PVM-1001 Pulsed Voltage Module — Datasheet

Instrument Description

The PVM-1001 adjustable pulsed voltage source can drive a 50 ohm resistive load from 0 V to 950 V in less than 10 ns (Rise Time). Pulse widths can range from 55 ns to 10,000 ns with repetition rates to 1 MHz (bursts to 5 MHz). Typical applications include instrument calibration, component testing, beam steering, and PMT and MCP gating.

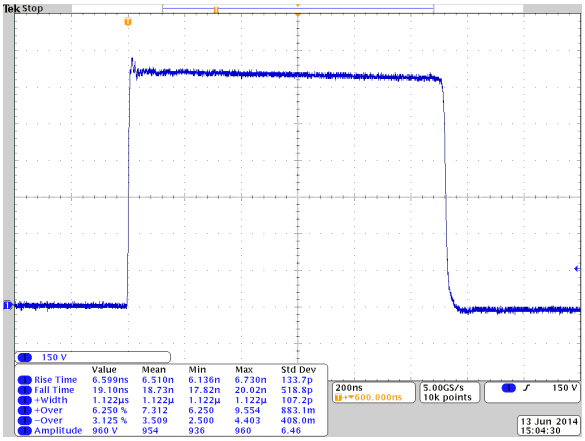
The output pulse width and frequency are controlled by an external trigger source.

Two models are available: The PVM-1001-P produces positive voltage pulses and requires an external positive high voltage power supply; the PVM-1001-N produces negative pulses and requires a negative supply.

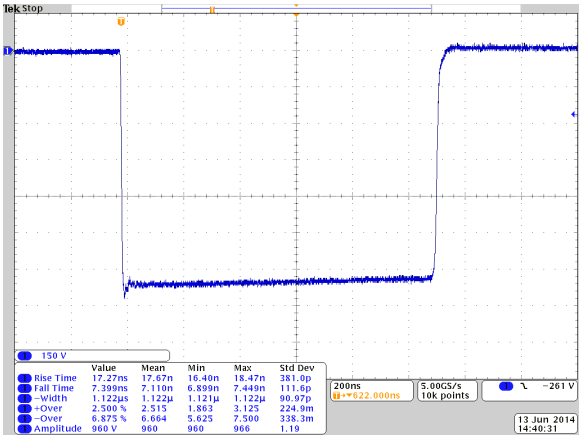
The front panel has an SMB connector for the trigger input and a connector for the AC-to-DC adapter. The rear panel has MHV connectors for high voltage input and pulsed high voltage output.

Ordering Information

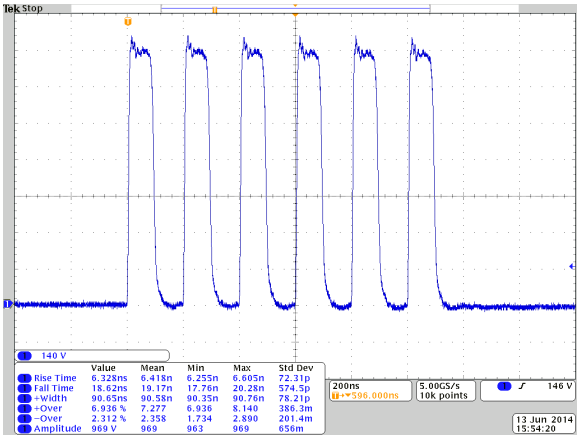
PVM-1001-P	Positive module
PVM-1001-N	Negative module
PVA-1001	Input and output cables



960 V Positive output pulse into a 50 Ω load



960 V Negative output pulse into a 50 Ω load



969 V Positive output 5 MHz burst pulse into a 50 Ω load
The negative model has the same burst pulse capability.

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PVM-1001 Positive

Input HVPS Requirements

HV Input Voltage	≤ 975 VDC Positive Source
HV Input Power	> Output Power + 5 W

Pulse Amplitude

Output Voltage Range	0 V to +950 V
Output Droop	< 10 V/µs
Voltage Overshoot	≤ 10 % (900 V to 950 V) ≤ 12 % (700 V to 899 V) ≤ 14 % (400 V to 699 V) ≤ 15 % (100 V to 399 V) ≤ 17 % (50 V to 99 V)
Rise Time	≤ 8 ns @ 200 V to 950 V ≤ 10 ns @ 50 V to 199 V
Fall time	≤ 50 ns @ 450 V to 950 V ≤ 80 ns @ 200 V to 449 V ≤ 130 ns @ 50 V to 199 V
Polarity	Positive
Compliance Voltage	25 V above desired output voltage
Maximum Output Power	208 W ***Refer to SOA Graphs***

PVM-1001 Negative

Input HVPS Requirements

HV Input Voltage	≤ -975 VDC Negative Source
HV Input Power	> Output Power + 5 W

Pulse Amplitude

Output Voltage Range	0 V to -950 V
Output Droop	< –10 V/µs
Voltage Overshoot	< 10 % –800 V to –950 V < 12 % –150 V to –799 V < 20 % –50 V to –149 V
Fall Time	≤ 9 ns @ –500 V to –950 V ≤ 10 ns @ –200 V to –499 V ≤ 12 ns @ –50 V to –199 V
Rise time	≤ 50 ns @ –450 V to –950 V ≤ 80 ns @ –200 V to –449 V ≤ 130 ns @ –50 V to –199 V
Polarity	Negative
Compliance Voltage	–25 V above desired output voltage
Maximum Output Power	208 W ***Refer to SOA Graphs***

PVM-1001 Positive & Negative

External Trigger Requirements

Frequency Range	≤ 1 MHz
Burst Mode	≤ 5 MHz
Trigger pulse width	55 ns ≤ Pulse width ≤ 10,000 ns
Delay (input trigger to output)	≤ 75 ns
Termination Impedance	50 Ω
Connector	SMB
Voltage Levels	0 V, output off (open) 5 V, output on (high voltage)

Power Specifications

DC Power Source	12 VDC, 12 W, supplied by adapter (included)
Adapter Power Requirements	100 VAC to 240 VAC

Output Connector

Output Connector	MHV, Rear Panel

General

Size (HxWxD)	6.5 cm x 20.4 cm x 10 cm
Weight	0.5 kg
Operating Temperature	15 °C to 40 °C

Notes

The PVM-1001 voltage source meets or exceeds these specifications. Specifications were measured driving a 50 ohm load (Bird Electronics, 1500W, 50 Ohm, Model 8860) connected with 3 feet of RG-58 coax cable.

Specifications subject to change without notice.

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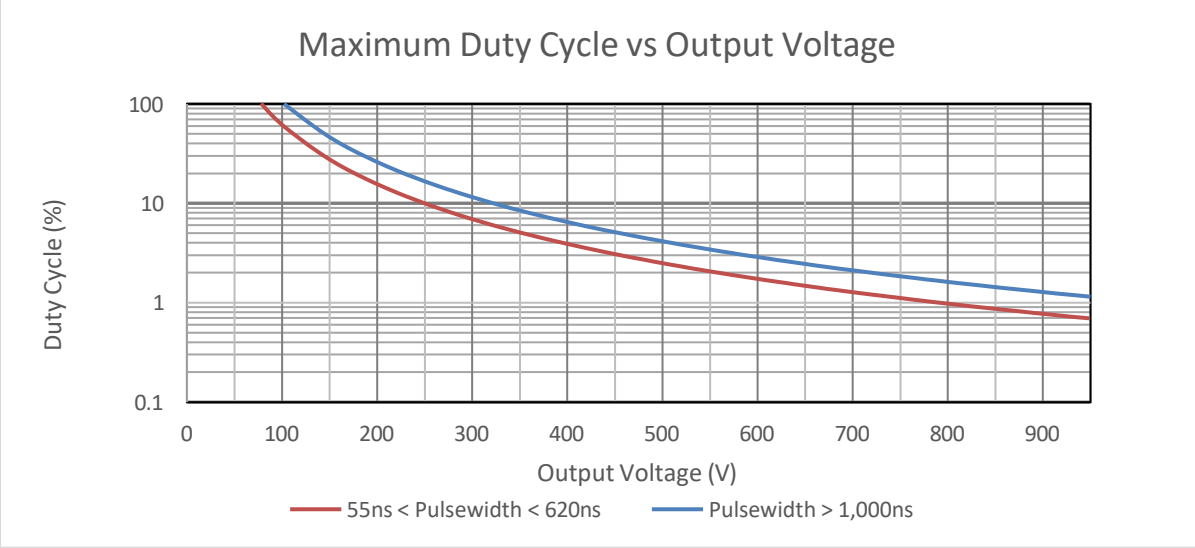
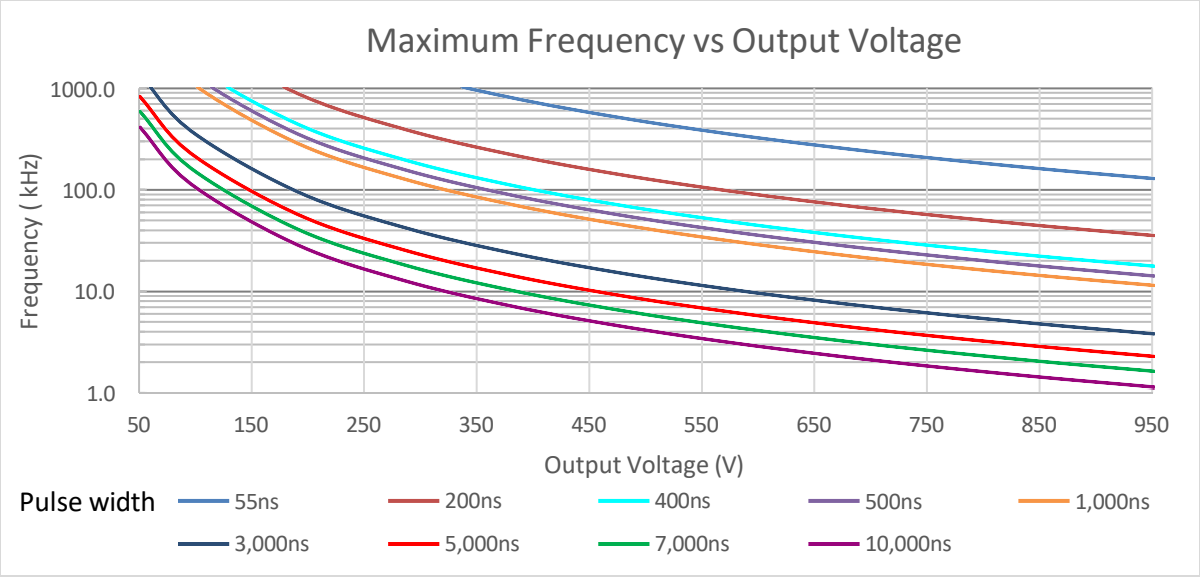
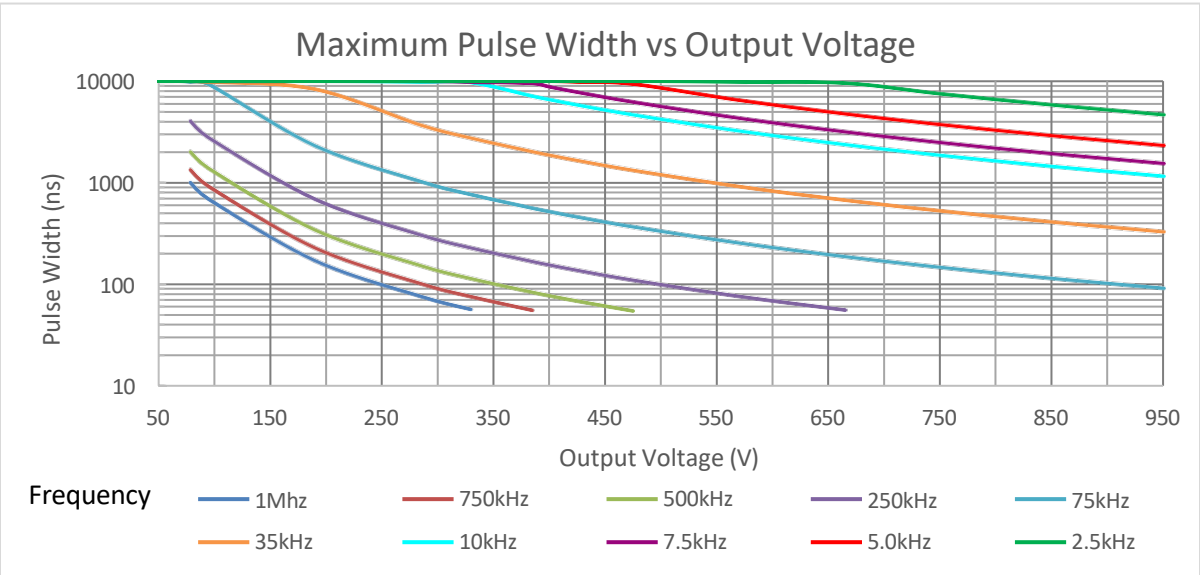

Maximum Duty Cycle vs Output Voltage
Duty Cycle (%)
100
10
1
0.1
0
100
200
300
400
500
600
700
800
900
Output Voltage (V)
55ns < Pulsewidth < 620ns
Pulsewidth > 1,000ns


Maximum Frequency vs Output Voltage
Frequency (kHz)
1000.0
100.0
10.0
1.0
50
150
250
350
450
550
650
750
850
950
Output Voltage (V)
Pulse width
55ns
200ns
400ns
500ns
1,000ns
3,000ns
5,000ns
7,000ns
10,000ns


Maximum Pulse Width vs Output Voltage
Pulse Width (ns)
10000
1000
100
10
50
150
250
350
450
550
650
750
850
950
Output Voltage (V)
Frequency
1Mhz
750kHz
500kHz
250kHz
75kHz
35kHz
10kHz
7.5kHz
5.0kHz
2.5kHz