



AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

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INSTRUCTIONS

MODEL AV-143CP-PS-EKA

0 to +4V IN,
0 to +30V OUT, TO 50 OHMS,

DUAL-CHANNEL
DC-COUPLED LINEAR AMPLIFIER

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

Phone: 613-226-5772 or 1-800-265-6681

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Manual Reference: Q:\office\instructword\AV-143\AV-143CP-PS-EKA edition1.doc, created February 11, 2002

INTRODUCTION

The Model AV-143CP-PS-EKA dual-channel DC-coupled linear amplifier has two independent amplifier channels ("A" and "B"), each with a gain (V_{OUT}/V_{IN}) of +7.5. Each of the two inputs may range from 0 to +4V. The input impedance is 1 k Ω . The corresponding outputs voltages are 0 to +30V, into load impedances of 50 Ω or greater.

The output rise and fall times are 50 ns or less.

SPECIFICATIONS

| | |
|--|--|
| Model: | AV-143CP-PS-EKA |
| Output amplitude: (max) ($R_L = 50 \Omega$) | + 30V |
| Voltage Gain: | +7.5 (non-inverting) |
| Rise, fall time: | ≤ 50 ns |
| Input impedance: | 1 k Ω |
| Output impedance: | 2 Ω |
| Bandwidth: | DC-10 MHz |
| Power out: (max) | 4 Watts |
| Overshoot: | $\leq 10\%$ |
| Prime power: | 120/240 Volts, 50 - 60 Hz |
| Connectors: | BNC |
| Dimensions: | 100 x 215 x 375 mm (3.9" x 8.5" x 14.8") |

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| | | | |
|-----------|-------------------------------------|-------------------|---------------------------|
| Quote No: | <u>10787</u> | Sender's Fax: | <u>613-226-2802</u> |
| File: | <u>R:\QUOTES\Q10787.doc</u> | Receiver's Fax: | <u>585-588-5987</u> |
| To: | <u>Eastman Kodak</u> | Receiver's Phone: | <u>585-477-6448</u> |
| | | Date: | <u>November 27, 2001</u> |
| Attn: | <u>David Trauernicht</u> | Number of pages: | <u>1, including cover</u> |
| Subject: | <u>Price and delivery quotation</u> | | |

Following our telephone conversation of November 27, 2001, I am pleased to provide the following price and delivery quotation:

| | |
|-----------------------|---|
| Quote Number: | 10787 |
| Model designation: | AV-143CP-PS-EKA |
| Basic Specifications: | As per Model AV-143CP-PS but with two independent channels, each with own input and output connectors (and offset control). |
| Price: | \$2,498.00 US, FOB destination. |
| Delivery: | 45-60 days, after receipt of order. |

Thank you for your continued interest in our products. Please call or email me if you require any further information.

Regards,

Dr. Walter Chudobiak
Chief Engineer

WC:mf

INSTALLATION

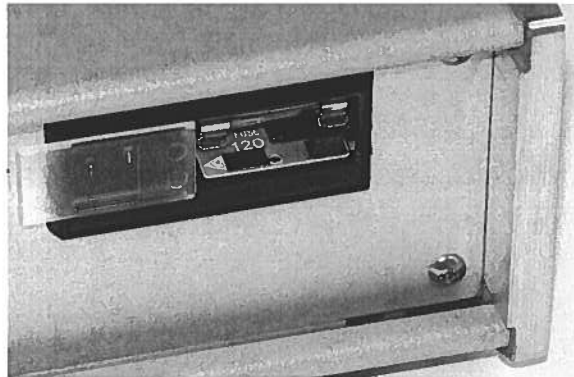
VISUAL CHECK

After unpacking the instrument, examine to ensure that it has not been damaged in shipment. Visually inspect all connectors, knobs, and handles. Confirm that a power cord and this manual are with the instrument. If the instrument has been damaged, file a claim immediately with the company that transported the instrument.

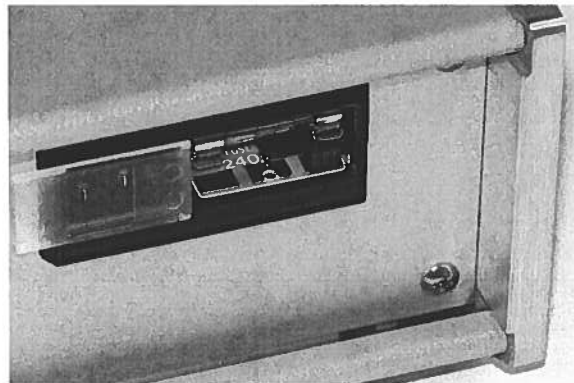
PLUGGING IN THE INSTRUMENT


Examine the rear of the instrument. There will be a male power receptacle, a fuse holder and the edge of the power selector card visible. Confirm that the power selector card is in the correct orientation.

For AC line voltages of 110-120V, the power selector card should be installed so that the "120" marking is visible from the rear of the instrument, as shown below:



For AC line voltages of 220-240V, the power selector card should be installed so that the "240" marking is visible from the rear of the instrument, as shown below:

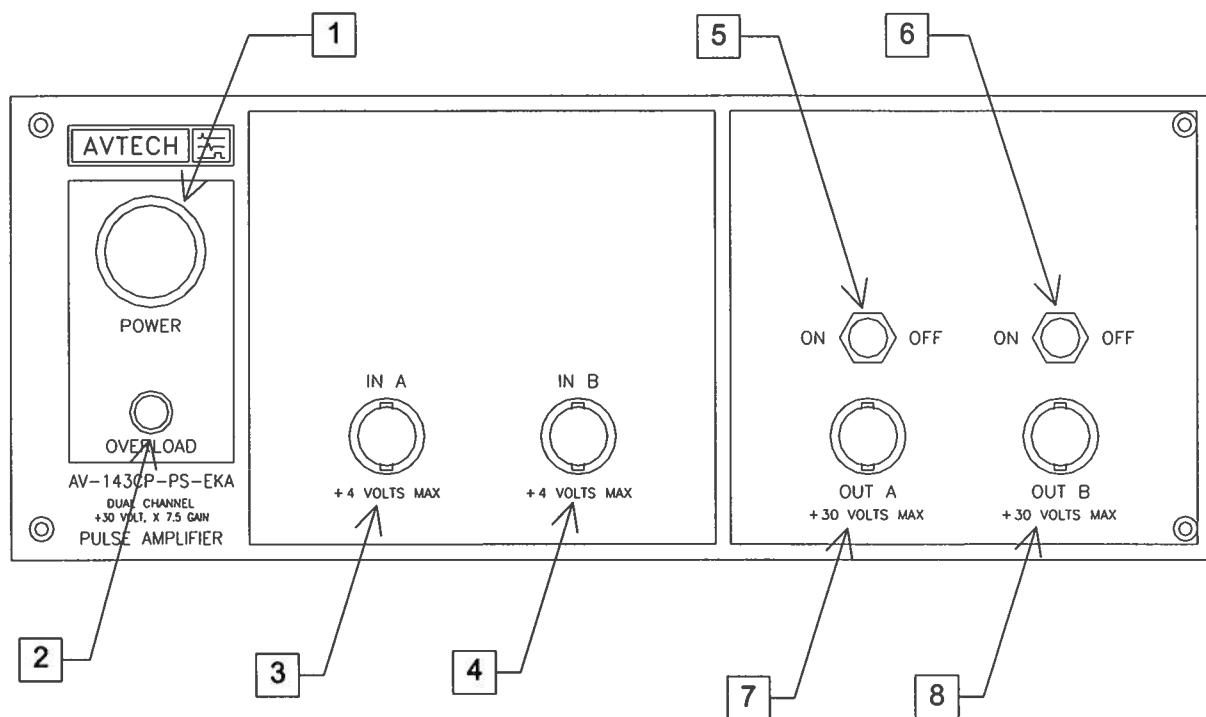




If it is not set for the proper voltage, remove the fuse and then grasp the card with a pair of pliers and remove it. Rotate horizontally through 180 degrees. Reinstall the card and the correct fuse.

In the 120V setting, a 1.0A slow blow fuse is required. In the 240V setting, a 0.5A slow blow fuse is required.

FRONT PANEL CONTROLS



1. **POWER Switch.** The POWER push button switch applies AC prime power to the primaries of the transformer, turning the instrument on. The push button lamp (#382 type) is connected to the +15V DC supply.
2. **OVERLOAD.** As a protective measure, an automatic overload circuit exists, which controls the front panel overload light. If the unit is overloaded (for instance, by operating into a very low impedance), 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.

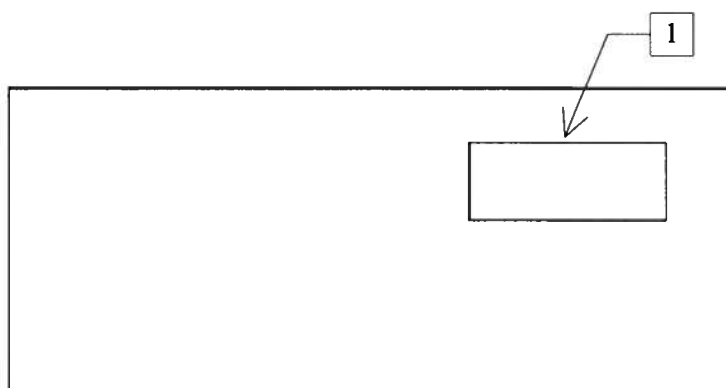
This overload indicator may come on briefly at start-up. This is not a cause for concern.

3. **IN A CONNECTOR.** The input for the "A" amplifier is applied to this BNC connector. The input voltage must always lie between 0 and +4V. Voltages outside of this range may damage the instrument. The input impedance is 1 k Ω . (Note, however, that if the "A" channel ON/OFF switch (see item 5) is "OFF", the input impedance will be lower, and may distort any applied signal.)
4. **IN B CONNECTOR.** The input for the "B" amplifier is applied to this BNC connector. The input voltage must always lie between 0 and +4V. Voltages outside of this range

may damage the instrument. The input impedance is 1 k Ω . (Note, however, that if the "B" channel ON/OFF switch (see item 6) is "OFF", the input impedance will be lower, and may distort any applied signal.)

5. A ON/OFF SWITCH. This switch must be set to "ON" to enable amplifier "A". If this switch is "OFF", no output signal will appear at the "OUT A" connector.
6. B ON/OFF SWITCH. This switch must be set to "ON" to enable amplifier "B". If this switch is "OFF", no output signal will appear at the "OUT A" connector.
7. OUT A CONNECTOR. This BNC connector provides the output signal for the "A" amplifier. This output can supply up to +30V into a 50 Ω (or greater) load. The output impedance is approximately 2 Ω .
8. OUT B CONNECTOR. This BNC connector provides the output signal for the "B" amplifier. This output can supply up to +30V into a 50 Ω (or greater) load. The output impedance is approximately 2 Ω .

REAR PANEL CONTROLS



1. **AC POWER INPUT.** A three-pronged recessed male connector is provided on the back panel for AC power connection to the instrument. Also contained in this assembly is a slow-blow fuse and a removable card that can be removed and repositioned to switch between 120V AC in and 240V AC in.

For AC line voltages of 110-120V, the power selector card should be installed so that the "120" marking is visible from the rear of the instrument.

For AC line voltages of 220-240V, the power selector card should be installed so that the "240" marking is visible from the rear of the instrument.

If it is not set for the proper voltage, remove the fuse and then grasp the card with a pair of pliers and remove it. Rotate horizontally through 180 degrees. Reinstall the card and the correct fuse.

In the 120V setting, a 1.0A slow blow fuse is required. In the 240V setting, a 0.5A slow blow fuse is required. See the "Installation" section for more details.

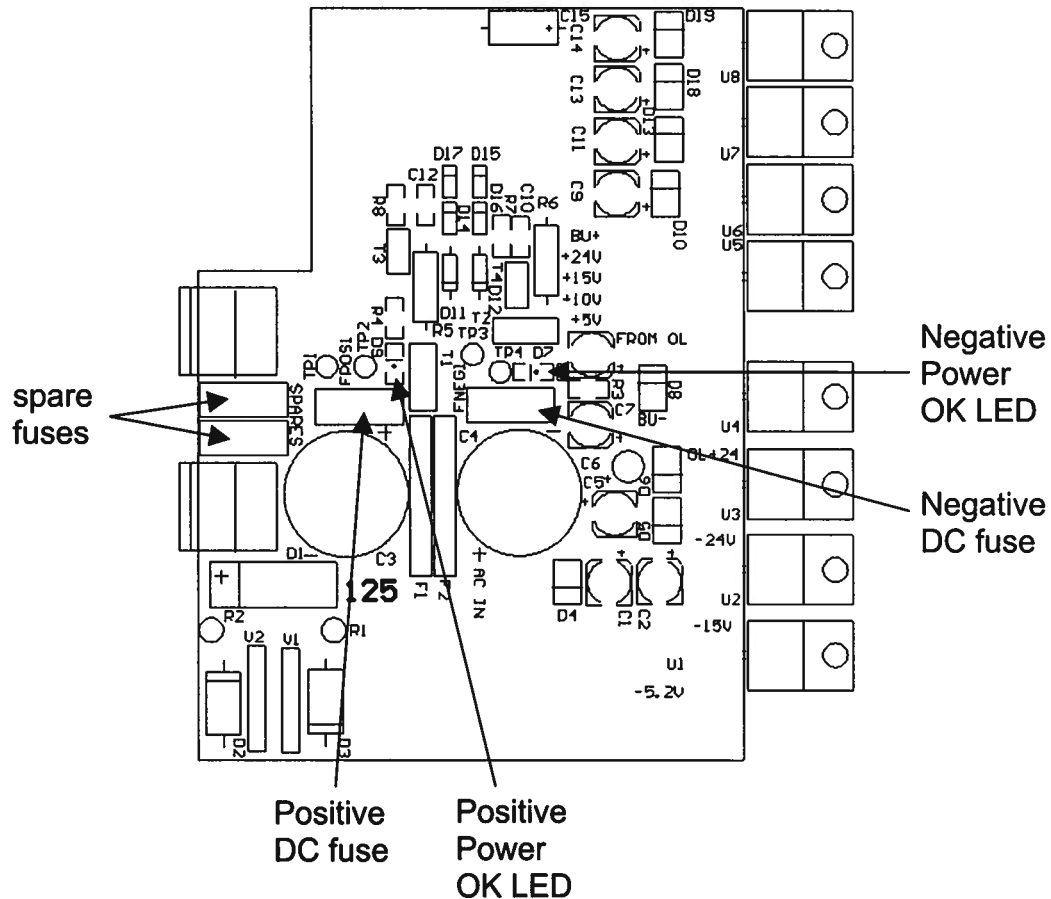
INTERNAL CONTROLS

Two separate ten-turn trim pots are provided for zeroing the spurious DC offset on the outputs. 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).

POWER SUPPLY AND FUSE REPLACEMENT

This instrument has three main fuses, plus two spares. One, which protects the AC input, is located in the rear-panel power entry module, as described in the "Rear Panel Controls" section of this manual. If the power appears to have failed, check the AC fuse first.

The other two fuses (plus two spares) are located on the internal DC power supply, as shown below:



The positive fuse and one of the spare fuses on this circuit board are 2A slow-blow fuses, Littelfuse part number R452002. (This fuse can be ordered from Digikey, www.digikey.com. The Digikey part number is F1345CT-ND). The negative fuse and the second spare fuse are 0.5A slow-blow fuses (Littelfuse R452.500, Digikey part number F1341CT-ND).

If you suspect that the DC fuses are blown, follow this procedure:

1. Remove the top cover, by removing the four Phillips screws on the top cover and then sliding the cover back and off.

2. Locate the two "Power OK" LEDs on the power supply circuit board, as illustrated above.
3. Turn on the instrument.
4. Observe the "Power OK" LEDs. If the fuses are not blown, the two LEDs will be lit (bright red). If one of the LEDs is not lit, the fuse next to it has blown.
5. Turn off the instrument.
6. If a fuse is blown, use needle-nose pliers to remove the blown fuse from its surface-mount holder.
7. Replace the fuse. (Spare 2 Amp and 0.5 Amp fuses are provided on the circuit board. They may be transferred to the active fuse locations using needle-nose pliers.)

PERFORMANCE CHECK SHEET