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*Ideal Power Solution*

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# CCP Series High voltage Capacitor Charging Power Supply

- Power range: 500W ~ 2KW
- Voltage range: 5KV ~ 100KV
- Current range: 10mA ~ 2000mA
- 4U / 19-inch standard chassis
- Precise voltage and current setting and measurement capabilities
- OCP, short circuit and load discharging protections etc.


## Overview

The CCP-4U series is developed based on the switching technology of IGBT components. It is high-voltage capacitor charging power supply specially designed to meet for small and medium capacitors charging applications. Compared with the traditional linear high-voltage power supply solution, the switched-type capacitor charging high-voltage power supplies have high power density, high efficiency, high output response speed and faster protection start self-recovery advantages.

This series of high-voltage power supplies use 19-inch 4U standard rack-mounted chassis, which is convenient for the supporting installation of the capacitor charging system. The output power range is 500W to 2KW, output voltage levels, at 1KV / 2KV / 3KV / 4KV / 5KV / 6KV / 8KV / 10KV / 12KV / 15KV / 20KV / 30KV / 40KV / 50KV / 60KV / 70KV / 80KV / 100KV, with complete protection functions to deal with overvoltage, overcurrent, load discharge and other situations.

The output voltage and current of the power supply can be controlled and read through the front control panel. And, this series of power supplies are also equipped with a DB25 interface as standard. Customers can edit the control software according to our communication protocol or apply 0 - 10V signal and dry contact signal on the interface according to our interface definition to achieve control and monitoring of the power supply, such as high voltage start/stop, output settings and readings.

## Features

- Can be used as a HV DC power supply or as HV capacitor charging power supply.
- Output voltage adjustable from 0 to 100%
- Output power: Average charging @ 1KJ/S ~ 1.5KJ/S and the peak charging power can reach 3KW.
- Charging in constant current mode and switch to constant current mode till fully charged.
- Unique double isolated system, strong anti-interference ability.
- Forced air cooling, very rugged design.

## Applications

- Ion beam implantation
- Semiconductor process
- Electron beam welding
- Capacitor charging
- High-power RF transmitter
- Electrostatic precipitator
- X-ray system

## Optional functions

- 0 ~ 10V analog signal control (DB25 interface) (+AC)
- RS communication interface (RS232 / RS485 optional) (+RC)

## Specifications

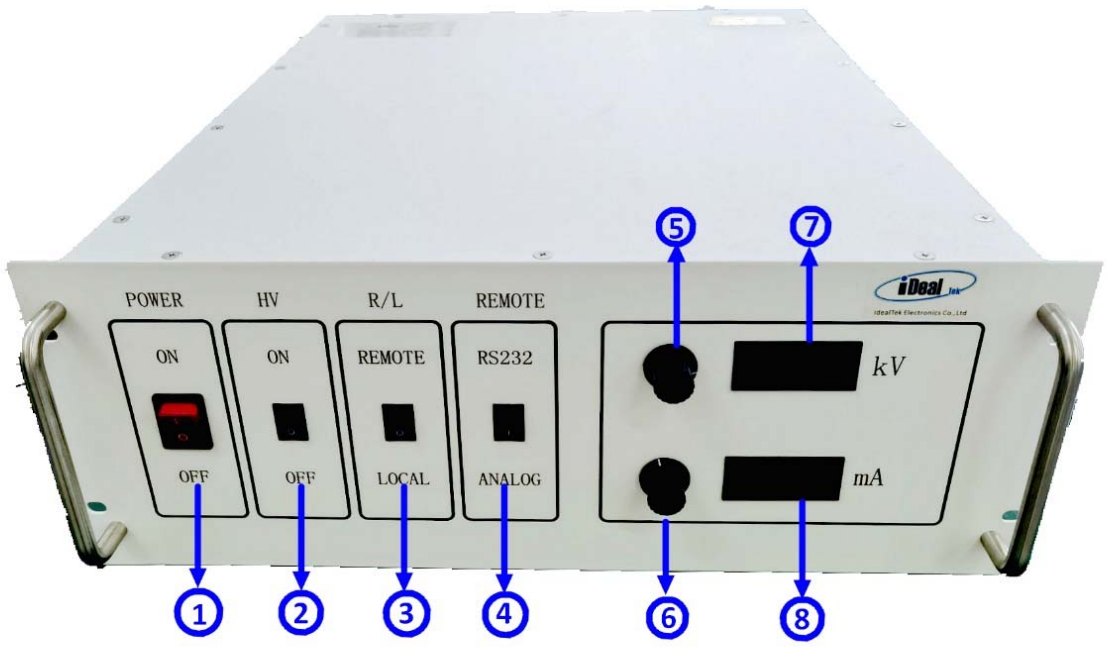
| | | |
|---|---|---|
| **Input** | Voltage | Single-phase 220V±10% (input tolerance: 10%) |
| | Frequency | 50Hz/60Hz |
| | Connection | Input line provided by iDealTek. (1 meter) |
| **Output** | Rated power | 500W ~ 2KW (Max.) available ** |
| | Output voltage adjusting range | 1KV / 2KV / 3KV / 4KV / 5KV / 6KV / 8KV / 10KV / 12KV / 15KV / 20KV / 30KV / 40KV / 50KV / 60KV / 70KV / 80KV / 100KV available **<br>(For other output voltages, please contact us for details) |
| | Output current adjusting | 0A ~ ****mA |
| | Output polarity | Positive or Negative (both available)<br>Client must choose one output polarity before ordering. |
| | Line regulation | ≤0.5% for ±10% change in input voltage. |
| | Load regulation | ≤0.5% for no load to full load at output. |
| | Ripple (Vr.m.s.) | ≤0.5%@ rated output. |

| | | | |
|---|---|---|---|
| | Output connection | | Detachable shielded high-voltage cable provided by IdealTek. (3 meters) |
| | Efficiency | | ≥85% |
| **Setting & Display** | Output control mode | Local | 10-turn potentiometer on front panel. |
| | | *Remote* | *DB25 analog port & RS485 communication port.* |
| | Display mode | Display mode | $4^1/_2$ LED digital display |
| | | Display resolution | ≤1% (range: 5%~100% of the rated value) |
| **Protection & Monitoring functions** | Load discharging protection | | When the load has discharging due to insufficient safety distance between load and ground, the power supply shutdown the high voltage output, and then restarts, so cycle like this till the discharging fault is eliminated. |
| | 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 from damage. |
| | Over current protection | | 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. |
| **Noise** | | | ≤55dB |
| **Protection degree** | | | IP20 |
| **Cooling method** | | | Forced air cooling (Front inlet, rear outlet) |
| **Working environment conditions** | Ambient temperature | | 0℃～40℃ |
| | Humidity | | 10%～90%(non-condensing) |
| | Height | | ≤2000m |
| **Storage environment conditions** | Ambient temperature | | -20℃～60℃ |
| | Humidity | | 10%～90%(non-condensing) |
| | Height | | ≤2000m |
| **Size (W*H*D) (mm)** | | | 483*177*550<br>(19" sub-rack 4U chassis) |
| **Weight (Kg)** | | | 35KG (1KV ~ 10KV)<br>45KG (20KV ~ 100KV) |

- **Note: every power supply has 48 hours full load burn-in test @ 40℃**

## Power Supply Front and Rear Panels Description

### Front panel description




| No. | Description |
|---|---|
| 1 | Power Switch (POWER) |
| 2 | HV ON / OFF Switch (HV) |
| 3 | Local / Remote Switch (LOCAL / REMOTE) |
| 4 | Analog / RS communication Switch |
| 5 | HV adjusting knob |
| 6 | Current adjusting knob |
| 7 | HV output display |
| 8 | Output current display |

## Rear panel description


| No. | Description |
|---|---|
| 1 | Mains power input (AC220V) |
| 2 | High voltage output |
| 3 | Fuse (FUSE) |
| 4 | Interlock terminals |
| 5 | cooling fan |
| 6 | Ground bolt |
| J1 | RS485 serial port (optional) |
| J2 | DB25 interface |

## Standard model list

| kV | mA | P (kW) | Model | kV | mA | P (kW) | Model |
|---|---|---|---|---|---|---|---|
| 1 | 2000 | 2 | CCP-220VAC-(N/P)2KW-1KV | 15 | 133 | 2 | CCP-220VAC-(N/P)2KW-15KV |
| 2 | 1000 | 2 | CCP-220VAC-(N/P)2KW-2KV | 20 | 100 | 2 | CCP-220VAC-(N/P)2KW-20KV |
| 3 | 666 | 2 | CCP-220VAC-(N/P)2KW-3KV | 30 | 66.6 | 2 | CCP-220VAC-(N/P)2KW-30KV |
| 4 | 500 | 2 | CCP-220VAC-(N/P)2KW-4KV | 40 | 50 | 2 | CCP-220VAC-(N/P)2KW-40KV |
| 5 | 400 | 2 | CCP-220VAC-(N/P)2KW-5KV | 50 | 40 | 2 | CCP-220VAC-(N/P)2KW-40KV |
| 6 | 333 | 2 | CCP-220VAC-(N/P)2KW-6KV | 60 | 34 | 2 | CCP-220VAC-(N/P)2KW-60KV |
| 8 | 250 | 2 | CCP-220VAC-(N/P)2KW-8KV | 70 | 28.5 | 2 | CCP-220VAC-(N/P)2KW-70KV |
| 10 | 200 | 2 | CCP-220VAC-(N/P)2KW-10KV | 80 | 25 | 2 | CCP-220VAC-(N/P)2KW-80KV |
| 12 | 166 | 2 | CCP-220VAC-(N/P)2KW-12KV | 100 | 20 | 2 | CCP-220VAC-(N/P)2KW-100KV |

**More models are coming soon.** ☺

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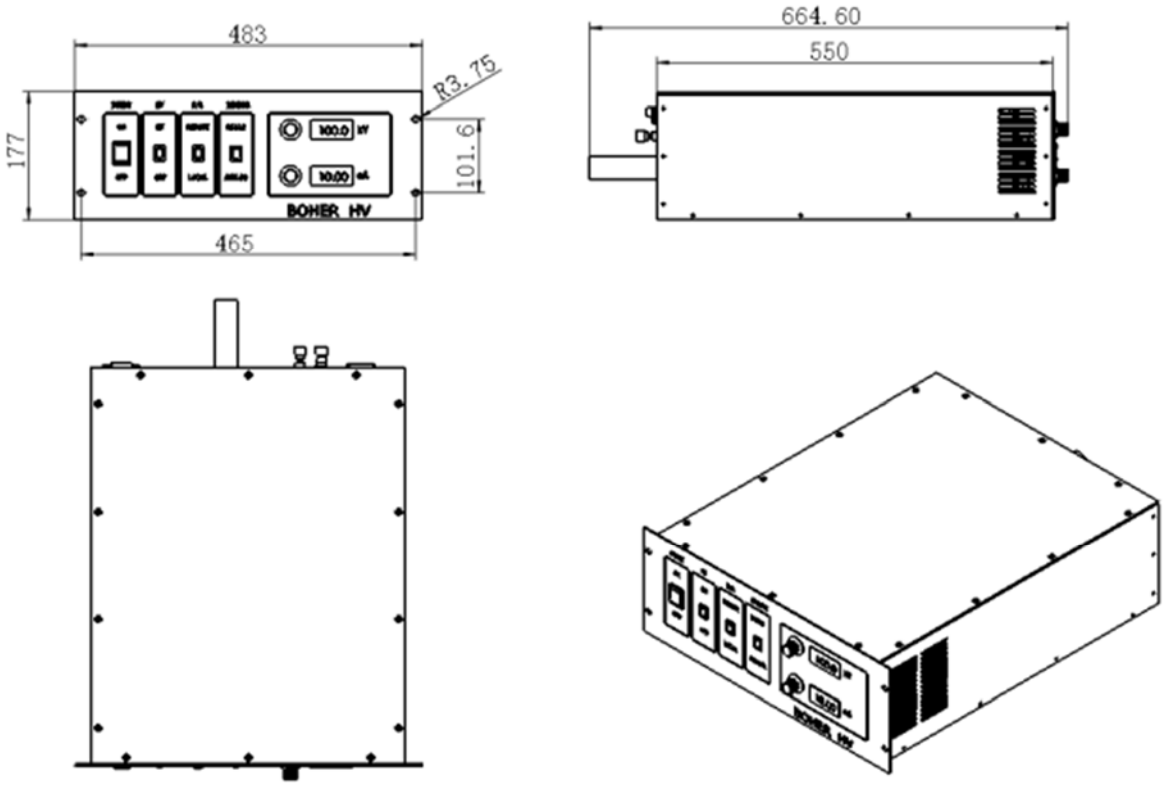
## Drawings (for reference only)




## Safety caution

1. This power module has HV output, only professional person could operate it.
2. Please make sure of good grounding before operation.
3. Capacitor charging power supply has low internal stored energy, please NO no-loading working.
4. Keep power module clean and good ventilation.
5. HV input & output connectors or HV load no touch anything.

## Remote DB25 port drawing and definition


| | | |
|---|---|---|
| **1** | Power supply common end | Power supply ground AGND |
| **2** | Reset / High voltage inhibit | Normally open circuit, low electric level = reset / inhibit. |
| **3** | External interlock | Open circuit ➔ + 15Vdc, closed ➔ <25mA |
| **4** | Power supply common end | Power supply ground AGND |
| **5** | mA test point | 0 - 10Vdc = 0 - 100% rated output, Zout = 1KΩ, 1% |
| **6** | kV Test Point | 0-10Vdc = 0-100% rated output, Zout = 1KΩ, 1% |
| **7** | + 10Vdc reference output | + 10Vdc @ 1mA |
| **8** | mA programming input | 0-10Vdc = 0-100% rated output, Zin> 10MΩ |
| **9** | Spare | |
| **10** | kV programming input | 0-10Vdc = 0-100% rated output, Zin> 10MΩ |
| **11** | RS232 ground | Only for models with communication function |
| **12** | RS232 transmission | Only for models with communication function |
| **13** | RS232 reception | Only for models with communication function |
| **14** | Spare | Power Supply Ground |
| **15** | Power supply common end | Power supply ground |
| **16** | Remote start-up of high voltage | The open circuit is + 15Vdc.<br>Connect to pin 15 to turn on high voltage. |
| **17** | Overcurrent fault | Low level = active |
| **18** | High voltage start indication | + 15Vdc = high voltage start |
| **19** | Voltage mode status | Open collector, low level = active. |
| **20** | Current mode status | Open collector, low level = active. |
| **21** | Spare | |
| **22** | System failure | Open collector, low level = active. |
| **23** | +15V | +15V |
| **24** | Power supply common end | Power supply ground AGND |
| **25** | Power supply common end | Power supply ground AGND |