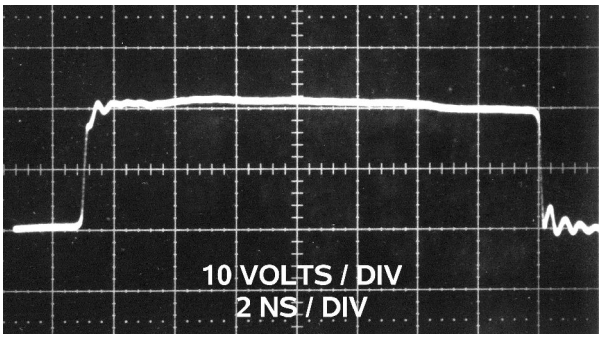
AVPP SERIES

1 MHz PULSE GENERATORS WITH ULTRA-FAST RISE AND FALL TIMES AND PULSE WIDTHS TO 1 us



- IEEE-488.2 GPIB Control (-B units)
- Amplitudes to 20 Volts
- 100 ps rise times
- Pulse widths variable from 0.2 to 1us

The AVPP series combines AVP and AVMP technology to produce 10 and 20 Volt outputs with variable 0.2 to 1 us pulse widths.

Model AVPP-1-C is a manually-controlled instrument that provides 100 ps rise times and 135 ps fall times, with output voltage variable to 10 Volts. The pulse width can be varied from 0.2 to 100 ns, in two ranges (0.2-5 and 5-100ns).

The AVPP-1-B is similar, but it includes IEEE-488.2 GPIB and RS-232 computer control interfaces. The pulse width may be varied from 0.4 to 100 ns. In the 0.4 to 5 ns pulse width range, the rise and fall times are 200 ps. At wider pulse widths, the rise time is 100 ps, and the fall time is 135 ps.

For wider pulse width 10 Volt applications, the AVPP-1A-B provides pulse widths of 0.5 ns to 1 us, with amplitudes to 10V, rise times of 200 ps, and fall times of 300 ps. The maximum repetition rate is 500 kHz, and the maximum duty cycle is 5% (e.g., the maximum pulse width at 500 kHz is 100 ns).

The AVPP-2 series provides rise times of 200 ps and fall times of 300 ps with amplitudes to 20 Volts and pulse widths variable from 0.4 to 100 ns in two ranges (0.4-8 and 8-100 ns). This series is offered in the manually-controlled "-C" format and the computer-controllable "-B" format.

For wider pulse width 20 Volt applications, the AVPP-2A-B provides pulse widths of 0.6 ns to 1 us, with amplitudes to 20V, rise times of 250 ps, and fall times of 350 ps. The maximum repetition rate is 100 kHz, and the maximum duty cycle is 5% (e.g., the maximum pulse width at 100 kHz is 500 ns).

All models include an internal oscillator with frequencies adjustable using the front-panel controls. A delay control and a sync output are provided for oscilloscope triggering purposes. All models can also be triggered externally with a TTL-level pulse.

Positive, negative, and dual polarity models can be provided. Polarity inversion in dual-polarity "-C" units is achieved by manually adding a supplied inverting transformer accessory to the main output. The transformer will increase the rise and fall times slightly. Polarity inversion in dual-polarity "-B" units is controlled by front-panel settings (or computer command), and no external transformer is required, and no speed degradation occurs when changing polarities.

A bias insertion option is available, which provides a circuit similar to Model AVX-T at the output. The DC offset/bias is applied to rear panel solder terminals. (See http://www.avtechpulse.com/bias/avx-t/ for details.) Another option provides an internally generated DC offset (0 to ±5V), which is adjustable using the front-panel controls. All AVPP units are also available with a monitor output option that provides an attenuated coincident replica of the main output pulse. Other options include analog electronic control (0 to +10V) of amplitude and offset.

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 online 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 switches and one-turn controls. All models require 100 - 240V, 50 - 60 Hz prime power.

In "-C" models, the output amplitude and pulse width for the 0.2 ns to 5 ns range interact to the extent that for a given pulse width setting, decreasing the output amplitude increases the output pulse width. This interaction may be eliminated by using external variable attenuators to control the amplitude. "-B" models use different circuitry, which circumvents this effect, at the expense of slightly slower rise and fall times.

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

AVPP-2-B

Model:	AVPP-1-C[1]	AVPP-1-B[2]	AVPP-1A-B[2]	AVPP-2-C[1]	AVPP-2-B[2]	AVPP-2A-B[2]
Amplitude[3,4]: (50Ω load)	0 - 10 Volts			0 - 20 Volts		
Pulse width (FWHM):	0.2 ns - 100 ns	0.4 ns - 100 ns	0.5 ns - 1 us	0.4 ns - 100 ns		0.6 ns - 1 us
PRF: internal trigger:	100 Hz - 1 MHz	1 Hz - 1 MHz	1 Hz - 500 kHz	10Hz - 100 kHz	1 Hz - 100 kHz	1 Hz - 100 kHz
external trigger:	0 Hz - 1 MHz		0 Hz - 500 kHz	0 Hz - 100 kHz		
Maximum duty cycle:	10%	10%	5%	1%	1%	5%
Rise and fall times[5]: (20%-80%)	t_{RISE} ≤ 100ps, t_{FALL} ≤ 135ps, except t_{RISE}, t_{FALL} ≤ 200ps for PW < 5ns on -B units		t_{RISE} ≤ 200 ps t_{FALL} ≤ 300 ps	t_{RISE} ≤ 200 ps t_{FALL} ≤ 300 ps		t_{RISE} ≤ 250 ps t_{FALL} ≤ 350 ps
GPIB and RS-232 control[2]:	No	Yes	Yes	No	Yes	Yes
Polarity[6,7]:	Positive or negative or both (specify)					
LabView Drivers:	-B units only: check http://www.avtechpulse.com/labview for availability and downloads					
Propagation delay:	≤ 150 ns (Ext trig in to pulse out)					
Jitter:	± 35ps ± 0.015% of sync delay					
DC offset[3,8]:	Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)					
Trigger required:	Ext trig mode: +5 Volts, 10 ns or wider (TTL)					
Sync delay:	Sync out to pulse out: Variable 0 to 200 ns					
Sync output:	+3 Volts, 200 ns, will drive 50 Ohm loads					
Monitor output option[9]:	Provides a 20 dB attenuated coincident replica of main output					
Connectors:	Out: SMA, Trig: BNC, Sync: BNC, Gate (-B): BNC, Monitor: SMA					
Power requirements:	100 - 240 Volts, 50 - 60 Hz					
Dimensions: (H x W x D)	-B units: 100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") -C units: 100 mm x 215 mm x 375 mm (3.9" x 8.5" x 14.8")					
Chassis material:	cast aluminum frame & 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 the 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 amplitude or offset, suffix the model number with -EA or -EO. These units also include standard front-panel controls.
4) 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.
5) For -C units, add 20% to the rise and fall times if an inverting transformer used.
6) For single polarity units, indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative). For dual-polarity -C units, suffix the model number with -P-PN or -N-PN where the suffix preceding -PN indicates the polarity at the mainframe output port. For dual-polarity -B units, simply add the suffix -PN.
7) Polarity inversion in dual-polarity "-C" units is achieved by manually adding a supplied inverting transformer accessory to the main output. The transformer will increase the rise and fall times slightly. Polarity inversion in dual-polarity "-B" units is controlled by front-panel settings (or computer command), and no external transformer is required, and no speed degradation occurs when changing polarities.
8) Add -OT to model number for internally generated 0 to ±5V offset option.
9) Add -M to model number for monitor option.

AVPP-1-C

See our Applications Information Section on pages 104 - 112, and visit the application note area of the Avtech web site: http://ww.avtechpulse.com/appnote.

Use the "Pick the Perfect Pulser" parametric search engine at http://www.avtechpulse.com/pick to find the best pulser for your application!