the SYNC output (4) and the main output (7). This delay is variable over the range of 0 to about 1 usec.
- (4) SYNC Output. This output precedes the main output (7) and is used to trigger the sampling scope time base. The output is a TTL level 100 nsec (approx.) pulse capable of driving a fifty ohm load.
- (5) PW Control. A one turn control which varies the output pulse width from 0.5 usec to 5.0 usec.
- (6) AMP Control. The output pulse amplitude is controlled by means of the one turn potentiometer (AMP).
- (7) OUT Connector. A multi pin connector which attaches the 2 foot cable from the pulse generator module to the main frame.
- (8) 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 controls. With the toggle switch in the EXT position, the AVO 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.
- (9) TRIG Input. The external trigger signal is applied at this input when the EXT toggle switch is in the EXT position. The output pulse appears about 60 nsec after the application of the TRIG pulse.

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. (0.5 amp SB)
- (2) 1.0 A SB FUSE. Protects output stage against overload conditions.
- (3) HV BNC. This connector must be connected to the HV BNC connector on the -PG module via a 4 foot length of RG58 cable. CAUTION: The center conductor is at a potential as high as 170 volts DC.

Fig. 4

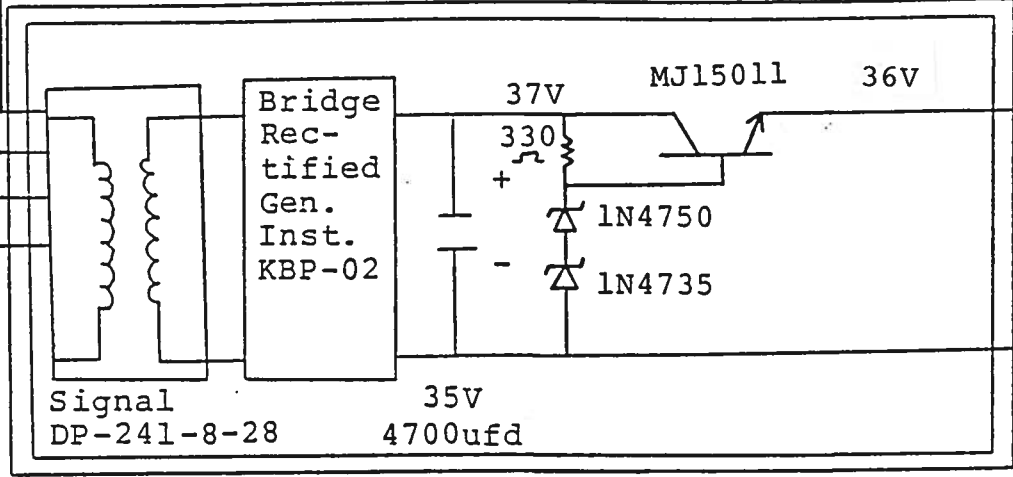
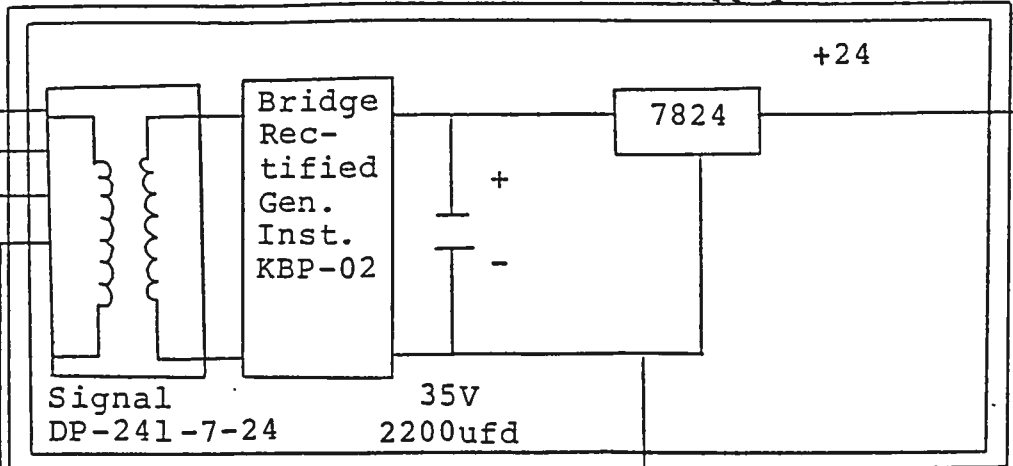
SYSTEM BLOCK DIAGRAM

Power Supply Module

On-Off

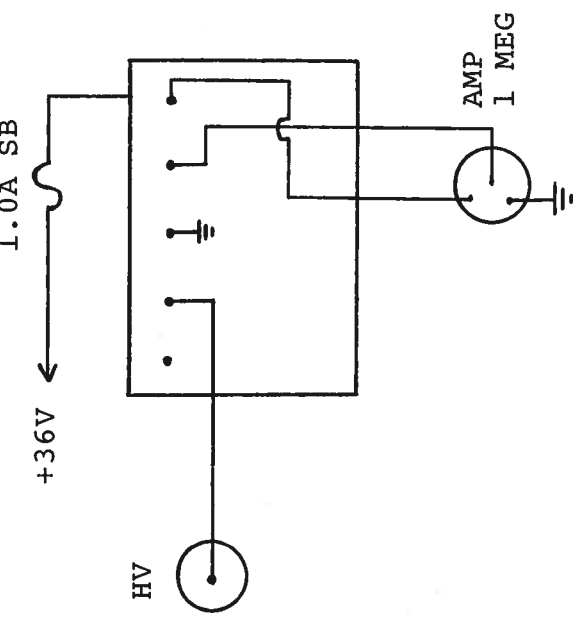
Corcom
6J1
Voltage
Selecting-
Fused Connector

120/240V
50-60 Hz

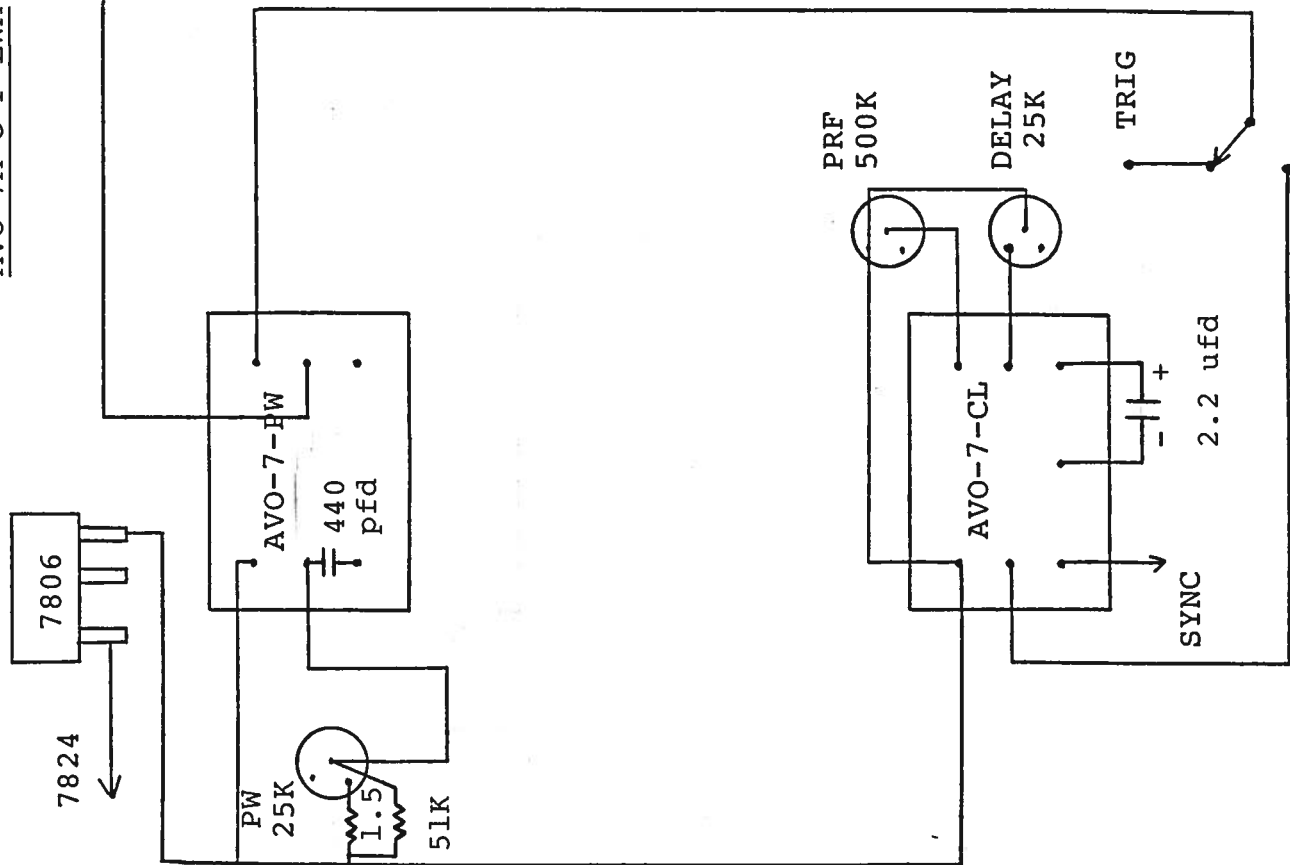
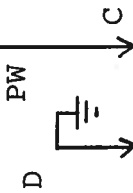


+24V

AVO-7A-C-P-LWA



7824



7824

PW

25K

1.5K

51K

AVO-7-PW

440 pfd

PRF

500K

DELAY

25K

TRIG

AVO-7-CL

2.2 ufd

SYNC

SYSTEM DESCRIPTION AND REPAIR PROCEDURE

The AV0-7-C unit consists of the following basic modules:

- 1) AV0-7-PG pulse generator module
- 2) AV0-7-CL clock module
- 3) +24V and +33V power supply board
- 4) AV0-7-PW pulse width module

The modules are interconnected as shown in Fig. 4.

In the event of an instrument malfunction, it is most likely that the 1.0 A slow blow fuse or the main power fuse on the rear panel has blown. Replace if necessary. If the unit still does not function, it is most likely that some of the output switching elements may have failed due to an output short circuit condition or to a high duty cycle condition. The unit should be returned to Avtech for replacement of the output switching elements. 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 the operation of the clock and power supply modules 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 1 Hz to 10 Hz using the PRF controls.
- c) The relative delay between the pin 2 and 3 outputs can be varied by at least 1 usec by the DELAY control.

The sealed clock module must be returned to Avtech for repair or replacement if the above conditions are not observed.

Schroff

02.09.90

11

Handwritten header text, possibly a date or reference number.

Handwritten line of text, possibly a recipient or sender name.

Handwritten text block, possibly a title or subject line.

Handwritten line of text, possibly a date or reference number.

Main body of handwritten text, consisting of several lines of a letter or document.

Second main body of handwritten text, continuing the letter or document.

Final line of handwritten text at the bottom of the page.