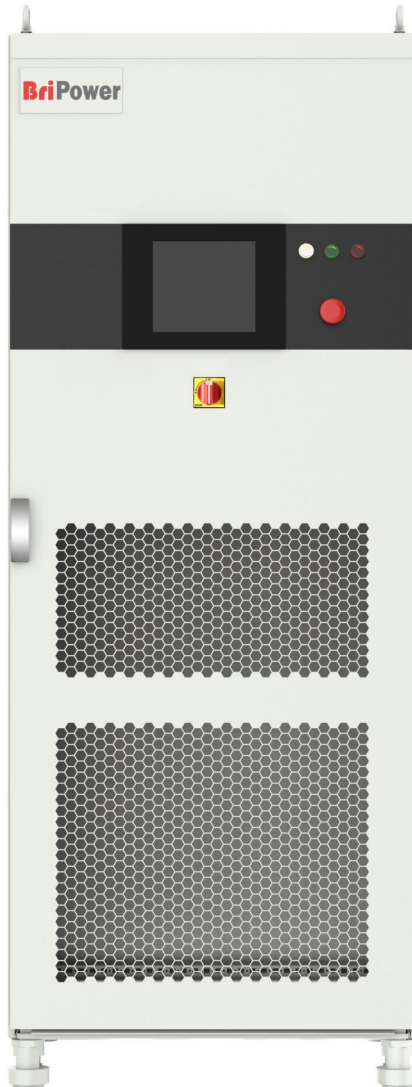


# ESD Series Programmable DC Power Supply

## Features



- Single system up to 500KW, and parallel system to 2MW
- Output voltage up to 2000V(std), higher voltage can be customized
- Applications: battery simulation, battery test (-BSS option), PV simulation (-PV option)
- Program accuracy up to 0.1%
- Seamless transition between source and sink modes (-R option)
- Current rise time (10%~90%) <1ms (-BSS option)
- CC/CV/CP/CR mode available
- Regenerative DC load function (-LD option)
- Hardware & software for PV Simulation (-PV option)
- Low-Voltage operation mode (-ZV option)
- Master-Slave interface (-MS option)
- Use water-cooling (-W option)
- LAN/RS485 interfaces (standard), CAN/RS232/ATI interfaces (optional)
- Emergency stop button and indicators on front panel
- TFT-Touch panel operation
- Mod-bus/SCPI protocols
- Output contactor
- Output terminal insulation monitoring function (-INS option)
- Remote sense
- CE conformity

## Overview

The BriPower ESD series is IGBT PWM switching DC power supply, which contains multi output power levels from 30KW to 500KW for single system, up to 4 individual systems can be paralleled to up to 2MW system. Output power level of customized system goes up to 4MW and above.

ESD series uses bi-directional design, which makes it possible to be used as DC power source or regenerative DC load. CV/CC/CP/CR operation modes are available for both sourcing and sinking.

ESD series adopts dual DSP+FPGA design, with powerful calculation and control capabilities, and can display and save measured values at 10K/s sampling. The ESD series adopts optical fiber communication and performs multiple monitoring and protection of all main components, communication connections and systems. It is the most reliable power supply product in the industry.

With touch panel on the front panel, users can control the power source through GUI software. System status indicators and emergency stop button are installed on the front panel. RS485 and LAN standard interface, optional RS232 and analog control interfaces are available for automated test applications.

## Bi-Directional (Re-generative) -R option

With the -R option, the unit can operate in source and sink mode, It has the capability to return the energy fully back to the grid.

## Re-generative DC Load -LD option<sup>1</sup>

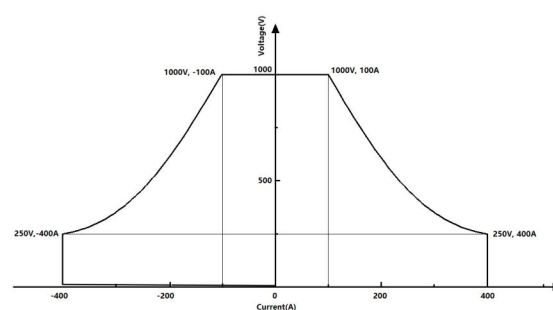
ESD series with -LD option can be used as regenerative DC electronic load. DC load simulation includes constant current, constant resistance, constant voltage, and constant power modes.

## Low Voltage Operation Mode -ZV option

ESD series DC electronic load with -ZV option can produce large current that meets the requirements under the input condition close to 0.4V, which can evaluate the electrical characteristics of the fuel cell (such as VI), etc.

## Automatic wide range Output

ESD series DC power supply has an automatic wide-range output function. Under the condition of rated output power, the output range of voltage/current can be adjusted, such as: high-voltage small current or low-voltage large current (also applicable in sink power mode). The same type of power supply can cover a wider range of power applications. ESD standard models provide  $\times 1/\times 3/\times 4$  current. For customized power/voltage/current, please consult the factory.

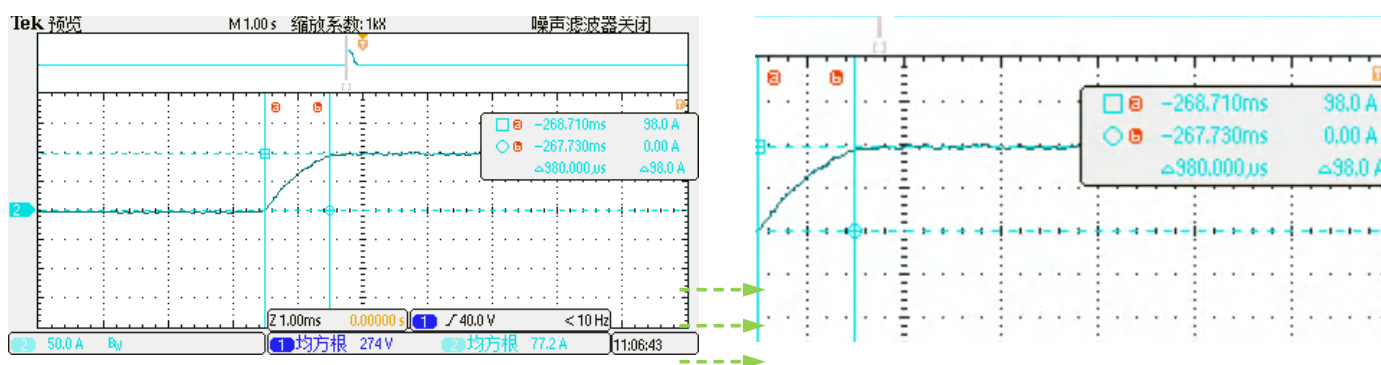


Example:100KW,1000V,±400A

## Fast current rising

ESD Series has excellent dynamic performance of current rising, which makes it ideal for battery test and battery simulation. Two versions are provided, and current rise time of each version is different.

Current Rise Time(10%~90%)	<3ms (std) , <1ms (BSS Option)
Current Rise Time(-90%~90%)	<5ms (std) , <2ms (BSS Option)
Regulation Time(0-100%Load change)	<3ms (std) , <1.5ms (BSS Option)



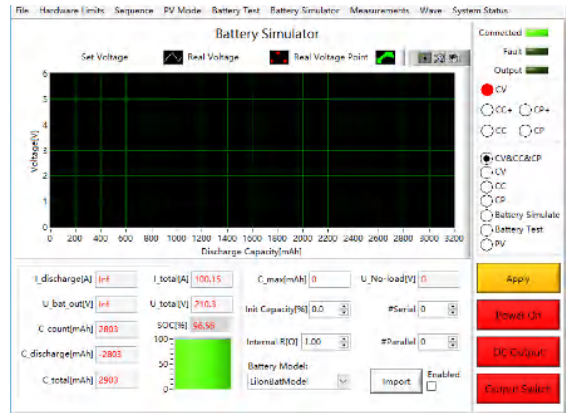
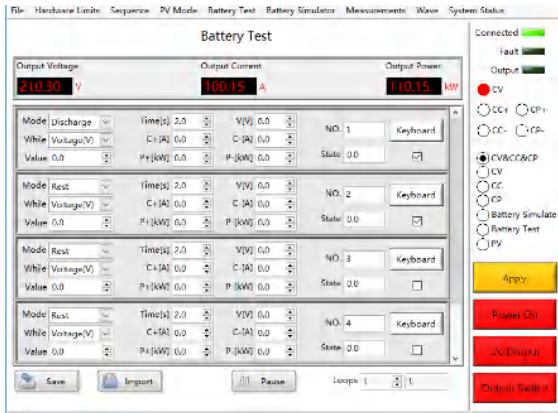
Current Rise Time(10%~90%) $T_{Rise} \leq 1ms$ (Example ESD 50-400-125-R)

## Battery Test

ESD series DC power supply can be used for characterization of power battery packs. It is used to test the charging and discharging performance, temperature rise characteristics, and cycle life of the power battery pack. Through the GUI software, different charging and discharging profiles can be programmed, and test results are displayed in real time.

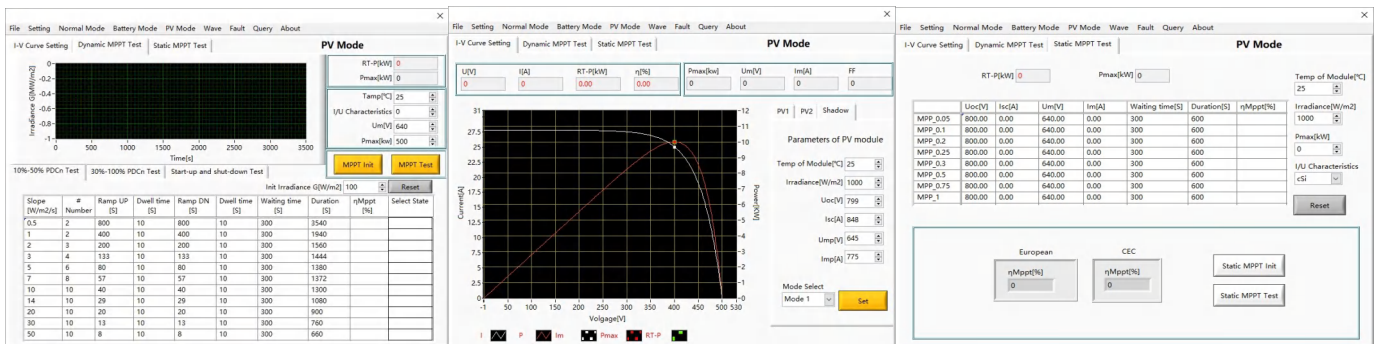
## Battery Simulation

ESD series DC power supplies can simulate the charging and discharging characteristics of the power battery pack/package and provide a convenient and efficient testing method for the development and testing of new energy vehicle motors etc.



## PV Simulation (-PV Option)

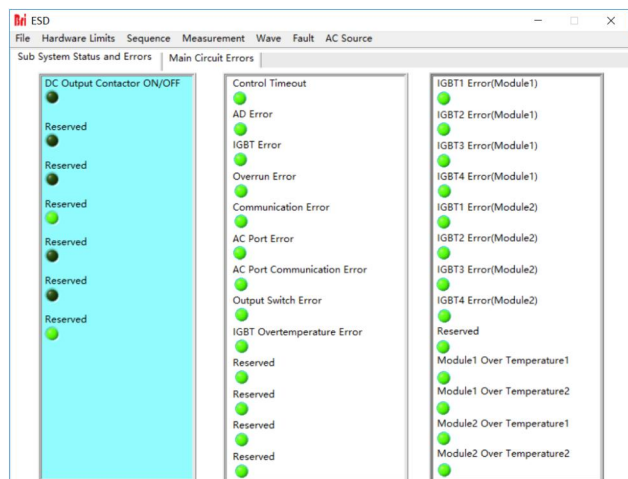
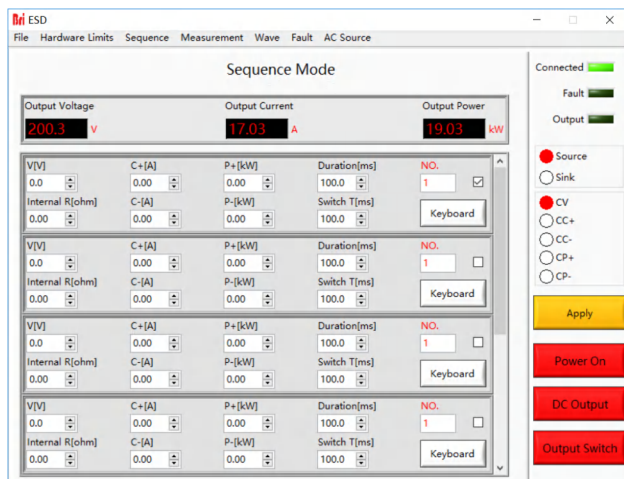
With -PV option, ESD series power supplies can be used to simulate IV curve of various solar panels under various temperature and irradiance condition, and conduct static and dynamic MPPT tests according to EN 50530:2010.



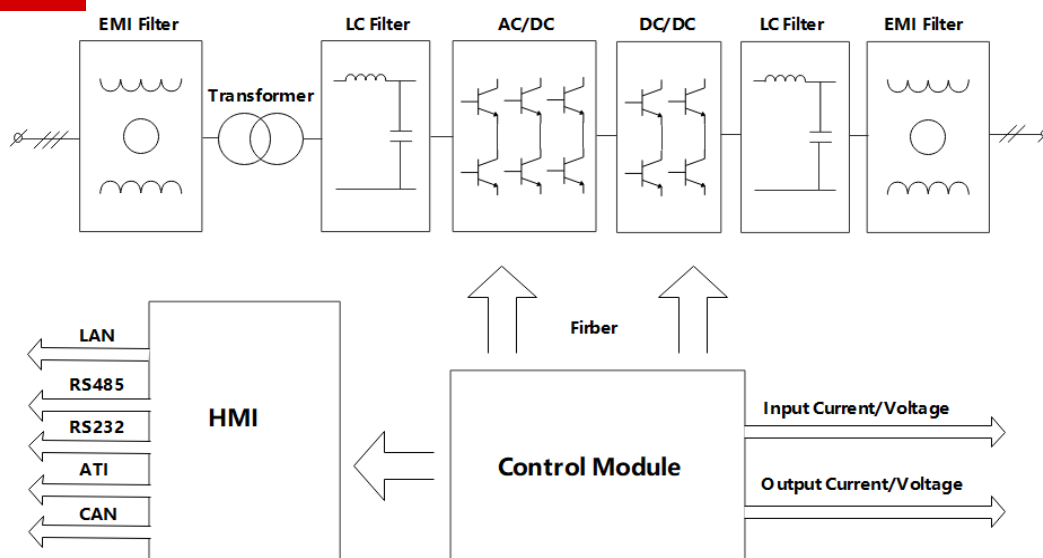
## Graphical User Interface

GUI software is installed in front touch panel, which uses Windows OS. The software provides following functions:

- Output settings and limits
- Sequence output settings
- Display measurements: voltage, current, power, etc.
- Capture, display and save output voltage and current waveforms.
- Display power source faults



## Block Diagram



## General Specification (customized unit specification will be shown in the quotation)

<b>AC Input</b>	
AC input Voltage	3P+N+PE,380VLL $\pm$ 10% (std)
Frequency	47-36HZ
Efficiency	$\geq$ 90%
Power Factor	0.95
<b>Output</b>	
Output Modes	CV, CC, CP and CR
Power Level	Up to 500KW in single controller, 2MW max power available.Customizable
Voltage Ranges	Up to 2000V,Customizable
Current Ranges	please refer to the Standard Models Specification
Load Regulation	0.1%FS
Line Regulation	0.1%FS
Voltage Ripple	0.1%FS
Stability	0.1%FS
Current Rise Time (10%~90%)	<3ms (std), <1ms (BSS Option)
Current Rise Time (-90%~90%)	<5ms (std), <2ms (BSS Option)
Regulation Time (0~100% Load change)	<3ms (std), <1.5ms (BSS Option)
Voltage Accuracy	0.1%FS
Current Accuracy	0.3%FS
Power Accuracy	0.3%FS
Power Resolution	0.02KW (~100KW), 0.1KW (100KW~500KW)
Voltage Resolution	0.05V(~800V),0.1V(800V~2000V)
Current Resolution	0.05A (~800A), 0.1A (800A~1600A), 0.2A(1600A~3200A)
Over Current	120%, 60 seconds

<b>Measurements</b>	
Measurements accuracy Power	0.3%FS
Measurements accuracy Voltage	0.1%FS
Measurements accuracy Current	0.3%FS
<b>Others</b>	
Protection	OVP, OCP, OTP
CE Conformity	EN 61010, EN 61326
Cooling	Forced Air Cooling
Temperature	Operating: 0~40°C, Storage: -20~85°C
Operating Humidity	20-90%RH (None Condensing)

### Standard Models Specification

Model	Power	Voltage	Current	Dimension (W*D*H mm)	Weight (kg)
ESD 100-500-200	100KW	500V	200A	900*900*2200	980
ESD 100-500-600			600A	2*900*900*1800	1280
ESD 100-500-800			800A	2*900*900*1800	1350
ESD 100-1000-100		1000V	100A	900*900*2200	980
ESD 100-1000-300			300A	2*900*900*1800	1200
ESD 100-1000-400			400A	2*900*900*1800	1250
ESD 100-1500-67		1500V	67A	900*900*2200	850
ESD 100-1500-200			200A	900*900*2200	900
ESD 100-1500-267			267A	900*900*2200	930
ESD 200-500-400	200KW	500V	400A	3*900*900*1800	2100
ESD 200-500-1200			1200A	5*900*900*2200	3200
ESD 200-500-1600			1600A	6*900*900*2200	3800
ESD 200-1000-200		1000V	200A	2*900*900*1800	1600
ESD 200-1000-600			600A	3*900*900*2200	2200
ESD 200-1000-800			800A	4*900*900*2200	2750
ESD 200-1500-133		1500V	133A	2*900*900*2200	1800
ESD 200-1500-400			400A	3*900*900*2200	2100
ESD 200-1500-533			533A	3*900*900*2200	2200
ESD 300-500-600	300KW	500V	600A	3*900*900*2200	2400
ESD 300-500-1800			1800A	7*900*900*2200	4800
ESD 300-500-2400			2400A	9*900*900*2200	6000
ESD 300-1000-300		1000V	300A	2*900*900*2200	2000

ESD 300-1000-900	300kw	1000V	900A	4*900*900*2200	3400	
ESD 300-1000-1200			1200A	5*900*900*2200	4100	
ESD 300-1500-200		1500V	200A	2*900*900*2200	2100	
ESD 300-1500-600			600A	4*900*900*200	3700	
ESD 300-1500-800			800A	5*900*900*2200	4500	
ESD 400-500-800	400KW	500V	800A	6*900*900*2200	4200	
ESD 400-500-2400			2400A	10*900*900*2200	6400	
ESD 400-500-3200			3200A	12*900*900*2200	7600	
ESD 400-1000-400		1000V	400A	4*900*900*1800	3200	
ESD 400-1000-1200			1200A	6*900*900*2200	4400	
ESD 400-1000-1600			1600A	8*900*900*2200	5500	
ESD 400-1500-267		1500V	267A	4*900*900*2200	3600	
ESD 400-1500-800			800A	6*900*900*2200	4200	
ESD 400-1500-1067			1067A	6*900*900*2200	4400	
ESD 500-500-1000			500KW	500V	1000A	6*900*900*2200
ESD 500-500-3000		3000A			12*900*900*2200	8500
ESD 500-500-4000		4000A			14*900*900*2200	9800
ESD 500-1000-500	1000V	500A		4*900*900*2200	3800	
ESD 500-1000-1500		1500A		8*900*900*2200	6800	
ESD 500-1000-2000		2000A		10*900*900*2200	8400	
ESD 500-1500-333	1500V	333A		4*900*900*2200	3900	
ESD 500-1500-1000		1000A		8*900*900*2200	6800	
ESD 500-1500-1333		1333A		9*900*900*2200	7600	

### Model Configuration

ESD AAA-BBB-CCC-DDD/EEE

AAA: Power, KW

BBB: Voltage range, V

CCC: Current range, A

DDD: Option

EEE: Input configuration

### AC Input Configuration

Please specify the input voltage(L-L)

/208,Input Voltage 208V±10%, 3-phase

/230,Input Voltage 230V±10%, 3-phase

/380,Input Voltage 380V±10%, 3-phase

/400,Input Voltage 400V±10%, 3-phase

/480,Input Voltage 480V±10%, 3-phase

## Options

- 232 RS232 program interface
- BSS Hardware and software for Battery simulation
- CAN CAN-bus program interface
- LD Regenerative DC load function
- PV Hardware and software for PV Simulation
- R Regenerative mode
- ATI Analog control interface (0~5V)
- ZV Low Voltage Operation Mode
- MS Master-Slave interface
- W Use water-cooling
- INS Output terminal insulation monitoring function



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## About Bripower

Bridge Technology is a company focusing on business of power supplies and test systems for new energy applications. We are devoted to providing high quality products and solutions for customers.

Bridge Technology has a top-class R&D team in China, works on modularization and standardization power supplies and systems.

We have sales, technical support, R&D and manufacture in Shanghai, Nanjing and Chengdu.

Nanjing Bridge New Energy Technology was founded on Jan 12th, 2016, focusing on R&D and manufacturing Bripower brand power systems, including bi-directional AC sources for grid simulation, bi-directional DC sources for battery simulation, and regenerative loads. The Bripower AC&DC power systems are widely used in new energy and related fields.