



**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](mailto:info@avtechpulse.com)  
<http://www.avtechpulse.com/>

BOX 5120, LCD MERIVALE  
OTTAWA, ONTARIO  
CANADA K2C 3H4  
TEL: (613) 226-5772  
FAX: (613) 226-2802

### INSTRUCTIONS

**MODEL AV-141C1  
×10 GAIN, ±3V OUTPUT  
PULSE AMPLIFIER  
WITH 800 ps 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

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

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

E-mail: [info@avtechpulse.com](mailto:info@avtechpulse.com)

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

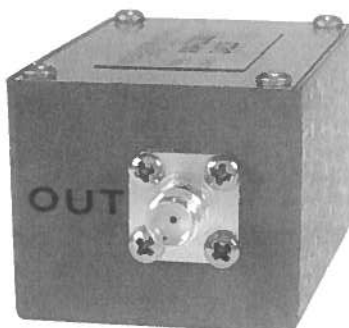
## TABLE OF CONTENTS

<b>WARRANTY.....</b>	<b>2</b>
<b>TECHNICAL SUPPORT.....</b>	<b>2</b>
<b>TABLE OF CONTENTS.....</b>	<b>3</b>
<b>INTRODUCTION.....</b>	<b>4</b>
<b>SPECIFICATIONS.....</b>	<b>4</b>
<b>EC DECLARATION OF CONFORMITY.....</b>	<b>5</b>
<b>CONTROLS.....</b>	<b>6</b>
<b>POWER SUPPLIES.....</b>	<b>6</b>
<b>PROTECTING YOUR INSTRUMENT.....</b>	<b>6</b>
<b>BASIC TEST ARRANGEMENT.....</b>	<b>7</b>
<b>PERFORMANCE CHECK SHEET.....</b>	<b>8</b>

Manual Reference: T:\instructword\av-141\av-141c1,edition3.sxw.  
Last modified November 5, 2004.  
Copyright © 2004 Avtech Electrosystems Ltd, All Rights Reserved.

## INTRODUCTION

The Model AV-141C1 is a DC-powered amplifier module, designed to amplify bipolar nanosecond rise time baseband pulses in the pulse width range of 1.5 ns and higher and CW signals in the frequency range of DC to 800 MHz.



## SPECIFICATIONS

Model:	AV-141C1
Bandwidth:	DC - 800 MHz
Gain: in dB:	20 dB
voltage gain (V/V):	× 10
Rise/fall time <sup>1</sup> :	800 ps
Input impedance:	50 Ω
Peak output: (to 50 Ω)	±3 V
Output impedance:	3 Ω, approx.
Min. input pulse width:	1.5 ns
Max. input pulse width:	No limit.
Equivalent input noise:	4 nV / √Hz
Connectors:	SMA
Prime power:	±15V, 100 mA
Dimensions:	1.4" x 1.1" x 2.3"

1) Measured for a pulse from 0V to maximum positive voltage output, between the 20% and 80% amplitude points.

EC DECLARATION OF CONFORMITY

We

Avtech Electrosystems Ltd.  
P.O. Box 5120, LCD Merivale  
Ottawa, Ontario  
Canada K2C 3H4

declare that this pulse generator meets the intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance pertains to the following specifications as listed in the official Journal of the European Communities:

EN 50081-1 Emission

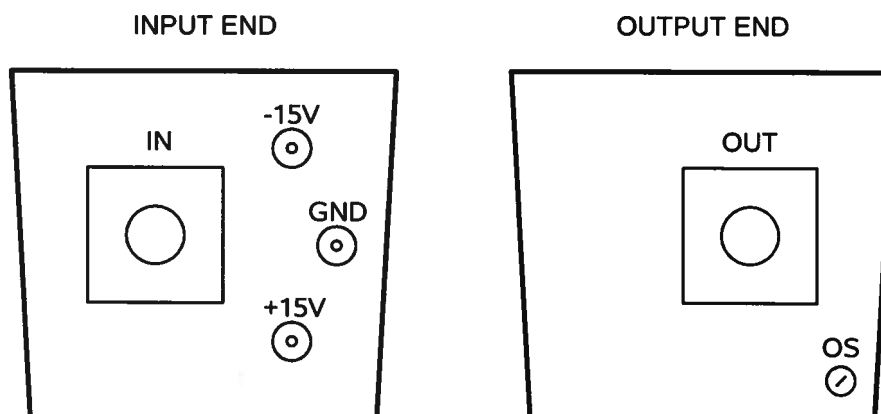
EN 50082-1 Immunity

and that this pulse generator meets the intent of the Low Voltage Directive 72/23/EEC as amended by 93/68/EEC. Compliance pertains to the following specifications as listed in the official Journal of the European Communities:

EN 61010-1:2001 Safety requirements for electrical equipment for measurement, control, and laboratory use



## CONTROLS



The input and output SMA connectors are located on opposite ends of the module, as shown above.

The +15V, -15V, and GND input solder terminals are located on the input end.

A DC offset nulling trimpot is accessible from the output end. It may be adjusted using a small screwdriver.

### POWER SUPPLIES

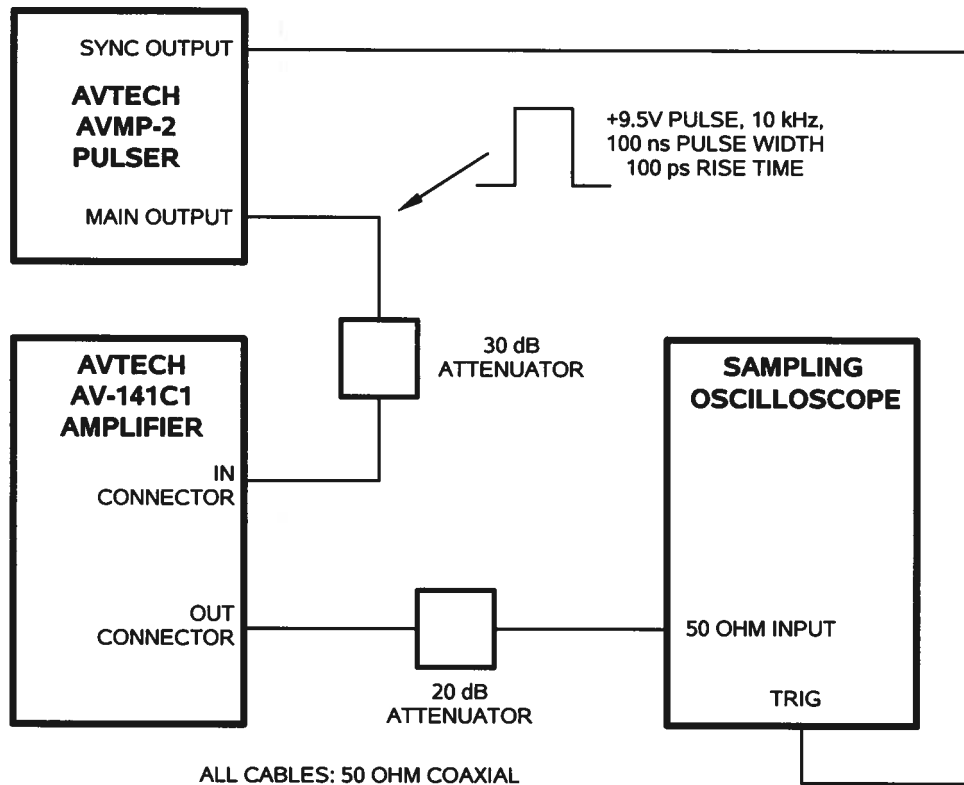
The AV-141C1 must be supplied with DC power supplies of nominally +15V and -15V (as well as a ground connection). In practice, the supplies may be as low as  $\pm 8V$ . The DC power supplies are internally regulated.

The power supply inputs are protected from excessive voltages and incorrect polarities by externally-mounted (and replaceable) 1N4746A Zener diodes. These diodes may be damaged by reversed polarities, or voltages exceeding  $\pm 17V$ .

### PROTECTING YOUR INSTRUMENT

**⚠** To obtain maximum performance, the input of the AV-141C1 is not protected against excessive input voltages. The input signal **MUST NOT EXCEED  $\pm 300$  mV!** It may be damaged by voltages greater than  $\pm 300$  mV. Failures due to the application of excessive input voltages are not covered by warranty.

## BASIC TEST ARRANGEMENT



The recommended test set-up is shown above.

The Avtech AVMP-2 series can be used to generate a +9.5V pulse at 10 kHz, with 100 ns pulse width. The rise time will be 100 ps. The 30 dB attenuator will reduce this signal to 300 mV.

The AV-141C1 amplifier will amplify the signal to 3V. The output rise time should be 800 ps or less. (Note that if a slower input signal is used, the observed output signal will be correspondingly slower.)

A 20 dB attenuator should be placed at the input of the oscilloscope, to avoid over-driving the input. Most high-bandwidth sampling oscilloscopes do not tolerate inputs of more than  $\pm 1V$ .

The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed several gigahertz.

Nov 5/04

