



- Amplitudes to 100, 200, 250, or 400 Volts
- IEEE-488.2 GPIB and RS-232 interfaces
- 10 and 20 ns rise and fall times
- Pulse widths variable from 0.1 to 100 us
- PRF to 10 kHz or 100 kHz
- Peak power to 3.2 kW, average power to 50W & 100 W
- For time-of-flight and many other applications

The AVR-2-B, AVR-3-B, AVR-3HF-B and AVR-4-B are high-voltage pulse generators capable of driving 50 Ohm (or higher) loads and operating over a wide pulse width range. The instruments include IEEE-488.2 GPIB and RS-232 interfaces. For diode loads, these models can be used to provide up to 2, 4, 5 or 8 Amps of pulsed current if the diode is connected in series with a 50Ω resistance.

All models operate over a wide pulse width range of 100 ns to 100 us.

Models AVR-2A-B and AVR-2B-B provide up to 100 Volts with rise times of 10 ns. The pulse repetition frequency (PRF) is variable from 1 Hz to 100 kHz. These models provide average output powers up to 50 and 100 Watts with maximum duty cycles of 25 and 50%, respectively.

The AVR-3-B provides up to 200 Volts with rise times of 10 ns. The pulse repetition frequency (PRF) is variable from 1 Hz to 10 kHz. This model will provide peak output power of 800 Watts and average outputs of 16 Watts (i.e. 2% maximum duty cycle).

The AVR-3HF-B is similar to the AVR-3-B, but offers higher amplitudes (up to 250V), higher maximum PRF (to 100 kHz), higher duty cycles (to 4%), and a maximum average output power of 50 Watts.

The AVR-4-B provides up to 400 Volts out with rise times of 20 ns, and pulse widths variable from 100 ns to 100 us. The PRF is variable from 1 Hz to 10 kHz. This model will provide peak output power of 3.2 kW and average output power of 16 Watts (i.e. 0.5% maximum duty cycle).

The MOSFET output stages in all models will safely withstand any combination of front panel control settings, output open or short circuits, and high-duty cycles. An internal power supply monitor removes the power to the output stage for five seconds if an average power overload exists. The AVR-3-B output stage will source up to 4 Amps, and will automatically shut down if the load current exceeds 4.8 Amps, approximately. Similarly, the AVR-3HF-B will supply 5A and shut down at 6A, and the AVR-4-B will supply up to 8A and shut down at 10A.

Aside from the internal clock, these instruments can also be triggered by a single-pulse pushbutton or an external TTL-level trigger input. When triggered externally the output pulse width can be set to track the input trigger pulse width ($PW_{OUT} = PW_{IN}$). A delay control and a sync output are provided for scope triggering. A gate input is also provided.

All models include a complete computer control interface (see <http://www.avtechpulse.com/gpib>). 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. An Ethernet port for Telnet and web-based control is optional on all models (-TNT option - see <http://www.avtechpulse.com/options/tnt> for details).

All models are available with positive or negative outputs. A dual-polarity option is also available. The polarity must be specified when ordering, by adding the suffix “-P”, “-N”, or “-PN” to the model number. The output polarity of units with the -PN dual-polarity option can be controlled by the front-panel settings, or by computer commands.

All models are available with a DC-voltage-controlled output amplitude option (0 to +10 V). All models require 100 - 240 Volts, 50 - 60 Hz, and are mounted in a rugged all-metal 4” x 17” x 15” chassis.

LabView drivers for these instruments are available for download at <http://www.avtechpulse.com/labview>.

Models in the AVR series may be suitable for replacing obsolete models from the former Velonex Corporation in many applications.

Actual test waveforms from shipped units are available from the online data pages for each model, at:

- <http://www.avtechpulse.com/medium/avr-2a/#testresults>
- <http://www.avtechpulse.com/medium/avr-2b/#testresults>
- <http://www.avtechpulse.com/medium/avr-3/#testresults>
- <http://www.avtechpulse.com/medium/avr-3hf/#testresults>
- <http://www.avtechpulse.com/medium/avr-4/#testresults>



AVR-3-B-PN



SPECIFICATIONS

AVR-2, AVR-3 & AVR-4 SERIES

Model:	AVR-2A-B ¹	AVR-2B-B ¹	AVR-3-B ¹	AVR-3HF-B ¹	AVR-4-B ¹
Amplitude ^{2,3} : (R _{LOAD} ≥ 50 Ohms)	0 to 100 Volts		0 to 200 Volts	0 to 250 Volts	0 to 400 Volts
Rise time (20%-80%):	≤ 10 ns				≤ 20 ns
Fall time (80%-20%):	≤ 10 ns				≤ 20 ns
Pulse width (FWHM):	100 ns to 100 us				
Maximum PRF:	100 kHz		10 kHz	100 kHz	10 kHz
Duty cycle (max):	25%	50%	2%	4%	0.5%
Maximum average power out:	50 Watts	100 Watts	16 Watts	50 Watts	16 Watts
Polarity ⁴ :	Positive or negative or both (specify)				
Output Impedance:	1.5 Ω, approximately				
Propagation delay:	≤ 150 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 mode)	Ext Trig Mode A: +5 Volt, 50 ns or wider (TTL) Ext Trig Mode B: +5 Volt, PW _{IN} = PW _{OUT} (TTL)				
Sync delay:	Variable 0 to ± 1 second (sync out to pulse out)				
Sync output:	+3 Volts, 200 ns, will drive 50 Ohm loads				
Gated operation:	Synchronous or asynchronous, active high or low, switchable.				
Connectors:	Out, Trig, Sync, Gate: BNC				
GPIB and RS-232 control ¹ :	Standard feature on all -B units.				
LabView drivers:	Available for download at http://www.avtechpulse.com/labview .				
Telnet / Ethernet control ⁵ :	Optional. See http://www.avtechpulse.com/options/tnt for details.				
Power requirements:	100 - 240 Volts, 50 - 60 Hz				
Dimensions:	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 -R5 to the model number to add a rack-mount kit.				
Temperature range:	+5°C to +40°C				

- B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude and frequency. See <http://www.avtechpulse.com/gpib> for details.
- For operation at amplitudes of less than 10% of full-scale, best results will be obtained by setting the amplitude near full-scale and using external attenuators on the output.
- For electronic control (0 to +10V) of amplitude, suffix the model

- number with -EA. These units also include the standard front-panel controls.
- Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative), or -PN for dual polarity option.
- Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.

See our Applications Information Section on pages 104 - 112, and visit the application note area of the Avtech web site: <http://www.avtechpulse.com/appnote>.

Use the "Pick the Perfect Pulser" parametric search engine at <http://www.avtechpulse.com/pick> to find the best pulser for your application!