



- Rise times as fast as 300 ps
- Amplitudes to 100V
- Pulse widths from 1 to 100 ns
- IEEE-488.2 GPIB Control
- Ethernet port for VXI-11.3 support

The AVI series provides high amplitude (up to 100 Volts) pulses with rise times as low as 300 ps.

The AVI-V-B family has rise times of 300 ps, pulse widths of 2 to 100 ns, variable amplitudes to 50V, and repetition frequencies up to 20 kHz.

The 40V AVI-V-3L-B family offers operation at pulse repetition frequencies as high as 100 kHz, with 500 ps rise and fall times. The pulse width is adjustable from 1 to 20 ns.

The higher-voltage AVI-V-HV2B-B family provides rise times of 600 ps, pulse widths variable from 4 to 100 ns, variable amplitudes of up to 100V, and pulse repetition frequencies of up to 20 kHz.

The AVI-V-HV3A-B family is similar, but with slower rise times of 1.5 ns.

Aside from the internal clock, all models can also be triggered by a single-pulse pushbutton or an external TTL-level trigger input. A delay control and a sync output are provided for oscilloscope triggering. A gate input is also provided. Either output polarity can be provided, as well as a dual output polarity option.

All models include a computer control interface (see <http://www.avtechpulse.com/gpib> for details). This provides GPIB and RS-232 computer-control, as well as front panel keypad and adjust knob control of the output pulse parameters. A large back-lit LCD displays the output amplitude, polarity, frequency, pulse width, and delay. To

allow easy integration into automated test systems, the programming command set is based on the SCPI standard, and LabView drivers are available at <http://www.avtechpulse.com/labview>.

A standard rear-panel Ethernet connector allows the instrument to be remotely controlled using the VXI-11.3, ssh, telnet, and web protocols. In particular, the VXI-11.3 features allows software like LabView to control an instrument using standard VISA communications drivers and network cabling, instead of using older-style GPIB cabling and GPIB controller cards. For details, see <http://www.avtechpulse.com/options/vxi>.

A DC offset or bias insertion option is available. Units with this option include a circuit similar to Model AVX-T at the output. The required DC offset or bias is applied directly to rear panel solder terminals. All models are available with a monitor option that provides an attenuated (20 dB or ÷10) coincident replica of the main output pulse.

All models require 100-240V, 50-60 Hz prime power.

Actual test waveforms from shipped units are available from the online data pages for each model, at:

- <http://www.avtechpulse.com/speed/avi-v/#testresults>
- <http://www.avtechpulse.com/speed/avi-v-hv1a/#testresults>
- <http://www.avtechpulse.com/speed/avi-v-HV2B/#testresults>
- <http://www.avtechpulse.com/speed/avi-v-hv3a/#testresults>
- <http://www.avtechpulse.com/speed/avi-v-3l/#testresults>



## SPECIFICATIONS

## AVI SERIES

Model <sup>1</sup> :	AVI-V-B	AVI-V-HV2B-B	AVI-V-HV3A-B	AVI-V-3L-B
Amplitude <sup>2,6,7</sup> :	< 10 - 50 V	< 20 - 100 V		< 10 - 40 V
Rise time (20%-80%):	≤ 300 ps	≤ 600 ps	≤ 1.5 ns	≤ 500 ps
Fall time (80%-20%):	≤ 3 ns	≤ 4 ns		≤ 500 ps
Pulse width (FWHM):	2 to 100 ns	4 to 100 ns		1 to 20 ns
Maximum pulse repetition frequency (PRF):	20 kHz			100 kHz
Propagation delay:	≤ 250 ns			
Polarity:	Positive or negative or both (specify <sup>3</sup> )			
Required load impedance <sup>6</sup> :	50 Ohms			
GPIB and RS-232 control <sup>1</sup> :	Standard on -B units.			
LabView Drivers:	Check <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability and downloads			
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Included. Recommended as a modern alternative to GPIB / RS-232. See <a href="http://www.avtechpulse.com/options/vxi">http://www.avtechpulse.com/options/vxi</a> for details.			
Settings resolution:	The resolution of the timing parameters (pulse width, delay, period) varies, but is always better than 0.15% of ( set value  + 20 ns). The amplitude resolution is < 0.1% of the maximum amplitude.			
Settings accuracy :	Amplitude, PRF, Delay: Typically ± 3% (±2 ns or ± 2% of max. amplitude) after 10 minute warmup. The pulse width may vary (typically ±4 ns) as a function of the other settings, and the amplitude may vary as a function of the PRF <sup>7</sup> , so their values should be verified by measurement. For high-accuracy applications requiring traceable calibration, verify the output with a calibrated oscilloscope.			
Jitter:	± 35 ps ± 0.015% of sync delay			
DC offset or bias insertion:	Optional <sup>4</sup> . Apply DC offset in the range of ±50V (250 mA max) to back panel solder terminal.			
Trigger modes:	Internal trigger, external trigger (TTL level pulse, > 10 ns, 1 kΩ input impedance), front-panel "Single Pulse" pushbutton, or single pulse trigger via computer command.			
Variable delay:	0 to 1.0 seconds, for all trigger modes (including external trigger).			
Sync output:	> +3 Volts, > 50 ns, will drive 50 Ohm loads			
Monitor output:	Optional <sup>5</sup> . Provides a 20 dB attenuated coincident replica of main output.			
Connectors:	Out, Monitor: SMA, Trig, Sync: BNC			
Power required:	100-240 Volts, 50-60 Hz			
Dimensions (H × W × D):	100 x 430 x 375 mm (3.9 x 17 x 14.8")			
Temperature range:	+5°C to +40°C			

- 1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay. (See <http://www.avtechpulse.com/gpib>).
- 2) For operation at amplitudes of less than 20% of full-scale, best results will be obtained by setting the amplitude near full-scale and using external attenuators on the output. In some cases, it is possible to add internally-switched attenuators for low amplitude operation. Contact Avtech for details.
- 3) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative). For dual-polarity units, add the suffix -PN.

- 4) For DC offset option suffix model number with -OS. Avtech Model AVX-T bias tee can also be used to obtain DC offset (<http://www.avtechpulse.com/bias/avx-t>).
- 5) For monitor option add suffix -M.
- 6) A 50 Ohm load is required. Other loads may damage the instrument. Consult Avtech ([info@avtechpulse.com](mailto:info@avtechpulse.com)) if you need to drive other load impedances.
- 7) The maximum output amplitude may decline up to 15% at maximum PRF. It will also decline as the pulse width is reduced to values comparable to the specified minimum fall times.



**Model AVI-V-B. The GPIB, RS-232, and Ethernet ports are on the rear panel.**