



Model AV-1021-B is a general-purpose 10 MHz lab pulse generator which includes IEEE-488.2 GPIB (and RS-232) computer control of amplitude, polarity, DC offset, pulse width, pulse repetition frequency, trigger mode and delay.

The unit features a front panel keyboard and adjust knob control of the output pulse parameters along with a four line by 40 character back-lit LCD display of the output amplitude, polarity, pulse width, pulse repetition frequency, DC offset and delay.

The output pulse amplitude and the DC offset are both variable from 0 to  $\pm 10V$ . The output impedance can be set at  $50\Omega$  (for transmission-line backmatching) or at  $2\Omega$  for maximum output voltage. (The amplitude and offset are reduced by a factor of two when the  $50\Omega$  setting is used with a  $50\Omega$  load.) The instrument can be triggered by its own internal clock, by an external TTL-level signal, by the front-panel "Single Pulse" pushbutton, or by a computer command. The internal clock is variable from 1 Hz to 10 MHz. A double pulse mode is available and a gate input is provided for synchronous or asynchronous control of the

- IEEE-488.2 GPIB (and RS232) control is standard
- $\pm 10$  Volt output (TTL and ECL also) into  $50\Omega$
- Variable DC offset to  $\pm 10$  Volts
- 10 ns rise and fall times (5 ns optional)
- Variable delay with low jitter
- Dual channel version (Model AV-1021D-B)

triggering. The output pulse width and delay are variable from 20 ns to 0.5 sec. The rise time of the main output is 10 ns. A 5 ns rise time option is also available. A burst mode option is also available. The unit also provides logic and logic-complement outputs (TTL and ECL signals).

Model AV-1021D-B is similar but provides two independent 0 to  $\pm 10$  Volt output channels. The two channels have separate pulse width, amplitude and polarity controls. One channel has adjustable delay, and one channel is synchronous with the sync output.

Models AV-1021-B and AV-1021D-B both require 100 - 240 Volts, 50 - 60 Hz prime power. All input and output connectors are BNC (female). A heavy-duty metal chassis insures low emissions.

For applications requiring faster rise times, consider the AV-1030 series (described at <http://www.avtechpulse.com/general/av-1030>). For applications not requiring GPIB computer control, see the general-purpose models AV-1020-C, AV-1022-C, or AV-1023-C at <http://www.avtechpulse.com/general>.

Model:	AV-1021-B	AV-1021D-B
GPIB and RS-232 control:	Included. See <a href="http://www.avtechpulse.com/gpib">http://www.avtechpulse.com/gpib</a> for details.	
LabView Drivers:	Check <a href="http://www.avtechpulse.com/labview/">http://www.avtechpulse.com/labview/</a> for availability and downloads	
Number of main output channels:	One	Two
Auxiliary logic-level outputs:	Logic and Logic-Inverted. May be set to TTL or ECL levels.	Logic and Logic-Inverted, for both channels. May be set to TTL or ECL levels.
Amplitude and peak output (to 50 Ohms) <sup>1</sup> :	Main output: 0 to $\pm 10$ V (when $Z_{OUT}=2\Omega$ ), 0 to $\pm 5$ V (when $Z_{OUT}=50\Omega$ ). Resolution: < 0.025% of full-scale. Logic outputs: TTL: 0 and +5V. ECL: -0.8V and -1.6V.	
Pulse repetition frequency (PRF):	1 Hz to 10 MHz	
Pulse width (FWHM):	20 ns to 0.5 sec, or DC	30 ns to 0.5 sec
Burst mode:	Optional <sup>3</sup> . Generates 1-500 pulses per trigger.	Not available.
Rise time, fall time (20%-80%):	Main: $\leq 10$ ns ( $\leq 5$ ns optional <sup>2</sup> ), TTL: 5 ns, ECL: 2 ns	
DC offset <sup>1</sup> :	0 to $\pm 10$ V for $Z_{OUT}=2\Omega$ , 0 to $\pm 5$ V for $Z_{OUT}=50\Omega$	
Source impedance $Z_{OUT}$ :	Main output: $2\Omega$ or $50\Omega$ , switchable <sup>2</sup> .	
Duty cycle (max):	80% (100% in PW DC mode)	
Waveform aberrations:	Overshoot and ringing are less than $\leq 10\%$ at amplitudes of 1 V and higher with outputs terminating in $50\Omega$ .	
Propagation delay:	< 120 ns (Ext trig in to pulse out, with delay set to zero)	
Trigger required (Ext trig mode):	+ 5 Volts, $\geq 4$ ns TTL	
Trigger required (Gate in):	TTL, synchronous or asynchronous, active high or low	TTL, synchronous, active high or low
Delay jitter:	$\pm 35$ ps $\pm 0.015\%$ RMS (sync out to pulse out)	
Delay:	0 to 0.5 sec (sync out to pulse out)	Channel 1: follows sync pulse by 0 to 0.5 sec Channel 2: synchronous with sync pulse
Sync output:	+2 Volts, 50 ns, will drive 50 Ohm loads	
Single pulse mode:	manual front-panel push button or computer command	
Double pulse mode:	yes	Channel 1 only
Signal connectors:	BNC. Main outputs and Sync are on the front panel. Logic outputs & Gate & Ext Trig inputs are on the rear.	
Telnet / Ethernet control <sup>4</sup> :	Optional. See <a href="http://www.avtechpulse.com/options/tnt">http://www.avtechpulse.com/options/tnt</a> for details.	
Power requirement:	100 - 240 Volts, 50 - 60 Hz	
Dimensions, Weight, Chassis:	100 x 430 x 375 mm (3.9" x 17" x 14.8"), 10 kg (22 lbs), anodized aluminum with blue-gray plastic trim	
Mounting & Temperature range:	Any, +5°C to +40°C	

1) Peak output = amplitude + offset. The amplitude and offset can not be set to maximum at the same time, or the peak output rating will be exceeded.  
2) Add the suffix -TR to the model number to specify the 5 ns rise time option. The minimum  $Z_{OUT}$  increases from  $2\Omega$  to  $6\Omega$  when -TR option is present.

3) Add the suffix -BR to the model number to specify the burst mode option. See <http://www.avtechpulse.com/options/br> for details about this option.  
4) Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.



AV-1021D-B