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SINCE 1975

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INSTRUCTIONS

MODEL AV-144B1-HUC
TTL INPUT, +100V OUTPUT
PULSE AMPLIFIER
WITH 2 ns RISE AND FALL TIMES

SERIAL NUMBER: _____

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.

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Manual Reference: /fileserver1/officefiles/instructword/av-144/AV-144B1-HUC,ed1.odt.
Last modified February 29, 2024.

INTRODUCTION

The Model AV-144B1-HUC is a DC-powered amplifier module, designed to amplify TTL input pulses. The output pulses are +100V in amplitude, approximately, and can drive 50 Ohm loads. The rise and fall times are < 2 ns (20%-80%). Pulse widths to 1 ms and duty cycles to 5% are supported.

The AV-144B1-HUC requires +24V, -24V, and +115V DC power supplies. The AV-144B1-HUC contains no internal switching regulators, to provide a low-noise environment.

The +24V and -24V supplies should be well regulated, and have a tolerance of +/- 0.5V.

The +115V nominal DC supply may be safely set in the range of 0V to +116V. When this supply is set to +115V, the output is nominally +100V. For lower supply values, the output amplitude will be proportionally lower.

The AV-144B1-HUC contains a thermal protection circuit, to provide a degree of protection against excessive duty cycles (> 5%) or other improper conditions. If the red LED indicator (labeled “T”) activates, turn off the power supplies and allow the module to cool. The AV-144B1-HUC also includes a short-circuit protection circuit.

BASIC SPECIFICATIONS

Model number: AV-144B1-HUC

Description: Customized DC-Coupled Non-Linear Amplifier

Output amplitude: +100 Volts to 50Ω (fixed)

Maximum duty cycle: 5%

Pulse width range: 30 ns to 1 ms, $PW_{IN} = PW_{OUT}$ (approximately)

Rise and fall times (20%-80%): < 2 ns

Input amplitude: TTL logic levels

Input impedance: 470 Ohms

Output impedance: < 5 Ohms

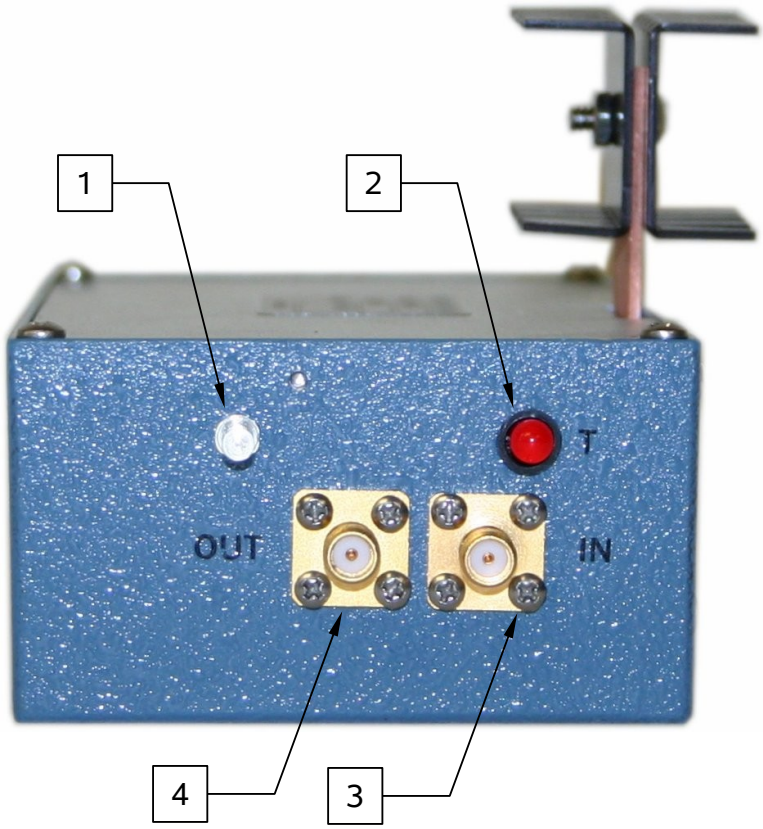
Prime Power: a) +24 VDC (+/- 0.5V), 300 mA
b) -24 VDC (+/- 0.5V), 300 mA
c) +115 VDC (+/- 1V), 150 mA

Connectors, Trig & Out: SMA

Connectors, DC Power: accessible on a 9-pin MTA 0.156" type header. One AMP 3-640600-9 mating connector will be supplied.

Chassis Size: 1.7" x 3.0" x 6.0"

CONTROLS - FRONT



1. GROUND TERMINAL. This terminal may be used to connect the instrument chassis to ground.

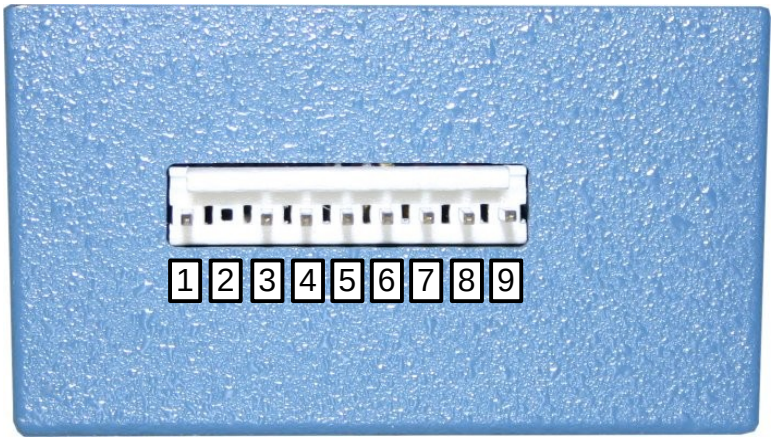
2. THERMAL OVERLOAD INDICATOR (T). If this indicator lights, turn off the power supplies to the module and allow the module to cool. If nuisance triggering is occurring, consider heat-sinking the module and the copper fin, or cooling it with an external fan. This should not be necessary if the duty cycle is kept below 2%.

3. IN CONNECTOR. This TTL-level (0 and +5V) logic input is used to trigger the instrument. The instrument triggers on the rising edge of this input. The input impedance of this input is 470 Ω. (Depending on the length of cable attached to this input, and the source driving it, it may be desirable to add a coaxial 50 Ohm terminator to this input to provide a proper transmission line termination. The Pasternack (www.pasternack.com) PE6008-50 BNC feed-thru 50 Ohm terminator is suggested for this purpose.)

4. OUT CONNECTOR. This SMA connector provides the main output signal, into load impedances of 50Ω.

   ⚠ Caution: Voltages as high as +100V may be present on the center conductor of this output connector. Avoid touching this conductor. Connect to this connector using standard coaxial cable, to ensure that the center conductor is not exposed.

CONTROLS - REAR



PIN 1. Connect the +115V DC power supply here (150 mA maximum).

PIN 2. Not used – pin removed.

PIN 3. Not used – no internal connections.

PIN 4. Connect the -24V DC power supply here (130 mA maximum).

PIN 5. Connect the power supply ground(s) here.

PIN 6. Connect the +24V DC power supply here (130 mA maximum).

PIN 7. Do not use. This is connected to the internal +5V regulator. No external connections should be made.

PIN 8. Not used – no internal connections.

PIN 9. +24V. This pin is connected internally to PIN 6.

POWER SUPPLY SEQUENCING

The AV-144B1-HUC requires three DC power supplies: +24V (130 mA typically), -24V (130 mA typically), and +115V (150 mA typically) DC.

The three supplies should be turned on simultaneously, or they can be applied in this sequence: +24V, -24V, and +115V DC.

PROTECTING YOUR INSTRUMENT

DO NOT EXCEED 5% DUTY CYCLE

The output duty cycle should never exceed 5%. Operation at lower duty cycles results in less power dissipation, extending the lifetime of the circuitry.

CONNECT THE POWER SUPPLIES PROPERLY

The +24V, -24V, and +115V power supplies are not protected against improper voltages. Make sure they are correctly applied.

PERFORMANCE CHECK SHEET