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Ideal Power Solution

CCPS Series High voltage Capacitor Charging DC Power Supply

- Power range: 6KW ~ 12KW
- Voltage range: 5KV ~ 60KV
- 6U / 19-inch standard chassis
- Precise voltage and current setting and measurement capabilities
- OVP, OCP, short circuit and OTP protections etc.



Overview

CCPS-6U series high voltage power supply is an upgraded version of CCP-6U high voltage capacitor charging power supply. It uses a 19-inch 6U standard rack-mounted chassis, with an output power of up to 10KW and an output voltage level of 5KV / 10KV / 20KV / 30KV / 40KV / 50KV / 60KV, the high-voltage charging power supply has achieved a substantial increase in the charging capacity of the rack-mounted high-voltage charging power supply on the basis of maintaining high efficiency, high output response speed and faster protection and starting self-recovery.

The front panel of this series of high-voltage charging power supplies is controlled by a potentiometer with the LCD meters showing high-voltage output. This series of high-voltage charging power supplies can be equipped with RS485 interface and control software to control and monitor the operating parameters of the high-voltage power supply.

The power supply is equipped with more comprehensive protections to ensure long-term and reliable operation of the power supply at full load, such as: input phase loss, output overvoltage, overcurrent, over heat, short circuit protection, etc., and can also be equipped with a discharging circuit to deal with high-voltage charging and discharging conditions for effective protection of the high-voltage power supplies and the capacitors under test.

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 @ 5KJ/S and the peak charging power can reach 12KW.
- 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 plus internal water cooling, very rugged design.

Optional functions

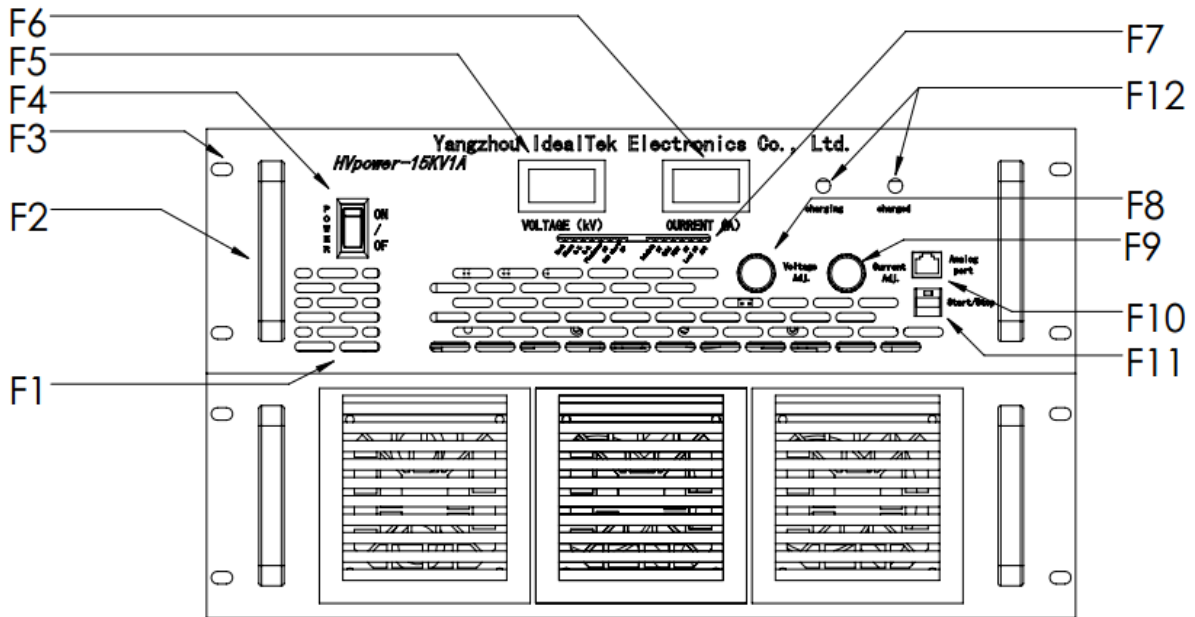
- 0 ~ 10V analog signal control (DB interface <6U>) (+AC)
- RS communication interface (RS232 / RS485 optional) (+RC)

Specifications			
Input	Connection mode		Three-phase, four-wire (PE), TN-S supply mode
	Voltage		380Vac±10%
	Frequency		50Hz/ 60Hz ± 10%
	Current		As per output power.
Output	Rated power		6KW ~ 12KW (Max.) available **
	Output voltage adjusting range		5KV ~ 60KV available ** (For other output voltages, please contact us for details)
	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	≤0.5% FS ± 1 digit (Output voltage change rate only caused by changes of input voltage over ± 10% range of variation)
		Load regulation	≤1% FS ± 1 digit (Output voltage change rate only caused by full range load changes)
	Accuracy (C.C.)	Line regulation	≤0.5% FS ± 1 digit (Output voltage change rate only caused by changes of input voltage over ± 10%)
		Load regulation	≤0.5% FS ± 1 digit (Output voltage change rate only caused by full range load changes)
	Temperature drift		≤0.03% FS (Output voltage change rate every 8 hours after power on for half an hour)
	Ripple (p-p)		≤0.5% FS (measured @ 80% ~ 100% rated output)
	Output cable		HV connector and line provided by IdealTek.
	Efficiency		≥90%
	Setting & Display	Local	10-turn potentiometer on front panel.
Remote (Optional)		RS485 communication interface. In line with MODBUS-RTU standard. <i>The user can control and monitor the power supply via RS485 connection with computer, E.g:</i> ● Power ON / OFF ● Output voltage & current setting & reading.	

		<ul style="list-style-type: none"> Working state monitoring (constant voltage, constant current, fault)
	Display mode	4 ¹ / ₂ LCD digital display
	Display error	≤±0.5%FS ± 1digit (range: 5%~100% of the rated value)
	Display resolution	As per output voltage & current values.
Protection & Monitoring functions	Input protection	Input lack phase protection.
	Output over voltage protection (OVP)	Power supply automatically cuts off output and alarms when output has over voltage.
	Output over current protection (OCP)	Power supply automatically cuts off output and alarms when the output has over current.
	Over temperature protection (OTP)	Power supply automatically cuts off output and alarms when the internal temperature of the power supply exceeds its threshold value.
	Output short-circuit protection	Power supply automatically switches to CC working when the output has short-circuit.
Over-loading capacity		Withstand working with 1.05 times of rated current.
Noise		≤65dB
Protection degree		IP20
Cooling method		<ul style="list-style-type: none"> Forced air cooling Forced air cooling + internal water-cooling loop. Direction: The lower part of the left and right sides - In and Top - Out wind. <i>Differ as per output power rating.</i>
Inverter transient protection response time		≤10us
Working environment conditions	Ambient temperature	-5°C ~ +45°C
	Humidity	10% ~ 80%(non-condensing)
	Height	≤1000m
	Location	Indoor use only No conductive dust, gas or steam that destroys the insulating medium No severe vibration and shock, good ventilation.
Size (W*H*D) (mm)		482*265.5*566.5 (19" 6U standard chassis)
Weight		Approx. 45Kg
<ul style="list-style-type: none"> Note: every power supply has 48 hours full load burn-in test @ 40°C 		

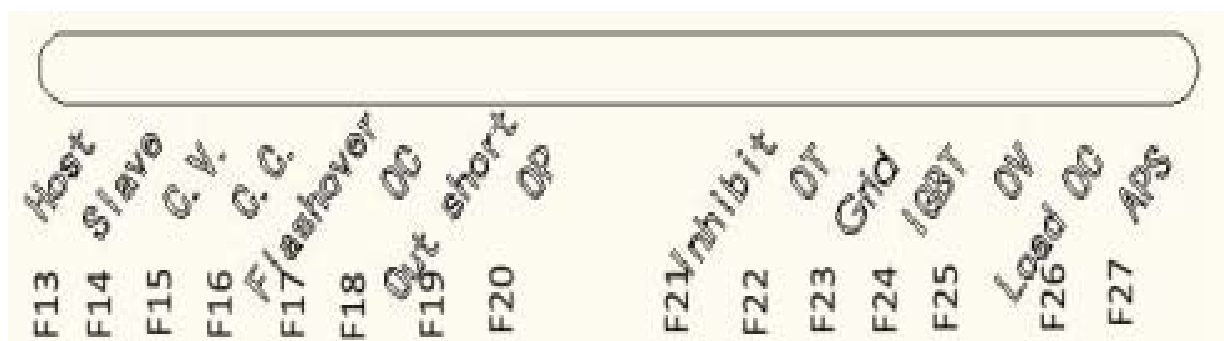
Power Supply Front and Rear Panels Description

Front panel description



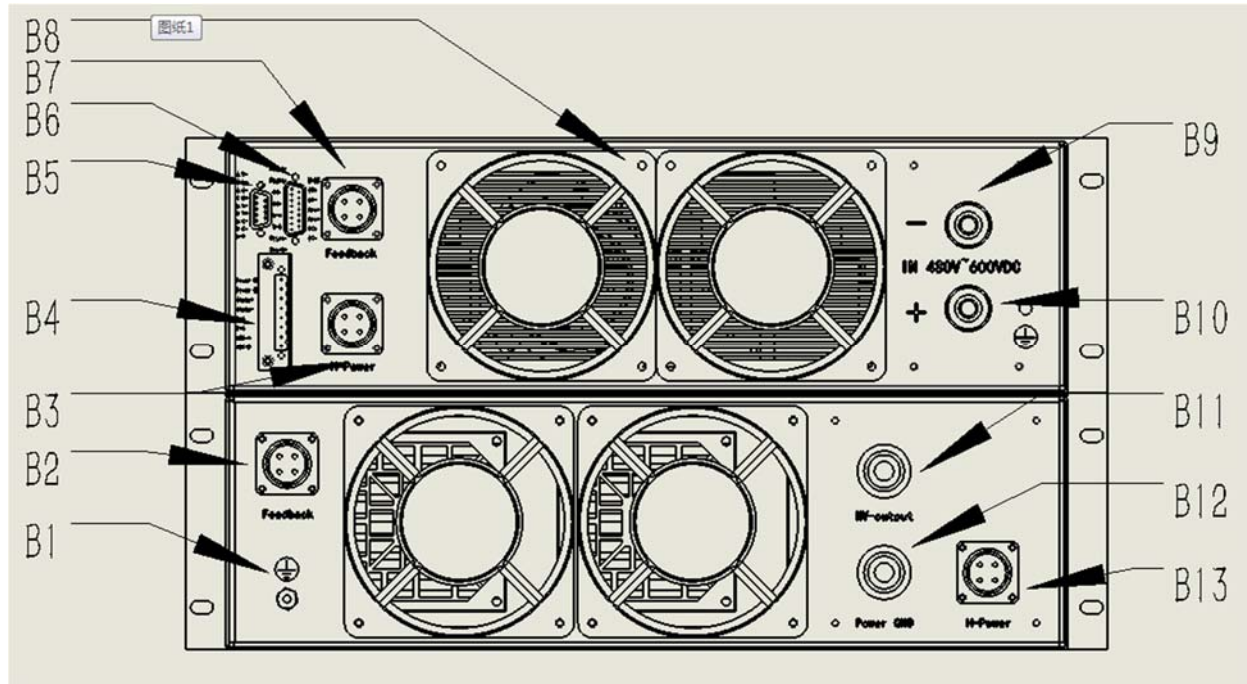
No.	Name	Function	Operation / display instruction
F1	Control cabinet air inlet	Control cabinet heat dissipation air inlet	Keep it clean and smooth
F2	Handle	For moving and lifting purpose	
F3	Mounting hole	For cabinet installing and fixing	
F4	POWER switch	Supply electric ON/OFF switch	Switch to ON position → Power ON Switch to OFF position → Power OFF
F5	VOLTAGE	Output voltage real-time display	Digital LED display
F6	CURRENT	Output current real-time display	Digital LED display
F7	Indicator lights	Real-time indication of module working state	Indicator lights display
F8	Voltage Adj.	Output voltage adjusting	Turn as icon, clockwise adjusting for increasing output voltage, anticlockwise adjusting for decreasing output voltage.
F9	Current Adj.	Output current adjusting	Turn as icon, clockwise adjusting for increasing output current, anticlockwise adjusting for decreasing output current.
F10	Analog port	232/485 optional port (N/A for this unit)	Please connect to DB9 port for communication with host.
F11	Start/Stop (with lock)	HV output start/stop	Press down (green light ON) → HV START Press up (green light OFF) → HV STOP
F12	Charging/Charged	Charging / Charged state indicator light	Charging lighted → Under charging. Charged lighted → Charging finished.

Front Panel Indicator Lights Description



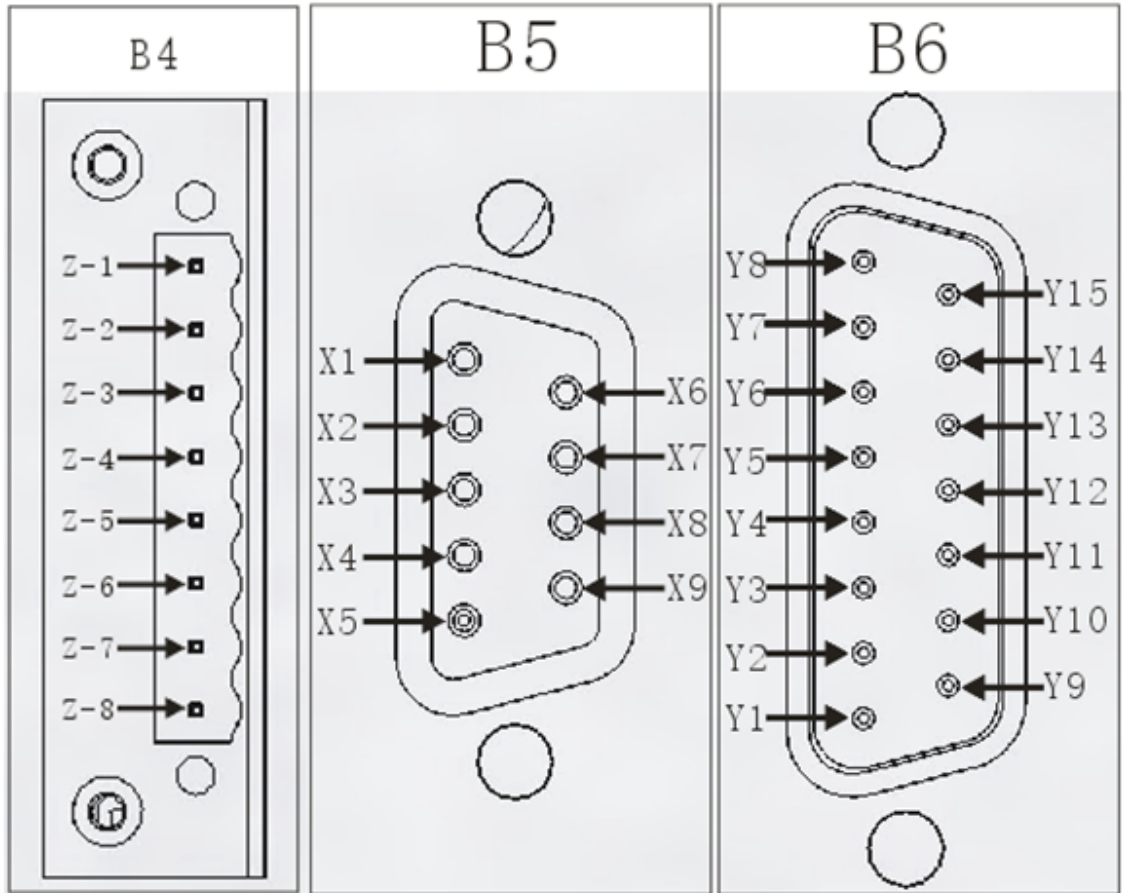
No.	Name	Function	Operation / display instruction
F13	Host indicator light	Green LED light, lighted when power supply works as host unit under multi-unit parallel-working. Note: host indicator light lighted under single-unit working.	Indicator lights display
F14	Slave indicator light	Green LED light, lighted when power supply works as slave unit under multi-unit parallel-working. Note: slave indicator light not lighted under single-unit working.	Indicator lights display
F15	C.V. indicator light	Green LED light, lighted when power supply works under CV state.	Indicator lights display
F16	C.C. indicator light	Green LED light, lighted when power supply works under CC state.	Indicator lights display
F17	Flashover indicator light	Red LED light, lighted when power supply output has disruptive discharging.	Indicator lights display
F18	OC indicator light	Red LED light, lighted when power supply has internal inverter output over current.	Indicator lights display
F19	Out short indicator light	Red LED light, lighted when power supply has output short-circuits.	Indicator lights display
F20	OP indicator light	Red LED light, lighted when output power of high voltage power supply exceeds the limit.	Indicator lights display
F21	Inhibit indicator light	Red LED light, lighted when power output is prohibited by client's external nodes.	Indicator lights display
F22	OT indicator light	Red LED light, lighted when power supply has internal module over temperature.	Indicator lights display
F23	Grid indicator light	Red LED light, lighted when power supply has input abnormal (i.e.: lack phase or out of scope)	Indicator lights display
F24	IGBT indicator light	Red LED light, lighted when power supply has internal inverter fault	Indicator lights display
F25	OV indicator light	Red LED light, lighted when output voltage goes out of scope.	Indicator lights display
F26	Load OC indicator light	Red LED light, lighted when output current goes out of scope.	Indicator lights display
F27	APS indicator light	Red LED light, lighted when internal auxiliary power supply is working.	Indicator lights display

Rear panel description



No.	Name	Function	Operation / display instruction
B1	GND	Main circuit part, connected to earth.	Separately connected to earth.
B2	HV cabinet (Feedback) air socket	For connection of HV cabinet and control cabinet.	Connect to control cabinet (Feedback) air plug
B3	Control cabinet (H-power) air socket	For connection of control cabinet and HV cabinet.	Connect to HV cabinet (H-power) air plug
B4	Control cabinet input port	Remote 485 signal input port	Leave it unconnected if no 485 signal used.
B5	Control cabinet DB9 port	Remote control / reading port	Connect in external analog signal for remote control / reading (i.e.: 0~10V)
B6	Control cabinet DB15 port	Remote start/stop, fault state TTL signal port	Connect in external start/stop signal (i.e.: 24V) Connect in external analog signal for fault state indication (i.e.: TTL signal)
B7	Control cabinet (Feedback) air socket	For connection of control cabinet and HV cabinet	Connect to HV cabinet (Feedback) air plug
B8	Cooling fan (temperature-controlled)	Exhaust fan, controlled by temperature inside the cabinet	The higher the temperature inside cabinet, the faster the fan speed is.
B9	IN 480V~600VDC	Connects to DC480V~600V input	Red is positive, black is negative.
B10/11	HV-output	Negative HV output connector	Connection port
B12	Power GND	Positive output connector	Connection port
B13	HV cabinet (H-power) air socket	For connection of HV cabinet and control cabinet.	Connect to control cabinet (H-power) air plug

Remote interface definition



B4 Wiring diagram / B5 Internal wiring / B6 Wiring diagram

No.	Name	Function	Operation / display instruction
Z-1	485-A	485-A	485-A
Z-2	485-B	485-B	485-B
Z-3	Remote ON/OFF state node (optional) (N/A for this unit)	ON/OFF state node +	Power OFF, node closed Power ON, node open
Z-4		ON/OFF state node -	
X1	Voltage remote control (optional) (N/A for this unit)	Voltage remote control +	0-10V signal for 0-15KV output voltage setting
X2		Voltage remote control -	
X3	Current remote control (optional) (N/A for this unit)	Current remote control +	0-10V signal for 0-1000mA output current setting
X4		Current remote control -	
X5	Voltage remote reading (optional) (N/A for this unit)	Voltage remote reading +	0-10V signal for 0-15KV output voltage reading

X6		Voltage remote reading -	
X7	Current remote reading (optional) (N/A for this unit)	Current remote reading +	0-10V signal for 0-1000mA output current reading
X8		Current remote reading -	
X9	N/A	N/A	N/A
Y1	Remote Start/Stop control (optional) (N/A for this unit)	Start: 24V+	External 24V voltage for HV output remote start/stop control
Y2		Start: 24V-	
Y3	N/A	N/A	N/A
Y4	N/A	N/A	N/A
Y5	Output voltage state signal (optional) (N/A for this unit)	Output -	Output voltage > 15kv, collector short circuit. Output voltage < 15kv, collector open circuit.
Y6		Output +	
Y7	Power supply fault detection signal (optional) (N/A for this unit)	Output -	Power supply is normal working, collector short circuit. Power supply has fault, collector open circuit.
Y8		Output +	
Y9	Output current state signal (optional) (N/A for this unit)	Output -	Output current > 1.05A, collector short circuit. Output current < 1.05A, collector open circuit.
Y10		Output +	
Y11	ARC state detection signal (optional) (N/A for this unit)	Output -	Power supply has abnormal ARC state, collector short circuit. Power supply is normal working, collector open circuit.
Y12		Output +	
Y13	OT state signal (optional) (N/A for this unit)	Output -	Power supply has over temperature, collector short circuit. Power supply is normal working, collector open circuit.
Y14		Output +	
Y15	N/A	N/A	N/A

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.

Standard model list

KV	mA	P (KW)	Model	KV	mA	P (KW)	Model
5	1200	6	CCPS-(N/P)6kW-5kV	10	1200	12	CCPS-(N/P)12kW-10kV
10	600	6	CCPS-(N/P)6kW-10kV	15	800	12	CCPS-(N/P)12kW-15kV
15	400	6	CCPS-(N/P)6kW-15kV	20	600	12	CCPS-(N/P)12kW-20kV
20	300	6	CCPS-(N/P)6kW-20kV	30	200	6	CCPS-(N/P)6kW-30kV
30	167	5	CCPS-(N/P)5kW-30kV	40	150	6	CCPS-(N/P)6kW-40kV
40	125	5	CCPS-(N/P)5kW-40kV	45	133	6	CCPS-(N/P)6kW-45kV
50	100	5	CCPS-(N/P)5kW-50kV	50	120	6	CCPS-(N/P)6kW-50kV
60	100	6	CCPS-(N/P)6kW-60kV	60	200	12	CCPS-(N/P)12kW-80kV

More models are coming soon. 😊