

- ◆ Amplitudes to +500V
- ◆ 10 ns rise time for +500V
- ◆ 5 or 10 ns fall times

- ◆ 15 ns to 10 us pulse width
- ◆ IEEE-488.2 GPIB, RS-232 control is standard
- ◆ Ethernet control is optional

The AVRZ-5 family provides high amplitude outputs (to +500V) with very fast rise times (< 10 ns), very fast fall times (5 or 10 ns), and a pulse width that is variable over a wide range (15 ns to 10 us, or 100 ns to 10 us).

The AVRZ-5A-B has a pulse width range of 100 ns to 10 us, with a maximum duty cycle of 0.1%. The maximum pulse repetition frequency is 5 kHz. The rise time is ≤ 5 ns for a 100V pulse, ≤ 7.5 ns for a 300V pulse, and ≤ 10 ns for a 500V pulse. The fall time is ≤ 10 ns.

The AVRZ-5W-B is similar, but it operates at narrower pulse widths (as low as 15 ns) and offers faster fall times of 5 ns. The faster circuitry introduces a small repetitive decaying “back-porch” transient, which is not present in the AVRZ-5A-B model. See the typical waveform photo shown above.

These models require a 50Ω load. They will not operate correctly into higher or lower impedances.

Both instruments may be triggered by the internal trigger source (variable from 1 Hz to 5 kHz), by an external TTL trigger source, by a front-panel pushbutton, or by a computer command. Both models include a complete computer control interface (see <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, 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 on the Avtech web site for download, at <http://www.avtechpulse.com/labview>. An Ethernet port for Telnet-based control is optionally available (see <http://www.avtechpulse.com/options/tnt> for details).

The standard models generate positive output amplitudes only. However, an accessory inverting transformer is available as an option (-INV option) for generating negative outputs. (This transformer can also be ordered separately as model AVX-R5 - see <http://www.avtechpulse.com/transformer/avx-r5>.) This special high-speed, high-voltage, wide-pulse inverting transformer does not noticeably degrade the transition times or limit the output pulse width. Some slight rounding and ringing is introduced, however - see the typical waveform on the next page for a typical example. The output transformer is connected to the main output using a short length of supplied coaxial cable.

For applications that require wider pulses, and can tolerate slower rise times, consider the AVR-5B series (<http://www.avtechpulse.com/medium/avr-5b>). Call or email Avtech (info@avtechpulse.com) with your special requirement!



AVRZ-5W-B

Model:	AVRZ-5W-B	AVRZ-5A-B
Amplitude ^{1,2} : (to 50 Ω load)	0 to +500 Volts	
Polarity:	Positive ⁶	
Output impedance during pulse ³ :	50 Ω	
Required load impedance:	50 Ω (required)	
Rise time (20% - 80%):	≤ 5 ns for 100V, ≤ 7.5 ns for 300V, ≤ 10 ns for 500V	
Fall time (80% - 20%):	≤ 5 ns	≤ 10 ns
Pulse width (FWHM):	15 ns to 10 us	100 ns to 10 us
“Back-porch” transient:	< 20% of amplitude, < 100 ns in width. Repeats and decays every 120 ns (see photo on previous page).	Not present
PRF:	0 to 5 kHz	
Duty cycle (max):	0.1% (i.e., pulse width is limited to 200 ns at 5 kHz, 2 us at 500 Hz, etc.)	
Propagation delay:	≤ 400 ns (Ext trig in to pulse out)	
Jitter (Ext trig in to pulse out):	± 200 ps ± 0.03% of sync delay	
Trigger required (EXT TRIG mode):	+ 5 Volts, 50 ns or wider (TTL)	
Sync delay:	Variable 0 to ± 500 ms	
Sync output:	+2 Volts, 200 ns, will drive 50 Ohm loads	
Gate input:	Synchronous, active high or low, switchable. Suppresses triggering when active.	
GPIB and RS-232 control:	Yes. (Visit http://www.avtechpulse.com/labview for LabView drivers.)	
Telnet / Ethernet control:	Optional ⁴ . See http://www.avtechpulse.com/options/tnt for details.	
Connectors:	Out ⁵ , Trig, Sync, Gate: BNC	
Power requirements:	100 - 240 Volts, 50 - 60 Hz	
Dimensions: (H x W x D)	100 mm x 430 mm x 475 mm (3.9" x 17" x 18.8")	
Chassis material:	cast aluminum frame and handles, blue vinyl on aluminum cover plates	
Temperature range:	+5°C to +40°C	

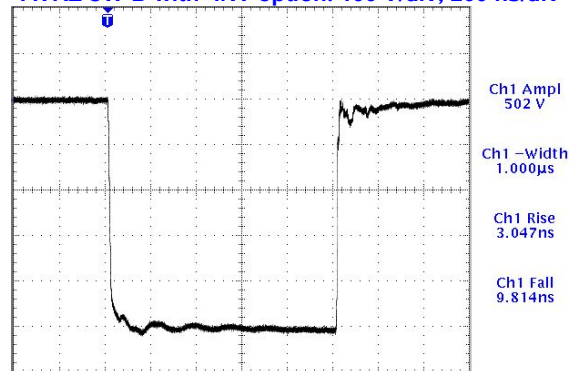
- 1) For analog electronic control (0 to +10V) of amplitude, add the suffix -EA to the model number. Electronic control units also include the standard front-panel controls.
- 2) For operation at amplitudes of less than 10% of full-scale, best results will be obtained by setting the amplitude near full-scale and using external attenuators on the output.
- 3) The output impedance falls to 2Ω (approx) for 1 us (approx) after the falling edge of the pulse, then rises to 1kΩ for the remainder of the time before the next pulse.

- 4) Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.
- 5) Add the suffix -NC, -HN, -MHV, or -SHV to the model number to replace the standard BNC output connector with N, HN, MHV, or SHV connectors, respectively.
- 6) Negative amplitudes can be generated using an optional inverting transformer accessory. Add the suffix -INV to the model number to include this accessory.

The output polarity of the AVRZ-5 series can be inverted with the optional -INV transformer accessory, shown below:



AVRZ-5W-B with -INV option. 100 V/div, 200 ns/div



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