



# AVTECH ELECTROSYSTEMS LTD.

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SINCE 1975

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## INSTRUCTIONS

MODEL AVX-SIPB-PS

0.2 to 5.0 V<sub>P-P</sub>, 0 to 50 MHz

SINE-TO-PULSE CONVERTER

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

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## INTRODUCTION

The AVX-SIP series is useful in experimental applications where a sine wave signal must be converted to logic-level pulses, to trigger other equipment. The AVX-SIPB-PS converts a sine-wave input with an amplitude in the range of 0.2V to 5V peak-to-peak to TTL levels (0 and +3 to +5V). The input frequency may be as high as 50 MHz. The output duty cycle is approximately equal to the input duty cycle (i.e., 50%).

The input impedance is 50 Ohms, and the input is DC-coupled. The trigger level is 0V. The input has a hysteresis of approximately +/- 30 mV, to eliminate false triggering on slowly varying inputs. The input should not exceed +/- 2.5V. Protection circuitry is present to reduce the possibility of damage from excessive input voltages.

The output can drive 50 Ohm (or higher) loads.

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

## AVAILABLE OPTIONS

-R5 Option: Specifies wider rack-mountable chassis (100 x 430 x 375 mm, 3.9" x 17" x 14.8") with rack-mount kit.

SPECIFICATIONS

Model:	AVX-SIPB-PS
Input frequency:	0 - 50 MHz
Input amplitude:	0.2 to 5 Volts, peak-to-peak
Input resistance:	50 Ohms
Output amplitude:	TTL levels: Low: 0V, High: +3 to +5V
Output pulse width:	One-half of input period, fixed
Output duty cycle:	50%, fixed
Connectors:	BNC
Power requirement:	100 - 240 Volts, 50-60 Hz
Dimensions <sup>1</sup> :	100 mm x 215 mm x 375 mm (3.9" x 8.5" x 14.8")

1) Add -R5 option to specify wider rack-mountable chassis (100 x 430 x 375 mm, 3.9" x 17" x 14.8") with rack-mount kit.

EC DECLARATION OF CONFORMITY

We

Avtech Electrosystems Ltd.  
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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



## 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 is with the instrument. If the instrument has been damaged, file a claim immediately with the company that transported the instrument.

### POWER RATINGS

This instrument is intended to operate from 100 - 240 V, 50 - 60 Hz.

The maximum power consumption is 57 Watts. Please see the “FUSES” section for information about the appropriate AC and DC fuses.

This instrument is an “Installation Category II” instrument, intended for operation from a normal single-phase supply.

### CONNECTION TO THE POWER SUPPLY

An IEC-320 three-pronged recessed male socket is provided on the back panel for AC power connection to the instrument. One end of the detachable power cord that is supplied with the instrument plugs into this socket. The other end of the detachable power cord plugs into the local mains supply. Use only the cable supplied with the instrument. The mains supply must be earthed, and the cable used to connect the instrument to the mains supply must provide an earth connection. (The supplied cable does this.)

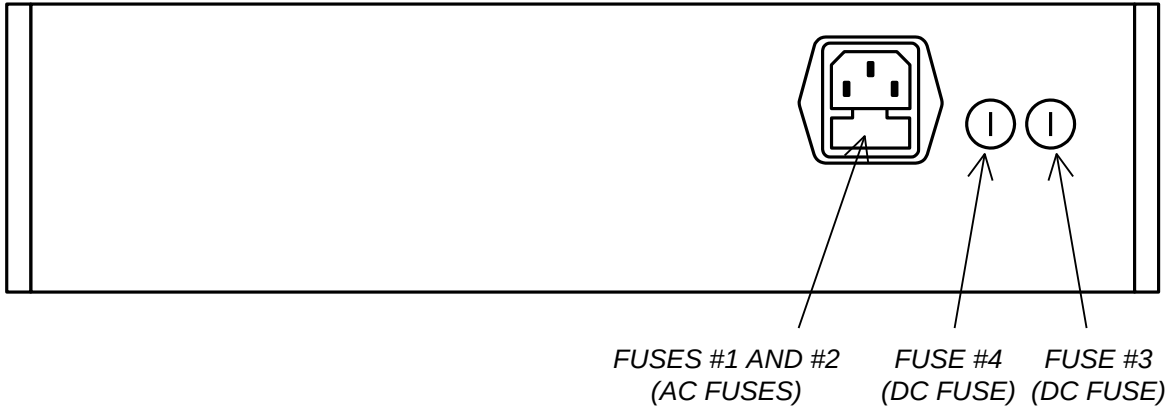
### ENVIRONMENTAL CONDITIONS

This instrument is intended for use under the following conditions:

1. indoor use;
2. altitude up to 2 000 m;
3. temperature 5 °C to 40 °C;
4. maximum relative humidity 80 % for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at 40 °C;
5. Mains supply voltage fluctuations up to  $\pm 10$  % of the nominal voltage;
6. no pollution or only dry, non-conductive pollution.

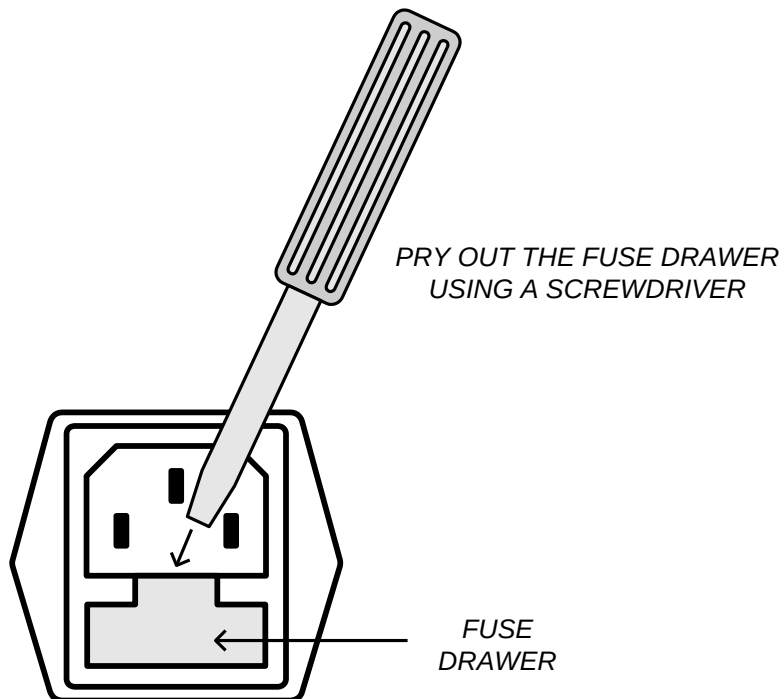
## FUSES

This instrument contains four fuses. All are accessible from the rear-panel. Two protect the AC prime power input, and two protect the internal DC power supplies. The locations of the fuses on the rear panel are shown in the figure below:



### AC FUSE REPLACEMENT

To physically access the AC fuses, the power cord must be detached from the rear panel of the instrument. The fuse drawer may then be extracted using a small flat-head screwdriver, as shown below:





## DC FUSE REPLACEMENT

The DC fuses may be replaced by inserting the tip of a flat-head screwdriver into the fuse holder slot, and rotating the slot counter-clockwise. The fuse and its carrier will then pop out.

## FUSE RATINGS

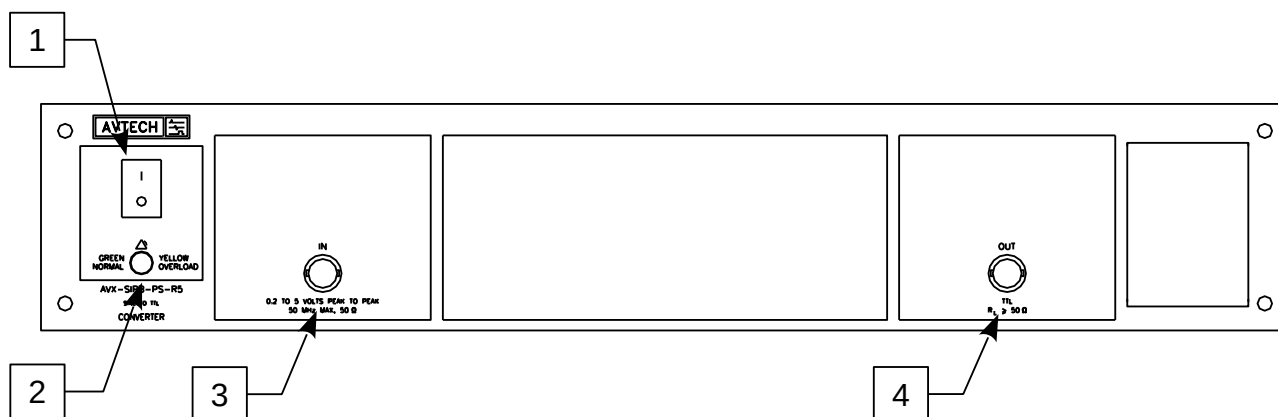
The following table lists the required fuses:

Fuses	Nominal Mains Voltage	Rating	Case Size	Manufacturer's Part Number (Wickmann)	Distributor's Part Number (Digi-Key)
#1, #2 (AC)	100-240V	0.25A, 250V, Time-Delay	5 x 20 mm	1950250000	WK5035-ND
#3 (DC)	N/A	0.5A, 250V, Time-Delay	5 x 20 mm	1950500000	WK5041-ND
#4 (DC)	N/A	Not used. A spare 0.5A fuse is installed here.			

The fuse manufacturer is Wickmann (<http://www.wickmann.com/>).

Replacement fuses may be easily obtained from Digi-Key (<http://www.digikey.com/>) and other distributors.

## FRONT PANEL CONTROLS

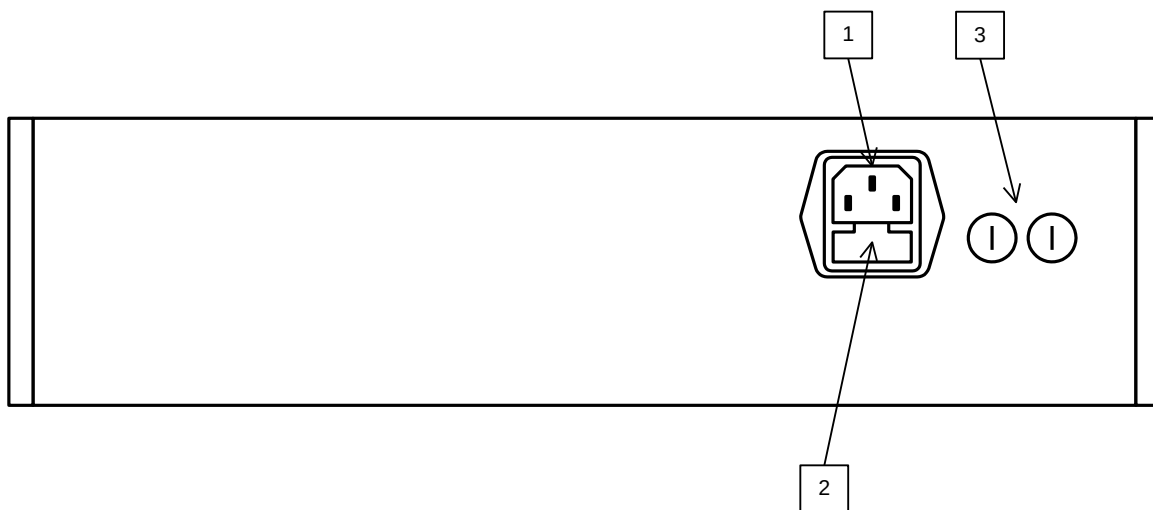


1. POWER Switch. This is the main power switch. When turning the instrument on, there may be a delay of several seconds before the instrument appears to respond.
2. OVERLOAD Indicator. When the instrument is powered, this indicator is normally green, indicating normal operation. If this indicator is yellow, an internal automatic overload protection circuit has been tripped. If the unit is overloaded (by operating at an exceedingly high duty cycle or by operating into a very low impedance), the protective circuit will disable the output of the instrument and turn the indicator light yellow. The light will stay yellow (i.e. output disabled) for about 5 seconds after which the instrument will attempt to re-enable the output (i.e. light green) for about 1 second. If the overload condition persists, the output will be disabled again (i.e. light yellow) for another 5 seconds. If the overload condition has been removed, the instrument will resume normal operation.

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

3. IN Connector. The input signal is applied to this connector. The input impedance is 50 Ω. The input should not exceed  $\pm 2.5\text{V}$ .
4. OUT Connector. This BNC connector provides the output signal. This output can drive 50 Ω (or higher) loads.

## REAR PANEL CONTROLS



1. AC POWER INPUT. An IEC-320 C14 three-pronged recessed male socket is provided on the back panel for AC power connection to the instrument. One end of the detachable power cord that is supplied with the instrument plugs into this socket.
2. AC FUSE DRAWER. The two fuses that protect the AC input are located in this drawer. Please see the “FUSES” section of this manual for more information.
3. DC FUSES. These two fuses protect the internal DC power supplies. Please see the “FUSES” sections of this manual for more information.

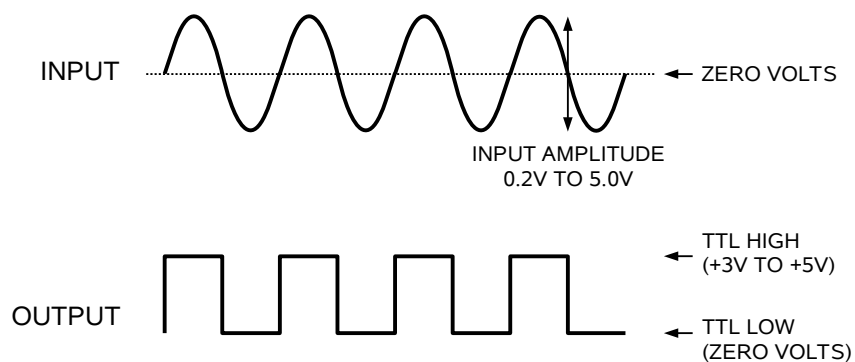
## GENERAL INFORMATION

### BASIC OPERATION

This instrument accepts sine wave inputs, with amplitudes of 0.2V to 5V in amplitude (peak-to-peak), and frequencies of up to 50 MHz.

The instrument converts the input sine wave into a TTL output, with nominally 50% duty cycle. The input impedance is 50 Ohms, and the input is DC-coupled. The trigger level is 0V. The input has a hysteresis of approximately +/- 30 mV, to eliminate false triggering on slowly varying inputs. The input should not exceed +/- 2.5V. Protection circuitry is present to reduce the possibility of damage from excessive input voltages.

The basic input and output waveforms are illustrated below:



*Basic Operation*

## MECHANICAL INFORMATION

### TOP COVER REMOVAL

If necessary, 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).

Always disconnect the power cord before opening the instrument.

There are no user-adjustable internal circuits. For repairs other than fuse replacement, please contact Avtech (info@avtechpulse.com) to arrange for the instrument to be returned to the factory for repair.

⚠ Caution: High voltages are present inside the instrument during normal operation. Do not operate the instrument with the cover removed.

### RACK MOUNTING

A rack mounting kit is available. The -R5 rack mount kit may be installed after first removing the one Phillips screw on the side panel adjacent to the front handle.

### ELECTROMAGNETIC INTERFERENCE

To prevent electromagnetic interference with other equipment, all used outputs should be connected to shielded 50Ω loads using shielded 50Ω coaxial cables. Unused outputs should be terminated with shielded 50Ω coaxial terminators or with shielded coaxial dust caps, to prevent unintentional electromagnetic radiation. All cords and cables should be less than 3m in length.

## MAINTENANCE

### REGULAR MAINTENANCE

This instrument does not require any regular maintenance.

On occasion, one or more of the four rear-panel fuses may require replacement. All fuses can be accessed from the rear panel. See the “FUSES” section for details.

### CLEANING

If desired, the interior of the instrument may be cleaned using compressed air to dislodge any accumulated dust. (See the “TOP COVER REMOVAL” section for instructions on accessing the interior.) No other cleaning is recommended.

PERFORMANCE CHECK SHEET