AVMP SERIES

100 kHz, 1 MHz PULSE GENERATORS
WITH 100 - 250 ps RISE TIMES
AND PULSE WIDTHS TO 100 ns, 1 us OR 10 us

10 V/div
2 ns/div

- Rise times of 100 to 250 ps
- Amplitudes to 20 Volts, PRF to 1 MHz
- IEEE-488.2 GPIB Control (-B units)
- Pulse widths as low as 5 ns, as high as 10 us

The AVMP series of pulse generators offer 5V, 10V, and 20V outputs with sub-nanosecond rise times, and pulse widths variable from several nanoseconds to 100 ns, 1 us, or 10 us.

The 5 Volt AVMP-1A family provides 100 ps rise times and 135 ps fall times. The pulse width can be varied from 5 to 100 ns. The AVMP-2 family is similar, but offers amplitudes up to 10 Volts. Both families operate to 1 MHz.

The AVMP-2A family is a 10 Volt model that offers a wider pulse width range, of 6 ns to 1 us, with 200 ps rise times and 300 ps fall times. The maximum pulse repetition frequency (PRF) is 500 kHz, and the maximum duty cycle is 5%. For wider pulse widths, the AVMP-4 family operates from 10 ns to 10 us, with 200 ps rise and fall times. The maximum frequency is 1 MHz, and the maximum duty cycle is 10%.

The 20 Volt AVMP-3 family provides 200 ps rise times and 300 ps fall times. The pulse width can be varied from 8 to 100 ns, and the PRF is variable to 1 MHz. The AVMP-3A family is similar, but offers and extended pulse width range of 8 ns to 1 us, and the PRF is variable to 100 kHz.

All -C and -B 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.

Some AVMP units are also available in DC-powered (+24V) miniature module form (AVMP-1A, etc.). These modules require a TTL input trigger signal.

Positive, negative, and (in -C and -B units) dual polarity models can be provided. Polarity inversion in dual-polarity AVMP-1A-C, AVMP-2-C and AVMP-3-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 and the AVMP-4-C is controlled by a front-panel switch (or by computer command on -B units) and no external transformer is required, and no speed degradation occurs when changing polarities. The dual
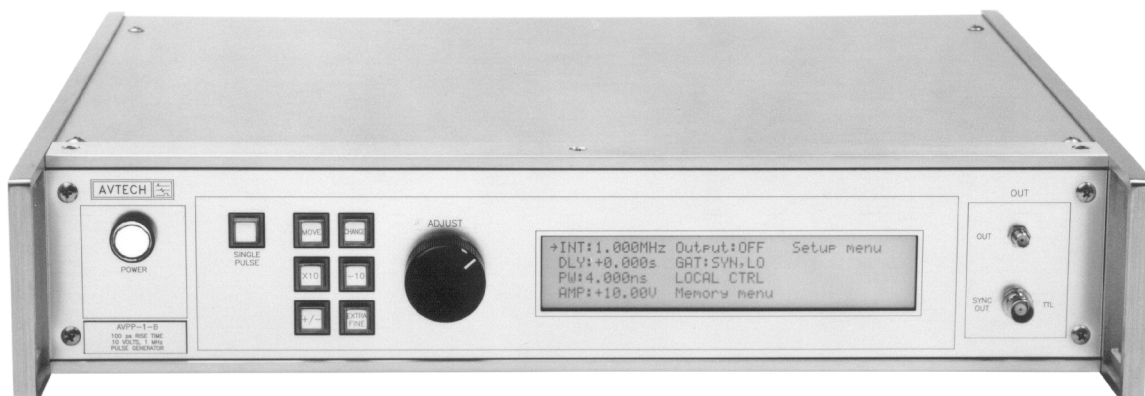
polarity option is not available on DC-powered modules.

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 AVMP 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, pulse width, 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 (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 -C and -B models require 100 - 240V, 50 - 60 Hz prime power.

In -C units and DC-powered modules, the output amplitude and pulse width 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.

The AVPP series is also available, which offers much the same performance of the AVMP series at wide pulse widths, but offers lower minimum pulse widths (below 1 ns). See http://www.avtechpulse.com/speed for details.

AVMP-2-B

Model:	AVMP-1A-C[1] AVMP-1A-B[2] AVMP-1A	AVMP-2-C[1] AVMP-2-B[2] AVMP-2	AVMP-2A-B[2]	AVMP-4-C[1] AVMP-4-B[2] AVMP-4	AVMP-3-C[1] AVMP-3-B[2] AVMP-3	AVMP-3A-B[2]
Amplitude[3,4]: (50Ω load)	0 - 5 Volts	0 - 10 Volts	0 - 10 Volts	0 - 10 Volts	0 - 20 Volts	0 - 20 Volts
Pulse width (FWHM):	5 ns - 100 ns		6 ns - 1 us	10 ns - 10 us	8 ns - 100 ns	8 ns - 1 us
Maximum PRF:	1 MHz		500 kHz	1 MHz		100 kHz
Maximum duty cycle:	10%		5%	10%		5%
Rise time[5] (20%-80%):	≤ 100 ps		≤ 200 ps	≤ 200 ps		≤ 250 ps
Fall time[5] (80%-20%):	≤ 135 ps		≤ 300 ps	≤ 200 ps	≤ 300 ps	≤ 350 ps
Polarity[6,7]:	Positive or negative or both (specify)					
GPIB and RS-232 control[2]:	Standard on -B units. Not available on -C units or modules.					
LabView Drivers:	-B units only: check http://www.avtechpulse.com/labview for availability and downloads					
Propagation delay:	Modules: ≤ 30 ns, -C and -B units: ≤ 120 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)			Not available	Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)	
Trigger required[10]:	Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)					
Variable sync delay, Sync out to pulse out: (-B and -C only):	0 to 200 ns		0 to 1.0 seconds	0 to 1 us	0 to 200 ns	0 to 1.0 seconds
Sync output (-B and -C only):	+3 Volts, 100 ns, will drive 50 Ohm loads					
Monitor output option[9]:	Provides a 20 dB attenuated coincident replica of main output					
Connectors:	-B and -C units: Out, Monitor: SMA, Trig, Sync, Gate (-B): BNC Modules: Trig, Out, Monitor: SMA, Power: Solder terminals					
Power requirements:	-B and -C units: 100 - 240 Volts, 50 - 60 Hz Modules: +24V DC.					
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") Modules: 43 mm x 66 mm x 109 mm (1.7" x 2.6" x 4.3")					
Chassis material:	-B and -C units: cast aluminum frame & handles, blue vinyl on aluminum covers Modules: cast aluminum with blue enamel					
Temperature range:	+5°C to +40°C					

1) -C suffix indicates stand-alone lab instrument with internal clock and line powering. No suffix indicates miniature module requiring DC power and external trigger. (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, pulse width, or offset, suffix the model number with -EA, -EW or -EO. These units also include standard front-panel controls. Not available on modules.

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) 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 AVMP-1A-C, AVMP-2-C, and AVMP-3-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 AVMP-1A-C, AVMP-2-C, and AVMP-3-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, and the AVMP-4-C, is controlled by front-panel settings (or computer command for -B units), 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. -OT and -EO options not available on modules or AVMP-4 models.

9) Add -M to model number for monitor option.

10) Add -ECL to the model number to specify an ECL-level trigger input (-1.6V and -0.8V logic levels) instead of TTL.

See our Applications Information Section on pages 104 - 112, and visit the application note area of the Avtech web site: www.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!