



AVR-E4-C-P, at maximum & minimum pulse widths.
100 V/div, 1 ns/div, 100 kHz.

- 20, 50 or 100 Volt peak outputs
- 0.3 ns rise and fall times
- 1 ns to 5 us pulse widths
- PRF to 1 MHz
- IEEE-488.2 GPIB control available (-B units)

The AVR-E family offers medium-to-high voltage pulses with very fast rise and fall times.

The AVR-E1 series provides peak outputs to 20V, with pulse widths variable from 10 to 200 ns, pulse repetition frequencies to 200 kHz, and rise and fall times of 300 ps. The minimum pulse width can optionally be reduced to 1 ns. The maximum pulse width can optionally be increased to 5 us, with a reduction in the maximum PRF to 20 kHz.

The AVR-E2 series has similar pulse width ratings, but offers a higher maximum amplitude of 50V, with 500 ps rise and fall times.

The AVR-E3 series offers a maximum amplitude of 100V, with 500 ps rise time, 1 ns fall time, and a maximum PRF of 100 kHz (or 20 kHz with the wider pulse width options).

The AVR-E3A series also provides a maximum amplitude of 100 V but with a 1.2 ns rise, a 10 to 500 ns pulse width range and a maximum PRF of 200 kHz.

The narrow-pulse AVR-E4 series can generate 100V pulses with pulse widths variable from 1 to 5 ns, at repetition rates to 100 kHz. The AVR-E5 series covers the pulse width range of 1 to 10 ns, with 50V maximum amplitude and a maximum repetition rate of 1 MHz.

The AVR-E6 series covers the pulse width range of 8 to 30 ns, with 100V maximum amplitude and a maximum repetition rate of 2 MHz.

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, frequency, pulse width, and delay. To allow easy integration into

automated test systems, the programming command set is based on the SCPI standard. LabView drivers are available for download at <http://www.avtechpulse.com/labview>.

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 vernier controls.

All 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 exists.

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. Either output polarity or an optional dual output polarity can be provided. Polarity inversion in dual polarity units is accomplished by means of a two-position switch or menu. 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> for details) at the output. The required DC offset or bias is applied directly to rear panel solder terminals.

“-C” models can also be supplied with voltage controlled output pulse width and amplitude options (0 to +10V). Units with the electronic control option also include the standard front-panel one-turn controls.

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

Visit <http://www.avtechpulse.com> for application notes, data sheets, LabView drivers, pricing, and more!

Models can be customized to meet specific requirements Contact Avtech (info@avtechpulse.com) for details!



AVR-E3-B

Model:	AVR-E1-C ¹ AVR-E1-B ²	AVR-E2-C ¹ AVR-E2-B ²	AVR-E3-C ¹ AVR-E3-B ²	AVR-E3A-C ¹ AVR-E3A-B ²	AVR-E4-C ¹ AVR-E4-B ²	AVR-E5-B ²	AVR-E6-B ²
Amplitude ^{3,4} : (50 Ohm load ⁹)	0 to 20V	0 to 50V	0 to 100V	0 to 100V	0 to 100V	0 to 50V	0 to 100V
Rise time (20%-80%):	0.3 ns	0.5 ns	0.5 ns	1.2 ns	0.4 ns	0.5 ns	2.0 ns
Fall time (80%-20%):	0.3 ns	0.5 ns	1.0 ns	2.0 ns ⁸	0.6 ns	1.0 ns	2.0 ns
Pulse width (FWHM) ³ :	standard units: 10 ns to 200 ns with -W1 option: 1 ns to 200 ns with -W2 option: 50 ns to 5 us with -W3 option: 1 ns to 5 us			10 to 500 ns	1 to 5 ns	1 to 10 ns	8 to 30 ns
Maximum PRF: Standard units, or with -W1 option: Units with -W2 or -W3 options:	200 kHz 20 kHz		100 kHz 20 kHz	200 kHz	100 kHz	1 MHz	2 MHz
Maximum duty cycle:	5%			2%	N/A		
Polarity:	Positive or negative or both (specify ⁵)						
Propagation delay:	-C: -B:	≤ 60 ns (Ext trig in to pulse out) ≤ 160 ns (Ext trig in to pulse out)					
Jitter: (Ext trig in to pulse out)	± 35ps ± 0.015% of sync delay						
DC offset or bias insertion:	Option available ⁶ . Apply required DC offset or bias in the range of ± 25 Volts, (250 mA max) to back panel solder terminals.						
Trigger required:	Ext trig mode: + 5 Volts, 10 ns or wider (TTL)						
Sync delay:	Variable 0 to ± 500 ns (to ± 5 us for -W)						
Sync output:	+ 3 Volts, 200 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: SMA, Other: BNC						
Power requirements:	100 - 240 Volts, 50 - 60 Hz						
GPIB and RS-232 control ² :	Standard on -B units. Not available on -C units.						
LabView drivers:	-B units only: Check http://www.avtechpulse.com/labview for availability and downloads						
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Optional on -B units ⁷ . Recommended as a modern alternative to GPIB / RS-232. See http://www.avtechpulse.com/options/vxi for details.						
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						
Temperature range:	+5°C to +40°C						

- 1) -C suffix indicates stand-alone lab instrument with internal clock and line powering. (See <http://www.avtechpulse.com/formats> for additional 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 + 10 V) of amplitude or pulse width, suffix the model number with -EA or -EW. Electronic control units also include the standard front-panel controls. -EW available on -E4, -E5, and -E6 units only.
- 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) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative) or -PN for dual polarity option. Polarity reversal achieved by means of a two-position switch that controls the polarity of the signal output port on -C units, and via keypad control on -B units. -PN option not available on -W3 units.
- 6) For DC offset option suffix model number with -OS.
- 7) Add the suffix -VXI to the model number to specify the Ethernet port..
- 8) Fall time increases to < 3 ns for pulse widths less than 15 ns.
- 9) A 50Ω load is required. Other loads may damage the instrument. Consult Avtech (info@avtechpulse.com) if you need to drive other load impedances.



AVR-E4-C

Avtech has provided quality high-speed instrumentation to industry, government and universities since 1975. We take particular pride in providing standard and custom-designed equipment to universities and we do provide an educational discount. We welcome inquiries from faculty and graduate students.