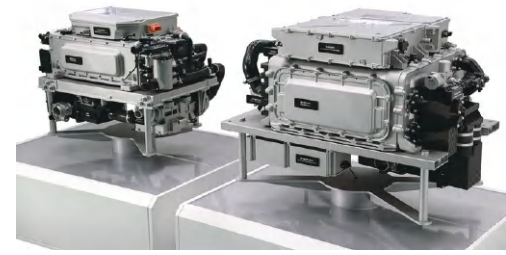
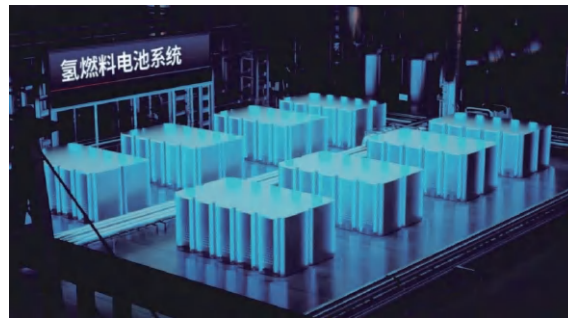


HY-BPCSU Series Double Polarity Constant Current Source

Military Quality Power Supply Expert



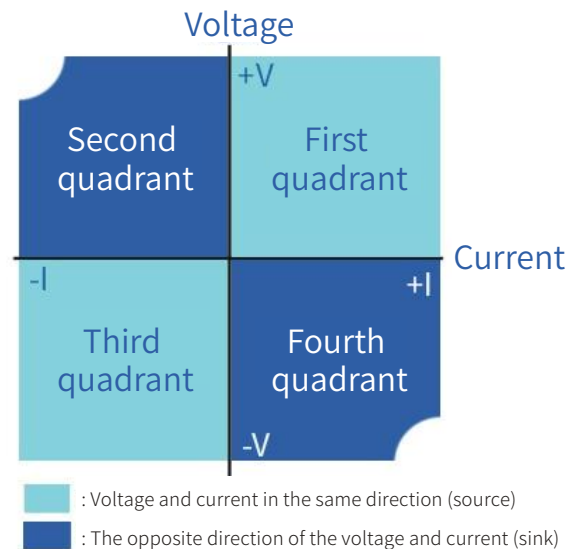
HY-BPCSU Series Double Polarity Constant Current Source



High precision, high power density



HY - BPCSU series dual polarity constant current source, with current amplifier function, it can be used as current expansion with electrochemical workstation, extending the maximum current $\pm 1000A$, for I-V curve test and AC impedance test of high current and low resistance system such as fuel cell and battery cell. The power supply adopts the new linear technology, which has the advantages of ultra-low distortion rate and ultra-low external interference. Through the four-quadrant action, it realizes the test method that can not only provide power as the power source, but also absorb power as the load.



Four-quadrant action concept map

Product Features

- Open circuit voltage: $\pm 2.5V/\pm 5V/\pm 10V/\pm 20V/\pm 30V/\pm 40V/\pm 60V/\pm 80V$ (optional)
- Output current: $0\sim\pm 1000A$ (optional)
- Output capacity: $125VA\sim 20kVA$
- Output wide channel: $DC\sim 100Hz, DC\sim 500Hz, DC\sim 1kHz, DC\sim 5kHz, DC\sim 10kHz (-3dB)$ (optional)
- The use of new linear technology, with ultra-low ripple and ultra-low external interference advantages
- High response speed, current response time $\leq 100\mu s$

Application Field

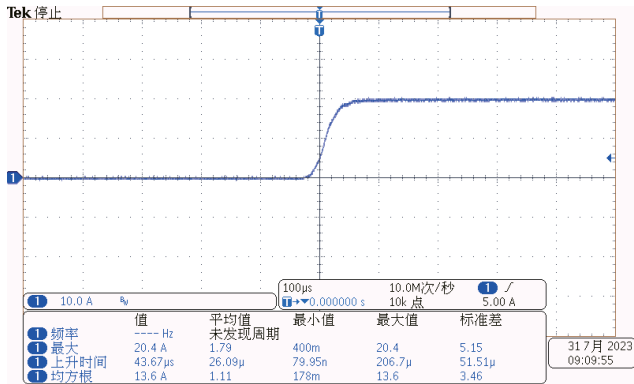
- Fuel cell electrochemical resistance analysis
- Electrochemical current expansion module
- Soft packet high frequency pulse test
- Fuel cell
- Power battery
- Lead battery
- Supercapacitor test

Electrochemical Impedance Spectroscopy

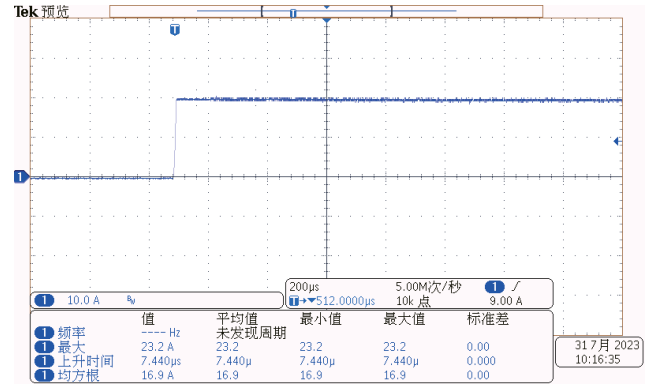
Electrochemical impedance spectroscopy (EIS) has always been one of the important means in the development of hydrogen energy. Using EIS, combined with circuit fitting or relaxation time analysis, researchers can analyze the polarization phenomenon in the battery to compare and optimize the corresponding material, structure or operating conditions. EIS generally uses sinusoidal current with an RMS value of 5%-10% as disturbance to collect current and voltage information of the battery, analyze impedance, phase difference and other information, and finally draw Nyquist diagram or Bode diagram for further processing. However, the influence of load or power on the impedance testing process has been ignored by researchers. In this paper, an electrolytic water single cell with an effective area of $5cm^2$ is taken as the test object, and based on the measured data, the influence of the power circuit in the impedance test process is analyzed. Because the pulling current of the $5cm^2$ electrolytic water single pool is within the range of the current that the electrochemical workstation and power amplifier can directly pull, and the behavior of the single pool under the condition of large electrical density can be studied.

HY-BPCSU Series Measured Waveforms

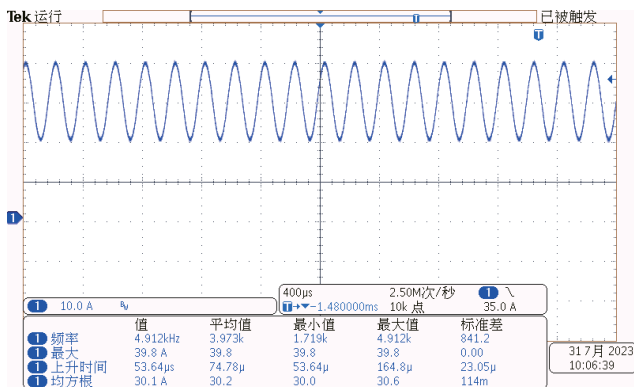
HY-BPCSU Series Measured Waveforms



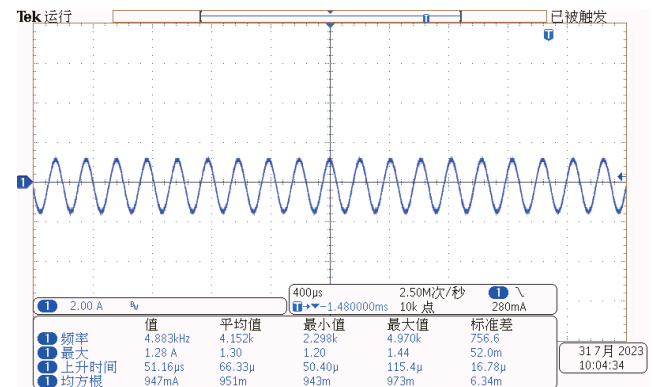
Measured current rise time $\leq 100\mu s$



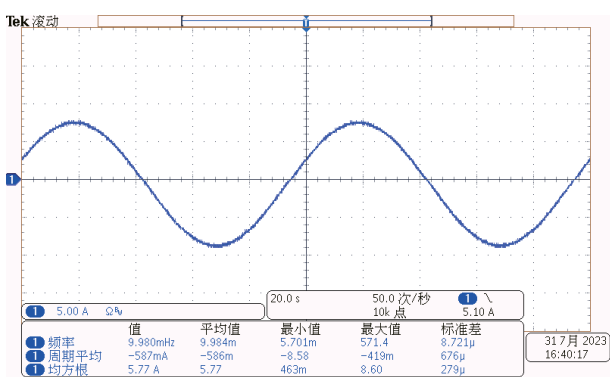
Actual measured current drop time $\leq 10\mu s$
(optional high-speed response $10\mu s$)



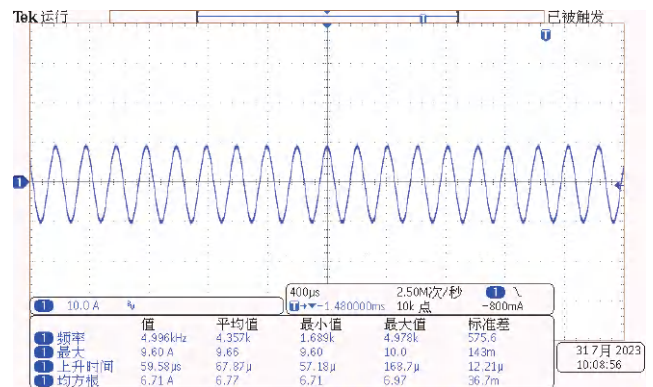
DC+AC mode waveform



1A Ripple shape of small current



0.01kHz frequency bandwidth waveform



5kHz frequency bandwidth waveform

HY-BPCSU Series Product Selection Table

Product Purchase Instructions

Product series	Output voltage	Output current	Output frequency	Purchasing function
HY-BPCSU	2.5	- 500	- 100	- 10

Product Model: HY-BPCSU 2.5-500-100-10
 The model information is: open circuit voltage is 2.5V, output current is 0~±500A, output frequency 100Hz, Choose to purchase user-defined features, Purchase high-speed response function, with a speed of ≤ 10μs.

Optional function

- HR : High resolution/precision
- T1 : Operating temperature -10°C to 45°C
- T2 : Operating temperature -20°C to 45°C
- CF : User-defined functions (please specify when ordering)
- MR : Measurement report (issued by CNAS certified third party)
- 10 : 10μs high-speed response speed
- 20 : 20μs high-speed response speed
- 50 : 50μs high-speed response speed

Communication protocol	Standard configuration communication interface	Select Configure communication interface (users can install themselves)
Modbus SCPI	RS-485 RS-232 Digital I/O	- LAN : Ethernet communication interface - GPIB : GPIB communication interface - IA : Analog quantity programming and monitoring interface (isolated type)

HY-BPCSU Series Model List * All technical indicators can only be guaranteed when the equipment runs continuously for more than 30 minutes at the specified operating temperature.

Special specifications outside the scope of the selection table are accepted for customization.
 Broadband > 1kHz, -3dB.

2.5V Series Power Supply Selection

5V Series Power Supply Selection

Models	Output voltage	Output current	Output capacity	Output frequency	Models	Output voltage	Output current	Output capacity	Output frequency
HY-BPCSU 2.5-50	2.5V	0~±50A	125VA	Standard: DC~100Hz DC~500Hz DC~1kHz Choose to buy: DC~5kHz DC~10kHz	HY-BPCSU 5-50	5V	0~±50A	250VA	Standard: DC~100Hz DC~500Hz DC~1kHz Choose to buy: DC~5kHz DC~10kHz
HY-BPCSU 2.5-100	2.5V	0~±100A	250VA		HY-BPCSU 5-100	5V	0~±100A	500VA	
HY-BPCSU 2.5-150	2.5V	0~±150A	375VA		HY-BPCSU 5-150	5V	0~±150A	750VA	
HY-BPCSU 2.5-200	2.5V	0~±200A	500VA		HY-BPCSU 5-200	5V	0~±200A	1000VA	
HY-BPCSU 2.5-250	2.5V	0~±250A	625VA		HY-BPCSU 5-250	5V	0~±250A	1250VA	
HY-BPCSU 2.5-300	2.5V	0~±300A	750VA		HY-BPCSU 5-300	5V	0~±300A	1500VA	
HY-BPCSU 2.5-400	2.5V	0~±400A	1000VA		HY-BPCSU 5-400	5V	0~±400A	2000VA	
HY-BPCSU 2.5-500	2.5V	0~±500A	1250VA		HY-BPCSU 5-500	5V	0~±500A	2500VA	

HY-BPCSU Series Product Selection Table

10V Series Power Supply Selection

Models	Output voltage	Output current	Output capacity	Output frequency
HY-BPCSU 10-50	10V	0~±50A	500VA	Standard: DC~100Hz DC~500Hz DC~1kHz Choose to buy: DC~5kHz DC~10kHz
HY-BPCSU 10-100	10V	0~±100A	1000VA	
HY-BPCSU 10-150	10V	0~±150A	1500VA	
HY-BPCSU 10-200	10V	0~±200A	2000VA	
HY-BPCSU 10-250	10V	0~±250A	2500VA	
HY-BPCSU 10-300	10V	0~±300A	3000VA	
HY-BPCSU 10-400	10V	0~±400A	4000VA	
HY-BPCSU 10-500	10V	0~±500A	5000VA	

20V Series Power Supply Selection

Models	Output voltage	Output current	Output capacity	Output frequency
HY-BPCSU 20-50	20V	0~±50A	1000VA	Standard: DC~100Hz DC~500Hz DC~1kHz Choose to buy: DC~5kHz DC~10kHz
HY-BPCSU 20-100	20V	0~±100A	2000VA	
HY-BPCSU 20-150	20V	0~±150A	3000VA	
HY-BPCSU 20-200	20V	0~±200A	4000VA	
HY-BPCSU 20-250	20V	0~±250A	5000VA	
HY-BPCSU 20-300	20V	0~±300A	6000VA	
HY-BPCSU 20-400	20V	0~±400A	8000VA	
HY-BPCSU 20-500	20V	0~±500A	10000VA	

30V Series Power Supply Selection

Models	Output voltage	Output current	Output capacity	Output frequency
HY-BPCSU 30-50	30V	0~±50A	1500VA	Standard: DC~100Hz DC~500Hz DC~1kHz Choose to buy: DC~5kHz DC~10kHz
HY-BPCSU 30-100	30V	0~±100A	3000VA	
HY-BPCSU 30-150	30V	0~±150A	4500VA	
HY-BPCSU 30-200	30V	0~±200A	6000VA	
HY-BPCSU 30-250	30V	0~±250A	7500VA	
HY-BPCSU 30-300	30V	0~±300A	9000VA	
HY-BPCSU 30-400	30V	0~±400A	12000VA	
HY-BPCSU 30-500	30V	0~±500A	15000VA	

40V Series Power Supply Selection

Models	Output voltage	Output current	Output capacity	Output frequency
HY-BPCSU 40-50	40V	0~±50A	2000VA	Standard: DC~100Hz DC~500Hz DC~1kHz Choose to buy: DC~5kHz DC~10kHz
HY-BPCSU 40-100	40V	0~±100A	4000VA	
HY-BPCSU 40-150	40V	0~±150A	6000VA	
HY-BPCSU 40-200	40V	0~±200A	8000VA	
HY-BPCSU 40-250	40V	0~±250A	10000VA	
HY-BPCSU 40-300	40V	0~±300A	12000VA	
HY-BPCSU 40-400	40V	0~±400A	16000VA	
HY-BPCSU 40-500	40V	0~±500A	20000VA	

Technical parameter

Ac output

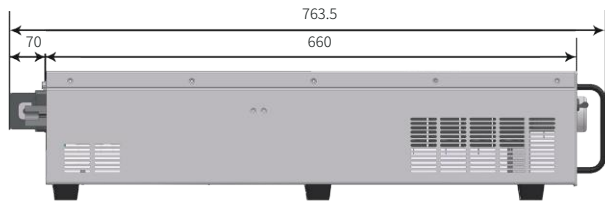
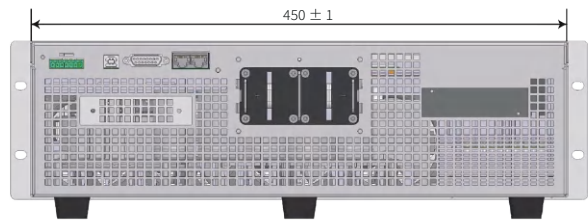
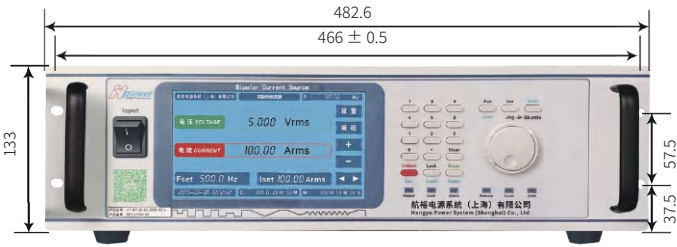
Working mode	Constant current mode (CC Mode)
Output capacity	Optional range 200VA-10kVA
Output current	0~±500A
Output current range can be set	0.5%-100%
Open-circuit voltage	L-N 2.5V/5V/10V/20V/30V/40V/60V/80V (Higher voltages can be customized)
Output frequency	Standard:DC~100Hz , DC~ 500Hz, DC~ 1kHz Choose to buy:DC~5kHz , DC~ 10kHz (Customizable for higher frequencies)
Frequency stabilization accuracy	100ppm
Input adjustment rate	≤0.5%F.S. (Note: F.S. means full scale)
Waveform distortion (THD)	Sine wave, I-THD≤1%, resistance test
	Different current machines have different distortion rates

HY-BPCSU Series Technical Parameters

Programming And Readback Accuracy & Resolution	
Current Output Programming Accuracy	0.5%F.S.
Current setting resolution	0.01A ($\leq 600A$), 0.1A ($> 600A$)
Frequency setting resolution	0.01Hz
Current Output Read-Back Accuracy	0.5%F.S.
Current Read Back Resolution	0.01A ($\leq 600A$), 0.1A ($> 600A$)
Protection Function	
OVP Overvoltage Protection Setting Range	10-110%, beyond the limit output immediately off
OCP Overcurrent Protection Setting Range	0-105%, beyond the limit output immediately off
OTP Overtemperature Protection	Output beyond the limit is turned off immediately
Environmental Condition	
Environment	Indoor use; Installation overvoltage class: II; Pollution level: P2; Class II equipment
Operating Ambient Temperature	0°C to 45°C; Choose to buy -10 ° C to 45 ° C, -20 ° C to 45 ° C
Storage Ambient Temperature	-20°C to 65°C
Working Ambient Humidity	20%-90%RH, no dew formation, continuous operation
Storage Environment Humidity	10%-95%RH, no dew formation
Altitude	Above 2000 meters above sea level, every 100 meters up, the power will be reduced by 2%, or reduce the maximum working ambient temperature by 1°C per 100 meters; When not in operation, the altitude can reach 12,000 meters
Cooling	Forced air cooling, intelligent speed control fan, Side/front inlet air, rear outlet air
Noise	$\leq 65dB(A)$, use 1 m to weighted measurement
Control Panel	
Display	7 inches, LCD LCD display, touch screen
Display item	Current (set value & measured value), voltage measured value, working time, cumulative working time, current time and date
Control Function	Digital key input, multi-stage shuttle knob adjustment (outer ring coarse adjustment/inner ring fine adjustment), output ON/OFF switch, Lock keyboard and touch lock, Reset Restart status indicator (Shift/Local/Remote/Alarm/Lock/Output)

HY-BPCSU Series Display And Size

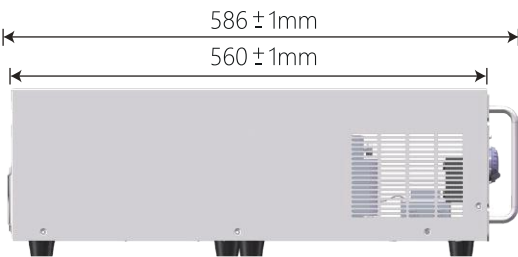
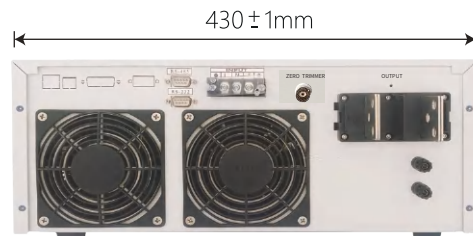
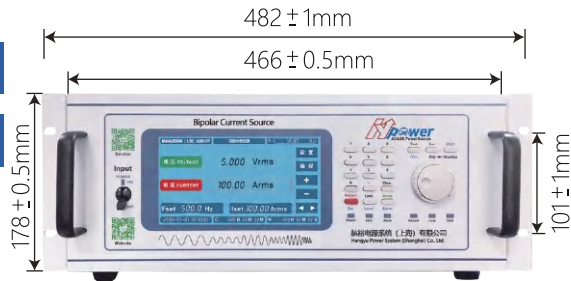
3U 482.6(W) * 660(D) * 133(H) mm



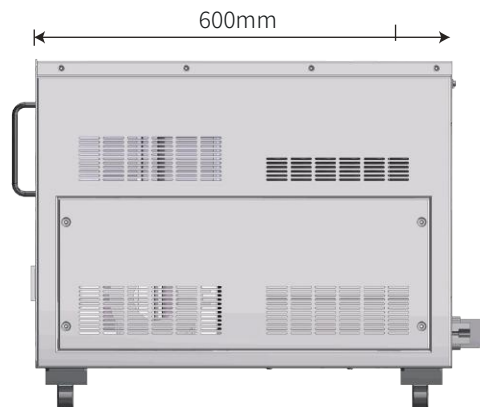
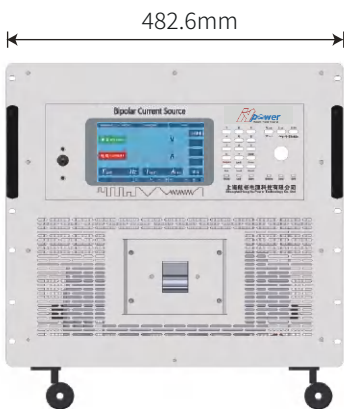
4U 430(W)*560(D)*178(H)mm

BPC

06

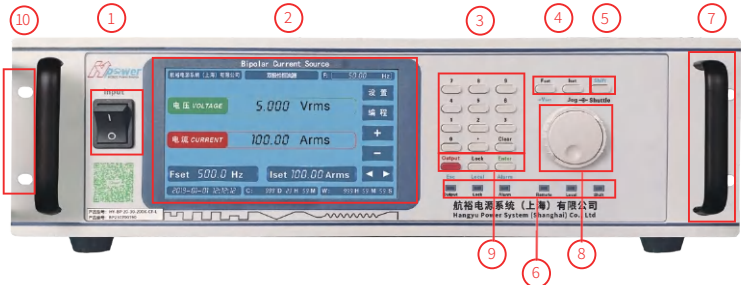


10U 440(W)*600(D)*445(H)mm

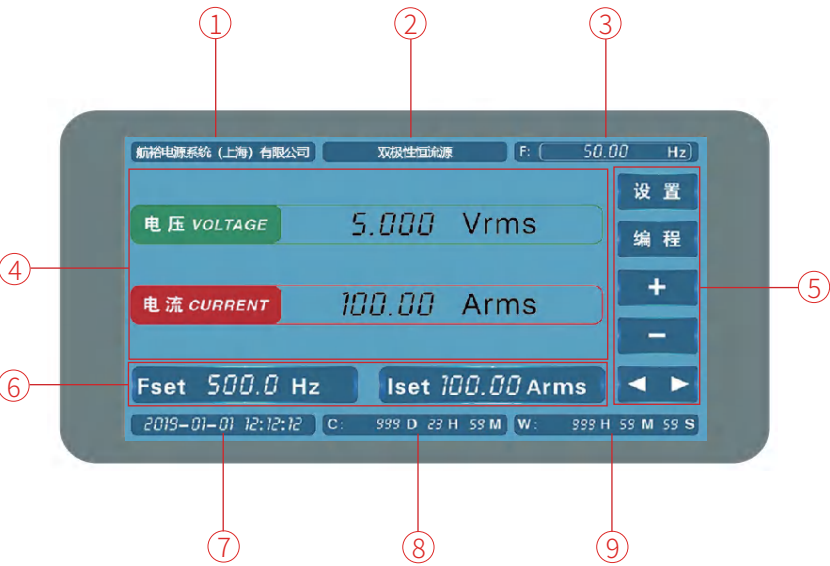


Control Panel

- 1、 Power input circuit breaker;
- 2、 7-inch LCD display window display: current setting value,voltage and current measurement value, function setting menu;
- 3、 Function button: for the required value input and parameter setting;
- 4、 Frequency/current setting key
- 5、 Shift function reuse key
- 6、 Status indicator light
- 7、 Case handle
- 8、 multi-level shuttle adjustment knob, the inner ring adjust one word each time, the outer ring is divided into ± 8 segments adjustable;
- 9、 Lock、 Enter、 Esc、 Local、 Reset、 Alarm、 Output ON/OFF
- 10、 19 inch standard rack mounting holes



Display Interface



- ① Manufacturer's name
- ② Product name
- ③ Product frequency
- ④ Voltage and current display area
- ⑤ Function setting area
- ⑥ Frequency/current setting
- ⑦ Current time
- ⑧ Accumulated running time
- ⑨ This time the running time

Cooperative Customers (Part)

Aerospace & Defense Military Research Institute



China Aerospace



Aerospace science and engineering



Aviation industry



China Air Development



China Electrical Engineering Group



China Shipbuilding Corporation



China Shipbuilding Industry Corporation

CASC 803 (Shanghai Aerospace Control Technology Institute)
 CASC 800 (Shanghai Aerospace Precision Machinery Research Institute)
 CASC 804 (Shanghai Aerospace Electronic Communication Equipment Research Institute)
 CASC 805 (Shanghai Aerospace System Engineering Institute)
 CASC 808 (Shanghai Precision Measurement and Testing Institute)
 CASC 811 (Shanghai Space Power Research Institute)
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 CASC 801 (Shanghai Space Propulsion Research Institute)
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 CASIC 206 (Beijing Machinery and Equipment Research Institute)
 CASIC 304 Institute (Beijing Great Wall Institute of Measurement and Testing Technology)
 CASIC 307 Factory (Aerospace Chenguang Co., LTD.)
 33 CASIC (33 Aerospace Science and Industry Institutes)
 CASIC 3651 Factory (Guizhou Aerospace Linquan Motor Co., LTD.)
 AVIC 615 (Aeronautical Radio Electronics Research Institute of China)
 AVIC 618 (Xi'an Flight Automatic Control Research Institute)
 AVIC 105 Factory (Tianjin Aviation Electromechanical Co., LTD.)
 AVIC 115 Factory (Shaanxi Aero Electric Co., LTD.)

AVIC 118 Factory (Shanghai Aviation Electric Appliance Co., LTD.)
 AVIC 181 Factory (Wuhan Aviation Instrument Co., LTD.)
 AVIC 607 Institute (China Leihua Electronic Technology Institute)
 AECC 606 Institute (Shenyang Engine Research Institute)
 CETC 14 Institute (Nanjing Institute of Electronic Technology)
 CETC 21 Institute (Shanghai Micromotor Research Institute)
 CETC 23 Institute (Shanghai Transmission Line Research Institute)
 CETC 36 Institute (Jiangnan Institute of Electronic Communication)
 CETC 38 Institute (East China Institute of Electronic Engineering)
 CETC 50 Institute (Shanghai Microwave Technology Research Institute)
 CETC 51 Institute (Shanghai Microwave Equipment Research Institute)
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 CSIC 726 Institute (Shanghai Marine Electronic Equipment Research Institute)
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 Nanjing Panda Electronics Co., LTD
 State-owned 741 Factory (Nanjing Huadong Electronics Group Co., LTD.)

Chinese People's Liberation Army

South Sea Fleet
 East China Sea Fleet
 North Sea Fleet
 Navy Plant 701 / Plant 702
 4724 Factory (Shanghai Haiying Machinery Factory)
 Unit 95861 (Empty Base 1)

Commercial Aviation



Commercial Aircraft Corporation of China



Collins Aerospace

Rockwell Collins



Guangzhou Aircraft Maintenance Engineering Co., LTD



Beijing Aircraft Maintenance Engineering Co., LTD

Scientific Research & Third Party Quality Inspection Agency

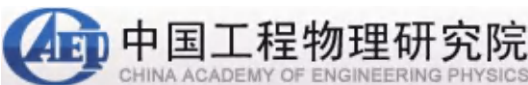


Technical Institute of Physics and Chemistry (Beijing)

Institute of Urban Environment (Xiamen)

Electrotechnical Research Institute (Beijing)

Institute of Applied Physics (Shanghai)



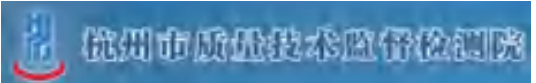
苏州电器科学研究院股份有限公司
 国家智能电网中高压成套设备质量监督检验中心
 国家电器产品质量监督检验中心



长春市产品质量监督检验院
 Changchun product quality supervision and inspection institute



西安市产品质量监督检验院
 Xi'an Supervision & Inspection Institute of Product Quality



Cooperative Customers (Part)

Military Academies & Local Universities



High-tech R&D Enterprise



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HY-BPC Series Bipolar Constant Current Source Power Supply Product Manual, Edition 06.00, January 2024

All technical data and instructions are based on the actual product

If there is any change, Hangyu Power has the final interpretation right

Authorized distributor:

