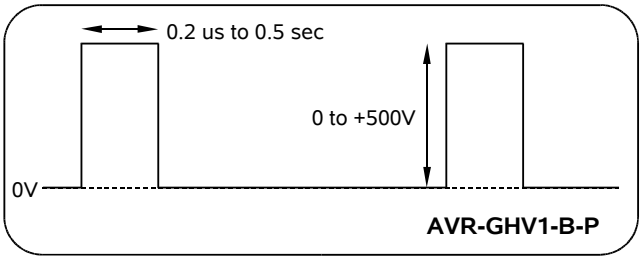
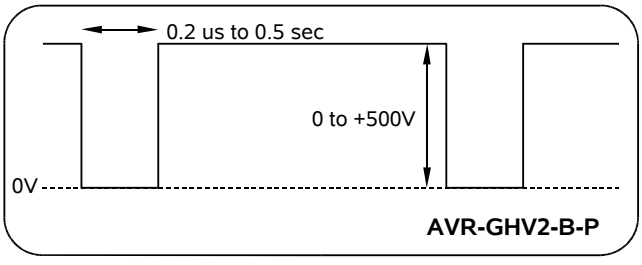
AVR-GHV SERIES

400, 500 & 800 VOLT
TIME-OF-FLIGHT BLANKING
AND GATING GENERATORS

- Amplitudes to ±500 Volts
- Pulse widths from 200 ns to 0.5 sec
- Rise, fall times as low as 30 ns
- PRF to 100 kHz
- Adaptable technology - easily customized
- IEEE-488.2 GPIB / RS-232 standard
- Ethernet / Telnet control optional



AVR-GHV1-B-P



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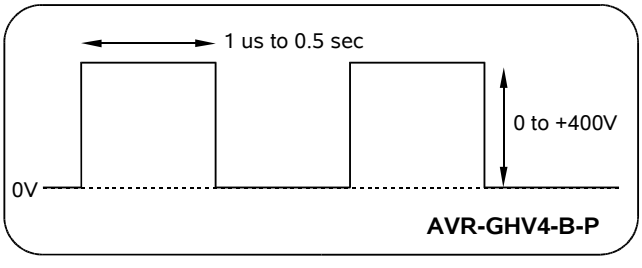

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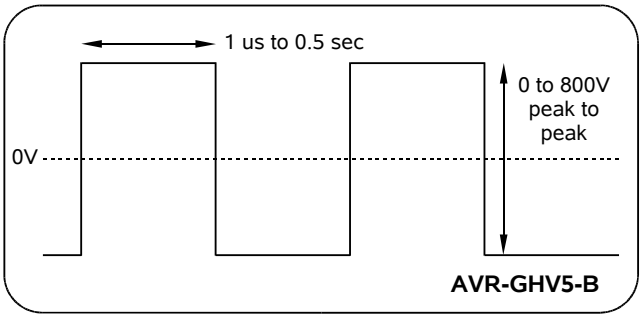

AVR-GHV5-B

The AVR-GHV series is specifically designed for gating and beam blanking applications requiring amplitudes up to ±500V, pulse widths from 200 ns to 0.5 sec and duty cycles as high as 80%. This series is designed to drive high impedance loads such as microchannel plates, grids and beam deflection plates. Typical output waveforms provided by each of the four standard models in this series are shown on this page. The versatile AVR-GHV technology can be adapted to provide a wide variety of waveforms (e.g., higher voltages, dual outputs, alternating pulse polarity, capacitive loads, etc). Contact Avtech if your particular requirement is not covered by the standard models.

Model AVR-GHV1-B provides up to 500 Volts out, pulse widths from 200 ns to 0.5 sec, PRF to 1 kHz and duty cycles to 80%. Positive, negative, and dual polarity units are available. (Dual polarity units generate one polarity at a time. The polarity can be switched from the front panel, or by computer command. Contact Avtech if you require polarity that alternates with every pulse, or dual outputs.)

Model AVR-GHV2-B provides an output which is basically the complement of the AVR-GHV1-B output - that is, the output potential is high (and variable) during the inter-pulse interval. The amplitude during this interval is variable from 0 to 500 Volts (via a one-turn control) while the amplitude during the pulse is fixed at 0 Volts.

Model AVR-GHV4-B generates a unipolar square wave with a variable output amplitude of 0 to 400V, pulse width variable from 1 us to 0.5 seconds, and PRF variable from 1 Hz to 100 kHz. An optional dual polarity output is available.

Model AVR-GHV5-B also generates a square wave, but the peak-to-peak output amplitude is variable from 0 to 800V and swings between positive and negative voltage levels of approximately equal magnitude. The pulse repetition frequency is variable from 1 Hz to 50 kHz.

For all models, the pulse timing may be set in terms of pulse width or duty cycle, as desired. The pulse repetition frequency is variable using the internal clock oscillator. 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. A manual push button is provided for one-shot operation. Models are protected from overload conditions (such as a short-circuited load) by an automatic control feature which limits the output power for as long as the overload condition persists. All models require 100 - 240V, 50 - 60 Hz prime power.

The output impedance of all models (i.e., the internal resistance in series with the output) is 50Ω, providing back-matching of systems that use coaxial cable on the output. This impedance will absorb transmission line reflections.

A burst mode option is also available, allowing a burst of 1-500 pulses to be generated in response to a single trigger event. See http://www.avtechpulse.com/options/br for details.

All instruments with the "-B" suffix include a complete computer control interface. (Visit http://www.avtechpulse.com/gpib 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 back-lit LCD displays the output amplitude, polarity, frequency, pulse width or duty cycle as appropriate, and delay. To allow easy integration into automated test systems, the programming command set is based on the SCPI standard. An Ethernet port for Telnet-based control is optional (additional details are available at http://www.avtechpulse.com/options/tnt).

For operation at lower voltages, see the related AVR-G series.

SPECIFICATIONS AVR-GHV SERIES

Model:	AVR-GHV1-B[1]	AVR-GHV2-B[1]	AVR-GHV4-B[1]	AVR-GHV5-B[1]
Amplitude:	0 to 500 Volts	0 to 500 Volts	0 to 400 Volts	0 to 800 Volts (peak to peak)
Pulse width (FWHM)[2]:	200 ns to 0.5 sec		1 us to 0.5 sec	
Load impedance:	≥ 100 kΩ			
Output impedance:	50 Ω (i.e., internal resistance in series with the output).			
Rise time (20%-80%)[7]:	≤ 40 ns	≤ 40 ns	≤ 30 ns	≤ 100 ns
Fall time (80%-20%)[7]:	≤ 40 ns	≤ 40 ns	≤ 30 ns	≤ 100 ns
PRF:	1 Hz to 1 kHz		1 Hz to 100 kHz	1 Hz to 50 kHz
Duty cycle:	0 - 80 %			
Polarity[3]:	Positive or negative or both (specify)		Positive or negative or both (specify)	Positive and negative
GPIB and RS-232 control[1]:	Standard on -B units			
LabView Drivers:	Check http://www.avtechpulse.com/labview for availability and downloads			
Telnet / Ethernet control[4]:	Optional on -B units. See http://www.avtechpulse.com/options/tnt for details.			
Burst mode:	Optional[5]. Generates 1-500 pulses per trigger event. See http://www.avtechpulse.com/options/br.			
Propagation delay:	≤ 100 ns (Ext trig in to pulse out)			
Jitter (Ext trig in to pulse out):	± 100 ps ± 0.03% of sync delay			
Trigger required: (External trigger modes)	Mode A: + 5 Volt, > 50 ns (TTL) Mode B: + 5 Volt, $PW_{IN} = PW_{OUT}$ (TTL)			
Sync delay:	Variable, 0 to ± 1 second			
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.			
Connectors (OUT)[6]:	Type N	Type N	BNC	Type N
Connectors (Trig, Sync, Gate):	BNC			
Power requirements:	100 - 240 Volts, 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:	cast aluminum frame and handles, blue vinyl on aluminum cover plates			
Mounting:	Any. Add the suffix -R5 to the model number to include a rack-mount kit.			
Temperature range:	+5°C to +40°C			

1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width or duty cycle (as appropriate), pulse repetition frequency, and delay (See http://www.avtechpulse.com/gpib).
2) When triggered externally, the pulse width can be set by the pulse instrument controls, or it may be set to track the input trigger pulse width.
3) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative) or -PN for dual polarity option (controlled by a two-position switch which controls the polarity of the signal output port). Keypad polarity control on -B units.
4) Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.
5) 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.
6) HV, MHV or HN output connectors can also be provided. To specify, suffix the model number by -SHV, -MHV or -HN as required.
7) Valid when the load is connected with zero cable length (for instance, on a binding post adapter). The rise and fall times will degrade for non-zero lengths of cable, due to the product of the 50 Ohm output impedance and the cable capacitance. The maximum cable length for operation (with degraded rise and fall times) is 2 meters (6 feet). If your application requires longer cable lengths, contact Avtech for appropriate modifications or applications assistance.

AVR-GHV1-B