INSTRUCTIONS

MODEL AV-141H-141D-145C2-146B-32-PS-BKA AMPLIFIER

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
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SECTION 1: GENERAL

1) This unit consists of four independent DC coupled amplifiers housed in a common chassis.

2) The basic specifications for each channel are given in the following section (Specifications).

3) The front panel and rear panel controls are described in the Controls Section.

4) The 4 channels are protected against excessive average power dissipation by the two rear panel 1.0 Amp fuses and by the units over load function. The 4 channels are not protected against input amplitudes which exceed those shown on the four input connectors on the front panels. Failures due to the application of excessive input amplitudes are not covered by the warranty.

5) A selection of RG58C cables is provided for interconnecting the four amplifiers.

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

7) For additional information:

Tel: 613-226-5772
Fax: 613-226-2802

SECTION 2: SPECIFICATIONS AND TESTING

MODEL AV-141H
SPECIFICATIONS

The Model AV-141H amplifier is designed to buffer bipolar nanosecond rise time baseband pulses in the pulse width range of about 5.0 ns and higher and CW signals in the frequency range of DC to 100 MHz. The basic specifications for the unit are as follows:

Gain:	$\geq$ 0 dB (unity gain)
Peak output voltage:	$\pm$ 10 Volts (to 50 Ohms)
Rise time:	$\leq$ 4 ns
Input impedance level:	$\geq 10^{10}$ Ohms
Bandwidth:	DC to 100 MHz

FIG. 1: MODEL AV-141H

MODEL AV-141D
SPECIFICATIONS

The Model AV-141D amplifier is designed to amplify bipolar nanosecond rise time baseband pulses in the pulse width range of about 5.0 ns and higher and CW signals in the frequency range of DC to 150 MHz. The basic specifications for the unit are as follows:

Gain:	> 20 dB
Peak output voltage:	± 3 Volt
Rise time:	< 3.0 ns
Impedance level:	50 Ohms nominal
Bandwidth:	DC to 15 MHz
Max. noise figure:	3.2 nV/ Hz

CAUTION: The input to this amplifier does not include any overload protection and so it may be damaged if subjected to high amplitude spurious outputs such as those provided by some PMT. The warranty does not apply to such failures.

FIG. 2: MODEL AV-141D

MODEL AV-145C2
SPECIFICATIONS

The Model AV-145C2 amplifier is designed to amplify bipolar baseband pulses in the pulse width range of about 20 ns and higher and CW signals in the frequency range of DC to 35 MHz. The basic specifications for the unit are as follows:

Gain:	≥ -40 dB to +40 dB Gain is controlled by a 0 to + 5 VDC control voltage (0V -40 dB; +5V +40 dB)
Bandwidth:	DC to 35 MHz
Peak output voltage (to 50 Ohms or higher):	±10.0 Volts
Rise time:	≤ 5 ns
Input impedance:	50 Ohms
Input noise level:	30 uV

FIG. 3: MODEL AV-145C2

MODEL AV-146B-32
SPECIFICATIONS

The Model AV-146B-32 clamping amplifier is designed to amplify bipolar baseband pulses in the pulse width range of about 20 ns and higher and CW signals in the frequency range of DC to 50 MHz. The basic specifications for the unit are as follows:

Gain:	$\geq$ -30 dB (x 32 voltage)
Bandwidth:	DC to 50 MHz
Peak output voltage (to 50 Ohms or higher):	$\pm$ 5.0 Volts
Clamping levels:	$\pm$ 0.5 V to $\pm$ 5.0 V
Rise time:	$\leq$ 6 ns
Input impedance;:	50 Ohms
Input noise level:	2.5 nV/ Hz

FIG. 4: MODEL AV-146B-32

SECTION 3: FRONT AND BACK PANELS

FRONT PANEL CONTROLS

1) POWER SWITCH. Applies basic prime power to the chassis.

2) ON-OFF: Each channel has a two position switch to turn the channel ON or OFF.

3) ON LIGHT: LED on each channel indicates when ON-OFF switch is in the ON position.

4) IN CONNECTOR: Each channel has a BNC input connector. CAUTION: Do not exceed the max rated input amplitude.

5) OUT CONNECTOR: Each channel has a BNC out connector. CAUTION: The load impedance must not be less than 50 Ohms. Failures due to short circuit loading are not covered by the warranty.

6) GAIN: The gain for the AV-145C2 stage is varied from -40 dB to +40 dB as the control voltage applied here is varied from 0 to +5 VDC.

7) ±0.5V to ±5.0V: Two one turn controls vary the negative and positive clamping levels for the output of the AV-146B stage.

8) OVERLOAD INDICATOR: If the unit is overloaded (by operating at an exceedingly high duty cycle or by operating into a short circuit), the protective circuit will turn the output of the instrument OFF and turn the indicator light ON. The light will stay ON (i.e. output OFF) for about 5 seconds after which the instrument will attempt to turn ON (i.e. light OFF) for about 1 second. If the overload condition persists, the instrument will turn OFF again (i.e. light ON) for another 5 seconds. If the overload condition has been removed, the instrument will turn on and resume normal operation. Overload conditions may be removed by:

    1) Reducing PRF (i.e. switch to a lower range)
    2) Reducing pulse width (i.e. switch to a lower range)
    3) Reducing output amplitude
    4) Removing output load short circuit (if any)

5)

FIG. 5: FRONT 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. (0.5 A SB)

(2) 1.0A SB (N&P): Fuses which protects the output stage if the output stage is overloaded.

(3)

FIG. 6: BACK PANEL CONTROLS

TOP COVER REMOVAL AND RACK MOUNTING

1) The interior of the instrument may be accessed by removing the four Phillips 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 Phillips screw on the side panel adjacent to the front handle.

ELECTROMAGNETIC INTERFERENCE

To prevent electromagnetic interference with other equipment, all used outputs should be connected to shielded 50 Ohm loads using shielded 50 Ohm coaxial cables. Unused outputs should be terminated with shielded 50 Ohm BNC terminators or with shielded BNC dust caps, to prevent unintentional electromagnetic radiation. All cords and cable should be less than 3m in length.

PERFORMANCE CHECK SHEET