

等离子体枪击穿电源

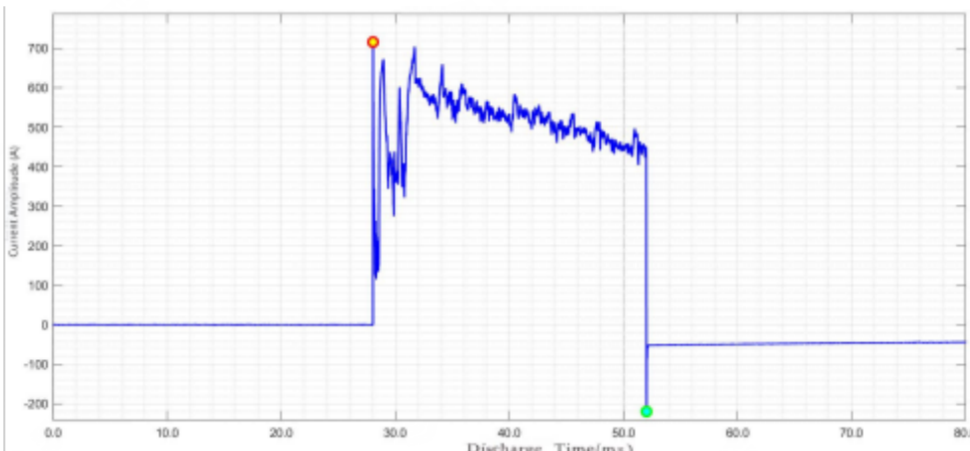
Introduction



Plasma guns serve as pivotal components for pre-ionization, fueling, and physical control in fusion devices. Their power supply systems must withstand the challenges of drastic transient impedance fluctuations, transitioning rapidly from high-voltage breakdown to high-current conduction.

To meet these rigorous requirements, Startorus Fusion has developed this specialized power supply. By integrating all-solid-state switching and optical-isolation triggering technologies, the system achieves nanosecond-level precision control and superior high-voltage isolation for enhanced noise immunity. The optimized low-inductance loop design effectively suppresses voltage spikes and current surges during the breakdown phase. Furthermore, the dual-capacitor redundant architecture and multi-layered protection mechanisms ensure stable and reliable operation throughout the hydrogen discharge process. While maintaining system safety and signal integrity, the power supply delivers stable high-power pulse energy with precise waveform modulation, providing critical mission-power support for fusion experiments.

Parameters

ITEM		Specification
Input	Input Voltage	220VAC $\pm$ 15%
	Power	1500 W max
	Energy Storage	7.88 Wh
Output	Output Voltage	0~1400 V
	Output Voltage	0~2000 A
	Output Pulse Duration	0~20 ms
Control	Data Commuciation Interface	Etherent
	Power Control Interface	Optical Trigger Input
	Operating Mode	Open-loop control
Safety	Isolation Voltage Withstand	3000VDC
Mechanica	Dimensions(LWH)	970 mm*725 mm*910 mm
Environmental	Operating Tenmperature	0~45 °C
	Humidity	$\leq$ 95%, No condensation
	Altitude	0~2000 m
Discharge Current Waveform Example	 The graph shows the discharge current waveform. The Y-axis is 'Current Amplitude (A)' ranging from -200 to 700. The X-axis is 'Discharge Time (ms)' ranging from 0.0 to 80.0. The waveform starts at 0 A, rises sharply to a peak of approximately 700 A at around 28 ms (marked with an orange dot), then decays with oscillations to about 450 A by 50 ms. At 52 ms (marked with a green dot), the current drops abruptly to 0 A and remains there until the end of the 80 ms period.	

Applications

Specifically engineered for efficient and reliable plasma ignition, this product delivers nanosecond-rise-time high-voltage pulses to ensure rapid and dependable dielectric breakdown in gaseous media. Following breakdown, the system autonomously transitions to constant-current or constant-power operational modes, supplying continuous, stable energy to sustain the plasma arc. It features exceptional load disturbance immunity and incorporates comprehensive protection mechanisms, making it the optimal power component for material processing, plasma spraying, and scientific research applications.