



AVOZ-G2-B, 10 A/div, 1 us/div

- Up to 100 Amps
- Pulse widths up to 1 ms
- Rise times of 50, 60, or 100 ns
- Rugged 60 cm output cables
- IEEE-488.2 GPIB and RS-232 interfaces
- Ethernet interface optional

The AVOZ-G models are voltage pulsers with very high maximum current ratings (ranging from 20 Amps to 100 Amps). These pulsers are designed for delivering wide pulses to laser diodes, diode arrays, and other low impedance loads.

Model AVOZ-G1-B will provide amplitudes of up to 20V into load impedances of 1Ω or higher, providing currents of up to 20 Amps. The rise and fall times are less than 50 ns, and the pulse repetition frequency (PRF) is variable up to 10 kHz. The pulse width is variable from 200 ns up to 1 ms. The maximum duty cycle is 2.5%.

Model AVOZ-G2-B will provide amplitudes of up to 50V into load impedances of 1Ω or higher, providing currents of up to 50 Amps. The rise and fall times are less than 70 ns, and the pulse repetition frequency (PRF) is variable up to 5 kHz. The pulse width is variable from 200 ns up to 100 us. The maximum duty cycle is 0.8%.

Model AVOZ-G3-B will provide amplitudes of up to 100V into load impedances of 1Ω or higher, providing currents of up to 100 Amps. The rise and fall times are less than 100 ns, and the pulse repetition frequency (PRF) is variable up to 1 kHz. The pulse width is variable from 300 ns up to 100 us. The maximum duty cycle is 0.4%.

The AVOZ-G instruments are voltage pulsers. A resistor must be connected in series with the diode under test to limit the current to the maximum rated current (or less). The output current (I_{OUT}) can be related to the pulser output voltage (V_{OUT}), the diode forward voltage drop (V_D) and the required series resistance (R_{SERIES}) by:

$$I_{OUT} = (V_{OUT} - V_D) / R_{SERIES}$$

All AVOZ-G models have a rear-panel output connector to which a unique 60 cm long high-current transmission line may be attached. This line has a characteristic impedance approximately equal to the expected load impedance. (For additional details, see the datasheet at <http://www.avtechpulse.com/transmission/av-clz1>.) This allows the laser diode to be placed away from the instrument without degrading the pulse shape. A matching resistor must be placed in series with the diode to provide a net resistive load to the line of 1Ω. A

medium-power test load (5 Watts) is provided with these models for the convenience of initial testing purposes. See <http://www.avtechpulse.com/accessories/av-ctl1> for more information about test loads.

Either output polarity (positive or negative) can be provided. A dual polarity option is also available. On dual polarity units, only one polarity is active at a time.

A delay control and a sync output are provided for scope triggering purposes. The units can also be triggered externally using a TTL-level pulse. All models are available with optional remote analog electronic control (0 to +10V) of the output amplitude. Electronic control units also include the standard front-panel one-turn controls.

All models include a complete computer control interface (see <http://www.avtechpulse.com/gpiib> for details). 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, and LabView drivers are available at <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. For details, see <http://www.avtechpulse.com/options/vxi>.

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

Many parameters can be adapted to meet special requirements. The AVOZ-G series replaces older models in the obsolete AVO-7 series (including the AVO-7A1-B, AVO-7A-B, AVO-7B1-B, and AVO-7B2-B). Contact Avtech (info@avtechpulse.com) with your special test needs!

Model ¹ :	AVOZ-G1-B	AVOZ-G2-B	AVOZ-G3-B
Amplitude ² :	1 to 20 V	2 to 50 V	5 to 100 V
Maximum output current:	20 A	50 A	100 A
Minimum load impedance ³ : (required to limit current)	1 Ω		
Pulse width (FWHM):	200 ns to 1 ms	200 ns to 100 us	300 ns to 100 us
Rise, fall times (20%-80%) ⁶ :	≤ 50 ns	≤ 70 ns	≤ 100 ns
Maximum PRF:	10 kHz	5 kHz	1 kHz
Duty cycle: (max)	2.5%	0.8 %	0.4%
Output impedance:	$\leq 0.02 \Omega$	$\leq 0.05 \Omega$	$\leq 0.05 \Omega$
Average output power:	10 W max.	20 W max.	40 W max.
Droop:	$\leq 10\%$, at maximum pulse width and maximum amplitude		
Polarity ⁴ :	Positive or negative or dual polarity (specify)		
GPIB & RS-232 control ¹ :	Standard on -B units.		
LabView drivers:	Check http://www.avtechpulse.com/labview for availability and downloads		
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Included. Recommended as a modern alternative to GPIB / RS-232. See http://www.avtechpulse.com/options/vxi for details.		
Settings resolution:	The resolution of the timing parameters (pulse width, delay, period) varies, but is always better than 0.15% of (set value) + 20 ns). The amplitude resolution is < 0.1% of the maximum amplitude.		
Settings accuracy:	Typically $\pm 3\%$ (plus $\pm 1.5\%$ of maximum amplitude) after 10 minute warmup. For applications requiring traceable calibration, verify the output parameters with a calibrated oscilloscope ⁷ .		
Propagation delay:	≤ 200 ns (Ext trig in to pulse out)		
Jitter:	$\leq \pm 35$ ps $\pm 0.015\%$ RMS (sync out to pulse out)		
Trigger modes:	Internal trigger, external trigger (TTL level pulse, > 10 ns, 1 k Ω input impedance), front-panel "Single Pulse" pushbutton, or single pulse trigger via computer command.		
Variable delay:	Sync to main out: 0 to 1.0 seconds, for all trigger modes (including external trigger).		
Sync output:	> +3 Volts, > 50 ns, will drive 50 Ohm loads		
Gate input:	Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active.		
Supplied output transmission line:	Detachable high-current transmission line cable assembly. See http://www.avtechpulse.com/transmission for details.		
Part number: length, Z ₀ :	AV-CLZ1-60 (see http://www.avtechpulse.com/transmission/av-clz1) 1 Ω , 60 cm		
Output connection:	End of cable: DB-37 male. Pins 1-19 = signal, pins 20-37 = ground.		
Supplied test load ⁵ :	AV-CTL1-ENC		
Other signal connectors:	Trig, Gate, Sync: BNC		
Power required:	100 - 240 Volts, 50 - 60 Hz		
Dimensions: (H x W x D)	100 x 430 x 375 mm (3.9" x 17" x 14.8")		
Chassis material:	Anodized aluminum, with blue plastic trim		
Optional rack-mount kit:	Add -R5 suffix.		
Temperature range:	$+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$		

- 1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of pulse amplitude, pulse width, delay and PRF. (See <http://www.avtechpulse.com/gpib>).
- 2) For operation at voltage amplitudes of less than 10% of full-scale, better results may be obtained by setting the amplitude near full-scale and increasing the load impedance accordingly.
- 3) For applications where additional resistance must be added in series with the device under test, Avtech recommends connecting multiple Ohmite OY-series (<http://www.ohmite.com>) ceramic composition resistors in parallel to create a high-power, low-inductance effective resistance.
- 4) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative) or -PN for dual polarity option.
- 5) The supplied test load is for low-duty-cycle basic operational tests only. The power

- rating of the load is 5 Watts, it is not capable of supporting the instrument's full maximum average output power. See <http://www.avtechpulse.com/accessories/> for details about the AV-CTL series of test loads.
- 6) Valid when tested into the supplied test load.
- 7) 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.



AVOZ-G3-B, shown with the supplied accessories (AV-CLZ1-60 cable and AV-CTL1-ENC test load).
See <http://www.avtechpulse.com/transmission/av-clz1> for more information about the AV-CLZ1-60 cable.
See <http://www.avtechpulse.com/accessories/av-ctl1> for more information about the AV-CTL1-ENC test load.