AVTECH

G P I B
IEEE-488

AVRF SERIES

1 - 7 ns RISE AND FALL TIME
100 - 750 VOLT PULSE GENERATORS
PULSE WIDTHS TO 1 us OR 100 us

Tek Run — Trig'd

Ch2 Rise 4.235ns
Ch2 Fall 3.045ns
Ch2 +Width 10.01µs
Ch2 Ampl 744.0 V

Ch2 200 V   M 2.00µs   A   Ext   800mV

- Amplitude / rise time combinations of 100V / 1 ns up to 750 V / 5 ns
- Pulse widths to 10 or 100 us
- PRF to 5 or 10 kHz
- Switchable polarity optional
- IEEE-488.2 GPIB / RS-232 control

The AVRF series offers high-voltage outputs (to 750 Volts) with fast rise times (1 - 5 ns) and wide pulse width ranges (0.1 us up to 10 or 100 us).

The AVRF-1-B model provides amplitudes of up to 100V, with rise and fall times of 1 ns. The pulse width may be adjusted from 0.1 to 100 us, with a maximum duty cycle of 1%. The maximum pulse repetition frequency (PRF) is 10 kHz. Model AVRF-2-B is similar, except that the maximum amplitude is 200V, with 2.7 ns rise and fall times, and the maximum duty cycle is 0.5%.

Model AVRF-4A-B generates up to 400 Volts, with 4 ns rise and fall times. The pulse width is variable from 0.15 to 10 us. The maximum duty cycle is 0.5%.

Model AVRF-6A-B generates up to 600 Volts, with 5 ns rise and fall times. The pulse width is variable from 0.15 to 10 us. The maximum PRF is 5 kHz, and the maximum duty cycle is 0.1%.

Model AVRF-7A-B generates up to 750 Volts, with 5 ns rise and fall times. The pulse width is variable from 0.15 to 10 us. The maximum duty cycle is 0.1%.

All models may be ordered in positive, negative, or dual-polarity configurations. The polarity of dual-polarity models may be controlled from the front-panel or by computer command. The maximum pulse width of the AVRF-6A-B and AVRF-7A-B is reduced to 5 us when operating in a negative output mode.

All models with the "-B" suffix include a complete computer control interface (for additional details, 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 back-lit LCD displays the output amplitude, polarity, frequency, pulse width or duty cycle as appropriate, 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 for download at the Avtech web site (http://www.avtechpulse.com/labview).

The -VXI option adds a rear-panel Ethernet connector, allowing 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 loads) by an automatic control feature that limits the output power for as long as the overload condition exists. A push button is provided for one-shot operation. A delay control and a sync output are provided for scope triggering purposes.

When triggered externally by a TTL-level pulse, the output pulse width may be controlled by the front-panel settings, or it may be set to track the input pulse width.

All models require 100-240 Volts, 50-60 Hz.

AVRF-1-B

Model:	AVRF-1-B[1]	AVRF-2-B[1]	AVRF-4A-B[1]	AVRF-6A-B[1]	AVRF-7A-B[1]
Maximum amplitude[2]: (50 Ohm load required)	100 Volts	200 Volts	400 Volts	600 Volts	750 Volts
Rise and fall times: (20%-80%)	≤ 1 ns	≤ 2.7 ns	≤ 4 ns[3]	≤ 5 ns[3]	
Pulse width (FWHM):	0.1 to 100 us		0.15 to 10 us	0.15 to 10 us (for positive outputs), 0.15 to 5 us (for negative outputs)	
PRF:	0 to 10 kHz			0 to 5 kHz	
Duty cycle (max):	1.0%	0.5%		0.1%	
Average power out (max):	4 Watts	4 Watts	16 Watts	7 Watts	11 Watts
Polarity:	Positive (-P option), negative (-N option), or both (-PN option)				
Propagation delay:	≤ 150 ns (Ext trig in to pulse out)				
Jitter:	± 100 ps ± 0.03% of sync delay (Ext trig in to pulse out)				
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:	0 to 1.0 seconds (Sync to main out), for all trigger modes (including external trigger).				
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.				
Monitor output:	Optional[6]. Provides a 20 dB attenuated coincident replica of the main output on a rear-panel connector. Requires a 50 Ohm load, if used.				
Connectors:	Out: BNC[4] Trig, Sync, Gate: BNC				
GPIB and RS-232 control[1]:	Standard on -B units.				
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Optional[5]. 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.				
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")				
Rack-mount kit:	Optional. Add -R5 to the model number.				
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 20% of full-scale, best results will be obtained by setting the amplitude near full-scale and using external attenuators on the output.
3) For units with the -N or -PN options, the rise and fall times in the negative mode will increase to 8 ns.
4) 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.
5) Add the suffix -VXI to the model number to specify the Ethernet port.
6) Add the suffix -M to the model number to specify the monitor output.

See our application notes at
http://www.avtechpulse.com/appnote!

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at http://www.avtechpulse.com/pick
to find the best pulser for your application!