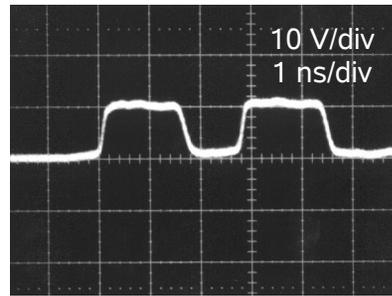


AVP-3S-C, 10V/div. Top: 500 ps/div  
Bot: 100 ps/div



AVP-AV-1-C-P-DP, with  
double-pulse output.

- ◆ Rise times to 50 ps
- ◆ Amplitudes to 40 Volts
- ◆ PRF to 1.0 MHz
- ◆ Pulse widths variable from 0.2 to 500 ns
- ◆ Double pulse option
- ◆ Stand-alone lab instruments or miniature modules
- ◆ IEEE-488.2 GPIB and RS-232 control (-B units)

The AVP series of pulse generators offer the fastest rise times available in the Avtech product line, with rise times as low as 50 ps for 2V units, and 150 ps for 40V units.

The AVP-2S family provides uniquely low rise times of 50 ps, pulse widths variable from 0.2 to 4 ns, amplitudes of up to 2 Volts, and pulse repetition frequencies of up to 1 MHz. The similar AVP-AV-1S family offers 65 ps, 5 Volt operation and the AVP-3S family offers 60 ps, 10 Volt operation.

The AVP-AV-1 family provides 100 ps, 10 Volts operation. The AVP-AV-HV2 family has peak amplitudes of 20V, pulse widths variable from 0.3 to 2 ns, with 100 ps rise times. These two families are also available in the computer-controllable “-B” format. (The rise times for “-B” models are 200 ps, and the minimum pulse width is 0.4 ns).

The high-voltage AVP-AV-HV3 family operates to 40V, with pulse widths variable from 0.4 to 2 ns, and 150 ps rise times.

For wide-pulse applications, the AVP-AV-2 family provides output pulse widths variable from 2 to 50 ns at frequencies as high as 50 kHz. With a wide pulse option (-W) this model will operate in the output pulse width range of 20 to 500 ns. The rise time is 100 ps.

Models with the “-C” or “-B” suffixes include an internal clock oscillator that is variable from 100 Hz to 1.0 MHz (to 50 kHz for AVP-AV-2 models) using the front-panel controls. A delay control and a sync output are provided for sampling scope triggering purposes. All models can also be triggered externally using a TTL-level pulse.

Either output polarity or optional dual output polarity can be provided. Separate output ports with common pulse width and amplitude controls are provided in dual polarity AVP-2S and AVP-AV-1S units. Only one of the two outputs is active at a time. Instruments with the “-B” computer control option have a single output port, whose polarity may be switched using the front-panel controls or by computer command. Polarity inversion in all other dual polarity units is accomplished by manually adding a supplied inverting transformer accessory which mates to the main output port.

A bias insertion option is available. Units with this option include a circuit similar to Model AVX-T at the output (see

<http://www.avtechpulse.com/bias/avx-t>). The required offset or DC bias is applied directly to rear panel solder terminals. Another option provides an internally generated DC offset (0 to  $\pm 5$  Volts), which is adjustable using the front-panel controls. All AVP units are also available with a monitor output option that provides an attenuated (20 dB) coincident replica of the main output pulse. Additional options include analog electronic control (0 to +10V) of output amplitude, pulse width and DC offset. Units with these options also include the standard front-panel controls. Several models are available with a double-pulse option which serves to provide a burst of two output pulses with a variable time separation of 0 to  $\pm 5$  ns, as shown above. Note that units with this option have a maximum output amplitude of 70% of the rated maximum amplitude (except when the relative time delay is set to zero, in which case the addition of the two coincident pulses allows the 140% of the rated amplitude to be obtained). All units equipped with this option exhibit rise and fall times of 300 ps.

Instruments with the “-B” suffix 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, 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 for download at the Avtech web site (<http://www.avtechpulse.com/labview>). An Ethernet port for Telnet-based control is optional on all -B units (-TNT option, <http://www.avtechpulse.com/options/tnt>).

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. -B and -C model require 100-240V, 50-60 Hz power.

All AVP units (except those with the double pulse option) are also available in a DC powered (+15V) miniature module format. These modules require a TTL input trigger signal and the output PRF equals the input trigger PRF. Pulse width and output amplitude are controlled by one-turn controls.



AVP-AV-1-B

Model:	AVP-2S-C <sup>1</sup>	AVP-AV-1S-C <sup>1</sup>	AVP-3S-C <sup>1</sup>	AVP-AV-1-C <sup>1</sup> AVP-AV-1-B <sup>2</sup> AVP-AV-1	AVP-AV-HV2-C <sup>1</sup> AVP-AV-HV2-B <sup>2</sup> AVP-AV-HV2	AVP-AV-HV3-C <sup>1</sup> AVP-AV-HV3	AVP-AV-2-C <sup>1</sup> AVP-AV-2-B <sup>2</sup> AVP-AV-2
Amplitude <sup>3,4,7</sup> : (50 Ohm load)	0 - 2 Volts	0 - 5 Volts	0 - 10 Volts		0 - 20 Volts	0 - 40 Volts	0 - 10 Volts
Pulse width <sup>3</sup> : (FWHM) -C and modules: -B units:	0.2 - 4 ns	0.2 - 4 ns	0.2 - 2 ns	0.2 - 4 ns 0.4 - 4 ns	0.3 - 2 ns 0.4 - 2 ns	0.4 - 2 ns	2 - 50 ns (20-500 ns option <sup>5</sup> )
PRF: external trigger mode: internal trigger (-B, -C):	0 Hz to 1 MHz 100 Hz to 1 MHz						0 Hz - 50 kHz 5 Hz - 50 kHz
Rise time (20%-80%) <sup>7</sup> :	≤ 50 ps	≤ 65 ps	≤ 60 ps	≤ 100 ps (≤ 200 ps for -B units)		≤ 150 ps	≤ 100 ps
Fall time (80%-20%) <sup>7</sup> :	≤ 200 ps		≤ 100 ps	≤ 200 ps		≤ 250 ps	≤ 200 ps
Polarity:	-C units: specify -P, -N, or -PN Modules: specify -P or -N			-C units: specify -P, -N, -P-PN, or -N-PN (see note 6) -B units: specify -P, -N, or -PN Modules: specify -P or -N			
Dual Polarity Option Style:	Two outputs (+ and -). Only one active at a time. -C units only.			-C units: one output, with inverting transformer accessory. -B units: one output, with switchable polarity			
GPIB and RS-232 control <sup>2</sup> :	Standard on -B units. Not available on -C units or modules.						
LabView Drivers:	-B units only: check <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability and downloads						
Internet control (Telnet & Web) <sup>8</sup> :	Optional on -B units. See <a href="http://www.avtechpulse.com/options/tnt">http://www.avtechpulse.com/options/tnt</a> for details.						
Double pulse option <sup>7</sup> :	Optional. See note 7. Only available on -C models.					Not available	
Propagation delay: (Ext trig in to pulse out)	-C units and Modules: ≤ 70 ns (Ext trig in to pulse out) -B units: ≤ 140 ns (Ext trig in to pulse out)						250 ns or 30 ns <sup>5</sup>
Jitter, Ext trig in to pulse out:	-C units and Modules: ±15 ps    -B units: ± 35ps ± 0.015% of sync delay						
DC offset or bias insertion:	Optional <sup>9</sup> . Apply required DC offset or bias in the range of ± 50V (250 mA max) to back panel solder terminal.						
Trigger required:	Modules: +5 Volt, 50 ns to 500 ns (TTL). ECL trigger option available. See note 11. -B and -C, ext trig mode: +5 Volt, 50 ns to 500 ns (TTL)						
Sync delay:	Variable 0 to 500 ns (sync out to pulse out, -B and -C units only)						
Sync output: (-B, -C only)	+0.5V, 20 ns, will drive 50Ω			+3 Volts, 200 ns (100 ns for -B units), will drive 50Ω			
Monitor output option <sup>10</sup> :	Provides a 20 dB (x10) attenuated coincident replica of main output						
Connectors:		Modules	-C units	-B units			
OUT, MONITOR <sup>8</sup> :		SMA	SMA	SMA			
TRIG:		SMA	BNC	BNC			
SYNC:		-	BNC	BNC			
GATE:		-	-	BNC			
DC POWER:		solder terminals	-	-			
Optional accessory kit:	Add the suffix "-AK1" to the model number to include the recommended accessory kit. Consists of three SMA, 18 GHz, 2 Watt attenuators (10, 20 & 30 dB) for use on the output, and two 50 Ohm, 1 GHz, 1 Watt feed-through terminators (one SMA, one BNC) for use on external trigger inputs.						
Power requirement:	-B and -C units: 100 - 240 Volts, 50 - 60 Hz,    Modules: +15 Volt, 200 mA						
Dimensions (H x W x D):	-B and -C units: 100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") Modules: 43 mm x 66 mm x 107 mm (1.7" x 2.6" x 4.2")						
Chassis material:	-B and -C units: anodized aluminum, with blue plastic trim.    Modules: cast aluminum, blue enamel						
Mounting, Temperature range:	Any, +5°C to +40°C						

- 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 details of the four basic instrument formats).
- B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay (See <http://www.avtechpulse.com/gpib>).
- For analog electronic control (0 to +10V) of amplitude, pulse width or DC offset suffix model number with -EA or -EW or -EO. Electronic control units also include standard front-panel controls. -EW not available on -B units.
- 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.
- For 20-500 ns pulse width, suffix model number with -W. Rise times increase to 150 ps for -W units. -W units have a propagation delay of 30 ns.
- Indicate desired polarity by suffixing model number by -P or -N (i.e.

- positive or negative) or -P-PN or -N-PN for dual polarity option where the suffix preceding -PN indicates the polarity at the mainframe output port.
- For double pulse option add suffix -DP. Rise and fall times for units with this option fixed at 300 ps. Units with this option have a maximum output amplitude of 70% of the rated maximum amplitude (except when the relative time delay is set to zero, in which case the addition of the two coincident pulses allows 140% of the rated amplitude to be obtained).
- Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.
- For externally applied DC offset option suffix model number with -OS. The Avtech AVX-T bias tee can also be used to obtain DC offset. For internally generated DC offset option (0 to ±5V) add suffix -OT or -EO to model number. (The -OT option is controlled by a front-panel dial, whereas the -EO option can be controlled by a front-panel dial or by an external 0 to +10V voltage). -OT, -EO not available on modules.
- For monitor option add suffix -M.
- For ECL trigger option, add suffix -ECL.



AVP-AV-1-C



AVP-AV-1