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Ideal Power Solution

HPS High Power High voltage DC Power Supply

- Power range: 30 ~ 1000KW
- Voltage range: 5KV ~ 320KV
- 19" industrial-grade chassis, rugged and reliable.
- Precise voltage and current setting and measurement capabilities
- OVP, OCP, short circuit and load discharging protections etc.

Overview

HPS series ultra-high-power high-voltage power supplies are developed on the basis of HP series high-power high-voltage power supplies using internal high-power high-voltage modules in parallel, using 19-inch standard cabinet, control part, inverter, and high-voltage transformer are installed in side under split design.

This series of high voltage power supplies are featured for ultra-high accuracy, high precision, and high stability electronic characteristic. The output voltage is optional from 5KV to 300KV, and the power has reached an astonishing ultra-wide range of 50KW to 500KW. The power supply adopts a mixed cooling method of air cooling of the control part, water cooling and oil cooling of the main power unit. The internal module redundancy technology and perfect protection circuit ensure the excellent reliability of the power supply under high-voltage and high-power output.



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This series of high power high voltage power supplies uses touch screens with built-in potentiometers and The LCD meter or LCD for high voltage output control and monitoring. This series of high power high voltage power supplies can be equipped with RS485 interface and control software to control and monitor the operating parameters of the high-voltage power supply

This type of power supply is currently mainly customized according to clients' requirements, and the industries currently involved are cutting-edge industries such as mining gravel, super-power capacitor charging, electron beam smelting, and tube aging.

Features

- Short circuit protection

Could accept long-term discharge sparking and short-circuiting for special-purpose environments also can be made to be short-circuit protection.

High-voltage power supply is equipped with a special output current short-circuit suppression circuit to prevent high-voltage power supply output discharging and sparking short circuit

The high-voltage power supply is equipped with a special discharging protection circuit to ensure that other equipment and the power supply are not damaged.

Ultra-short protection time: When the sensitive current detection circuit detects that the current exceeds the protection set value, power supply would enable the current-limit & power-limit circuit to ensure that the output current is controlled within the set value. The protection startup time is within 10 microseconds and can be achieved in 3 microseconds as requirements.

- Double current-protection circuit

The first-level protection: The dynamic current detection control circuit stabilizes the current at the set value dynamically.

The second-level protection: when the output current threshold protection control circuit detects that the output current exceeds the set threshold value, power supply immediately stops the

current energy output cycle, and re-enters the next energy output cycle when the circuit resets, and the control circuit has soft-start process on new energy cycle after each reset, that is, the energy output has a rising process from zero to maximum. This control mode ensures a smooth process for each energy output.

The power supply voltage-drop flash detection circuit detects short-circuit and sparking condition of the load at the first time, and enables the protection circuit in time.

- Redundancy technology

HPS high-power power system has redundancy configuration inside, this design can cut off any one or a group of single-unit at any time without interrupting the operation of the entire power supply system.

The application of this technology improves the stability of some systems that cannot be powered down.

- Module design

The power system adopts modular design, the front-end inverter and the rear-stage rectification are independent of each other, which makes installation and maintenance easy.

- Overvoltage protection

When the output voltage exceeds the upper limit voltage set by the customer, the power supply will automatically cut off the output and alarms.

- Overcurrent protection

Over current protection value 0 ~ 100% rated value continuously adjustable, power supply activates protection when current exceeds protection value.

- Overload protection

Power supply has built-in overload protection circuit to prevent the power supply from being damaged due to overload.

- Overheat protection

Power supply has built-in over-heat protection circuit, power supply activates protection when the temperature of the power supply radiator exceeds 75 degrees and the automatically resumes below 75 degrees.

- Grid input protection

Power supply shutdown when the input voltage exceeds the range of 342V ~ 420V.

- Constant voltage (CV) & Constant current (CC)

Output voltage & current continuously adjustable from 0 to rated value, CV & CC automatically switchable.

- Linkage adjustment

The latest linkage adjustment technology, using a network cable to connect each module via synchronous adjustment of each module to achieve the average output of each module.

- Surge limit

AC input uses active inrush current limit to reduce the impact on the grid when the input is powered on.

Optional functions

- 0 ~ 5V / 0 ~ 10V / 4 ~ 20mA analog signal control. (DB port) (+AC)
- RS communication interface (RS232 / RS485 optional) (+RC)
- Pulse operation: can be equipped with time controller to form DC pulse power supply (+PULSE)

Block diagram & Key technology

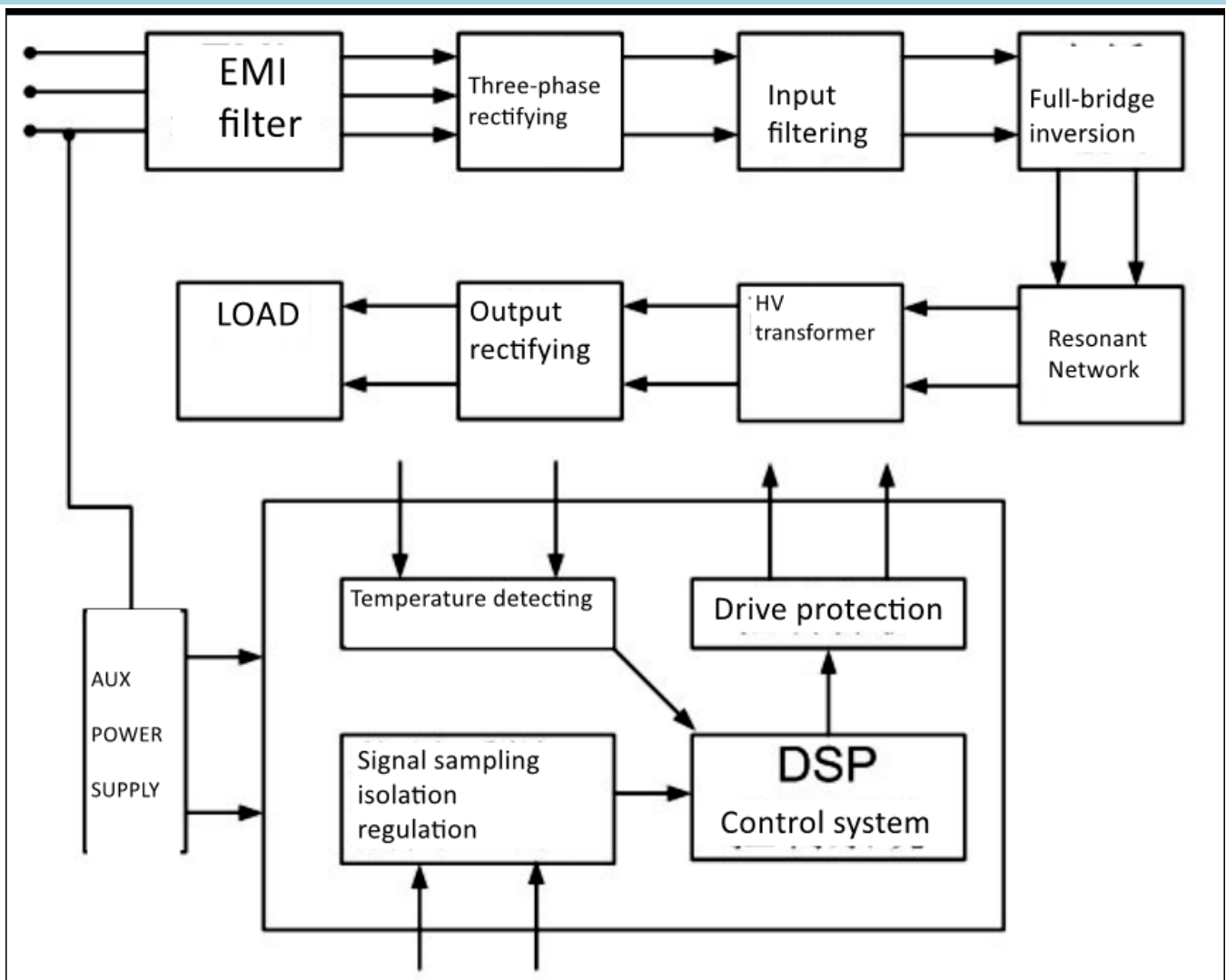
Key technology

- The HPS high voltage power supply adopts the multi-module series & parallel connection technology to balance the output of each module.
- The HPS high voltage power supply adopts optical fiber isolation sampling technology.
- The HPS high voltage power supply adopts the temperature control system to control the cooling

fan speed. This cooling control mode reduces both unnecessary energy consumption and fan noise while extending fan life.

- The HPS high-voltage power supply adopts small built-in HV oil tank and modular layout structure, the high-voltage components are immersed in oil for heat dissipation, which effectively reduces the temperature of high-voltage power components and greatly extends the service life of insulating materials.
- The high voltage transformer in the oil tank adopts double high voltage insulation mode.
- The heat pipe technology is adopted to achieve better dissipation of the heat sink, lower local temperature of the power components, and greatly extends the service life of power components.

Block diagram



Specifications		
Input	Connection mode	Three-phase, four-wire (PE), TN-S supply mode.
	Voltage	380Vac (input tolerance: 10%)
	Frequency	50Hz/60Hz±10%
	Current	Depends on output power rating
Output	Rated power	****KW (Max.)
	Output voltage adjusting range	0 ~ ***KV
	Output current adjusting range	0A ~ *****mA
	Output polarity	Positive or Negative (both available) Client must choose one output polarity before ordering.
	Working mode	Constant voltage (CV) / Constant current (CC)
	Accuracy (C.V.)	Line regulation ≤0.2% FS (Output voltage change rate only caused by changes of input voltage over a specified range of
		Load regulation ≤0.2% FS (Output voltage change rate only caused by full range load changes)
	Accuracy (C.C.)	Line regulation ≤0.2% FS (Output current change rate only caused by changes of input voltage over a specified range of
		Load regulation ≤0.2% FS (Output current change rate only caused by full range load changes)
	Ripple (r.m.s)	≤0.3% FS (measured @ 80% ~ 100% rated output)
	Output connection	HV connector and line provided by IdealTek.
	Power factor	cosΦ= 0.92
	Efficiency	≥90% (measured @ 80% ~ 100% resistive load)
	Working ability	Withstand long-term continuous working at full load.
Setting & Display	Output control mode	Voltage & Current continuously adjustable via 10-turn potentiometer or touch screen with self-locking function. (Depends on output power rating)
	Display mode	4 ¹ / ₂ LCD digital display or LCD (Depends on output power rating)
	Display error	≤±0.5%FS ± 1digit (range: 50%~100% of the rated value)
	Display resolution	As per output voltage & current values.
Protection & Monitoring	Input protection	Input lack phase protection.

functions	Over voltage protection (OVP)	Power supply automatically cuts off output and alarms when output has over voltage.
	Over current protection (OCP)	When the users' load exceeds the rated load and cause over-loading, the power supply works in constant current mode, the power supply output current does not change, and output voltage decreases.
	Over temperature protection (OTP)	Power supply automatically cuts off output and alarms when the internal temperature of the power supply exceeds its threshold value.
	Short circuit protection	When a short circuit occurs between the load and the ground, the power supply works in constant current mode, the current is limited to the maximum value, and the voltage drops to 0 to protect the internal inverter
	Inverter transient protection response time	≤10us
Start-up overshoot		No start-up overshoots.
Over-loading capacity		Withstand working with 1.05 times of rated current.
Short protection mode		CC working when short-circuit.
Noise		≤65 ~ 75dB
Protection degree		IP20
Cooling method		Forced air cooling / Oil-immersed cooling / Oil-immersed cooling + Water cooling + air cooling HV oil tank: oil-immersed cooling Rectifier & Inverter part: water cooling (external water injection required) Other parts: Forced air-cooling. Direction: The lower part of the left and right sides - In and Top - Out wind
Working environment conditions	Ambient temperature	-10°C ~ 40°C
	Humidity	10% ~ 80%(non-condensing) No conductive dust, gas or steam that destroys the insulating medium No severe vibration and shock, good ventilation.
	Height	≤2000m
Storage environment conditions	Ambient temperature	-20°C ~ 60°C
	Humidity	10% ~ 80%(non-condensing)
	Height	≤2000m

Size (W*H*D) (mm)	19" cabinet with 1000mm / 1200mm / 1800mm Height (Depends on output power rating)
Weight	Depends on output power rating

- Note: every power supply has 48 hours full load burn-in test @ 40°C
- The product can be customized on demand.
- Note: The discharging devices for capacitor discharging use is not included, but provided by the user.
- IDEALTEK can provide load isolation switch which has interlock with HV start/stop switch, (CANNOT BE USED WITH HV OUTPUT ON!) (optional)

Safety caution

1. This power supply has HV output, only professional person could operate it.
2. Please check power supply as below before start-up.
 - (1). Keep power supply clean and good ventilation.
 - (2). HV input & output connectors or HV load no touch anything.
 - (3). Please check back current of load well connected with GND bolt at the back of power supply.

Model list

KV	mA	P (KW)	Model
50	1000	50	HPS-(N/P)50KW-50KV
100	500	50	HPS-(N/P)50KW-100KV
200	250	50	HPS-(N/P)50KW-200KV
50	2000	100	HPS-(N/P)100KW-50KV
100	1000	100	HPS-(N/P)100KW-100KV
150	667	100	HPS-(N/P)100KW-150KV
200	500	100	HPS-(N/P)100KW-200KV
50	3000	150	HPS-(N/P)150KW-50KV
100	1500	150	HPS-(N/P)150KW-100KV
150	1000	150	HPS-(N/P)150KW-150KV
200	750	150	HPS-(N/P)150KW-200KV
100	2000	200	HPS-(N/P)200KW-100KV
200	1000	200	HPS-(N/P)200KW-200KV
150	2000	300	HPS-(N/P)300KW-150KV
300	1000	300	HPS-(N/P)300KW-300KV

More models are coming soon. 😊

Drawings (for reference only)

19" industrial-grade cabinet (RAL7035 / BLACK)



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