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 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.

TECHNICAL SUPPORT

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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.

This instrument is intended for use in research, development, test and calibration laboratories by qualified personnel.

SPECIFICATIONS

Model:		AV-141C1
Bandwidth:		DC - 800 MHz
Gain:	in dB:	20 dB
	voltage gain (V/V):	10
Rise/fall time[1]:		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.

REGULATORY NOTES

FCC PART 18

This device complies with part 18 of the FCC rules for non-consumer industrial, scientific and medical (ISM) equipment.

This instrument is enclosed in a rugged metal chassis and uses a filtered power entry module (where applicable). The main output signal is provided on a shielded connector that is intended to be used with shielded coaxial cabling and a shielded load. Under these conditions, the interference potential of this instrument is low.

If interference is observed, check that appropriate well-shielded cabling is used on the output connectors. Contact Avtech (info@avtechpulse.com) for advice if you are unsure of the most appropriate cabling. Also, check that your load is adequately shielded. It may be necessary to enclose the load in a metal enclosure.

If any of the connectors on the instrument are unused, they should be covered with shielded metal "dust caps" to reduce the interference potential.

This instrument does not normally require regular maintenance to minimize interference potential. However, if loose hardware or connectors are noted, they should be tightened. Contact Avtech (info@avtechpulse.com) if you require assistance.

EC DECLARATION OF CONFORMITY

We   Avtech Electrosystems Ltd.
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            Ottawa, Ontario
            Canada K2C 3H4

declare that this pulse generator meets the intent of Directive 2004/108/EG 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

DIRECTIVE 2002/95/EC (RoHS)

This instrument is exempt from Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment. Specifically, Avtech instruments are considered "Monitoring and control instruments" (Category 9) as defined in Annex 1A of Directive 2002/96/EC. The Directive 2002/95/EC only applies to Directive 2002/96/EC categories 1-7 and 10, as stated in the "Article 2 - Scope" section of Directive 2002/95/EC.

DIRECTIVE 2002/96/EC (WEEE)

European customers who have purchased this equipment directly from Avtech will have completed a "WEEE Responsibility Agreement" form, accepting responsibility for WEEE compliance (as mandated in Directive 2002/96/EC of the European Union and local laws) on behalf of the customer, as provided for under Article 9 of Directive 2002/96/EC.

Customers who have purchased Avtech equipment through local representatives should consult with the representative to determine who has responsibility for WEEE compliance. Normally, such responsibilities with lie with the representative, unless other arrangements (under Article 9) have been made.

Requirements for WEEE compliance may include registration of products with local governments, reporting of recycling activities to local governments, and financing of recycling activities.

CONTROLS

INPUT END   OUTPUT END

-15V
IN   ⊙

GND
⊙

+15V
⊙

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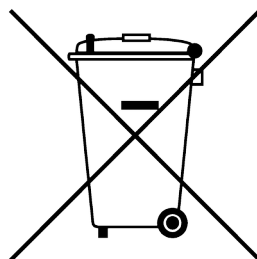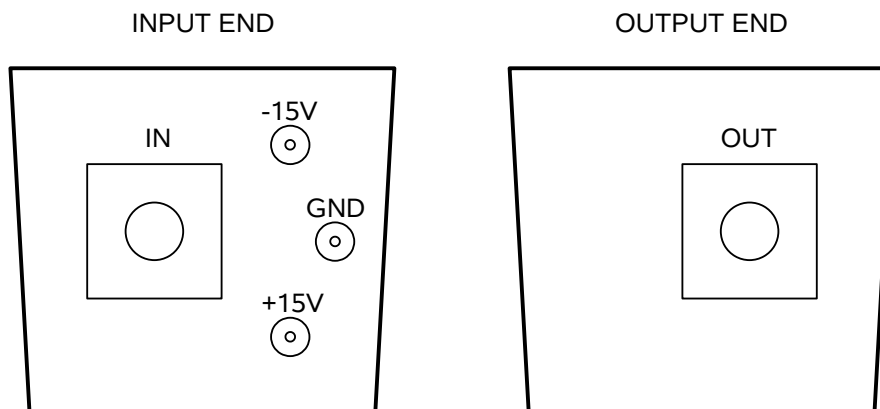
The input and output SMA connectors are located on opposite ends of the module, as shown above.

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

A DC offset nulling trimpot is accessible from the bottom side. It may be adjusted using a small screwdriver, if necessary.


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 ±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 ±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 ±300 mV! It may be damaged by voltages greater than ±300 mV. Failures due to the application of excessive input voltages are not covered by warranty.

BASIC TEST ARRANGEMENT
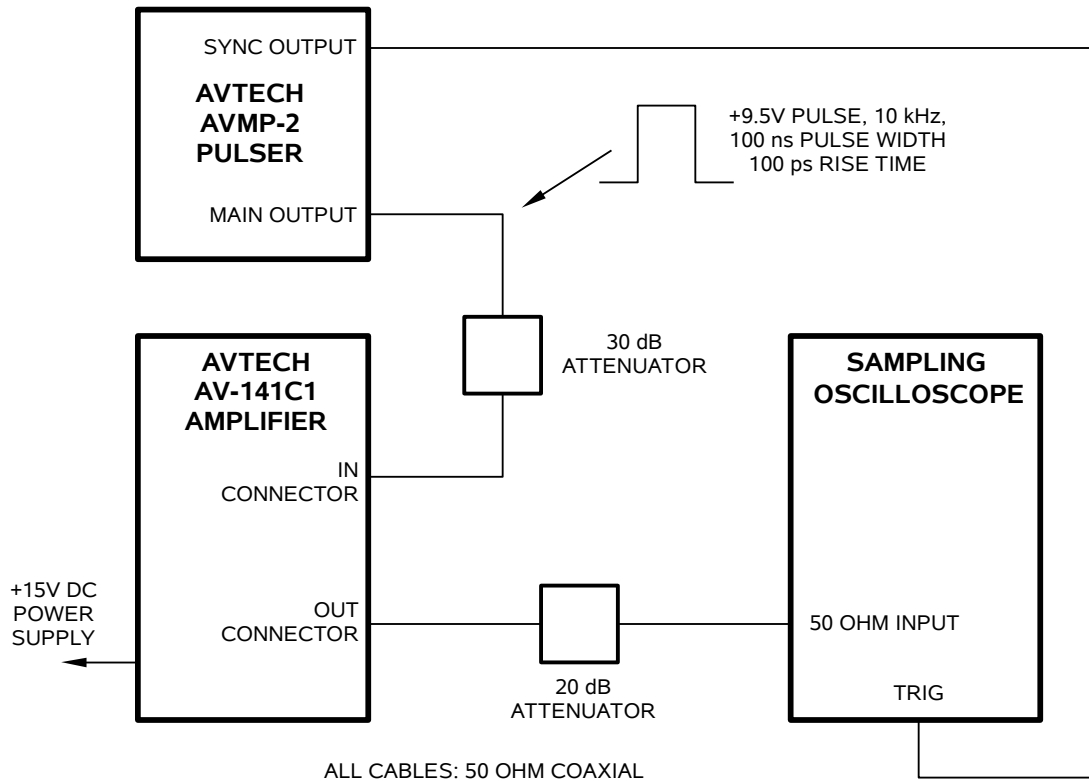
The recommended test set-up is shown above.

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 ±1V.

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

PERFORMANCE CHECK SHEET