



- ◆ IEEE-488.2 GPIB and RS-232 control (-B units)
- ◆ Peak outputs to 26 Amps
- ◆ Pulse widths from 5 to 100 ns
- ◆ Rise times as low as 2 ns
- ◆ Variable rise times

The AVO-5 series of pulse generators is designed for pulsing laser diodes and other low impedance loads with narrow, high-current pulses. Each model consists of an instrument mainframe and a miniature output impedance-matching transformer module that connects to the mainframe via a 2-foot long coaxial cable. The diode load is connected in series with a low-value current limiting resistor between two output solder terminals (OUT, GND) on the output module. Optional plug-in (or screw-in) socket mounting of the diode is also available.

Models AVO-5-C and AVO-5-B provide peak output amplitudes (either polarity available) that are variable from 0 to 26 Amps into a 3Ω load, pulse widths variable from 6 to 100 ns, PRF variable to 5 kHz, and 3 ns rise times. While these models are intended for use with a 3Ω load (to match the output impedance), the amplitude can be extended in some applications up to 50 Amps by lowering (and thus mis-matching) the load resistance. See Technical Brief 14 for details (online at <http://www.avtechpulse.com/appnote/techbrief14>).

The AVO-5A1 models provide a 2 ns rise times and peak outputs of 16 Amps. The pulse width is adjustable from 5 to 100 ns.

Either output polarity can be provided. A dual-polarity option is available, which allows the output polarity to be set by the front-panel controls or by computer command (-B units only).

All models include an adjustable oscillator for internal triggering. A delay control and a sync output are provided for oscilloscope triggering purposes. All models can also be triggered externally with a TTL-level pulse. On “-C” models, the output parameters are controlled by

front-panel switches and one-turn controls.

Instruments with the -B suffix include 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. (See <http://www.avtechpulse.com/gpib> for additional details). To allow easy integration into automated test systems, the programming command set is based on the SCPI standard and LabView drivers are available for download at <http://www.avtechpulse.com/labview>.

All models are protected from overload conditions (such as excessively high duty cycle or short circuited load) by an automatic feature that limits the output power for as long as the overload condition persists.

AVO-5 units are available with a monitor output option that provides an attenuated (20 dB or ±10) coincident replica of the main output pulse. All models are also available with optional analog electronic control (0 to +10V) of the output amplitude. Electronic control units also include the standard front-panel controls. Some models are available with variable rise and fall time options. All models are available with optional plug-in or screw-in socket mounting of the diode. When ordering, the customer must specify the diode package type and the required pin connections (e.g. anode, cathode, ground, etc.). See AVX-S Series for readily available package mounting. Contact Avtech for special or different packages. All models require 100 - 240 V, 50 - 60 Hz prime power.

Application notes and general applications assistance are available at <http://www.avtechpulse.com/appnote>.



AVO-5-B

Model:	AVO-5-C ¹ AVO-5-B ²	AVO-5A1-C ¹ AVO-5A1-B ²
Amplitude ^{3,4} :	0 to 26 A ⁶	0 to 16 A
Required load impedance:	3 Ω ^{5,6}	10 Ω
Output impedance:	≈ 3 Ω	≈ 10 Ω
Pulse width (FWHM):	6 to 100 ns	5 to 100 ns
Rise time (20%-80%):	< 3 ns, or 3 to 10 ns variable (option ⁷)	2 ns
Fall time (80%-20%):	< 4 ns, or or 4 to 10 ns variable (option ⁷)	≤ 4 ns
PRF:	0 to 5 kHz	
Polarity ⁸ :	Positive or negative or both (specify)	
GPIB and RS-232 control ² :	Standard on -B units. Not available on -C.	
Propagation delay:	≤ 350 ns (Ext trig in to pulse out)	
Jitter:	± 100 ps ± 0.03% of sync delay (Ext trig in to pulse out)	
Trigger required:	External trig mode: +5 Volts, 50 to 500 ns (TTL)	
Variable Sync delay:	0 to 200 ns (Sync out to pulse out)	
Sync output:	+ 3 Volt, 200 ns, will drive 50 Ohm loads	
Gate input (-B only):	Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active.	
Monitor output option ⁹ :	Provides a 20 dB attenuated coincident replica of main output.	
Connectors:	OUT: Solder terminals, or optional plug-in socket similar to AVX-S3 series ¹⁰ . Other: BNC	
Power requirements:	100 - 240 Volts, 50 - 60 Hz	
Dimensions: (Mainframe)	-C models: 100 × 215 × 375 mm (3.9" × 8.5" × 14.8") -B models: 100 × 430 × 375 mm (3.9" × 17" × 14.8")	
Dimensions: (Transformer Module)	23 × 28 × 38 mm (0.9" × 1.1" × 1.5")	
Chassis material:	Cast aluminum frame and handles, blue vinyl on aluminum cover plates	
Mounting:	Any	
Temperature range:	+ 5°C to + 40°C	

- 1) -C suffix indicates stand-alone lab instrument with internal clock and line powering. (See <http://www.avtechpulse.com/formats> for additional details of the basic instrument formats).
- 2) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay. (See <http://www.avtechpulse.com/gpib>).
- 3) For analog electronic control (0 to + 10 V) of amplitude, suffix model number with -EA. Electronic control units also include standard front-panel controls.
- 4) The minimum useful amplitude is approximately 20% of the maximum amplitude. The waveform may be distorted below this level.
- 5) The AVO-5 mainframe is essentially identical to Model AVL-2 and therefore may be used as a 320 Volt, 50 Ohm pulse generator (SMA output connectors). See <http://www.avtechpulse.com/speed/avl-2>.
- 6) The load impedance for the AVO-5 may be reduced to as low as zero Ohms. The maximum output amplitude increases for lower load

- impedances, to a maximum of 50 A at zero Ohms. However, the rise time, fall time, and waveform distortion (ringing) may increase at impedances lower than 3 Ohms, due to the impedance mismatch. See <http://www.avtechpulse.com/appnote/techbrief14> for details.
- 7) For variable rise, fall time option, add suffix -T1 to model number. Control is by a 10-position switch. Not available on -B units.
- 8) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative) or -PN for dual polarity option.
- 9) For monitor option add suffix -M.
- 10) To specify diode socket mounting option, suffix model number with -S3. When ordering, customer must also specify the diode package type (e.g. TO-18) and the required pin connections (e.g. anode, cathode, ground, etc.). See AVX-S Series for readily available package mounting. Contact Avtech for special or different packages.



AVO-5-C