Rise	Fall	Width	Amplitude	Main Size
				500ps/div
64.15 ps	140.61 ps	323.50 ps	204.00 mV	Main Pos
				31.25ns

AVM-4-C, +20V, < 500 ps

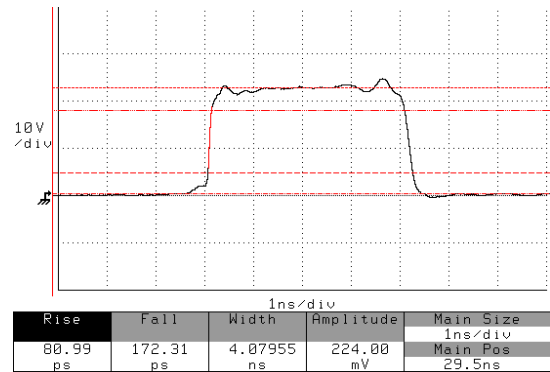| Rise	Fall	Width	Amplitude	Main Size
				1ns/div
80.99 ps	172.31 ps	4.07955 ns	224.00 mV	Main Pos
				29.5ns

AVM-4-C, +20V, > 4 ns

The models in the AVM family provide very fast rise times (100-170 ps), with high pulse repetition frequencies (PRFs) of up to 10 or 25 MHz, variable pulse widths, and amplitudes as high as 20 Volts.

The AVM-1 series provides 5V amplitudes, 25 MHz PRF, 0.25 to 6 ns pulse widths, with 100 ps rise times.

The AVM-2 series provides higher amplitudes (15V standard, 20V optional), for 0.25 to 2 ns pulse widths.

The AVM-3 series operates up to 15V, with wider 2 to 15 ns pulse widths (10 ns above 10 MHz), and 150 ps rise times.

The AVM-4 series provides 20V amplitudes, 10 MHz PRF, 0.5 to 5 ns pulse widths, with 150 ps rise times, and includes a computer-controllable version with GPIB and RS-232 ports.

The AVM-5 series is similar, with 10V amplitudes, 0.5 to 10 ns pulse widths, and 120 ps rise times.

The AVM-6 series is similar, with 5V amplitudes, 10 MHz PRF, 0.5 to 10 ns pulse widths, and 100 ps rise times.

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. 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 .

The -VXI option adds a rear-panel Ethernet connector, allowing an instrument to be remotely controlled using the VXI-11.3, ssh, telnet, and web protocols. The VXI-11.3 feature 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.

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

Models with the -C or -B suffixes include an adjustable internal oscillator that is variable from up 10 or 25 MHz (depending on the model) using the front-panel controls. A sync output is provided for sampling scope triggering purposes. All models can also be triggered externally using an externally-generated TTL-level pulse.

AVM models are available in positive, negative, or dual-polarity versions. In dual-polarity -C units and modules, the polarity inversion is accomplished by manually adding an inverting transformer accessory on the pulser's output connector. Dual-polarity -B units contain two separate pulse generator circuits (one for each polarity). The front-panel polarity setting (or computer command) controls an internal relay that connects the appropriate circuit to the main output connector.

Some AVM units are available in a DC-powered miniature module format. These modules require a TTL input trigger signal. The DC power and ground connections are applied to solder terminals. The output pulse width and amplitude are normally controlled by screwdriver-adjustable one-turn trimpots. These trimpots may optionally be replaced with single solder terminals, allowing the pulse width (-EW option) and amplitude (-EA option) to be controlled by a 0 to +10V DC control voltage. Alternatively, all solder terminals can be replaced with pin strips intended for use with mass-termination insulation displacement connectors (-MTA options). See the photos on page 3 for examples.

A DC offset or bias insertion function is included. The required DC offset or bias is applied directly to rear panel solder terminals. An available option provides an internally-generated DC offset (0 to ±5V) controlled from the front panel (also by computer command on -B units).

AVM units are available with a monitor output option that provides an attenuated (20 dB or x10) coincident replica of the main output pulse.

Additional options include analog electronic control (0 to +10V) of output amplitude, pulse width, propagation delay and DC offset. -C units with these options also include the standard front-panel controls. On modules, they replace the one-turn trimpots. These options provide a form of remote-control for units without the full GPIB / RS-232 interfaces (standard on -B units).

The AVM series is only specified for periodic triggering within the frequency ranges noted in the table below. It is not suitable for aperiodic applications. The output amplitude and pulse width may interact, particularly in the module and -C formats. 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 or by using the slower AVMM series.

The AVM series is ideally suited for systems or laboratory applications such as logic testing, TDR, radar, optical and cable communications, SAW, switching and propagation time studies and educational fields. In some cases, the specifications can be adapted to satisfy a particular requirement.

4ТЕСТ

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Model:	AVM-1-C[1] AVM-1	AVM-2-C[1] AVM-2	AVM-3-C[1]	AVM-4-C[1] AVM-4-B[2]	AVM-5-C[1] AVM-5-B[2]	AVM-6-C[1] AVM-6-B[2]
Maximum amplitude (into 50Ω)[3,4,13]:	5V	15V standard, 20V optional[12]	15V	20 V	10 V	5 V
Pulse width (FWHM)[3]:	0.25 - 6 ns	0.25 - 2.0 ns	2.0 - 15 ns[14]	0.5 - 5.0 ns	0.5 - 10 ns	0.5 - 10 ns
Maximum PRF:	25 MHz			10 MHz		
Rise time (20% - 80%):	≤ 100 ps		≤ 150 ps	≤ 150 ps	≤ 120 ps	≤ 100 ps
Fall time (80% - 20%):	≤ 250 ps		≤ 800 ps[14]	≤ 300 ps	≤ 300 ps	≤ 300 ps
Required load[9]:	50 Ohms					
Polarity[5]:	-C units and Modules: specify -P, -N, -P-PN, or -N-PN -B units: specify -P, -N, or -PN					
GPIB and RS-232 control[2]:	Standard on -B units. Not available on -C units or modules.					
LabView Drivers:	-B units only					
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Optional on -B units[11]. Recommended as a modern alternative to GPIB / RS-232.					
Settings accuracy:	Not calibrated; parameters may interact noticeably. For traceable calibration, verify the output parameters with a calibrated oscilloscope.					
Fixed propagation delay: (EXT TRIG in to pulse out)	-C units and Modules: ≤ 30 ns (Ext trig in to pulse out) -B units: ≤ 140 ns (Ext trig in to pulse out)					
Variable delay, internal trigger mode:	-C units: 0 to 50 ns -B units: 0 to +/- 1 second Modules: Not available					
Variable delay, external trigger mode:	-C units and Modules: Optional[3,6], 0 to 5 ns -B units: Standard, 0 to +/- 1 second					
Jitter (EXT TRIG in to pulse out):	-C units and Modules: ±15 ps -B units: ± 35 ps ± 0.015% of sync delay					
Gate input:	-B units only. Active high or low, switchable. Suppresses triggering when active.					
DC offset or bias insertion[3,7]:	Apply required DC offset to back panel solder terminals (± 50 Volts, 250 mA max) An internally-generated offset function is optional[7].					
External trigger	Modules, and -B and -C external trigger mode: TTL-level (Low: 0V, High: +3V to +5V), 10 ns or wider.					
Trigger input impedance:	-C units and Modules: 50Ω (optionally 1 kΩ[10]). -B units: 1 kΩ					
Sync output:	-C units: +3 Volts, width varies with PRF (always > 10 ns), will drive 50Ω -B units: +3 Volts, 50 ns, will drive 50Ω Modules: Not Available					
Monitor output option[8]:	Provides a 20 dB attenuated coincident replica of main output					
Connectors (-B and -C units):	Out, Monitor: SMA, Trig, Sync, Gate (-B units only): BNC,					
Connectors (modules):	In, Out: SMA, Power: Solder terminals					
Optional accessory kit: (attenuators and terminators)	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.					
Optional accessory kit: (coaxial cables and adapters)	Add the suffix "-AK8" to the model number to include the recommended accessory kit. Consists of one 12-inch SMA-M/SMA-M PE-SR405FL coaxial cable, one 12-inch SMA-M/SMA-MRG-316 coaxial cable, one 36-inch SMA-M/SMA-M RG-316 coaxial cable, one 24-inch SMA-M/BNC-M RG-316 coaxial cable, one 36-inch BNC-M/BNC-M RG58C/U coaxial cable, one SMA-F to BNC-M adapter, one SMA-M to BNC-F adapter, one SMA-F to SMA-F adapter, and one SMA-F to solder cup adapter					
Dimensions (H x W x D):	-B units: 100 x 430 x 375 mm (3.9" x 17" x 14.8") -C units: 100 x 215 x 375 mm (3.9" x 8.5" x 14.8") Modules: 43 x 66 x 107 mm (1.7" x 2.6" x 4.2")					
Power requirement:	-B and -C units: 100 - 240 V, 50 - 60 Hz. AVM-1 & AVM-2 modules: +24V DC. AVM-4 modules: +28V DC.					
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.
2) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay
3) For analog electronic control (0 to +10V) of amplitude, pulse width, delay or offset suffix model number with -EA or -EW or -ED or -EO. Electronic control units also include the standard front panel one-turn controls. Not available on -B units (since remote control is already provided digitally).
4) For -C units and modules, the minimum useful amplitude is 20% of the maximum. For -B units, it is 4% of the maximum, due to the use of internally-switched attenuators. For operation at lower amplitudes, best results will be obtained by setting the amplitude near full-scale and using external attenuators on the output.
5) Indicate desired polarity by suffixing model number with -P or -N (i.e. positive or negative), or -P-PN or -N-PN for dual polarity option on -C units and

modules (where the suffix preceding -PN indicates the polarity at the mainframe output port), or -PN for the dual-polarity option on -B units.
6) Indicate delay option by suffixing model number with -D.
7) For internally generated DC offset option (0 to ±5 V, one turn control) add suffix -OT to model number. -OT and -EO options not available on modules.
8) For monitor option add suffix -M.
9) A 50 Ohm load is required. Other loads may damage the instrument.
10) An input impedance of ≥1 kΩ can also be provided (-Z1K option).
11) Add the suffix -VXI to the model number to specify the Ethernet port.
12) Add the suffix -HV to specify the 20V maximum amplitude option. Not available on modules.
13) The maximum output amplitude may decline by up to 20% when operating at PRFs higher than 20% of the maximum specified PRF.
14) At PRFs above 10 MHz, the maximum pulse width falls to 10 ns and the fall time increases to 1.5 ns.

AVM-6-B

AVM-2-C

Front   *Back*

AVM-2-P-M, with standard AMP/PW trimpots and power solder terminals. A 12/25 MHz range switch is on the rear panel, to select the best operating mode.

Front

AVM-2-P, with -EA and -EW options. Solder terminals replace the AMP and PW trimpots. The back is unchanged.

Front   *Back*

AVM-2-P-MTA. MTA pin strips replace the power and AMP/PW solder terminals. There are no mechanical trimpots or switches.

AVAILABLE MODULE CONFIGURATIONS