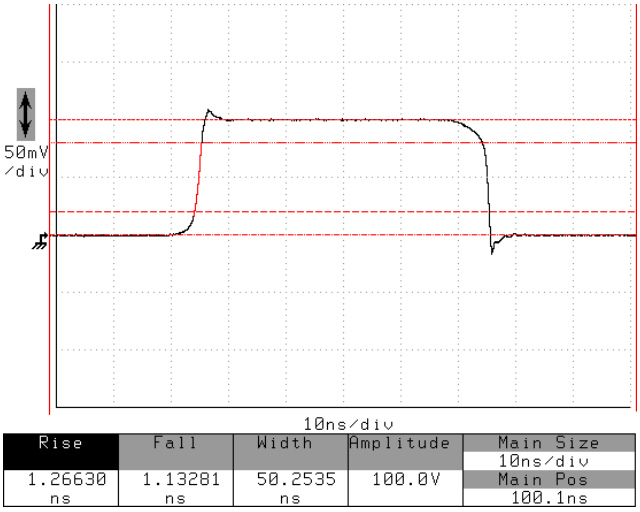

AVR-E3A-B-P, 10 kHz, 50 ns, +100V
50 V/div, 10 ns/div

- 20, 50 or 100 Volt peak outputs
- Nanosecond rise times
- 1 ns to 5 us pulse widths
- PRF to 1 MHz
- IEEE-488.2 GPIB control
- Ethernet port for VXI-11.3 support

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 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 (subject to a maximum duty cycle limit of 5%).

The AVR-E2 series has similar pulse width ratings, but offers a higher maximum amplitude of 50V, with 500 ps rise times and 1 ns fall times.

The AVR-E3 series offers a maximum amplitude of 100V, with 500 ps rise times, and a maximum PRF of 100 kHz.

The AVR-E2A and AVR-E3A models are similar to the AVR-E2 and AVR-E3 models, but with slower rise times (< 1.5 ns) and fall times (< 2.5 ns). These slower, lower-cost variants are generally not subject to the same governmental export controls that may apply to those models with ≤ 500 ps rise/fall times (US ECCN 3A230).

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.

All models 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. (For additional details, please see http://www.avtechpulse.com/gpib.) 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.

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 additional details, please see http://www.avtechpulse.com/options/vxi.

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.

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.

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

Many models can be customized to meet specific requirements. Contact Avtech engineers at info@avtechpulse.com for details.

Typical waveforms from actual production units are available online. See the individual product pages at:

http://www.avtechpulse.com/speed
http://www.avtechpulse.com/medium

Model[1]:	AVR-E1-B	AVR-E2-B	AVR-E3-B	AVR-E2A-B	AVR-E3A-B	AVR-E4-B	AVR-E5-B	AVR-E6-B
Maximum amplitude[2]:	20V	50V	100V	50V	100V	100V	50V	100V
Rise time (20%-80%):	≤ 0.3 ns	≤ 0.5 ns	≤ 0.5 ns	≤ 1.5 ns		≤ 0.4 ns	≤ 0.5 ns	≤ 2.0 ns
Fall time (80%-20%):	≤ 0.6 ns	≤ 1 ns	≤ 1 ns[3]	≤ 2.5 ns		≤ 0.6 ns	≤ 1.0 ns	≤ 2.0 ns
Pulse width (FWHM):	standard: 10 ns - 200 ns -W1 option: 1 ns - 200 ns -W2 option: 50 ns - 5 us -W3 option: 1 ns - 5 us			standard: 10 ns - 500 ns -W1 option: 3 ns - 500 ns -W2 option: 10 ns - 5 us -W3 option: 3 ns - 5 us		1 - 5 ns	1 - 10 ns	8 - 30 ns
Maximum PRF (subject to duty cycle limit):	200 kHz		100 kHz	200 kHz		100 kHz	1 MHz	2 MHz
Maximum duty cycle:	5%					N/A		
Required load[6]:	50Ω (±10%)							
Polarity:	Positive or negative or both (specify[4]).							
DC offset or bias insertion:	Option available[5]. Apply required DC offset or bias in the range of ± 25 Volts, (250 mA max) to back panel solder terminals.							
Trigger modes:	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.							
Variable delay (Sync to main out):	0 to 1.0 seconds, for all trigger modes (including external trigger).							
Propagation delay:	≤ 200 ns (Ext trig in to pulse out)							
Jitter:	± 35ps ± 0.015% of sync delay (Ext trig in to pulse out)							
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.							
Connectors:	Out: SMA, Other: BNC							
Power requirements:	100 - 240 Volts, 50 - 60 Hz							
GPIB and 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, after 10 minute warm-up:	Amplitude: Typically ± (3% of setting) ± (2% of maximum). Delay, Period: Typically ± (3% of setting) ± (5 ns) Pulse width: Typically ± (3% of setting) ± (2 ns), at maximum amplitude. As the amplitude is reduced, the pulse width may shift ± 5 ns. For high-accuracy applications requiring traceable calibration, verify the output with a calibrated oscilloscope[7].							
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) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay (see http://www.avtechpulse.com/gpib).
2) 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.
3) Increases to < 1.5 ns for pulse widths > 200 ns (for units with the -W2 or -W3 options).
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 -OS option adds an internal bias tee circuit to the output, allowing an externally-generated DC offset (±25V/250mA max) to be added the output signal. The -OT option includes the -OS function, and adds the ability to generate a ±5V/100mA offset internally (controlled from the front panel, or by computer command).
6) A 50Ω load is required. Other loads may damage the instrument. Consult Avtech (info@avtechpulse.com) if you need to drive other load impedances.
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.

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