

AVO-6C-B-N waveform. 10 kHz, 1 us, -250V into a 50Ω load (no output module). 100 V/div, 200 ns/div.

- ◆ IEEE-488.2 GPIB and RS-232 control
- ◆ Peak outputs to 1, 5 and 10 Amperes
- ◆ Pulse widths to 5 us and to 50 us

The AVO-6 series of pulsed voltage pulse generators is designed for pulsing laser diodes and other low impedance loads with rectangular current pulses as high as 10 Amperes and pulse widths as high as 50 us. The diode load is connected between two solder terminals on the output module which connects to the mainframe via a 2 foot long 50Ω coaxial cable. The output module contains the elements necessary to match the diode to the mainframe. Optional plug-in (or screw-in) socket mounting of the diode is also available. If the output module is not used, the mainframe can be used to drive a 50Ω load directly.

Model AVO-6A-B provides variable amplitudes (either polarity available) of up to 1 Amp, pulse width variable from 50 ns to 5 us, pulse repetition frequencies (PRF) to 20 kHz, and 10 ns rise times. Model AVO-6A1-B is similar but features 1 ns rise and fall times, and a maximum PRF of 10 kHz.

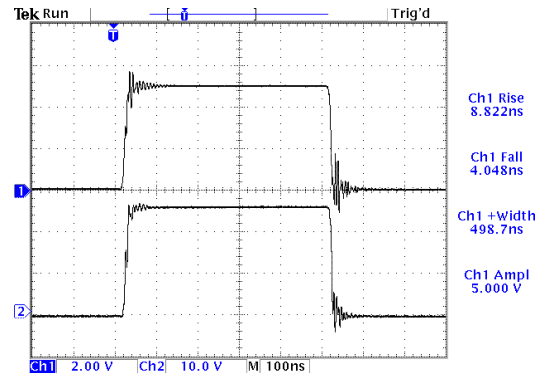
For higher current applications, Avtech offers model AVO-6F1-B, which provides up to 4 Amps and pulse widths to 5 us, with 2 ns rise and fall times. Model AVO-6C-B provides up to 5 Amperes at pulse widths to 5 us with 10 ns rise times.

For wider pulse width applications, model AVO-6C1-B operates to 5A with pulse widths of 50 us and 10 ns rise time. The maximum PRF is 10 kHz, and the maximum duty cycle is 1%.

For higher PRF applications, the AVO-6HF-B operates to 5 Amps, 100 kHz, at duty cycles of up to 4%. The pulse width is variable from 50 ns to 50 us. Due to the high power dissipation in the output module, the output module is fan-cooled.

The AVO-6D-B is offered for applications requiring up to 10A with pulse widths to 5 us, and 15 ns rise times.

All models are protected from overload conditions by an automatic control feature which limits the output



Top: Output of Tektronix CT-2 current probe, measuring an AVO-6C-B-P +5A current pulse through a 1N5819 diode soldered to the output module. 1A/div, 100 ns/div.

Bot: MON output, into a 50Ω load. 10V/div, 100 ns/div.

- ◆ Maximum duty cycles from 0.5 to 10%
- ◆ 6 basic models
- ◆ Customizations available

power for as long as the overload condition persists.

All 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. (See <http://www.avtechpulse.com/gpib> for details). 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 for download at (<http://www.avtechpulse.com/labview>) the Avtech web site. An Ethernet port for Telnet-based control is optional on all -B units (-TNT option, see <http://www.avtechpulse.com/options/tnt>).

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

A delay control and sync output is provided for scope triggering purposes. The units can also be triggered externally using a TTL-level pulse. The propagation delay in the externally triggered mode is typically 100 ns. Either output polarity or an optional dual output polarity can be provided. All models are available with a monitor output option which provides an attenuated coincident replica of the main output pulse. All models are available with optional electronic control (0 to +10V) of output amplitude. Electronic control units also include the standard front-panel controls.

All models are also available with optional plug-in or screw-in socket mounting of the diode. When ordering, the customer must 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.

Application notes are available on the Avtech web site, at <http://www.avtechpulse.com/appnote>.



SPECIFICATIONS

AVO-6 SERIES

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|--|---|------------------------|------------------------|------------------------|-----------------------|------------------------|-----------------------|
| Model: | AVO-6A-B ¹ | AVO-6A1-B ¹ | AVO-6F1-B ¹ | AVO-6HF-B ¹ | AVO-6C-B ¹ | AVO-6C1-B ¹ | AVO-6D-B ¹ |
| Amplitude ^{2,3} : | 0 - 1 Amps | | 0 - 4 Amps | 0 - 5 Amps | | | 0 - 10 Amps |
| Pulse width (FWHM): | 50 ns - 5 us | | 100 ns - 5 us | 50 ns - 50 us | 50 ns - 5 us | 50 ns - 50 us | 50 ns - 5 us |
| Rise & fall time: (20%-80%) | ≤ 10 ns | ≤ 1 ns | ≤ 2 ns | ≤ 10 ns | | | ≤ 15 ns |
| Maximum PRF: | 20 kHz | 10 kHz | 10 kHz | 100 kHz | 10 kHz | | 10 kHz |
| Duty cycle (max): | 10 % | 5 % | 1 % | 4 % | 1 % | | 0.5 % |
| Polarity ⁴ : | Positive or negative or both (specify) | | | | | | |
| Output impedance: | 50 Ohms | | | | | | 12 Ohms |
| DC offset or bias insertion: | Optional ⁵ Apply required DC bias current in the range of ± 100 mA to solder terminals on the output module. Not available on the AVO-6HF-B or AVO-6C1-B (50 us models). | | | | | | |
| Propagation delay: | ≤ 150 ns (Ext trig in to pulse out) | | | | | | |
| Jitter: | ≤ ± 100 ps ± 0.03% of sync delay (Ext trig in to pulse out) | | | | | | |
| Trigger required: | External trigger mode: TTL-level pulse (LOW: 0V, HIGH: +3 to +5V), 50 ns or wider | | | | | | |
| Sync delay: | 0 to ± 1 sec | | | | | | |
| Sync output: | + 3 Volts, 100 ns, will drive 50 Ohm loads | | | | | | |
| Gate input: | Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active. | | | | | | |
| Monitor output: | Optional ⁶ . Provides an attenuated coincident replica of output current. | | | | | | |
| GPIB, RS-232 control ² : | Standard on -B units. | | | | | | |
| Telnet / Ethernet control: | Optional ⁷ . See http://www.avtechpulse.com/options/tnt for details. | | | | | | |
| Output connectors, standard: | Solder terminals. | | | | | | |
| Optional output device sockets: | The standard solder terminals can be replaced by a plug-in or screw-in socket. See http://www.avtechpulse.com/laser-bias/avx-s1 for examples. Contact Avtech (info@avtechpulse.com) with your special device mounting requirement. | | | | | | |
| Optional alternative output connector and cable (AVO-6D-B only): | -CLZ option ⁸ : The output can be provided on a DB-9 male connector (Pins 1-5 = signal, pins 6-9 = ground), suitable for use with the Avtech AV-CLZ11 series of low impedance cables. Includes one AV-CLZ11-60 cable and one AV-CTLX DB-9-to-PCB adapter (see http://www.avtechpulse.com/transmission/av-clz11 and http://www.avtechpulse.com/accessories/av-ctlx for details.) The cable must be terminated by a user-supplied 11-13 Ohm resistance (or resistance in series with a diode). | | | | | | |
| Connectors, other: | BNC | | | | | | |
| Power requirements: | 100 - 240 Volts, 50 - 60 Hz | | | | | | |
| Dimensions: (H x W x D) | Mainframe: 100mm x 430 mm x 375mm (3.9" x 17" x 14.8") Output module (excludes AVO-6HF-B): 41 mm x 66 mm x 76 mm (1.6" x 2.6" x 3.0") Output module (AVO-6HF-B only): 150 mm x 150 mm x 150 mm (6" x 6" x 6") | | | | | | |
| Chassis material: | Cast aluminum frame and handles, blue vinyl on aluminum cover plates | | | | | | |
| Mounting: | Any | | | | | | |
| Temperature range: | +5°C to +40°C | | | | | | |

- 1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude and frequency. See <http://www.avtechpulse.com/gpib/> for details.
- 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 (between the mainframe and the output module).
- 3) For analog electronic control (0 to +10V) of amplitude suffix model number with -EA. Electronic control units also include standard front-panel controls.

- 4) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative) or -PN for dual polarity.
- 5) For DC offset option suffix model number with -OS. Not available for the model AVO-6C1-B.
- 6) For monitor option add suffix -M.
- 7) Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.
- 8) Add the suffix -CLZ to the model number to specify this output arrangement. For the AVO-6D-B only.



AVO-6C-B