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NANOSECOND WAVEFORM ELECTRONICS  
SINCE 1975

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OTTAWA, ONTARIO  
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## INSTRUCTIONS

MODEL AVX-R5

HIGH-VOLTAGE, HIGH SPEED

POLARITY-INVERTING

PULSE TRANSFORMER

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: 888-670-8729 (USA & Canada) or +1-613-686-6675 (Intl)

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Manual Reference: /files/server1/officefiles/instructword/avx-r/AVX-R5,ed2.odt.  
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## INTRODUCTION

The AVX-R5 transformer is a polarity-inverting transformer suitable for input voltages of up to  $\pm 700\text{V}$ . The AVX-R5 is typically used with the Avtech AVRZ-5W-B series of high-voltage pulse generators (<http://www.avtechpulse.com/medium/avrz-5w>). It can also be used with other Avtech high-voltage pulse generators, such as the AVR-5B and AVR-7B families.

The maximum pulse width when for input amplitudes of 0-500V is 10 us. The maximum pulse width is reduced to 5 us for amplitudes of 500-700V.

The rise time of the AVX-R5 transformer is  $< 5\text{ ns}$ , 20%-80%.

This instrument is intended for use in research and development laboratories.

## SPECIFICATIONS

Model:	AVX-R5
Max. input:	700V
Maximum pulse width:	10us @ 500V 5us @ 700V
Rise time <sup>1</sup> :	5 ns
Impedance:	50 Ohms
Droop:	5% maximum
H/W/D,mm:	102×159×159
inches:	4.0×6.3×6.3
Connectors:	BNC female <sup>2</sup>

1) Measured 20%-80%, in response to a step input.

2) To specify SMA female connectors, add the suffix -SMA to the model number.

## 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](mailto: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](mailto:info@avtechpulse.com)) if you require assistance.

### EC DECLARATION OF CONFORMITY



We                      Avtech Electrosystems Ltd.  
                             P.O. Box 5120, LCD Merivale  
                             Ottawa, Ontario  
                             Canada K2C 3H5

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 2006/95/EC. 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 2011/65/EU (RoHS)

We Avtech Electrosystems Ltd.  
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Ottawa, Ontario  
Canada K2C 3H5

declare that, to the best of our knowledge, all electrical and electronic equipment (EEE) sold by the company are in compliance with Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (also known as “RoHS Recast”). In addition, this declaration of conformity is issued under the sole responsibility of Avtech Electrosystems Ltd. Specifically, products manufactured do not contain the substances listed in the table below in concentrations greater than the listed maximum value.

<i>Material/Substance</i>	<i>Threshold level</i>
Lead (Pb)	< 1000 ppm (0.1% by mass)
Mercury (Hg)	< 1000 ppm (0.1% by mass)
Hexavalent Chromium (Cr6+)	< 1000 ppm (0.1% by mass)
Polybrominated Biphenyls (PBB)	< 1000 ppm (0.1% by mass)
Polybrominated Diphenyl ethers (PBDE)	< 1000 ppm (0.1% by mass)
Cadmium (Cd)	< 100 ppm (0.01% by mass)

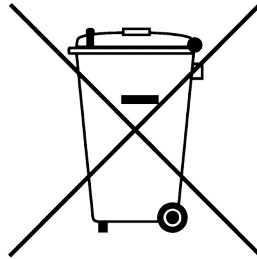
DIRECTIVE 2002/96/EC (WEEE)

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 will lie with the representative, unless other arrangements (under Article 9) have been made.

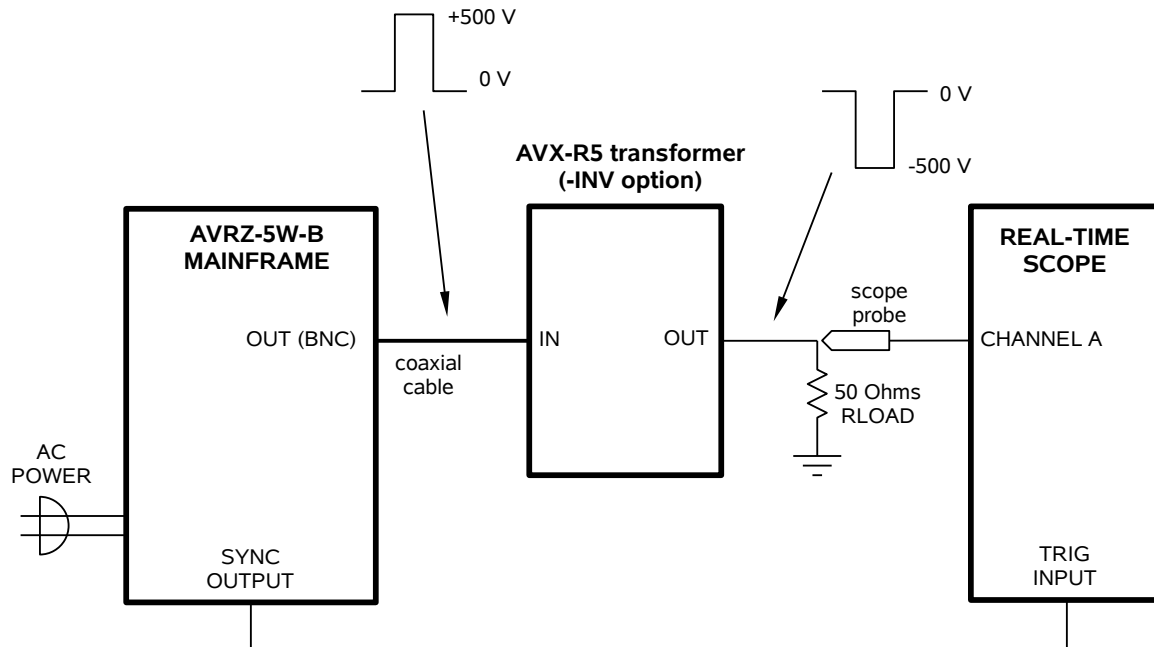
Requirements for WEEE compliance may include registration of products with local governments, reporting of recycling activities to local governments, and financing of recycling activities.



## GENERAL INFORMATION

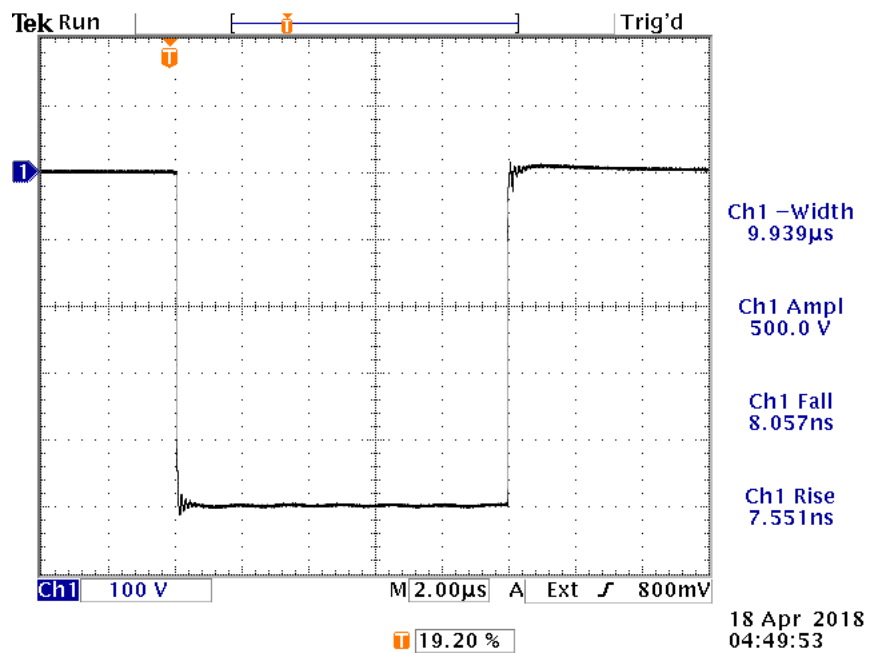
The AVX-R5 is typically used with the Avtech AVRZ-5W-B or AVRZ-5A-B. The AVRZ-5W-B and AVRZ-5A-B mainframes normally generate positive amplitudes in the range of 0 to +500V. It can also be used with other Avtech high-voltage pulse generators, such as the AVR-5B and AVR-7B families.

In this application, the AVX-R5 transformer is connected to the output of the AVRZ-5W-B mainframe using standard coaxial cable. (This cable should be as short as possible to minimize possible reflections.) The basis test arrangement is shown below:



The transformer is capable of operating up to the maximum rated pulse width of the AVRZ-5W-B and AVRZ-5A-B (10 us). The transformer may introduce slight rounding and ringing to the output waveform, and it may degrade rise and fall times by several nanoseconds. A typical waveform photo is shown below:





100 V/div, 2 us/div.  
(Rise and fall times measured at 20%-80%)

PERFORMANCE CHECK SHEET