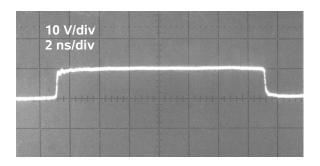




## AVMP SERIES

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



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

The 10 Volt AVMP-2 family provides 100 ps rise times and 135 ps fall times. The pulse width can be varied from 5 to 100 ns. The maximum PRF is 1 MHz, and the maximum duty cycle is 10%.

The AVMP-2A family is a 10 Volt model that offers a wider pulse width range, of 7 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-2, 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-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.

- 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

A bias insertion option is available, which provides a circuit similar to Model AVX-T at the output. The DC offset/bias is solder terminals. applied to rear panel (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 computercontrol, as well as front panel keypad and adjust knob control of the output pulse parameters. A large backlit LCD displays the output amplitude, polarity, frequency, pulse width, and delay. (See <a href="http://www.avtechpulse.com/gpib">http://www.avtechpulse.com/gpib</a> for details). To allow easy integration into automated test systems, the programming command set is based on the SCPI standard, and LabView drivers (<a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a>) are available. An Ethernet port for Telnet or web-based control is optional (-TNT option, <a href="http://www.avtechpulse.com/options/tnt">http://www.avtechpulse.com/labview</a>) are available. An Ethernet port for Telnet or web-based control is optional (-TNT option, <a href="http://www.avtechpulse.com/options/tnt">http://www.avtechpulse.com/options/tnt</a>). 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 <u>http://</u><u>www.avtechpulse.com/speed</u> for details.



## AVMP-2A-B-OT



## **SPECIFICATIONS**

## **AVMP SERIES**

Pulse width (FWHM):5 ns - 100 ns7 ns - 1 us10 ns - 10 us8 ns - 100 ns8 ns - 1 usMaximum PRF:1 MHz500 kHz1 MHz100 kHzMaximum duty cycle:10%5%10%5%Rise time <sup>5</sup> (20%-80%): $\leq$ 100 ps $\leq$ 200 ps $\leq$ 200 ps $\leq$ 250 psFall time <sup>5</sup> (80%-20%): $\leq$ 135 ps $\leq$ 300 ps $\leq$ 200 ps $\leq$ 300 ps $\leq$ 300 psPolartly <sup>67</sup> :Positive or negative or both (specify)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 http://www.avtechpulse.com/labview for availability and downloadsInternet control (Telnet & Web):Optional <sup>17</sup> . See http://www.avtechpulse.com/labview for availability and downloadsPropagation delay:Modules: $\leq$ 30 ns, -C and -B units: $\leq$ 120 ns (Ext trig in to pulse out)Jitter: $\pm$ 35ps $\pm$ 0.015% of sync delayDC offset <sup>2,6</sup> :Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out:0 to 1.0 seconds0 to 1 usO to 200 ns0 to 1.0 seconds0 to 1 us0 to 200 nsO to 200 ns0 to 1.0 secondsTrig, Sync, Gate (-B): BNC Power: Solder terminalsPower requirements:-B and -C units:0.0 Admintor: SMA, Modules: Trig, Out, Monitor: SMA, Toig, Sync, Gate (-B): BNC Power: Solder terminalsChassis material:-B and -C units:100 mx 430 mm x 370 mm (3.9" x 17" x 14.8") Modules: 434 mm x 66 mm x 109 mm (1.7" x 2.6" x 4.3")Chassis material:<	Model:	AVMP-2-C <sup>1</sup> AVMP-2-B <sup>2</sup> AVMP-2	AVMP-2A-B <sup>2</sup>	AVMP-4-C <sup>1</sup> AVMP-4-B <sup>2</sup> AVMP-4	AVMP-3-C <sup>1</sup> AVMP-3-B <sup>2</sup> AVMP-3	AVMP-3A-B <sup>2</sup>
Maximum PRF:1 MHz500 kHz1 MHz100 kHzMaximum duty cycle:10%5%10%5%Rise time* (20%-80%): $\leq$ 100 ps $\leq$ 200 ps $\leq$ 200 ps $\leq$ 250 psFall time* (80%-20%): $\leq$ 135 ps $\leq$ 300 ps $\leq$ 200 ps $\leq$ 200 ps $\leq$ 250 psRequired load impedance: $50$ Ohms <sup>12</sup> Polarty <sup>6,7</sup> :Positive or negative or both (specify)Polarty <sup>6,7</sup> :Positive or negative or both (specify)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 http://www.avtechpulse.com/labview for availability and downloadsInternet control (Telnet & Web):Optional <sup>11</sup> . See http://www.avtechpulse.com/labview for availability and downloadsPropagation delay:Modules: s 30 ns, -C and -B units: s 120 ns (Ext trig in to pulse out)Jitter: $\pm$ 35ps $\pm$ 0.015% of sync delayDC offset <sup>13,6</sup> :Apply required DC offset to back panel solder terminals ( $\pm$ 50 Volts, 250 mA max)Trigger required <sup>10</sup> :Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out:0 to 200 nsSync output (-B and -C only):+3 Volts, 100 ns, will drive 50 Ohm loadsMonitor output option*:-Provides a 20 dB attenuated coincident replica of main outputConnectors:-B and -C units: 01, Monitor: SMA, Power: Solder terminalsPower requirements:-B and -C units: 100 mm x 430 mm x 103 mm (1.7" x 2.6" x 4.3")Modules: +24V DCB and -C units: 100 mm x 430 mm x 103 mm (1.7" x 2.6" x 4.3")<	Amplitude <sup>3,4</sup> : (50Ω load)	0 - 10 Volts	0 - 10 Volts	0 - 10 Volts	0 - 20 Volts	0 - 20 Volts
Maximum duty cycle:10%5%10%5%Rise time <sup>5</sup> (20%-80%): $\leq 100 \text{ ps}$ $\leq 200 \text{ ps}$ $\leq 220 \text{ ps}$ $\leq 250 \text{ ps}$ Fall time <sup>5</sup> (80%-20%): $\leq 135 \text{ ps}$ $\leq 300 \text{ ps}$ $\leq 200 \text{ ps}$ $\leq 250 \text{ ps}$ Required load impedance: $50 \text{ Ohms}^{12}$ Positive or negative or both (specify)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 http://www.avtechpulse.com/labview for availability and downloadsInternet control (Telnet & Web):Optional <sup>17</sup> . See http://www.avtechpulse.com/options/tht for details.Propagation delay:Modules: s 30 ns, -C and -B units: s 120 ns (Ext trig in to pulse out)Jitter: $\pm 35ps \pm 0.015\%$ of sync delayDC offset <sup>3,8</sup> :Apply required DC offset to back panel solder terminals (± 50 Volts, 250 m A max)Trigger required <sup>10</sup> :Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out:0 to 200 ns0 to 1.0 seconds0 to 1 us(5 and -C only): $-B$ and -C units: Out, Monitor: SMA, Power: Solder terminals Modules: +24V DC.Trig, Sync, Gate (-B): BNC Modules: +24V DC.Power requirements: $-B$ and -C units: 100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") Modules: +24V DC. $-B$ and -C units: cast aluminum frame & handles, bulce vinyl on aluminum covers Modules: cast aluminum with blue enamel	Pulse width (FWHM):	5 ns - 100 ns	7 ns - 1 us	10 ns - 10 us	8 ns - 100 ns	8 ns - 1 us
InstantialInstantialInstantialInstantialInstantialInstantialRise time*(20%+80%): $\leq 100 \text{ ps}$ $\leq 200 \text{ ps}$ $\leq 200 \text{ ps}$ $\leq 250 \text{ ps}$ Fall time*(80%-20%): $\leq 135 \text{ ps}$ $\leq 300 \text{ ps}$ $\leq 200 \text{ ps}$ $\leq 300 \text{ ps}$ $\leq 350 \text{ ps}$ Required load impedance: $50 \text{ Ohms}^{12}$ Positive or negative or both (specify)GPIB and RS-232 control?: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 downloadsInternet control (Telnet & Web):Optional11. See <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability and downloadsPropagation delay:Modules: $\leq 30 \text{ ns}$ , -C and -B units: $\leq 120 \text{ ns}$ (Ext trig in to pulse out)Jitter: $\pm 35ps \pm 0.015\%$ of sync delayDC offset <sup>1,8</sup> :Apply required DC offset to back panel solder terminals ( $\pm 50 \text{ Volts}, 250 \text{ mA max}$ )Trigger required <sup>10</sup> :Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out:0 to 200 ns0 to 1.0 seconds0 to 1 usOt to 200 ns0 to 200 ns0 to 1.0 seconds0 to 1 us0 to 200 nsSync output (-B and -C only):+3 volts, 100 ns, will drive 50 Ohm loadsModules:Trig, Out, Monitor: SMA, Modules:Trig, Sync, Gate (-B): BNC Modules:Onnectors:-B and -C units:100 mx 430 mm x 375 mm (3.9" x 17" x 14.8") Modules	Maximum PRF:	1 MHz	500 kHz	1 MHz		100 kHz
Fail time* (80%-20%): $\leq 135 \text{ ps}$ $\leq 300 \text{ ps}$ $\leq 200 \text{ ps}$ $\leq 300 \text{ ps}$ $\leq 350 \text{ ps}$ Required load impedance:50 Ohms <sup>12</sup> Polarity <sup>6,7</sup> :Positive or negative or both (specify)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 downloadsInternet control (Telnet & Web):Optional <sup>11</sup> . See <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability and downloadsPropagation delay:Modules: $\leq 30 \text{ ns}$ , -C and -B units: $\leq 120 \text{ ns}$ (Ext trig in to pulse out)Jitter: $\pm 35ps \pm 0.015\%$ of sync delayDC offset <sup>38</sup> :Apply required DC offset to back panel solder terminals ( $\pm 50 \text{ Volts}, 250 \text{ mA max}$ )Trigger required <sup>10</sup> :Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out:0 to 200 ns0 to 200 ns0 to 1.0 seconds0 to 1 us0 to 200 ns0 to 1.0 seconds0 to 1.0 seconds0 to 1 us0 to 200 nsProvides a 20 dB attenuated coincident replica of main outputConnectors:-B and -C units:-B and -C units:0.0 to 240 Volts, 50 - 60 HzModules:+24V DC.Dimensions: (H x W x D)-B and -C units:-B and -C units:100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") Modules:-B and -C units:-B and -C units:-B and -C units:100 mm x 430 mm x 109 mm (1.7"	Maximum duty cycle:	10%	5%	10%		5%
Required load impedance: 50 Ohms <sup>12</sup> Polarity <sup>6,7</sup> : Positive or negative or both (specify)   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 http://www.avtechpulse.com/labview for availability and downloads   Internet control (Telnet & Web): Optional <sup>11</sup> . See http://www.avtechpulse.com/options/tnt for details.   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 <sup>3,8</sup> : Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max) Not available   Trigger required <sup>10</sup> : Modules, and -B &-C external trigger mode: +5 Volts, 10 ns or wider (TTL)   Variable sync delay, Sync out to pulse out: 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 <sup>9</sup> : Provides a 20 dB attenuated coincident replica of main output   Connectors: -B and -C units: 0ut, Monitor: SMA, Power: Solder terminals   Power requirements: -B and -C units: 100 - 240 Volts, 50 - 60 Hz Modules: 43 mm x 430 mm x 375 mm (3.9" x 17" x 14.8")   Modules: +24V DC. -B and	Rise time⁵ (20%-80%):	≤ 100 ps	≤ 200 ps	≤ 200 ps		≤ 250 ps
Polarity <sup>6,7</sup> : Positive or negative or both (specify)   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 http://www.avtechpulse.com/labview for availability and downloads   Internet control (Telnet & Web): Optional <sup>11</sup> . See http://www.avtechpulse.com/options/tnt for details.   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 <sup>3,8</sup> : Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)   Trigger required <sup>10</sup> : Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)   Variable sync delay, Sync out to pulse out: 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 Modules: Trig, Out, Monitor: SMA, Trig, Sync, Gate (-B): BNC Modules: Trig, Out, Monitor: SMA, Trig, Sync, Gate (-B): BNC Modules: Power: Solder terminals   Power requirements: -B and -C units: 100 - 240 Volts, 50 - 60 Hz Modules: +24V DC. Power: Solder terminals   Power requirements: -B and -C units: 100 mm x 375 mm (3.9" x 17" x 14.8") Modules: 43 mm x 66 mm x 109 mm (1.7" x 2.6" x 4.3") Chassis material: -B	Fall time <sup>5</sup> (80%-20%):	≤ 135 ps	≤ 300 ps	≤ 200 ps	≤ 300 ps	≤ 350 ps
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 http://www.avtechpulse.com/labview for availability and downloads   Internet control (Telnet & Web): Optional <sup>11</sup> . See 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 <sup>3.8</sup> : Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max) Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)   Trigger required <sup>10</sup> : 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 <sup>9</sup> : Provides a 20 dB attenuated coincident replica of main output   Connectors: -B and -C units: 0ut, 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 and -C units: cast aluminum frame & handles, blue vinyl on aluminum covers Modules: cast aluminum with blue enamel	Required load impedance:	50 Ohms <sup>12</sup>				
LabView Drivers: -B units only: check http://www.avtechpulse.com/abview for availability and downloads   Internet control (Telnet & Web): Optional <sup>11</sup> . See http://www.avtechpulse.com/options/tnt for details.   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 <sup>3.8</sup> : Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max) Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)   Trigger required <sup>10</sup> : Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)   Variable sync delay, Sync out to pulse out: 0 to 200 ns 0 to 1.0 seconds 0 to 1 us 0 to 200 ns 0 to 1.0 seconds   Sync out to pulse out: 0 to 200 ns 0 to 1.0 seconds 0 to 1.0 seconds 0 to 1.0 seconds 0 to 1.0 seconds   Sync output (-B and -C only): +3 Volts, 100 ns, will drive 50 Ohm loads 0 to 1.0 seconds 0 to 1.0 seconds 0 to 1.0 seconds   Power requirements: -B and -C units: Out, Monitor: SMA, Power: Solder terminals 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 and -C units: 100 mm x 430 mm x 375 mm (3.9"	Polarity <sup>6,7</sup> :	Positive or negative or both (specify)				
Internet control (Telnet & Web):Optional <sup>11</sup> . See <a href="http://www.avtechpulse.com/options/tht">http://www.avtechpulse.com/options/thtfor the terminal is in the terminal is in the terminal is in the terminal is in the terminal is in terminal is in the terminal is in the terminal is in terminal is in terminal is in the terminal is in the terminal is in terminal is in the terminal is in the terminal is in the terminal is in terminal is in the termin</a>	GPIB and RS-232 control <sup>2</sup> :	Standard on -B units. Not available on -C units or modules.				
Propagation delay:Modules: $\leq$ 30 ns, -C and -B units: $\leq$ 120 ns (Ext trig in to pulse out)Jitter: $\pm$ 35ps $\pm$ 0.015% of sync delayDC offset <sup>3,8</sup> :Apply required DC offset to back panel solder terminals ( $\pm$ 50 Volts, 250 mA max)Apply required DC offset to back panel solder terminals ( $\pm$ 50 Volts, 250 mA max)Trigger required <sup>10</sup> :Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out:0 to 200 ns0 to 1.0 seconds0 to 1 us0 to 200 ns0 to 1.0 secondsSync output (-B and -C only):+3 Volts, 100 ns, will drive 50 Ohm loads0 to 1.0 seconds0 to 1.0 seconds0 to 2.00 ns0 to 1.0 secondsConnectors:-B and -C units:Out, Monitor: SMA, Modules:Trig, Sync, Gate (-B): BNC Modules:Frovides a 20 dB attenuated coincident replica of main outputPower requirements:-B and -C units:100 - 240 Volts, 50 - 60 Hz Modules:Free and -C units:100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") Modules:Dimensions: (H x W x D)-B and -C units:100 mm x 430 mm x 109 mm (1.7" x 2.6" x 4.3")-B and -C units:cast aluminum with blue enamel	LabView Drivers:	-B units only: check http://www.avtechpulse.com/labview for availability and downloads				
Jitter: ± 35ps ± 0.015% of sync delay   DC offset <sup>3.8</sup> : Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max) Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)   Trigger required <sup>10</sup> : Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)   Variable sync delay, Sync out to pulse out: 0 to 200 ns 0 to 1.0 seconds 0 to 1 us 0 to 200 ns 0 to 1.0 seconds   (-B and -C only): +3 Volts, 100 ns, will drive 50 Ohm loads 0 to 1.0 seconds 0 to 1.0 seconds 0 to 1.0 seconds   Monitor output option <sup>9</sup> : Provides a 20 dB attenuated coincident replica of main output   Connectors: -B and -C units: 0ut, Monitor: SMA, Trig, Sync, Gate (-B): BNC Modules:   Power requirements: -B and -C units: 100 - 240 Volts, 50 - 60 Hz Modules:   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:   Chassis material: -B and -C units: 100 mm x 430 mm x 109 mm (1.7" x 2.6" x 4.3")	Internet control (Telnet & Web):	Optional <sup>11</sup> . See http://www.avtechpulse.com/options/tnt for details.				
DC offset <sup>3.8</sup> : Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max) Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max)   Trigger required <sup>10</sup> : 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 0 to 1.0 seconds 0 to 1.0 seconds   Monitor output option <sup>9</sup> : Provides a 20 dB attenuated coincident replica of main output   Connectors: -B and -C units: 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 and -C units: Cast aluminum frame & handles, blue vinyl on aluminum covers Modules: cast aluminum with blue enamel	Propagation delay:	Modules: $\leq$ 30 ns, -C and -B units: $\leq$ 120 ns (Ext trig in to pulse out)				
panel solder terminals (± 50 Volts, 250 mA max)Not availablepanel solder terminals (± 50 Volts, 250 mA max)Trigger required10:Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)Variable sync delay, Sync out to pulse out: 	Jitter:	± 35ps ± 0.015% of sync delay				
Variable sync delay, Sync out to pulse out: (-B and -C only):0 to 200 ns0 to 1.0 seconds0 to 1 us0 to 200 ns0 to 1.0 secondsSync output (-B and -C only):+3 Volts, 100 ns, will drive 50 Ohm loadsMonitor output option <sup>9</sup> :Provides a 20 dB attenuated coincident replica of main outputConnectors:-B and -C units:Out, Monitor: SMA, Modules:Trig, Sync, Gate (-B): BNC Modules:Power requirements:-B and -C units:100 - 240 Volts, 50 - 60 Hz Modules:Power: Solder terminalsPomensions: (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 109 mm (1.7" x 2.6" x 4.3")Chassis material:-B and -C units:cast aluminum with blue enamel	DC offset <sup>3,8</sup> :	panel solder terminals Not available		panel solder terminals		
Sync out to pulse out: (-B and -C only):0 to 200 ns0 to 1.0 seconds0 to 1 us0 to 200 ns0 to 1.0 secondsSync output (-B and -C only):+3 Volts, 100 ns, will drive 50 Ohm loadsMonitor output option <sup>9</sup> :Provides a 20 dB attenuated coincident replica of main outputConnectors:-B and -C units:Out, Monitor: SMA, Modules:Trig, Sync, Gate (-B):BNC Power: Solder terminalsPower requirements:-B and -C units:100 - 240 Volts, 50 - 60 Hz Modules:+24V DCB and -C units:100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") Modules:Dimensions: (H x W x D)-B and -C units:100 mm x 430 mm x 109 mm (1.7" x 2.6" x 4.3")-B and -C units:cast aluminum frame & handles, blue vinyl on aluminum covers Modules:Chassis material:-B and -C units:cast aluminum with blue enamel-A and -C	Trigger required <sup>10</sup> :	Modules, and -B & -C external trigger mode: +5 Volts, 10 ns or wider (TTL)				
Monitor output option <sup>9</sup> : Provides a 20 dB attenuated coincident replica of main output   Connectors: -B and -C units: Out, Monitor: SMA, Trig, Sync, Gate (-B): BNC Modules:   Power requirements: -B and -C units: 100 - 240 Volts, 50 - 60 Hz Modules:   Power requirements: -B and -C units: 100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8") Modules:   Dimensions: (H x W x D) -B and -C units: 100 mm x 430 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:	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
Connectors:-B and -C units:Out, Monitor: SMA, Trig, Out, Monitor: SMA,Trig, Sync, Gate (-B):BNC Power: Solder terminalsPower requirements:-B and -C units:100 - 240 Volts, 50 - 60 Hz +24V DC.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:Chassis material:-B and -C units:cast aluminum frame & handles, blue vinyl on aluminum covers Modules:	Sync output (-B and -C only):	+3 Volts, 100 ns, will drive 50 Ohm loads				
Modules:Trig, Out, Monitor: SMA,Power: Solder terminalsPower requirements:-B and -C units:100 - 240 Volts, 50 - 60 Hz Hodules:+24V DC.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 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:	Monitor output option <sup>9</sup> :	Provides a 20 dB attenuated coincident replica of main output				
Modules: +24V DC.   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:   Chassis material: -B and -C units: cast aluminum frame & handles, blue vinyl on aluminum covers Modules:   Chassis material: -B and -C units: cast aluminum with blue enamel	Connectors:					
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:   Constraint Constraint Constraint   Chassis material: -B and -C units: cast aluminum frame & handles, blue vinyl on aluminum covers Modules:   Chassis material: -B and -C units: cast aluminum with blue enamel	Power requirements:					
Modules: cast aluminum with blue enamel	Dimensions: (H x W x D)					
Temperature range: +5°C to +40°C	Chassis material:					
	Temperature range:			+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 <u>http://www.avtechpulse.com/formats</u> for the basic instrument formats).
- -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay (See <u>http://www.avtechpulse.com/gpib</u>).
- 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 the dual-polarity 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 suffix -PN.
- 7) Polarity inversion in dual-polarity 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.
- 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.
- 11)Add the suffix -TNT to the model number to specify the internet control option.
- 12) A 50 Ohm load is required. Other loads may damage the instrument. Consult Avtech (info@avtechpulse.com) if you need to drive other load impedances.

See our Applications Information Section on pages 104 - 112, or visit the application note area of the Avtech web site: <u>http://www.avtechpulse.com/appnote</u>.

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