



# 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>

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

## INSTRUCTIONS

MODELS AVX-STRA-PS,  
AVX-STRB-PS

ULTRA-FAST  
PULSE STRETCHERS

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>

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## INTRODUCTION

The AVX-STR series is useful in experimental applications where an ultra-fast low-level pulse must be converted to standard logic levels and widened, to trigger other equipment.

The AVX-STRA-PS converts pulses with widths of 200 ps or higher, and amplitudes of 30 mV to 1V, to TTL levels (0 and +3 to +5V). The output pulse width is fixed at 50 ns, suitable for triggering most laboratory instruments. The input pulse repetition frequency may be as high as 10 MHz.

The AVX-STRB-PS handles slower, larger input pulses. This model converts pulses with widths of 2 ns or higher, and amplitudes of 300 mV to 3V, to TTL levels (0 and +3 to +5V). The output pulse width is fixed at 50 ns, suitable for triggering most laboratory instruments. The input pulse repetition frequency may be as high as 10 MHz.

All models require 120/240 Volts, 50-60 Hz prime power and are equipped with SMA input and output connectors.

## SPECIFICATIONS

Model:	AVX-STRA-PS	AVX-STRB-PS
Input pulse width:	$\geq 200$ ps	$\geq 2$ ns
Input amplitude:	+30 mV to +1.0 V	+300 mV to +3.0 V
Input resistance:	50 Ohms	
Input pulse repetition frequency:	0 to 10 MHz	
Output amplitude:	TTL levels: Low: 0V High: +3 to +5V	
Output pulse width:	50 ns, fixed	
Propagation delay:	$\leq 20$ ns	
Connectors:	SMA	
Power requirement:	120/240 Volts (switchable) 50-60 Hz	
Dimensions:	100 mm x 215 mm 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 is 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.

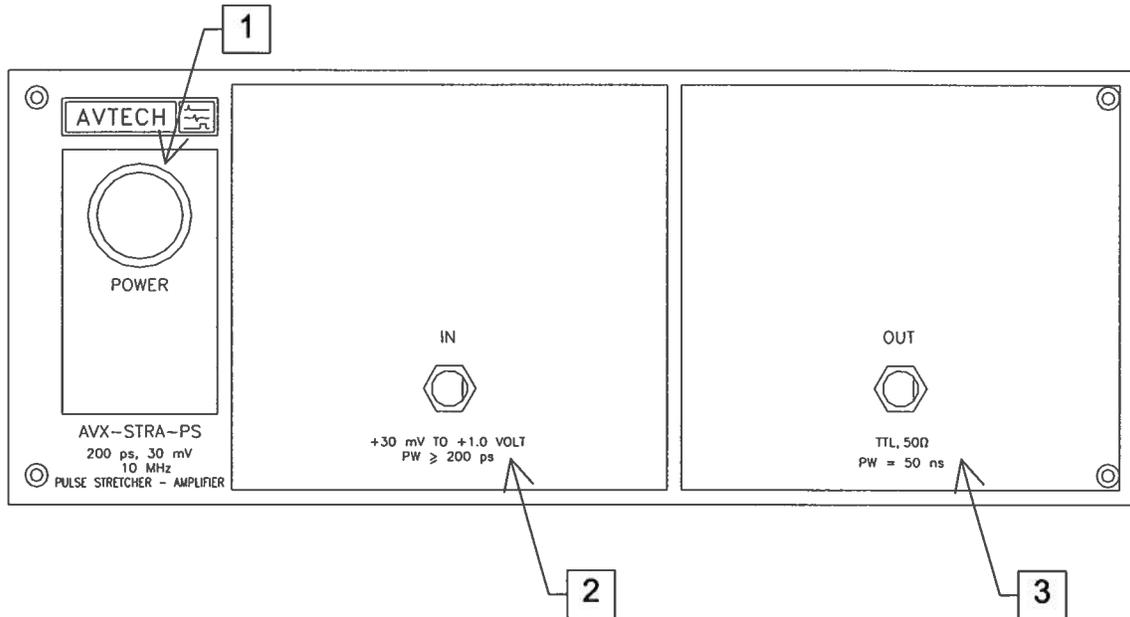
For AC line voltages of 110-120V, the power selector card should be installed so that the "120" marking is visible from the rear of the instrument.

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.

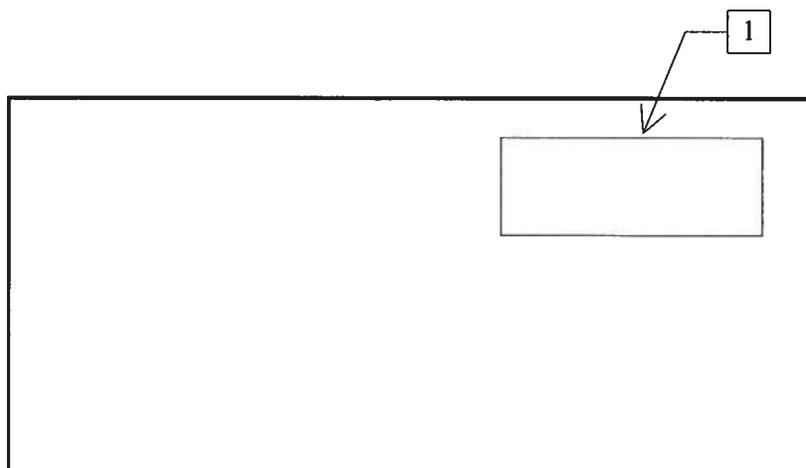
In the 120V setting, a 1/4A slow blow fuse is required. In the 240V setting, a 1/8A slow blow fuse is required.

## 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. **IN Connector.** The input signal is applied to this SMA connector. The input impedance is 50Ω.
3. **OUT Connector.** This is the main output. A single TTL-level pulse (i.e. logic low = 0V, logic high = +3 to +5V) is generated for each input pulse. The output pulse width is fixed at approximately 50 ns. This output will drive loads of 50Ω or greater.

## 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 1/2A 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 1/4A slow blow fuse is required. In the 240V setting, a 1/8A slow blow fuse is required.

## GENERAL INFORMATION

### BASIC OPERATION

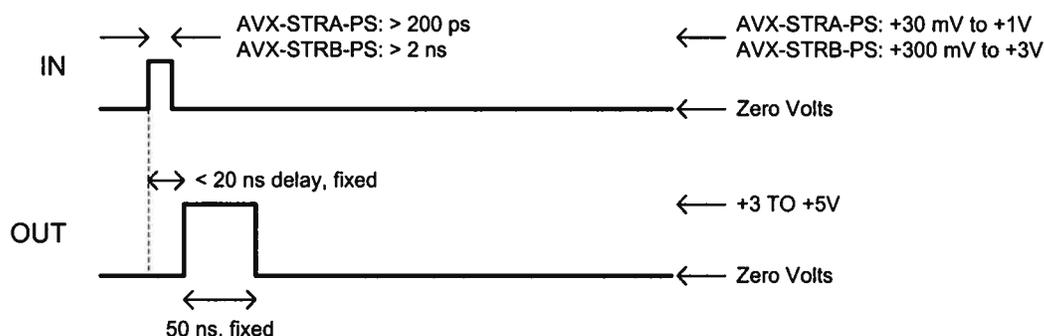
This instrument has one pulse input and one pulse output.

The AVX-STRA-PS accepts an input of 200 ps or wider, with an amplitude of +30mV to +1V.

The AVX-STRB-PS accepts an input of 2 ns or wider, with an amplitude of +300mV to +3V.

For each input pulse, an output pulse is generated on the OUT connector. The output pulse has a fixed pulse width of approximately 50 ns, and operates at standard TTL logic levels (i.e. logic low = 0V, logic high = +3 to +5V). The IN-to-OUT propagation delay is less than 20 ns.

The basic input and output waveforms are illustrated below:



*Basic Operation*

### FALSE TRIGGERING CONSIDERATIONS

Due to the sensitive inputs of the AVX-STRA-PS and AVX-STRB-PS, care must be taken to avoid false triggering.

Use coaxial shielded cable to connect to the input connector, to avoid interference with other signals.

Also, if the input pulse amplitude is expected to be much larger than the minimum rated amplitude for the unit (30 mV for the AVX-STRA-PS, and 300 mV for the AVX-STRB-PS), consider adding a shielded coaxial attenuator at the input of this instrument. This will attenuate both the signal and any unwanted noise. (See the Avtech application note at <http://www.avtechpulse.com/appnote/vendors/> for suggested attenuator suppliers.)

### TOP COVER REMOVAL

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).

### ELECTROMAGNETIC INTERFERENCE

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

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(edition 1)