



- ◆ Amplitudes to 200V or 250V
- ◆ PRF to 100 kHz
- ◆ 3 or 10 ns rise and fall times
- ◆ Pulse widths from 10 ns to 5 us
- ◆ IEEE-488.2 GPIB control available
- ◆ Optional ethernet port for VXI-11.3 support

The AVR series provides peak outputs to 200 Volts, with rise and fall times of 2 or 10 ns. Pulse widths as narrow as 10 ns and as wide as 5 us can be provided.

The AVR-A-1-PW family provides 200 Volt pulses with 10 ns rise and fall times. The pulse width may be varied from 50 ns to 500 ns. The maximum pulse repetition frequency (PRF) is 100 kHz, and the maximum duty cycle is 0.5%.

The AVR-S3 family is similar, except it offers faster rise and fall times of 3 ns. The maximum PRF is 10 kHz, and the pulse width is variable from 100 ns to 5 us (subject to a 0.5% duty cycle limit). The maximum amplitude is 200 Volts. A 50 Ohm load is required.

For applications requiring narrow pulses or fast response times, the AVR-A-1-S2 family offers pulse widths of 10 to 200 ns, with a minimal 30 ns propagation delay (when externally triggered).

For higher voltage, higher power applications, the AVR-AHF-1-B generates amplitudes to 250 Volts, with PRF to 100 kHz, duty cycles to 4%, and average output powers to 50 Watts. The pulse width is adjustable from 50 ns to 500 ns. (For wider pulse widths, consider the AVR-3HF-B as well – <http://www.avtechpulse.com/medium/avr-3hf>.)

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 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 (<http://www.avtechpulse.com/labview>).

The -VXI option adds a rear-panel Ethernet connector, allowing an 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, please see <http://www.avtechpulse.com/options/vxi>.

The -C versions provide output pulse parameters similar to those of the -B models, but do not include the GPIB or RS-232 interfaces (i.e. no computer control or LCD display). The output parameters are controlled by front-panel range switches and one-turn controls. All models require 100-240V, 50-60 Hz AC power.

A delay control and a sync output are provided on all models for oscilloscope triggering purposes. The units can also be triggered externally using a TTL-level pulse.

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

Either output polarity or an optional dual output polarity can be provided. Polarity inversion in dual polarity -C units is accomplished by means of a two-position switch. -B units provide keypad / computer control of the polarity.

A DC offset or bias insertion option is available. Units with this option include a circuit similar to Model AVX-TC (see <http://www.avtechpulse.com/bias/avx-tc>) at the output.

All models can also be supplied with voltage-controlled output amplitude options (0 to +10V). Units with the analog electronic control option also include the standard front-panel controls.



-B STYLE UNIT



## SPECIFICATIONS

## AVR SERIES

Model:	AVR-AHF-1-B <sup>2</sup>	AVR-A-1-PW-C <sup>1</sup> AVR-A-1-PW-B <sup>2</sup>	AVR-S3-B <sup>2</sup>	AVR-A-1-S2-C <sup>1</sup>
Amplitude <sup>3,4,5</sup> : (50 Ohm load)	< 10 to 250 Volts	< 10 to 200 Volts		
Pulse width (FWHM) <sup>3,5</sup> :	50 to 500 ns	50 to 500 ns	100 ns to 5 us	10 ns to 200 ns
PRF:	0 to 100 kHz	0 to 100 kHz	0 to 10 kHz	0 to 10 kHz
Rise & fall times (20%-80%):	≤ 10 ns	≤ 10 ns	≤ 3 ns	≤ 3 ns
Maximum duty cycle:	4%	0.5%		0.2%
Maximum avg. output power:	50 Watts	4 Watts		1.6 Watts
Required load:	≥ 50 Ω		50 Ω ± 10% <sup>8</sup>	
Polarity <sup>6</sup> :	Positive or negative or both (specify)			
Front-panel controls:	-B units: keypad and adjust knob, and GPIB / RS-232 control -C units: decade range switches & one-turn dials for PRF, pulse width & delay; one-turn dial for amplitude.			
GPIB and RS-232 control <sup>2</sup> :	Standard on -B units. Not available on -C.			
LabView drivers:	-B units only: check <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability and downloads			
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	-B units only: Optional <sup>9</sup> . Recommended as a modern alternative to GPIB / RS-232. See <a href="http://www.avtechpulse.com/options/vxi">http://www.avtechpulse.com/options/vxi</a> for details.			
Settings resolution (-B units only):	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 (-B units only):	Typically ± 3% (plus ±1V or ± 2 ns) after 10 minute warmup. For high-accuracy applications requiring traceable calibration, verify the output parameters with a calibrated oscilloscope.			
Propagation delay:	≤ 100 ns (Ext trig in to pulse out)			
Jitter:	± 100 ps ± 0.03% of sync delay, Ext trig in to pulse out			
DC offset or bias insertion:	Option available. Apply required DC offset or bias in the range of ± 50 Volts, (250 mA max) to back panel solder terminal. See note 7.			
Trigger modes:	-B units:	Internal trigger, external trigger (TTL level pulse, > 10 ns, 1 kΩ input impedance), front-panel "Single Pulse" pushbutton, or single pulse trigger via computer command.		
	-C units:	Internal trigger, or external trigger (TTL level pulse, > 50 ns, 1 kΩ input impedance).		
Variable delay:	-B units:	0 to 1.0 seconds, for all trigger modes (including external trigger).		
(Sync to main out)	-C units:	0 to 200 ns, for internal trigger mode only. No variable delay in external trigger mode.		
Sync output:	> +3 Volts, > 50 ns, will drive 50 Ohm loads			
Gate input: (-B units only)	Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active.			
Connectors:	Out, Trig, Sync, Gate (-B only): BNC			
Dimensions:	100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8")			
Power requirements:	100 - 240 Volts, 50 - 60 Hz			
Chassis material:	Cast aluminum frame & 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. No suffix indicates miniature module requiring DC power and external trigger. (See <http://www.avtechpulse.com/formats> for details of the four 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 +10V) of the amplitude, suffix model number with -EA. Electronic control units also include standard front-panel controls.
- 4) 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.
- 5) For 10-turn dial control of pulse width (or amplitude) suffix model number with -PWT (or -AT). For -C units only.
- 6) Indicate desired polarity by suffixing model No. by -P or -N (i.e. positive or negative) or -PN for dual polarity option. Polarity reversal is achieved by means of a two-position switch on -C units and by keypad control on -B units.
- 7) For DC offset option suffix model number with -OS.
- 8) The instrument may be damaged by load impedances outside this range.
- 9) Add the suffix -VXI to the model number to specify the Ethernet port.

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