

T E C H N I C A L D A T A S H E E T

Parametric High-Voltage Pulse Experimental Power Supply

Jet-type atmospheric low-temperature plasma surface-treatment equipment



ACS Material Parametric High-Voltage Pulse Experimental Power Supply (image for reference only)

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SECTION I

Product Overview

A parametric pulse power supply is a device where the pulse amplitude, pulse width, rising time, falling time, frequency, period, duty ratio, waveform shape (square or triangular), load, and number of output pulses can all be set and adjusted to the user's requirements. The rising and falling edges of high-voltage pulses have the greatest impact on the timing of gas discharge; the pulse width significantly affects the distribution and uniformity of the discharge, while the pulse frequency may influence its stability and efficiency. A parametric source with fully adjustable waveform parameters aids comprehensive research of discharge characteristics and allows convenient, accurate capture of discharge-initiation moments. Two models are available: the EPPHVP20 (0–20 kV) and the EPPHVP15 (0–15 kV).

Product Features

- Adjustable parameters — all parameters of the high-voltage output pulses, especially the rising and falling times, can be set and adjusted for systematic discharge research.
- Load matching — the source adapts to different loads, with output waveform characteristics selectable based on the load, so the pulse waveform meets user requirements.
- Controlled electromagnetic interference — the output high-voltage waveform is controllable, significantly reducing EMI from fast nanosecond pulses and minimizing impact on other test equipment.

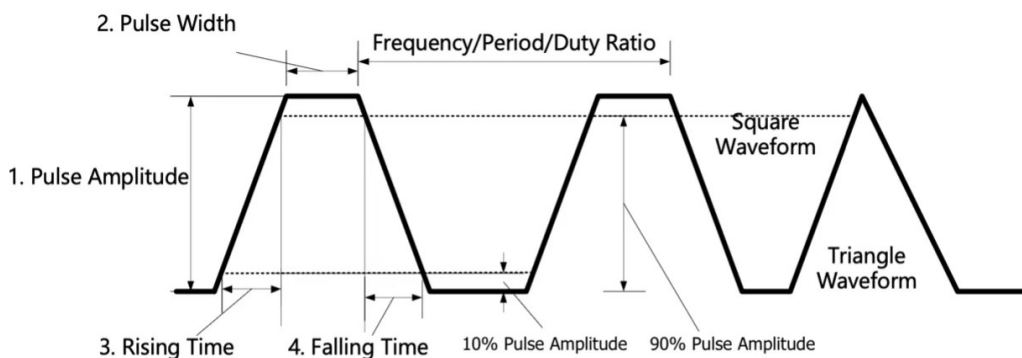


Figure 1. Adjustable parameters of a parametric high-voltage pulse (pulse amplitude, pulse width, rising time, falling time; square and triangular waveforms).

SECTION II

Specifications

Specification	EPPHVP20	EPPHVP15
Output amplitude	0–20 kV continuously adjustable	0–15 kV continuously adjustable
Waveform	Square and triangular waves; any combination as needed	
Pulse width	0 ns–1 ms adjustable, max duty cycle 75%, step size 10 ns	
Rising time (50 pF)	50–500 ns adjustable, step size 10 ns	
Falling time (50 pF)	50–500 ns adjustable, step size 10 ns	
Rise/fall rate	Greater than 10 kV / 50 ns (load 50 pF)	
Rise/fall time	Less than 40 ns (20 kV / 0 pF, triangular wave)	
Number of output pulses	Periodic signal output, or 1–1000 pulses	
Output frequency (1 μ s / 50 ns / 0 pF)	100 kHz/5 kV; 20 kHz/10 kV; 9 kHz/15 kV; 5 kHz/20 kV	100 kHz/5 kV; 15 kHz/10 kV; 8 kHz/15 kV
Rise/fall overshoot	No more than 5% (excluding probe error 5%)	

Specification	EPPHVP20	EPPHVP15
Top width jitter	No more than 5% (excluding probe error 5%)	
Trigger output	Pulse width 1 μ s, delay adjustable (0 to ± 800 ns), 5 V TTL	
Trigger input	Pulse width greater than 50 ns, frequency less than 100 kHz	
Control method	Wired, touch screen, keyboard	
Dimensions / weight	610 $\times$ 180 $\times$ 485 mm, 18 kg	

For reference only, with an average error margin of $\pm 10\%$. Specifications are typical and may vary; confirm details at the time of quotation.

SECTION III

Applications

The fully adjustable pulse parameters make this power supply well suited to research where discharge behavior depends on pulse shape and timing:

- Gas-discharge research — systematic study of discharge initiation, distribution, and uniformity as a function of pulse edges, width, and frequency.
- Plasma and dielectric-barrier discharge — driving and characterizing atmospheric and low-temperature plasma sources.
- High-voltage pulse testing — waveform-controlled excitation for materials, devices, and insulation studies.

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