



AVTECH ELECTROSYSTEMS LTD.

NANOSECOND WAVEFORM ELECTRONICS
SINCE 1975

P. O. BOX 265
OGDENSBURG, NY
U.S.A. 13669-0265
TEL: (315) 472-5270
FAX: (613) 226-2802

TEL: 1-800-265-6681
FAX: 1-800-561-1970

e-mail: info@avtechpulse.com
<http://www.avtechpulse.com>

P.O. BOX 5120 STN. F
OTTAWA, ONTARIO
CANADA K2C 3H4
TEL: (613) 226-5772
FAX: (613) 226-2802

INSTRUCTIONS

MODEL AV-143CP-PS

0 to +4V IN,

0 to +30V OUT, TO 50 OHMS,

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

Fax: 613-226-2802 or 1-800-561-1970

E-mail: info@avtechpulse.com

World Wide Web: <http://www.avtechpulse.com>

TABLE OF CONTENTS

WARRANTY.....2

TECHNICAL SUPPORT.....2

TABLE OF CONTENTS.....3

INTRODUCTION.....4

SPECIFICATIONS.....4

INSTALLATION.....5

VISUAL CHECK.....5

PLUGGING IN THE INSTRUMENT.....5

FRONT PANEL CONTROLS.....7

REAR PANEL CONTROLS.....8

INTERNAL CONTROLS.....8

POWER SUPPLY AND FUSE REPLACEMENT.....9

PERFORMANCE CHECK SHEET.....11

Manual Reference: T:\instructword\lav-143\AV-143CP-PS edition3.sxw.
Copyright © 2003 Avtech Electrosystems Ltd, All Rights Reserved.

INTRODUCTION

The Model AV-143CP-PS DC-coupled linear amplifier has a gain (V_{OUT}/V_{IN}) of +7.5. The input 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 60 ns or less.

SPECIFICATIONS

Model:	AV-143CP-PS
Output amplitude: (max) ($R_L = 50 \Omega$)	+ 30V
Voltage Gain:	+7.5 (non-inverting)
Rise, fall time: (20%-80%)	≤ 60 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")

INSTALLATION

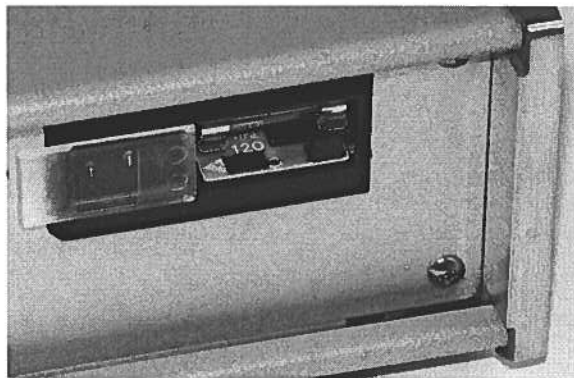
VISUAL CHECK

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.

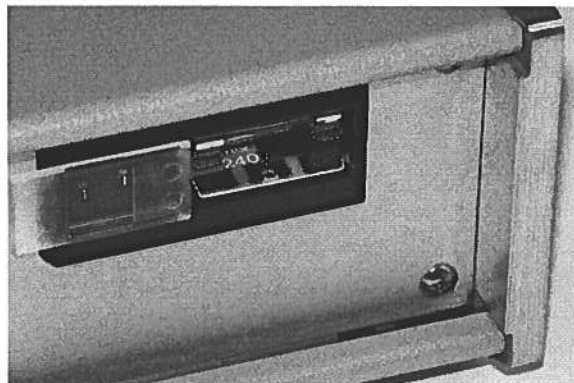
PLUGGING IN THE INSTRUMENT

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:



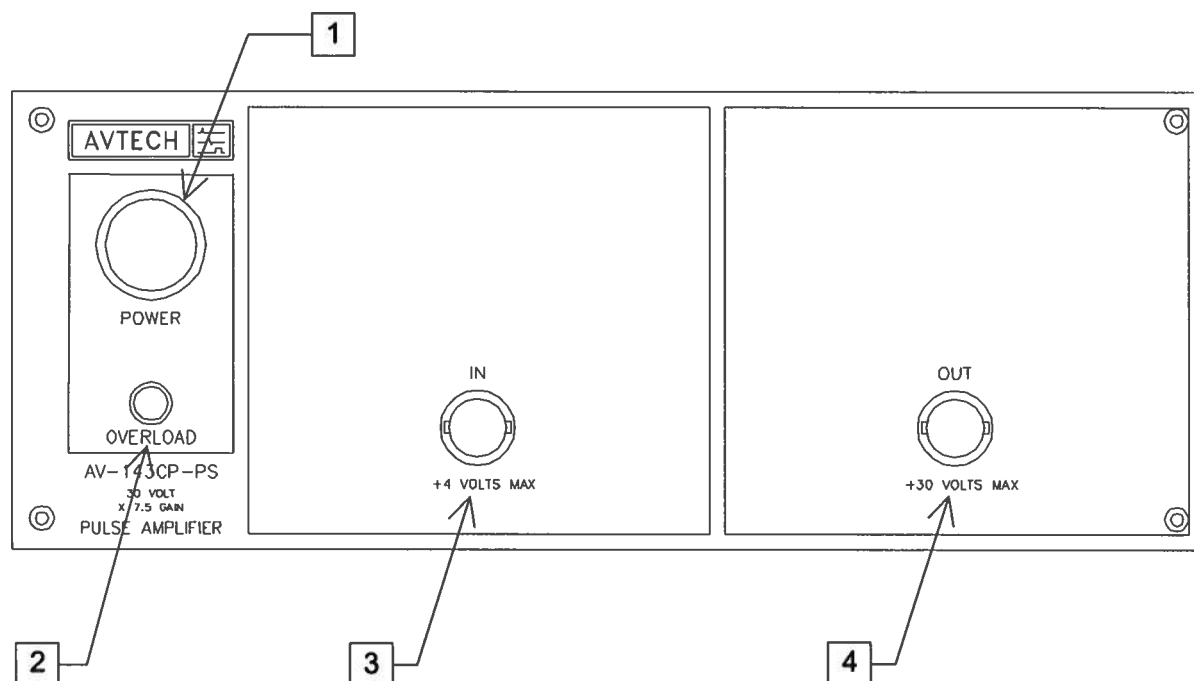
For AC line voltages of 220-240V, the power selector card should be installed so that the "240" marking is visible from the rear of the instrument, as shown below:



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 0.5A slow blow fuse is required. In the 240V setting, a 0.25A slow blow fuse is required.

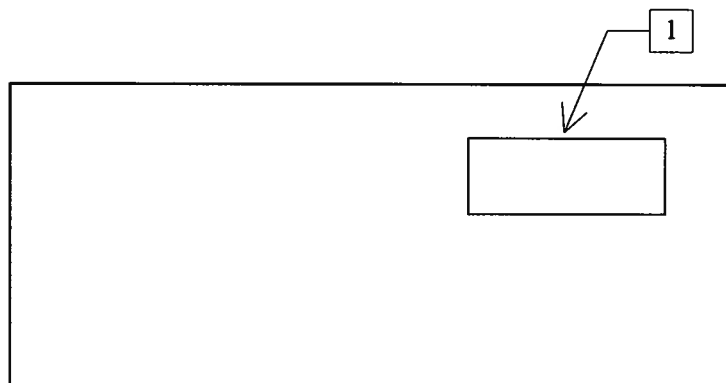
FRONT PANEL CONTROLS



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 CONNECTOR.** The input 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 .
4. **OUT CONNECTOR.** This BNC connector provides the output signal. 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 0.5A slow blow fuse is required. In the 240V setting, a 0.25A slow blow fuse is required. See the "Installation" section for more details.

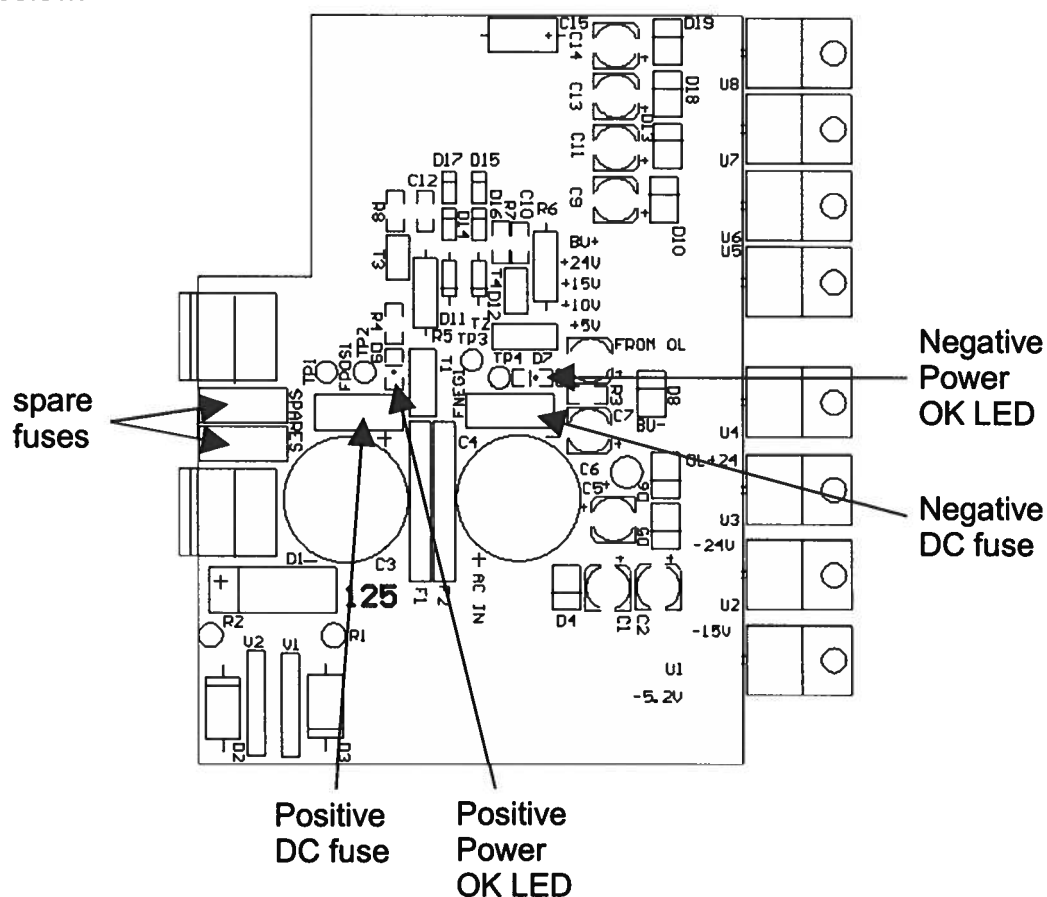
INTERNAL CONTROLS

A ten-turn trimpot is provided for zeroing the spurious DC offset on the output. 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). Locate the blue module with the "PG" label. A small brass screwhead will be visible through the top cover of this module. Rotating this screwhead with a small screwdriver will adjust the offset.

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 1A slow-blow fuses, Littlefuse part number R452001. (This fuse can be ordered from Digikey, www.digikey.com. The Digikey part number is F1343CT-ND). The negative fuse and the second spare fuse are 0.5A slow-blow fuses (Littlefuse 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 1 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.)

July 18 / 2003