



A +5V, 25 ns waveform

- PRF to 10 MHz
- Amplitudes to  $\pm 5$  Volts
- 300 ps rise time, 350 ps fall times
- Low jitter and variable delay
- IEEE-488.2 GPIB and RS-232 control ports
- Ethernet port for VXI-11.3 support

The AV-1030-B offers very high performance in an easy-to-use general-purpose lab instrument format. The AV-1030-B has a front-panel keypad and liquid crystal display, and IEEE-488.2 GPIB, RS-232, and Ethernet computer-control ports. Settings can be changed using the front-panel menus, or by computer commands sent over the various ports.

The AV-1030-B provides 300 ps rise times, repetition rates to 10 MHz, amplitudes of up to  $\pm 5$  Volts, pulse widths of 10 ns to 1 ms, low jitter, variable delay, and a sturdy metal chassis.

Dedicated logic-level outputs (normal and logically complemented) are provided. These outputs share the same timing as the main output, but have fixed logic-level amplitudes (switchable between TTL and ECL levels). Both can drive 50  $\Omega$  loads.

The AV-1030-B includes a complete computer control interface (see <http://www.avtechpulse.com/gpib>). 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 backlit 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. A LabView driver is available at [www.avtechpulse.com/labview](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. See <http://www.avtechpulse.com/options/vxi> for details.

The AV-1030-B pulser can be triggered by an internal oscillator, by an external TTL pulse, by a front-panel pushbutton, or by computer command. A gate input can be used to inhibit triggering. A SYNC output is provided for oscilloscope triggering purposes. The delay between the main output and the SYNC output is variable. The SYNC output may be set to precede or to lag the main output.

The maximum duty cycle is 10%, and the main output is AC-coupled. A 50 $\Omega$  load is required. To add a DC offset to the output, consider using the AVX-T series (<http://www.avtechpulse.com/bias>) of bias tees.

For higher duty cycle or lower speed applications, consider the AV-1021-B or other models in our general-purpose series:

<http://www.avtechpulse.com/general>.



AV-1030-B



## SPECIFICATIONS

## AV-1030 SERIES

Model:	AV-1030-B
GPIB and RS-232 control:	yes
Amplitude (main output):	$\pm 0.05$ to $\pm 5$ Volts, adjustable
Logic outputs:	One non-inverted and one inverted. TTL <sup>3</sup> and ECL <sup>4</sup> modes (switchable).
Required load impedance:	50 Ohms <sup>2</sup> .
Output impedance:	At amplitudes of $< \pm 1.5V$ : 50 $\Omega$ , approximately At amplitudes of $> \pm 1.5V$ : $<< 50 \Omega$ .
Rise time (20%-80%):	$\leq 300$ ps
Fall time (80%-20%):	$\leq 350$ ps
Pulse repetition frequency:	1 Hz to 10 MHz
Pulse width (FWHM) <sup>1</sup> :	10 ns to 1 ms
Jitter:	$\leq \pm 25$ ps $\pm 0.01$ % of Sync delay (SYNC out to main OUT)
Polarity (main output):	Positive or negative, switchable
Duty cycle (maximum):	10 %
Waveform aberrations:	Overshoot, undershoot, and ringing are less than $\pm 20\%$ with outputs terminating in 50 Ohms.
Droop:	$\leq 10\%$ at maximum pulse width
Trigger modes:	Internal trigger, external trigger (TTL level pulse, $> 10$ ns, 1 k $\Omega$ input impedance), front-panel "Single Pulse" pushbutton, or single pulse trigger via computer command.
Gate input:	Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active.
Propagation delay:	$\leq 200$ ns (Ext trig in to pulse out)
Variable delay:	0 to 1.0 seconds (Sync out to main out), for all trigger modes (including external trigger).
Sync output:	$> +3$ Volts, $\sim 40$ ns, will drive 50 Ohm loads
Signal connectors:	Main output: SMA. Other: BNC
LabView Drivers:	Check <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability
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 varies, but is always better than 0.15% of the set value. The amplitude resolution is typically 0.02% of the maximum amplitude.
Settings accuracy:	Typically $\pm 3\%$ (plus $\pm 50mV$ or $\pm 5$ ns <sup>1</sup> ) after 10 minute warmup. For high-accuracy applications requiring traceable calibration, verify the output parameters with a calibrated oscilloscope <sup>5</sup> .
Power requirement:	100 – 240 V, 50 - 60 Hz
Dimensions (H x W x D):	100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8")
Chassis material:	Anodized aluminum, with blue plastic trim
Temperature range:	$+5^{\circ}C$ to $+40^{\circ}C$
Optional rack-mount kit:	Add the suffix "-R5" to the model number to include the 19" rack mount kit
Optional accessory kit:	Add the suffix "-AK1" to the model number to include the recommended accessory kit. Consists of three SMA, 18 GHz, 2 Watt attenuators (10, 20 & 30 dB) for use on the output, and two 50 Ohm, 1 GHz, 1 Watt feed-through terminators (one SMA, one BNC) for use on external trigger inputs.

1) The pulse width may vary by  $\pm 5$  ns as the amplitude is varied.

2) A 50 Ohm load is required for proper operation.

3) TTL levels: low = 0 to +0.8V, high = +3 to +5V (fixed).

4) ECL levels: low = -1.6V, high: -0.8V (fixed).

5) These instruments are provided with a basic calibration checksheet, showing a

selection of measured output parameters. These measurements are performed with equipment that is calibrated on a regular basis by a third-party ISO/IEC 17025:2005 accredited calibration laboratory. However, Avtech itself does not claim any accreditation. For applications requiring traceable performance, use a calibrated measurement system rather than relying on the accuracy of the pulse generator settings.