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NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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INSTRUCTIONS

MODEL AV-144B1-HUB
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 disassembled, 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

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Manual Reference: /files/officefiles/instructword/av-144/AV-144B1-HUB,ed1.odt.
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INTRODUCTION

The Model AV-144B1-HUB 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-HUB requires +24V, -24V, and +115V DC power supplies. The AV-144B1-HUB 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 ± 0.5 V.

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-HUB 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-HUB also includes a short-circuit protection circuit.

SPECIFICATIONS & ORIGINAL QUOTATION

May 17, 2007
Andrew J. Speck
Rowland Institute at Harvard
100 Edwin H. Land Blvd
Cambridge, MA 02142
Phone: (617) 497-4749
Fax: (617) 497-4627
E-mail: speck@rowland.harvard.edu

Andrew,

Following your recent inquiry, I am pleased to re-quote as follows for a module with does not contain any DC-DC converters:

Quote number: 13800

Model number: AV-144B1-HUB

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

Maximum duty cycle: 5%

Maximum output power: 15 Watts

Pulse width range: 100 ns to 1 ms, PWin = POut

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

Input amplitude: TTL logic levels

Input impedance: > 1 kilohm*
(* lated revised to 470 Ohms)

Output impedance: < 5 Ohms

Prime Power: a) +24 VDC (+/- 0.5V), 300 mA
b) -24 VDC (+/- 0.5V), 300 mA
c) +125* VDC (+/- 1V), 100 mA

(* lated revised to +115V)

Connectors, Trig & Out: SMA on 1.7" x 3.0" face (see attached photos)

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"

Price for qty 1: \$4298 US each, FOB destination.

Price for qty 2: \$3498 US each, FOB destination.

Price for qty 3: \$3180 US each, FOB destination.

Price for qty 4: \$3050 US each, FOB destination.

Price for qty 5: \$3000 US each, FOB destination.

Prices include the 5% academic discount.

Quote valid for: 60 days

Estimated delivery: 60 days after receipt of order.

Please note the failures caused by improper power supply connections or sequencing are not covered by the warranty. Be aware that "bare-bones" modules of this type because they are more susceptible to user abuse, due to the multiple power supplies required.

Please call or email me if I can be of further assistance.

Thank you for your interest in our products!

Regards,

Mary Budarick
Sales Manager

--- Avtech Electrosystems Ltd. ----- since 1975 ---

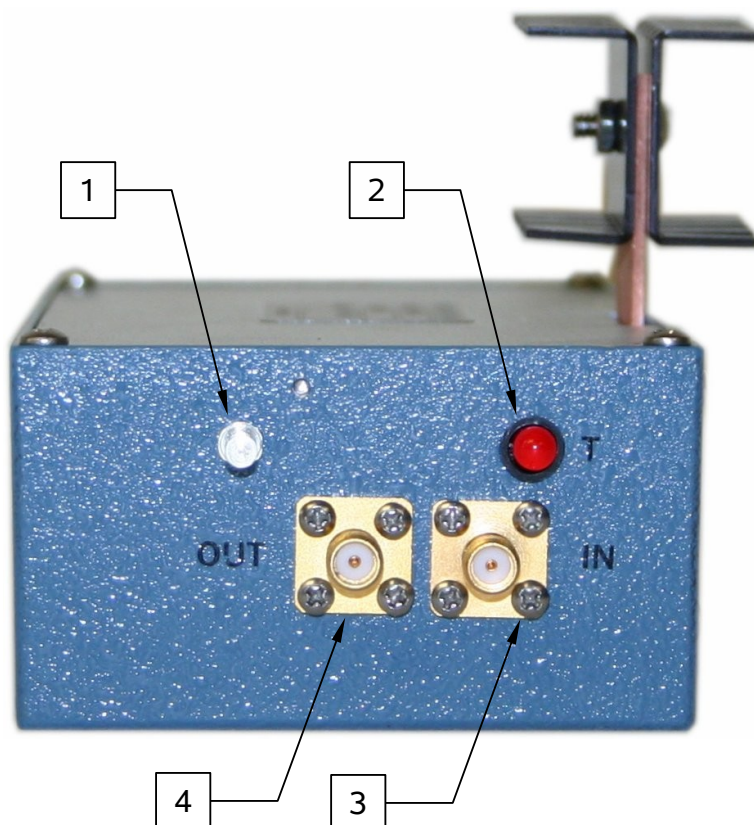
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Pulse Generators - Laser Diode Drivers - HV Amplifiers
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Andrew Speck wrote:

> Thank you for the quote. We are seriously considering it but have a couple of questions. First, it looks like it has an internal DC-DC converter to generate the 100V for the output. We are very sensitive to noise in our experiment so we would prefer it if we could provide the required voltages from an external linear power supply instead rather than having any dc-dc converters internal to the module. Second, are there any quantity discounts from ordering more than one.


CONTROLS - FRONT



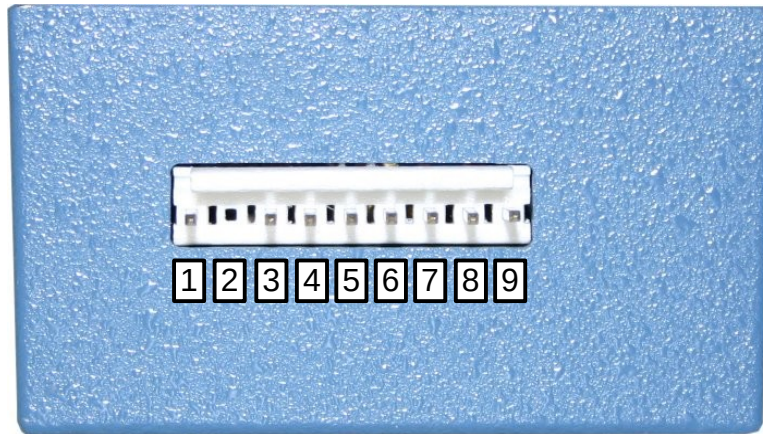
1. GROUND TERMINAL. This terminal may be used to connect the instrument chassis to ground.
2. THERMAL OVERLOAD INDICATOR (T). If this indicator lights, turn off the power supplies to the module and allow the module to cool. If nuisance triggering is occurring, consider heat-sinking the module and the 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.)

This is wired in parallel with the "IN" pin on the rear panel. Either connector can be used to provide the trigger signal to the instrument.

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. IN. This is wired in parallel with the IN SMA connector on the front panel. Either connector can be used to provide the trigger signal to the instrument.

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

POWER SUPPLY SEQUENCING

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