



A +5V, 25 ns waveform

- PRF to 10 MHz
- Amplitudes to ±5 Volts
- 300 ps rise time, 350 ps fall times
- Low jitter and variable delay
- IEEE-488.2 GPIB and RS-232 control, or manually controlled instruments
- Optional ethernet port for VXI-11.3 support

The AV-1030 family of pulse generators offer very high performance in an easy-to-use general-purpose lab instrument format. The AV-1030-C uses front-panel range switches and analog dials to control all settings. The AV-1030-B has a front-panel keypad and liquid crystal display, and IEEE-488.2 GPIB and RS-232 computer-control ports. Settings can be changed using the front-panel menus, or by computer commands sent over the GPIB or RS-232 ports.

Models AV-1030-C and AV-1030-B are both high-performance pulse generators providing 300 ps rise time, repetition rates to 10 MHz, amplitudes of 0 to ±5 Volts, pulse widths of 10 ns to 1 ms, low jitter, variable delay, and a sturdy metal chassis.

The amplitude of the AV-1030-C is controlled by a six-position range switch (±0.5, ±1.5 and ±5 Volts) and a one-turn fine control. The output impedance in the lower ranges is 50 Ohms, providing transmission-line back-matching for low distortion. The output pulse width is variable using a five-position range switch and a one-turn fine control. The pulse repetition frequency is variable from 1 Hz to 10 MHz in seven decade ranges.

Both models include logic-level outputs. These outputs share the same timing as the main output, but have fixed logic-level amplitudes. Both can drive 50 Ω loads.

The AV-1030-B includes a complete computer control interface. 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 for download.

The -VXI option for the AV-1030-B adds a rear-panel Ethernet connector, allowing an 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.

Both models can be triggered by the internal oscillator, by an external TTL pulse, or by a front-panel pushbutton. The AV-1030-B may also be triggered by computer command. Both models include a gate input that 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 for both models is 10%, and the outputs are AC-coupled. A 50Ω load is required. To add a DC offset to the output, consider using the AVX-T series of bias tees.

For higher duty cycle or lower speed applications, consider the AV-1000-C, AV-1020-C, and AV-1021-B families.



AV-1030-B

Model:	AV-1030-C	AV-1030-B
GPIB and RS-232 control:	no	yes
Amplitude (main output) ¹ :	± 0.2 to ± 5 Volts, adjustable	± 0.05 to ± 5 Volts, adjustable
Logic outputs:	One TTL ⁵ , and one ECL ⁶ (both non-inverted)	One non-inverted and one inverted. TTL ⁵ and ECL ⁶ modes (switchable).
Required load impedance:	50 Ohms ⁴ .	
Output impedance:	At amplitudes of $< \pm 1.5V$: 50 Ω , approximately At amplitudes of $> \pm 1.5V$: $<< 50 \Omega$.	
Rise time (20%-80%):	≤ 300 ps	
Fall time (80%-20%):	≤ 350 ps	
PRF:	1 Hz to 10 MHz	
Pulse width (FWHM) ² :	10 ns to 1 ms	
Jitter:	$\leq \pm 25$ ps ± 0.01 % of Sync delay (SYNC out to main OUT)	
Polarity (main output):	Positive or negative, switchable	
Duty cycle (max):	10 %	
Waveform aberrations:	Overshoot, undershoot, and ringing are less than $\pm 20\%$ at amplitudes of 0.5V and higher ¹ with outputs terminating in 50 Ohms.	
Drop:	$\leq 10\%$ at maximum pulse width	
Trigger required:	External trigger mode: TTL levels ⁵ , ≥ 4 ns width	
Gate input:	TTL low: No output. TTL high (or unconnected): Normal output	
Propagation delay:	< 100 ns (Ext Trig to Out)	
Sync delay:	± 50 ns to ± 1 ms	0 to ± 1 second
Sync output:	$+3$ Volts, 50 ns, will drive 50 Ohm loads	
Single pulse mode:	Yes, push-button controlled	
Signal connectors:	Main output: SMA. Other: BNC	
LabView Drivers:	AV-1030-B only	
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	AV-1030-B only: Optional ³ . Recommended as a modern alternative to GPIB / RS-232.	
Settings resolution: (AV-1030-B only)	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: (AV-1030-B only)	Typically $\pm 3\%$ (plus $\pm 50mV$ or ± 2 ns) after 10 minute warmup. For high-accuracy applications requiring traceable calibration, verify the output parameters with a calibrated oscilloscope.	
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) For operation at lower amplitudes, best results will be obtained by setting the amplitude near maximum and using external attenuators on the output. Suitable attenuators are available in the optional accessory kit.
 2) The pulse width may vary by ± 5 ns as the amplitude is varied.
 3) Add the suffix -VXI to the model number to specify the Ethernet port.

4) A 50 Ohm load is required. Other loads may damage the instrument. Consult Avtech if you need to drive other load impedances.
 5) TTL levels: low = 0 to $+0.8V$, high = $+3$ to $+5V$ (fixed)
 6) ECL levels: low = $-1.6V$ high: $-0.8V$ (fixed)



AV-1030-C