

PRODUCT

BROCHURE

BriPower[™]

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BriPower™



PRODUCT



BROCHURE



Bi-Directional AC Sources

Bi-Directional DC Sources

Regenerative Loads

Custom Power Solutions





About BriPower™

Nanjing Bridge New Energy Technology (Bridge Technology) was founded on Jan 12th, 2016, focusing on business of regenerative power supplies and electronic loads. We are devoted to providing high quality products and solutions for customers.

Our product brand is BriPower™.

- Bi-directional AC sources
- Bi-directional DC sources
- Regenerative loads
- Custom Power Solutions

The BriPower™ AC&DC power systems are widely used in new energy and related fields.

Our Factory is on ISO Certified and The Quality Management System Confirms to the Standard GB/T19001-2016/ISO9001-2015.

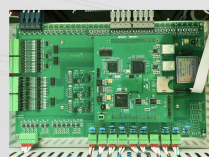
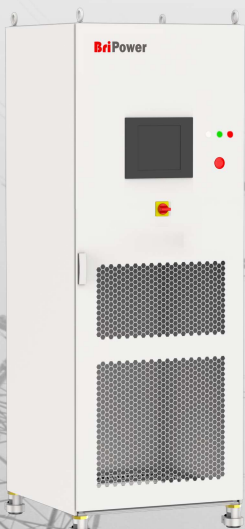
Advanced Control Technology

The BriPower power systems benefit from our unique control technology, which combines the advantages of DTC control technology and vector control technology, to achieve faster dynamic response performance and lower output ripple. This control technology uses intelligent neural filtering to effectively suppress the influence of external disturbances on the power supply's internal measurements, while recognizing system parameters at the microsecond level to make the optimal response.

High Reliability

The controllers inside BriPower power systems keep monitoring the key status and parameters, including the system input and output voltages and currents; the power components' voltages, currents, and temperatures, the DC-bus voltage, the communication connection status, the circuit breaker and contactor status, emergency stop status, etc.

This feature greatly improves the reliability of the power systems. And, when there is a failure, fast error locating is possible by checking the fault indicators. The troubleshooting time is nearly zero.



Sub System Status and Errors	Main Circuit Errors	System Status
Fans-in-Cabinet ON/OFF	Control Timeout	IGBT1 Error(L1)
Pre-charge Switch ON/OFF	AD Error	IGBT Over Temperature1
Main Input Contactor ON/OFF	IGBT Error	IGBT2 Error(L1)
Output Switch ON/OFF	Overrun Error	IGBT Over Temperature2
DC Pre-charge Switch ON/OFF	Communication Error	IGBT3 Error(L1)
Not Used	Parallel Error	IGBT Over Temperature3
Not Used	Parallel Communication Error	IGBT4 Error(L1)
Not Used	Fans-in-Cabinet Error	IGBT Over Temperature4
Not Used	Pre-charge Switch Error	IGBT5 Error(L1)
Not Used	Main Input Contactor Error	IGBT Over Temperature5
Not Used	Output Switch Error	IGBT1 Error(L2)
Not Used	Output Pre-charge Error	IGBT Over Temperature6
		IGBT2 Error(L2)
		Emergency Stop Error of Local
		IGBT3 Error(L2)
		Emergency Stop Error of Remote
		IGBT4 Error(L2)
		IGBT Overtemperature Error
		IGBT5 Error(L2)
		Transformer Overtemperature Error

PRODUCTS CATALOG

AC/DC PRODUCT

- KGS Series SiC AC/DC Power Source & Load..... 01
 - ZGX Series AC/DC Power Source & Load..... 09
 - ESA Series Programmable AC Power Supply..... 15
-

DC PRODUCT

- ESD Series Programmable DC Power Supply..... 23
 - BSL Series High Power DC Source & Load..... 29
-



BriPower KGS Series

SiC AC/DC Power Source & Load

Features

- Modular design, output power from 15kVA to 1080kVA
- Bi-directional AC/DC power source, seamless transition between source and sink modes
- Regenerative AC/DC load function
- Output: AC, DC, AC+DC
- Independent three-phase output, which can be configured as single-phase output
- Max output 450V L-N within output frequency range from DC to 5kHz
- Frequency Range: DC~ 5kHz max
- Up to 100th harmonic waveform generation, inter-harmonic generation
- Trigger out, TTL signal output for voltage or frequency change
- AC output, ON/ OFF output phase angle can be programmed
- Using true current feedback control when working in CC mode
- RLC Load Simulation&RCD Load Simulation
- Current limit can be programmed, output can be shorted for short circuit test
- Bi-Polar DC Source (-BP option)
- Analog signal input for use as a power amplifier (delay $\leq 20 \mu\text{s}$)
- 30 Built-in harmonic waveforms
- Soft start: effectively restrain the impulse current when power on
- TFT-Touch panel operation
- Master-Slave interface
- LAN, RS485, Analog control interface
- Emergency stop button and indicators on front panel
- Mod-bus/ASCII protocols
- CE conformity
- 13 months warranty



Overview

The BriPower KGS series is a high-performance AC/DC power source/load, using SiC MOSFET PWM technology, which contains multi output power levels from 15kVA to 1080kVA. With an output frequency range from DC to 5kHz, max output 450V L-N.

KGS series uses bi-directional design, which makes it possible to be used as grid simulator to test distributed generation systems. KGS Series is well suited for aerospace applications. Remote control interfaces and SCPI command language are provided for easy integration into ATE systems.

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

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, LAN and analog control interfaces are available for automated test applications.

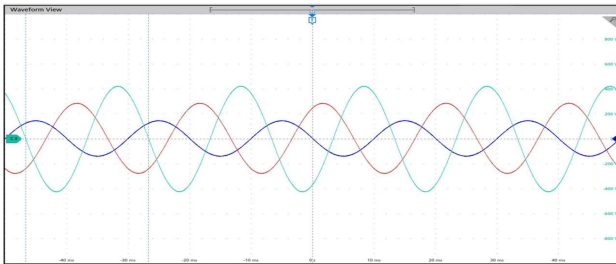
Grid Simulation

KGS series is comprehensive, fast dynamic grid simulator for distributed generation system testing, such as the electrical characteristics of energy storage PCS, PV inverter, etc. The simulation functions include voltage and frequency fluctuation, voltage drop, high voltage ride through, low/zero voltage drop, three-phase unbalance, harmonic and inter-harmonic etc. The KGS series meets the requirements of

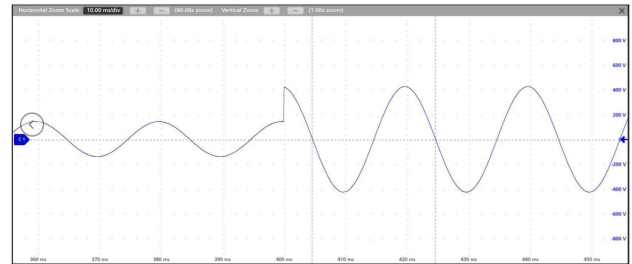
grid tied DG regulations testing, such as: grid voltage abnormality test, grid frequency abnormality test, high voltage ride through test, low/zero voltage ride through test, anti-islanding test, etc. KGS series provides GUI software to simulate various real-world power grid operating conditions.

- **Voltage/frequency sequence programming**

The KGS series provides voltage and frequency sequence programming function. The parameters such as output voltage, frequency, slew rate, ON/ OFF output phase angle, duration time, switching time are programmable, and three phases are independent for settings.



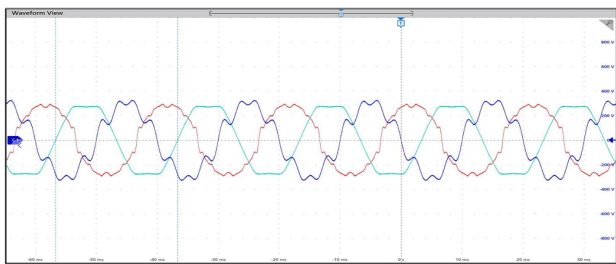
Three-phase Unbalance



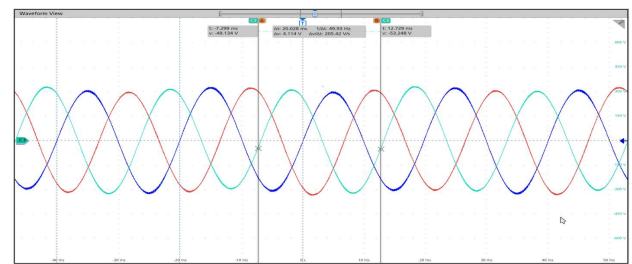
Voltage change waveform@90°

- **Harmonic and inter-harmonic waveforms**

Dual DSP+FPGA technology is used in KGS series to generate up to 100th harmonic. KGS series supports inter-harmonics editing. Users can program the phase angle and amplitude of the harmonic through the GUI, allowing generate three-phase harmonic/inter-harmonic waveforms independently.



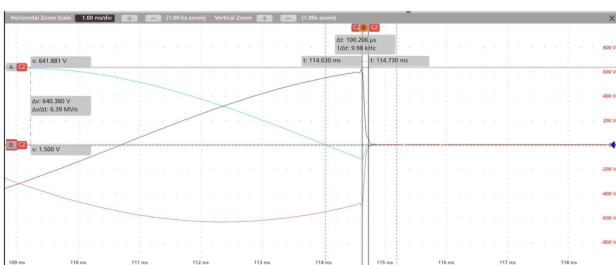
Harmonic Waveform



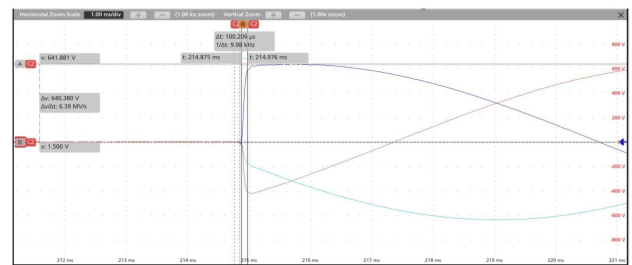
Inter-Harmonic Waveform

- **Fast dynamic — Voltage drop simulation (LVRT test)**

KGS series provides firmware and software support for low/zero voltage ride through tests.



Voltage change (450V→0V) < 100us

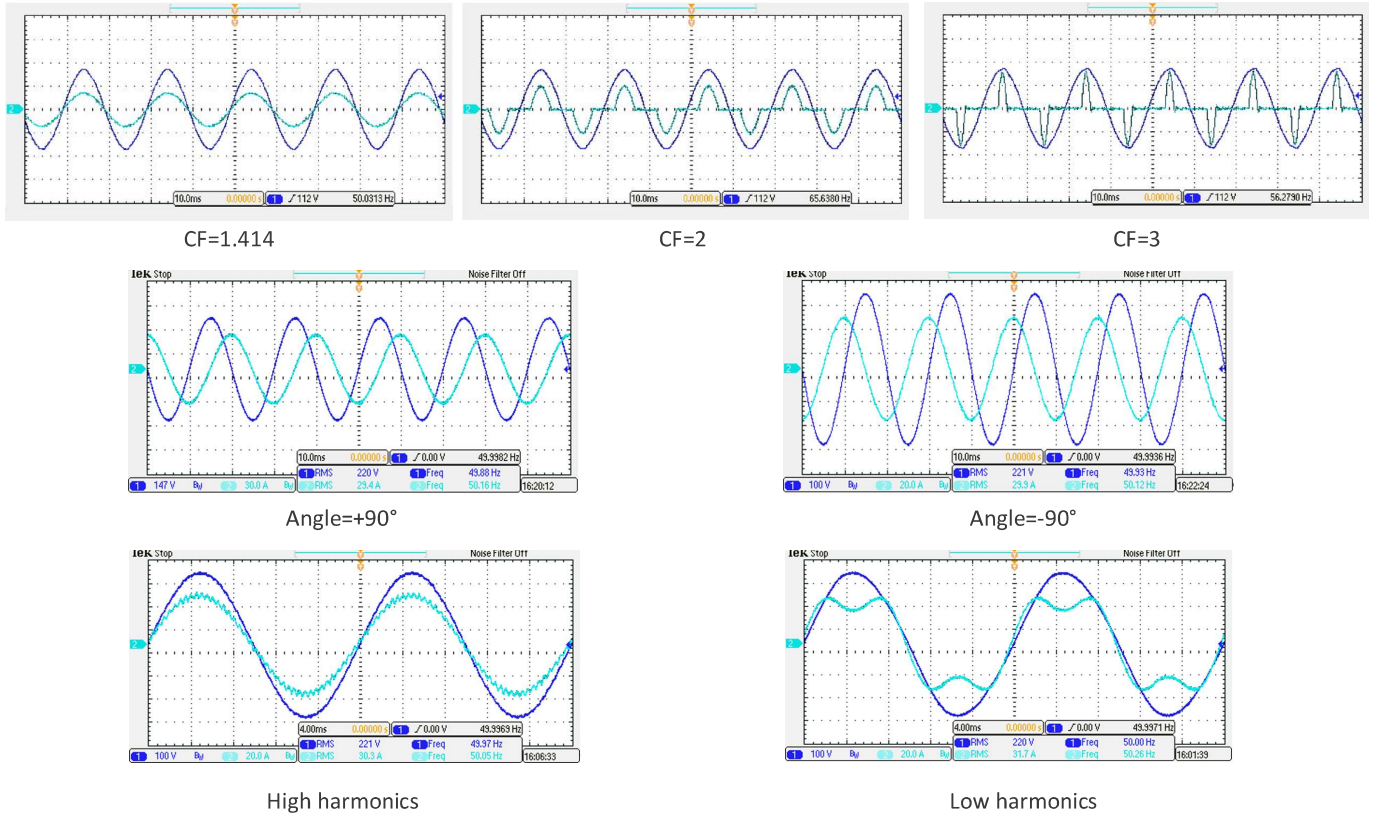


Voltage change (0V→450V) < 100us

Note: above test waveforms were measured under resistive load.

Re-regenerative AC Load ¹

In the regenerative AC load mode, CR mode, Rectifier mode, and CC/CP phase lead/lag mode are available. **CR mode** is used to simulate three-phase resistive loads, the CR mode and three-phase resistance parameters can be set through the panel and can realize the program of resistance sequence. **Rectifier mode** can be used to simulate non-linear loads, the CC/CP mode and CF (setting range: 1.414~3) parameters can be set through the panel. **CC/CP phase lead/lag mode** can simulate sinusoidal current, Constant current CC and constant power CP modes are available to adjust load current or power, phase angle can be set from 90° to -90° simulating the voltage and current conditions under inductive and capacitive loads.



Regenerative DC electronic load mode is also available with the KGS series, which provides CV, CC, CP, and CR operation modes.

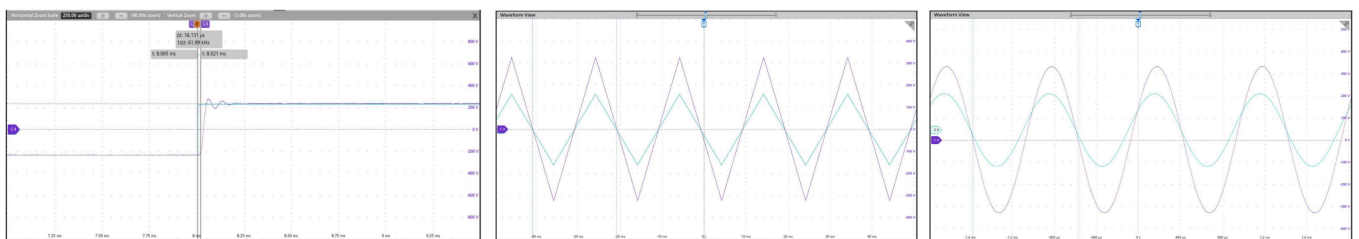
¹ KGS can still output a stable and reliable current waveform even when the input voltage is not pure sine wave or the sine wave has large distortion.

Current Source Mode

The KGS Series uses true current feedback control when working in Current source mode. It is different from power supplies using voltage feedback with constant current mode, which is called voltage controlled current. The voltage controlled current power supplies maintain setting current value by adjusting output voltage and have relatively long response time to sudden impedance changes, which typically results in dynamic current overshoot or undershoot as the load impedance changes. KGS series working in CC mode does not have such problem and will always maintain the current at the setting value, regardless of transient load conditions.

Power Amplifier Function (analog signal input)

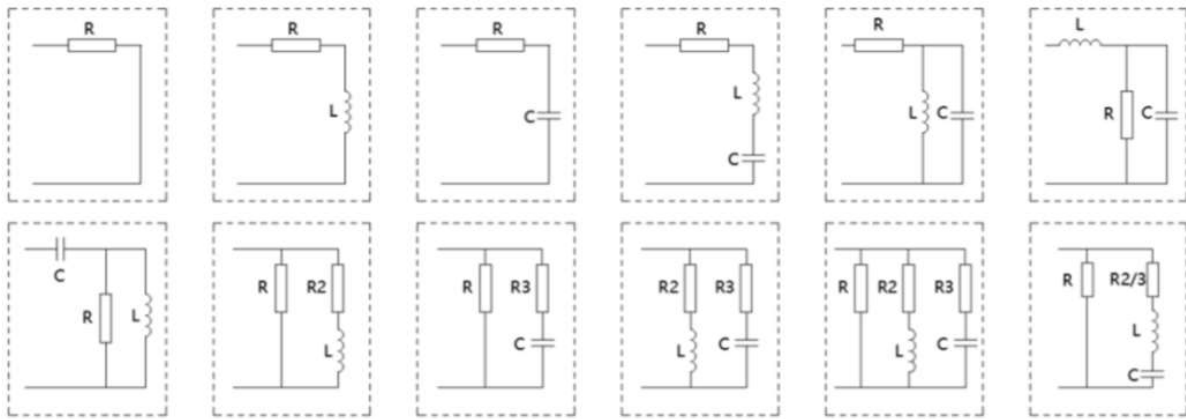
The KGS is a power amplifier with high dynamic response and bandwidth. The delay between input external signal and power source output $\leq 20 \mu\text{s}$.



KGS output waveform (square/ triangular/sine wave input signal)

RLC Load Simulation

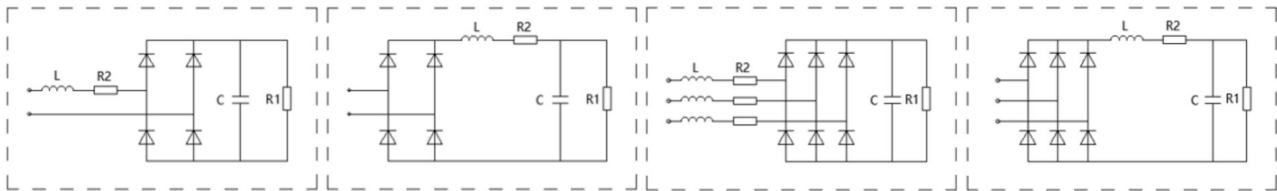
The KGS series provides RLC load simulation mode, which simulates the impedance of the combinations of R, L and C components. The three phases are independently programmable, and the R, L, C values can be set respectively.



Complex Impedance Combinations of KGS-RLC

RCD Load Simulation

KGS provides RCD non-linear load simulation function for testing UPS power supplies, inverters, etc. The KGS has four built-in RCD electrical topologies, 3-phase independently programmable, with individually programmable R, L and C parameter values.



Avionics Power Line Simulation

The KGS series meets the requirements of avionics bus simulation, and can simulate working conditions including normal working, power interruption (conversion), abnormal power supply, emergency power supply, startup, power failure, etc., to meet the requirements of MIL-STD-704 and other test regulations. In addition, remote control interfaces and SCPI command language are provided for easy integration into ATE systems.

IEC Related Test Applications

KGS series can meet the requirements for AC power in IEC 61000 3-2, 3-3, 3-11, 3-12, 4-11, 4-13 and other standard tests.

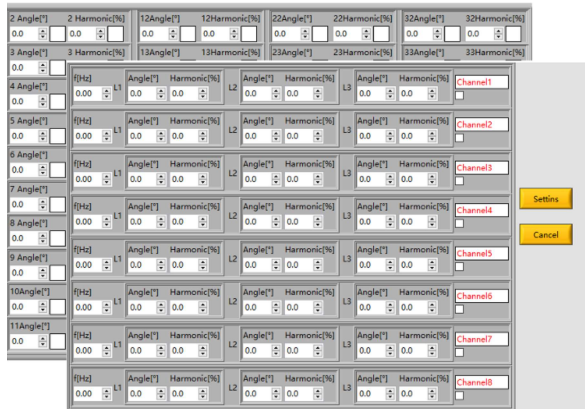
Bi-Polar DC Source (-BP option)

The KGS series also provides bipolar DC output, and in this mode, phase A is used as POS+ output, phase B is used and NEG- output, the Neutral terminal is used as PE. The output power of KGS 45-BP is 30KW in bipolar output mode, and the voltage range is +/-600V, the current range is +/-70A.

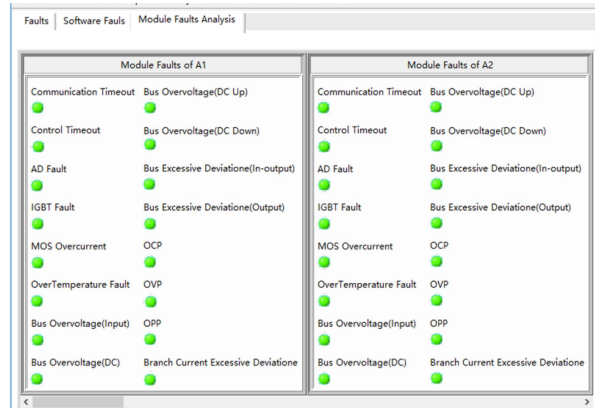
Graphical User Interface

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

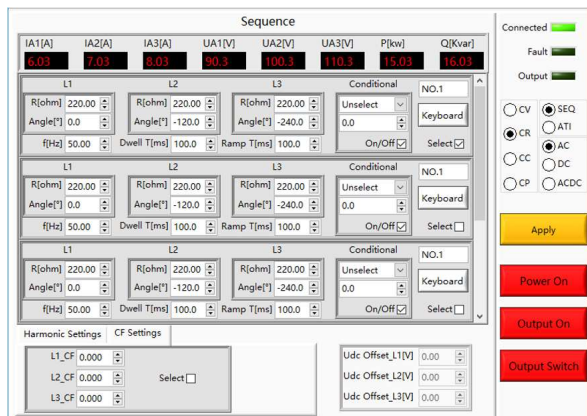
- Output limits and settings
- Sequence output settings: The output phase voltage, angle, frequency, ON/OFF phase angle, dwell time, switching time and other parameters of the power supply can be set.
- Generate harmonic and inter-harmonic waveforms: Up to 100th harmonic waveform generation, inter-harmonic generation
- Real time display measurements: voltage, current, power, etc.
- Capture, display and save output voltage and current waveforms
- Display power source faults



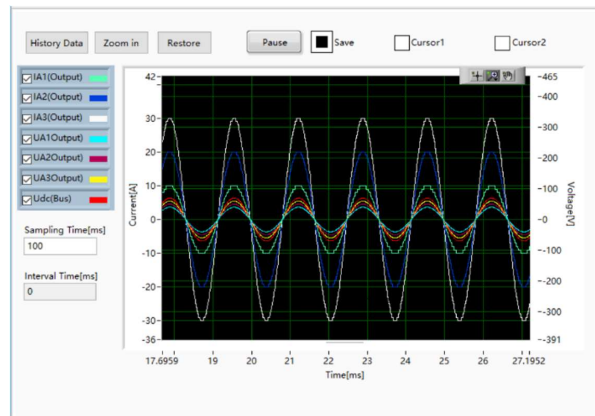
Sequence Programming



Waveform Display

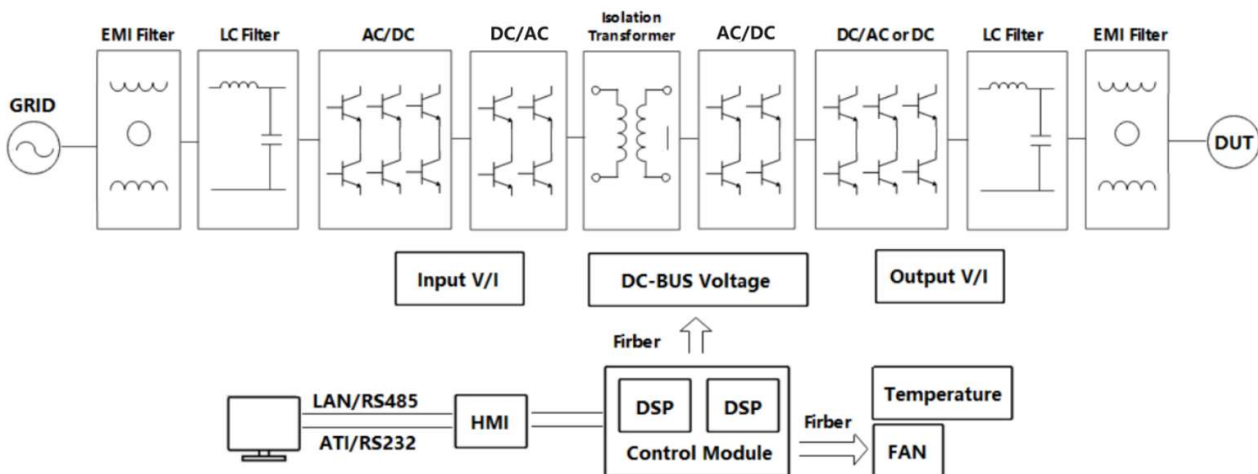


Harmonic/Inter-harmonic editing



Fault Display

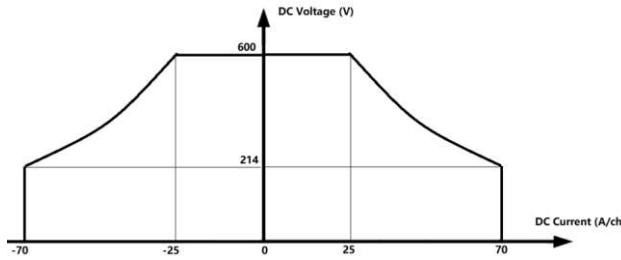
Block Diagram



General Specification

AC input	
Voltage	3P+N+PE, 380VLL±10%(std)
Frequency	47-63Hz
Efficiency	≥85%
Power Factor	0.99
THDi	<3%FS

Output	
Output Modes	AC, DC, or AC+DC
Power Level	From 15kVA to 1080kVA
Load Regulation	0.1%FS
Line Regulation	0.1%FS
AC Output	
Voltage & Current Range (max output per 15KW module)	<p>Max 450V L-N, 70A @ DC~65Hz Max 375V L-N, 70A @ 65~1000Hz Max 350V L-N, 70A @ 1000~2000Hz Max 250V L-N, 60A @ 2000~3000Hz Max 150V L-N, 50A @ 3000~5000Hz</p> <p>Legend: — DC-60Hz — 60-1000Hz — 1000-2000Hz — 2000-3000Hz — 3000-5000Hz</p>
Phase Angle Range	Phase B/C relative to phase A, 0.0~360.0°
Frequency Range	DC -5000Hz
Small signal bandwidth	10kHz
THD	<p><0.3%FS @15~50Hz (measured at 250V L-N, Resistive Load) <0.4%FS @50~500Hz (measured at 250V L-N, Resistive Load) <0.7%FS @500~2000Hz (measured at 250V L-N, Resistive Load) <1%FS @2000~4000Hz (measured at 100V L-N, Resistive Load) <2%FS @4000~5000Hz (measured at 100V L-N, Resistive Load)</p>
Harmonic Generation	Up to 100th @50/60Hz
	Harmonic accuracy: 1%FS
	Within 50th: total harmonic content ≤ 100%; Within 100th: total harmonic content ≤ 30%
Voltage Slew Rate	≥5V/us
Current Slew Rate	≥0.5A/us
Current Peak Factor	1 ~ 3
Power Accuracy	DC~45Hz: 0.3%FS; 45~70Hz: 0.1%FS; 70~2KHz: 0.3%FS
Voltage Accuracy	DC~45Hz: 0.2%FS; 45~70Hz: 0.1%FS; 70~2KHz: 0.2%FS
Current Accuracy	DC~45Hz: 0.3%FS; 45~70Hz: 0.1%FS; 70~2KHz: 0.3%FS
Frequency Accuracy	0.01%FS+0.01Hz
Phase Angle Accuracy	DC~45Hz: <1°; 45~70Hz: <0.1°; 70~2KHz: <1°
Power Resolution	0.001kW
Voltage Resolution	0.1V
Current Resolution	0.01A
Frequency Resolution	0.01Hz (~100Hz); 0.05Hz (>100Hz)

DC Output	
Voltage & Current Range (max output per 15KW module)	0~600V, ±70A/ch 
Voltage Accuracy	0.1%FS
Current Accuracy	0.1%FS
Voltage Ripple	0.1%FS
AC+DC Mode	Max Power, Voltage and Current are the same as DC Mode
RLC/RCD Load Simulation ²	
R	Range: 0.1~1000Ω. Resolution: 0.1Ω. Accuracy: ±0.1%FS
L	Range: 0.1~5000mH. Resolution: 0.5mH. Accuracy: ±0.1%FS
C	Range: 0.001~5mF. Resolution: 0.1mF. Accuracy: ±0.1%FS
Others	
Standard Interface	LAN/RS485/ATI
Protection	OVP, OCP, OPP, OTP
IP Ingress protection	IP21
CE Conformity	EN 62040-1, EN 62040-2
Cooling	Forced Air Cooling
Temperature	Operating: 0~40°C Storage: -20~85°C
Operating Humidity	20-90%RH (None Condensing)

² Measured at 50/60Hz.

Standard Models Specification

Model	Output Power	Max AC Output	Max DC Output	Dimension (W*D*H mm)	Weight(kg)
KGS 15	15kVA	450V L-N, 70A	0~600V, ±70A	800*900*1100	300
KGS 45	45kVA	450V L-N, 70A/ph	0~600V, ±70A	800*900*1500	460
KGS 90	90kVA	450V L-N, 140A/ph	0~600V, ±140A	900*900*2200	900
KGS 135	135kVA	450V L-N, 210A/ph	0~600V, ±210A	1600*900*1800	1050
KGS 180	180kVA	450V L-N, 280A/ph	0~600V, ±280A	1600*900*2200	1200
KGS 270	270kVA	450V L-N, 420A/ph	0~600V, ±420A	2400*900*2200	1800
KGS 360	360kVA	450V L-N, 560A/ph	0~600V, ±560A	3200*900*2200	2400
KGS 450	450kVA	450V L-N, 700A/ph	0~600V, ±700A	4000*900*2200	2900
KGS 540	540kVA	450V L-N, 840A/ph	0~600V, ±840A	4800*900*2200	3600

Note:

1. Total weight < 1400KG, the cabinet bottom is wheel structure; otherwise, it is channel steel structure.
2. The current above is the 3-phase output current, when configured as single-phase output, the output current extended to 3 times.

Options

- BP Bi-Polar DC Source
- HV900 Increase output voltage to 900V L-N, consult factory

AC Input Configuration ³

Please specify the input voltage (L-L)

/380, Input Voltage 380VLL±10%, 3P+N+PE/3P+PE

/400, Input Voltage 400VLL±10%, 3P+N+PE/3P+PE

/480, Input Voltage 480VLL±10%, 3P+N+PE/3P+PE

³ Other AC input is available, please consult factory.

Model Configuration

KGS AAA-BBB/CCC

AAA: Power, kVA

BBB: Option

CCC: Input configuration

BriPower ZGX Series

AC/DC Power Source & Load

Features

- Compact modular design, 15KVA in 4U
- Bi-directional design
- Output: AC, DC, AC+DC
- Single unit: maximum 15KW, 450V L-N, 30A/ph, DC-1KHz output
- Power expansion to 960KVA by master/slave paralleling(using single mode fiber, SMF)
- Single phase, 3-phase, split phase, and multi-channel output
- Various modes: Regenerative AC/DC source, regenerative AC/DC load, BiPolar DC source
- Regenerative RLC load in full frequency range
- True current source in CC mode
- Up to 100th harmonics waveform generation, inter-harmonic generation
- Soft start: effectively restrain the impulse current when power on
- Trigger out, TTL signal output for voltage or frequency change
- Error locating function
- LAN interface
- MOD-bus /SCPI protocols
- Grid simulation, battery simulation, PV simulation
- 24 months warranty



Overview

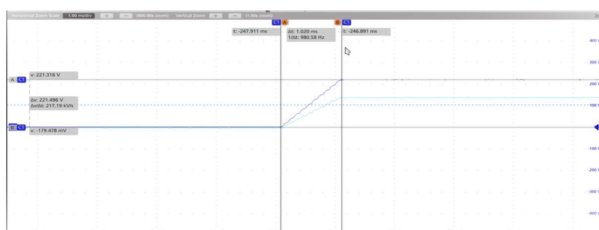
The ZGX series is a compact modular design power supply with SiC PWM technology, providing full functions of grid simulator, battery simulator, PV simulator, regenerative AC/DC load, bipolar DC source, and RLC/RCD load. The 15KVA bidirectional power supply is designed in a 4U chassis, and can be upgraded to 960KVA system by master/slave paralleling. The maximum output of each unit is AC 450V L-N, 30A/ph, DC~1KHz or DC 636V, 90A.

Operation Modes ----- Bi-Directional AC/DC Source

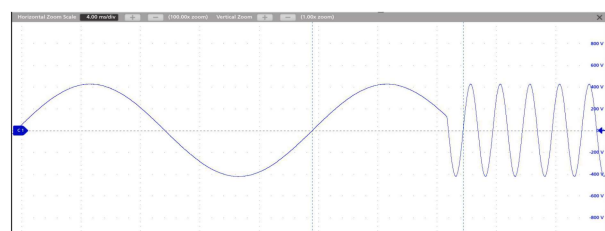
ZGX series is comprehensive, fast dynamic grid simulator for distributed generation system testing, such as the electrical characteristics of energy storage PCS, PV inverter, etc. The simulation functions include voltage and frequency fluctuation, voltage drop, high voltage ride through, low/zero voltage drop, three-phase unbalance, harmonic and inter-harmonic etc. The ZGX series meets the requirements of grid tied DG regulations testing, such as: grid voltage abnormality test, grid frequency abnormality test, high voltage ride through test, low/zero voltage ride through test, anti-islanding test, etc. ZGX series provides GUI software to simulate various real-world power grid operating conditions.

• Voltage/frequency sequence programming

The ZGX series provides voltage and frequency sequence programming function. The parameters such as output voltage, frequency, slew rate, ON/ OFF output phase angle, duration time, switching time are programmable, and three phases are independent for settings.



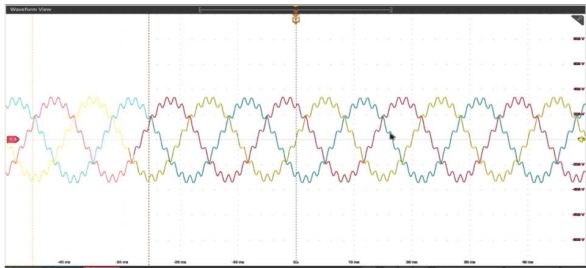
DC voltage and current rise waveform



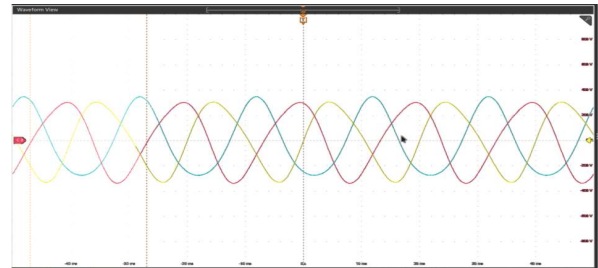
Frequency change waveform

- **Harmonic and inter-harmonic waveforms**

Dual DSP+FPGA technology are use in ZGX series to generate up to 100th harmonic. ZGX series supports inter-harmonics editing. Users can program the phase angle and amplitude of the harmonic through the GUI, allowing generate three-phase harmonic/inter-harmonic waveforms independently.



Harmonic waveform



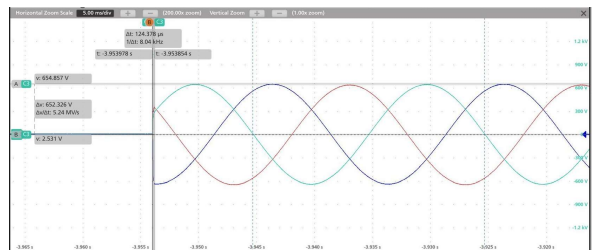
Inter-harmonic waveform

- **Voltage drop simulation (LVRT test)**

ZGX series provides firmware and software support for low/zero voltage ride through tests.



Voltage drop waveform



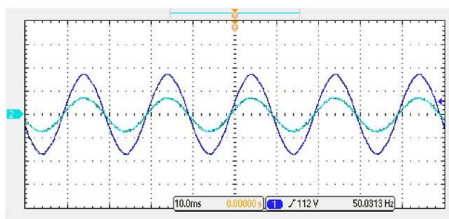
Voltage rise waveform

ZGX series has also DC output mode and works as regenerative DC source for battery testing, battery simulation etc.

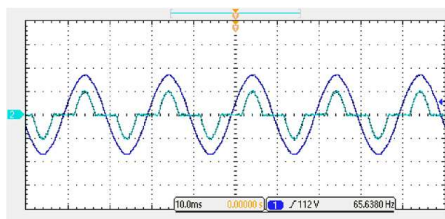
Note: above test waveforms were measured under resistive load.

Operation Modes ----- AC/DC Load

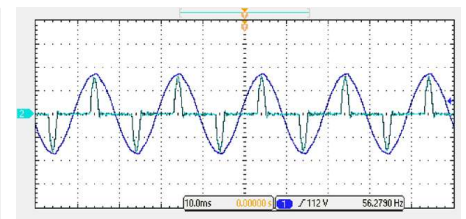
In the regenerative AC load mode, CR mode, Rectifier mode, and CC/CP phase lead/lag mode are available. CR mode is used to simulate three-phase resistive loads, the CR mode and three-phase resistance parameters can be set through the panel and can realize the program of resistance sequence. Rectifier mode can be used to simulate non-linear loads, the CC/CP mode and CF (setting range: 1.414~3) parameters can be set through the panel. CC/CP phase lead/lag mode can simulate sinusoidal current, Constant current CC and constant power CP modes are available to adjust load current or power, phase angle can be set from 90° to -90° simulating the voltage and current conditions under inductive and capacitive loads.



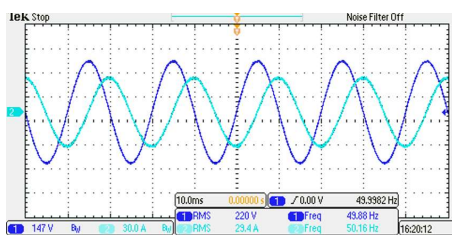
CF=1.414



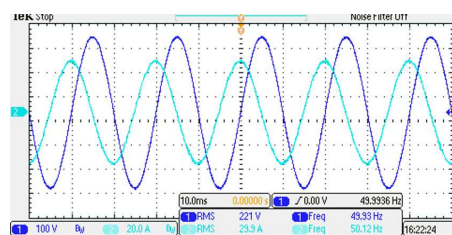
CF=2



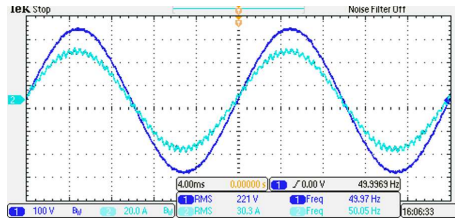
CF=3



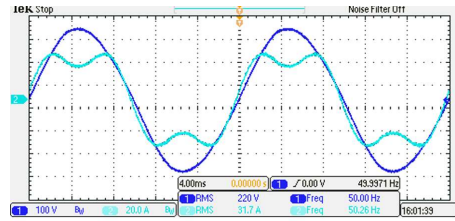
Angle=+90°



Angle=-90°



High harmonics



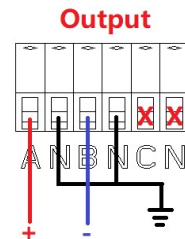
Low harmonics

Regenerative DC electronic load mode is also available with the ZGX series, which provides CV, CC, CP, and CR operation modes.

Operation Modes ----- Bi-Polar (-BP option)

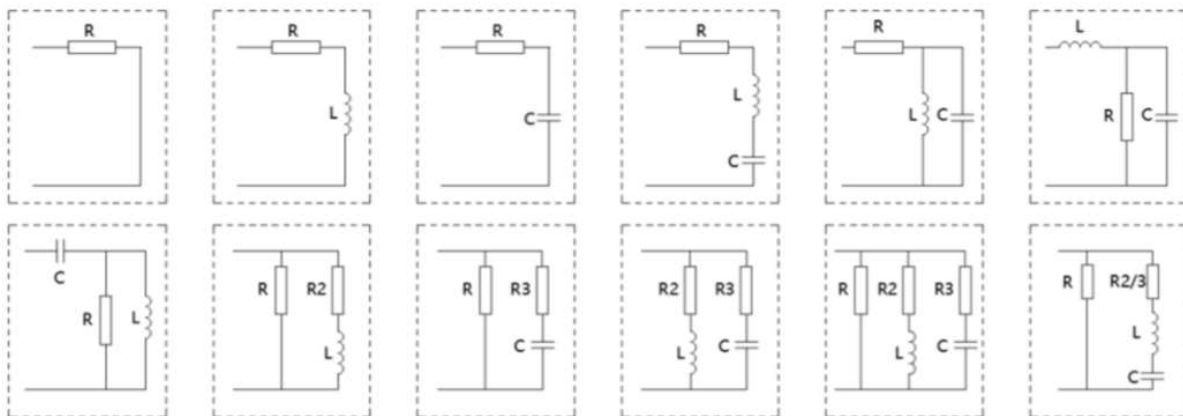
The ZGX series also provides bipolar DC output, and in this mode, phase A is used as POS+ output, phase B is used and NEG- output, the Neutral terminals of phase A and B are shorted and used as PE.

The output power is 10KW in bipolar output mode, and the voltage range is +/-636V, the current range is +/-30A.



Operation Modes ----- RLC Load

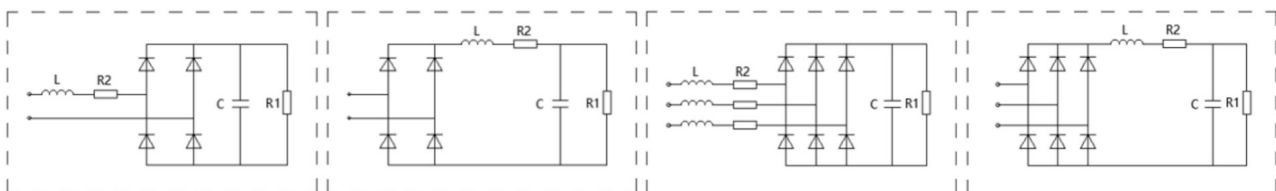
The ZGX series provides RLC load simulation mode, which simulates the impedance of the combinations of R, L and C components. The three phases are independently programmable, and the R, L, C values can be set respectively.



Complex Impedance Combinations of KGS-RLC

Operation Modes ----- RCD Load

The ZGX series provides RCD non-linear load simulation function for testing UPS power supplies, inverters, etc. The ZGX has four built-in RCD electrical topologies, 3-phase independently programmable, with individually programmable R, L and C parameter values.



Application ----- Avionics Power Line Simulation

The ZGX series has an output frequency range of DC~1KHz, which meets the requirements of avionics bus simulation, including conditions of normal working, power interruption (conversion), abnormal power supply, emergency power supply, startup, power failure, etc.

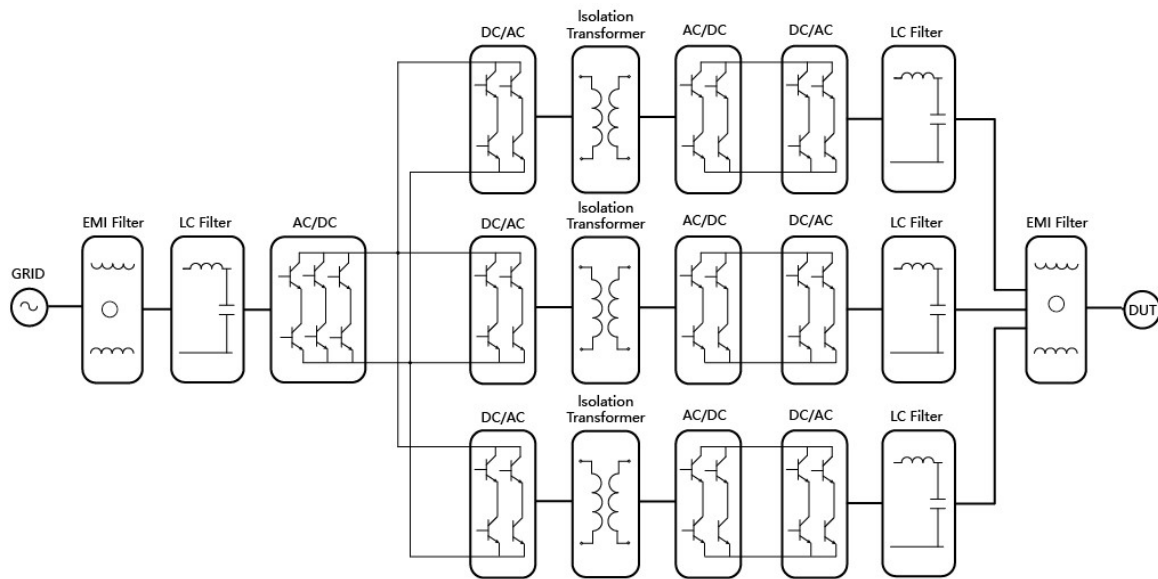
Application ----- Battery Simulation (-BSS option)

The ZGX series provides GUI software to simulate the charging and discharging characteristics of the power battery pack/package and it provides battery simulation software, which can simulate different types of batteries, lithium-ion batteries, etc., supporting multiple parameter settings, including: battery capacity, the number of cells in series and parallel, the state of charge, etc.

Application ----- PV Simulation (-PV option)

The ZGX GUI software also provides function of PV simulation to simulate IV curves of various solar panels, under various temperature and irradiance condition, and conduct static and dynamic MPPT tests according to EN 50530: 2010.

Block Diagram



General Specification

Model No.	ZGX 15
AC input	
Provide pre-charge circuit. Effectively restrain the impulse current when power on	
Voltage	3P+N+PE, 380VLL±10% (std) ¹
Frequency	47-63Hz
Efficiency	≥85%
Power Factor @ Rated Power	>0.99
THDi	<1%
Output	
Output Modes	AC, DC, or AC+DC
Power Level	15KW
Load Regulation	0.1%FS
Line Regulation	0.1%
AC Output	
Voltage Range (L-N)	Max 300V L-N @ DC~1000Hz; Max 450V L-N @ DC~70Hz

¹ When the AC input of ZGX 15 is single-phase 220V L-N, the total output power of the three-phase is 5KW.

Current Range	30A/ph (3-phase) or 90A (single phase)
Frequency Range	0.01 ~ 1000Hz
Phase Angle Range	Phase B/C relative to phase A, 0.0~360.0°
THD	<0.5%FS @DC~400Hz (measured at 250VL-N, Resistive Load) <1%FS @400~1000Hz (measured at 250VL-N, Resistive Load)
Harmonic waveform Generation	Up to 100th
Voltage Slew Rate	≥3V/us
Current Slew Rate	≥0.5A/us
Small signal bandwidth	10kHz
Power Accuracy	0.2%FS
Voltage Accuracy	0.1%FS
Current Accuracy	0.2%FS
Frequency Accuracy	0.01%FS+0.01Hz
Phase Angle Accuracy	<1° (@50Hz)
Power Resolution	0.001kW
Voltage Resolution	0.1V
Current Resolution	0.01A
Frequency Resolution	0.01Hz (~100Hz), 0.05Hz (>100Hz)
Phase Angle Resolution	<0.1°
DC Output	
Voltage Range	0-636V
Current Range	30A/ch (3-channel) or 90A (single channel)
Voltage Accuracy	0.1%FS
Voltage Resolution	0.1V
Current Accuracy	0.1%FS
Current Resolution	0.01A
Voltage Ripple	0.1%FS
AC+DC Mode	Max Power, Voltage and Current are the same as DC Mode
AC Power Measurement Accuracy	0.2%FS
AC Voltage Measurement Accuracy	0.1%FS
AC Current Measurement Accuracy	0.2%FS
DC Voltage Measurement Accuracy	0.1%FS
DC Current Measurement Accuracy	0.1%FS
Frequency Measurement Accuracy	0.01%+0.01Hz
RLC/RCD Load Simulation ²	
R	Range: 0.1~1000Ω. Resolution: 0.1Ω. Accuracy: ±0.1%FS
L	Range: 0.1~5000mH. Resolution: 0.5mH. Accuracy: ±0.1%FS
C	Range: 0.001~5mF. Resolution: 0.1mF. Accuracy: ±0.1%FS

² The accuracy measured at 50/60Hz.

Others	
Standard Interface	LAN
Protection	OVP, OCP, OPP, OTP
IP Ingress protection	IP21
Cooling	Forced Air Cooling
Temperature	Operating: 0~40°C Storage: -20~85°C
Operating Humidity	20-90%RH (None Condensing)
Dimension (W*D*H, mm)	440*670*178
Weight (kg)	About 42.5KG
Shipping Dimension (W*D*H, mm)	600*800*300
Shipping Weight (kg)	About 50KG

Options

- BSS Battery Simulation function
- PV PV Simulation function

AC Input Configuration

Please specify the input voltage:

/380, Input Voltage 380VLL±10%, 3P+N+PE/3P+PE

/400, Input Voltage 400VLL±10%, 3P+N+PE/3P+PE

/220, Input Voltage 220VLN±10%, 1P+N+PE

Model Configuration

ZGX 15-AAA/BBB

AAA: Option

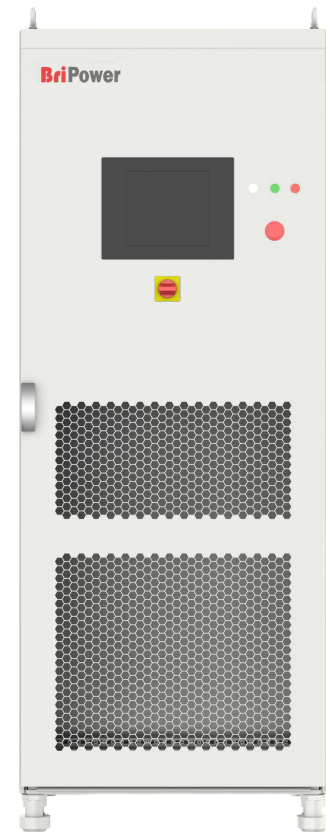
BBB: Input configuration

BriPower ESA Series

Programmable AC Power Supply

Features

- Output power: up to more than 4MVA and above
- 4 quadrant operation, regenerative up to 100% of rated output power back to grid (-R option)
- Independent three-phase output
- Up to 50th harmonic waveform generation
- Soft start: effectively restrain the impulse current when power on
- Voltage drop simulation (LVRT test)
- High voltage ride through simulation
- Regenerative AC load function (-LD option)
- Line impedance (RL) simulation (-IMP option)
- Voltage and frequency sequencing programming via GUI, slew rate can be programmed
- ON/ OFF output phase angle can be programmed
- Current limit can be programmed, output can be shorted for short circuit test
- Triger out, TTL signal output for voltage or frequency change
- Extends to DC output (-DC option)
- Adding single phase output (-1P option)
- Using water-cooling (-W option)
- Master-Slave interface (-MS option)
- Change to transformer output topology (-TR option)
- AC output frequency extended to 400Hz (only for CV mode) (-HF400 option)
- TFT-Touch panel operation
- LAN/RS485 interfaces (standard)
- RS232/Analog control interfaces (-ATI/-232 option)
- Mod-bus/SCPI protocols
- Emergency stop button
- Remote sense
- CE conformity
- 13 months warranty



Overview

The BriPower ESA series is a high-performance and multi-functional grid simulator, using advanced PWM technology, which contains multi output power levels from 30kVA to 240kVA for single system, and up to 4 individual systems can be paralleled to achieve power levels up to 960KVA and above. Output power level of customized system goes up to 4MW and above.

ESA series uses bi-directional design, which can be used as a grid simulator in varieties of applications such as in Smart Grid, Energy Storage, Solar etc. ESA can also be used as regenerative AC electronic load (- LD option).

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

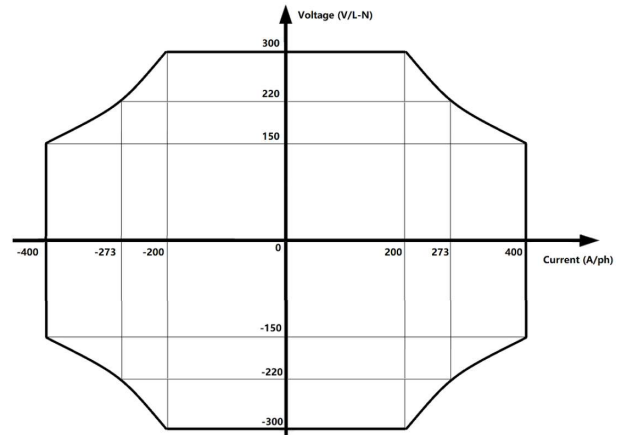
With touch panel on the front panel, users can control the power source through GUI software. System status indicators and emergency stop button are installed on the front panel. RS485 and LAN standard interface, optional RS232 and analog control interfaces are available for automated test applications.

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.

Constant Power output

ESA series AC 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.



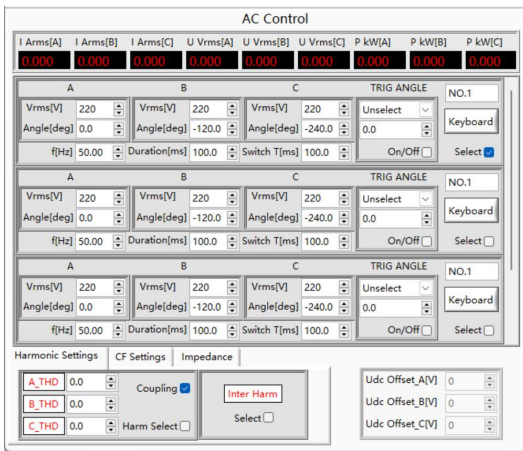
Example: 180kVA, 300V L-N, 400A/ph

Grid Simulation

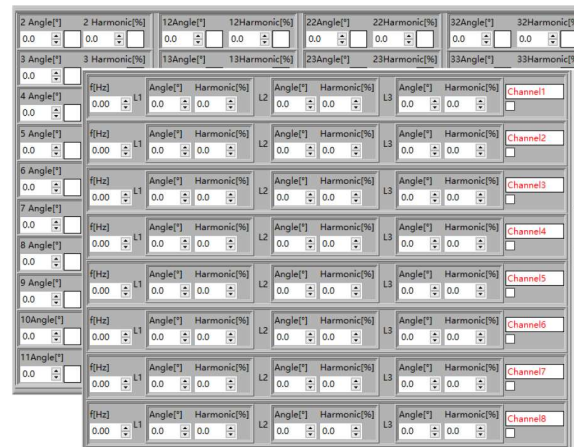
ESA series can be used as a grid simulator to meet the requirements of grid tied DG regulations testing, such as: grid voltage abnormality test, grid frequency abnormality test, high voltage ride through test, low/zero voltage ride through test, anti-islanding test, etc. ESA series has various simulation functions, including: voltage and frequency fluctuations, voltage sags, high voltage ride through, low/zero voltage ride through, three-phase unbalance, harmonics and inter-harmonics. ESA series provides standard software that can simulate various real-world power grid operating conditions and supports multiple parameter settings.

- Voltage/frequency sequence programming**

Voltage and frequency sequence programming via GUI, and the output voltage, frequency, slew rate, ON/ OFF output phase angle, dwell time, switching time can be programmed. Three-phase can be independently programmed.



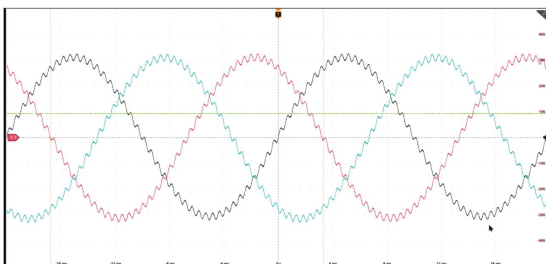
Sequence Programming



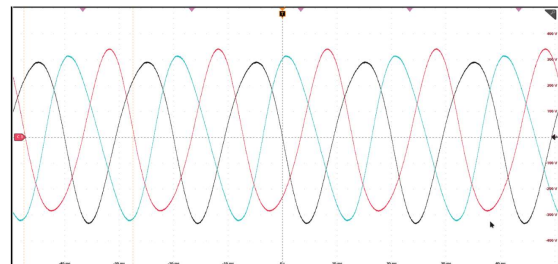
Harmonic/Inter-Harmonic Editing

- Harmonic and inter-harmonic waveforms**

DSP+FPGA technology are use in ESA series to generate up to 50th harmonic. And ESA series supports inter-harmonics editing. Users can program the phase angle and amplitude of the harmonic through the GUI, allowing generate three-phase harmonic/inter-harmonic waveforms independently.



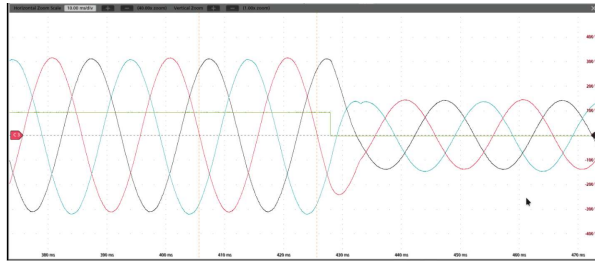
Harmonic Waveform



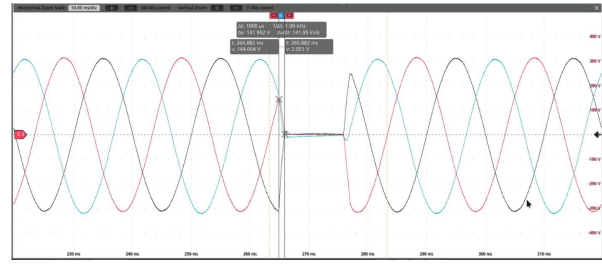
Inter-Harmonic Waveform

- **Voltage drop simulation (LVRT test)**

ESA series provides firmware and software support for low/zero voltage ride through tests.



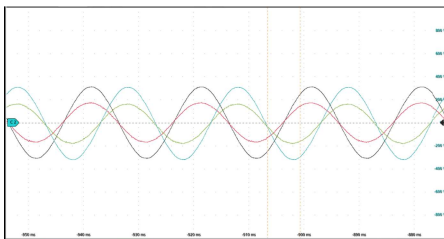
Voltage drop



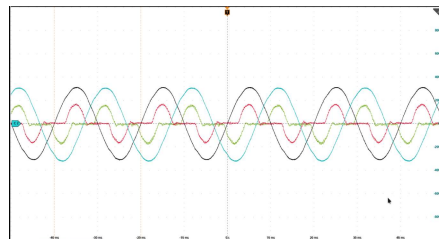
Zero voltage ride

Re-regenerative AC Load (-LD option)¹

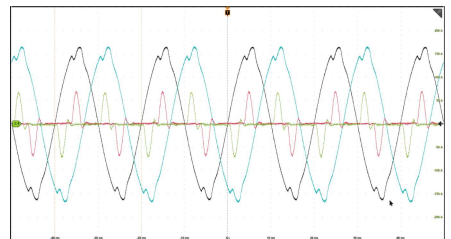
ESA series with -LD option can be used as regenerative AC electronic load. This function consists of CR mode, Rectifier mode, CC/CP phase lead/lag mode. CR mode is used to simulate three-phase resistive loads, the CR mode and three-phase resistance parameters can be set through the panel and can realize the program of resistance sequence. Rectifier mode can be used to simulate non-linear loads, the CC/CP mode and CF (setting range: 1.414~3) parameters can be set through the panel. CC/CP phase lead/lag mode can simulate sinusoidal current, Constant current CC and constant power CP modes are available to adjust load current or power, phase angle can be set from 90° to -90° simulating the voltage and current conditions under inductive and capacitive loads.



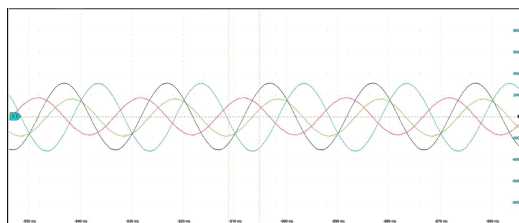
CF=1.414



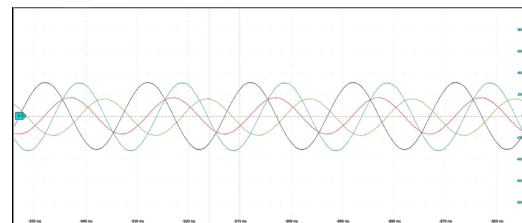
CF=2



CF=3



Angle=+90°



Angle=-90°

¹ ESA-LD is suitable for the case where the input voltage is a pure sine wave. If the input voltage is not a pure sine wave, the output current waveform may be affected. The -LD option must be used in combination with the -R option.

Extends to DC output (-DC option)

DC output mode is available with the -DC option. The output will be DC and AC 0~100Hz. There is up to 50% output power and current derating below 30Hz.

Line impedance (RL) Simulation (-IMP option)

ESA series with -IMP option can simulate output line impedance (RL). The impedance range is up to Rated V/Rated I; and can be set in percentage in GUI software.

Change to transformer output topology (-TR option)

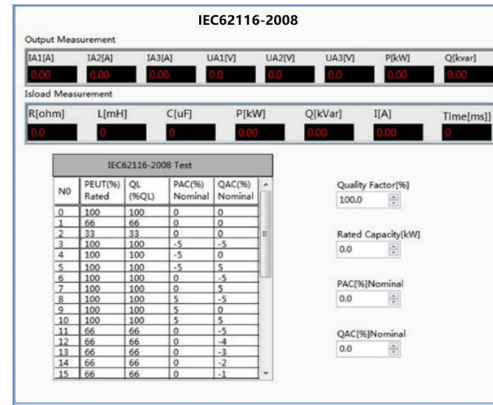
With -TR option, a three-phase independent transformer will be used at the output end, and the frequency output range is 40-70Hz, which meets most of the power frequency test requirements. (ESA doesn't use transformer at output by default).

Power supply + Electronic RLC load for anti-islanding test (-62116 option)²

The -62116 option of BriPower ESA series provides a perfect solution for anti-islanding test. ESA with -62116 options acts as power supply + electronic RLC load in this application. During the anti-island test, ESA-62116 simulates RLC load, and meets test requirement of IEC62116-2008.

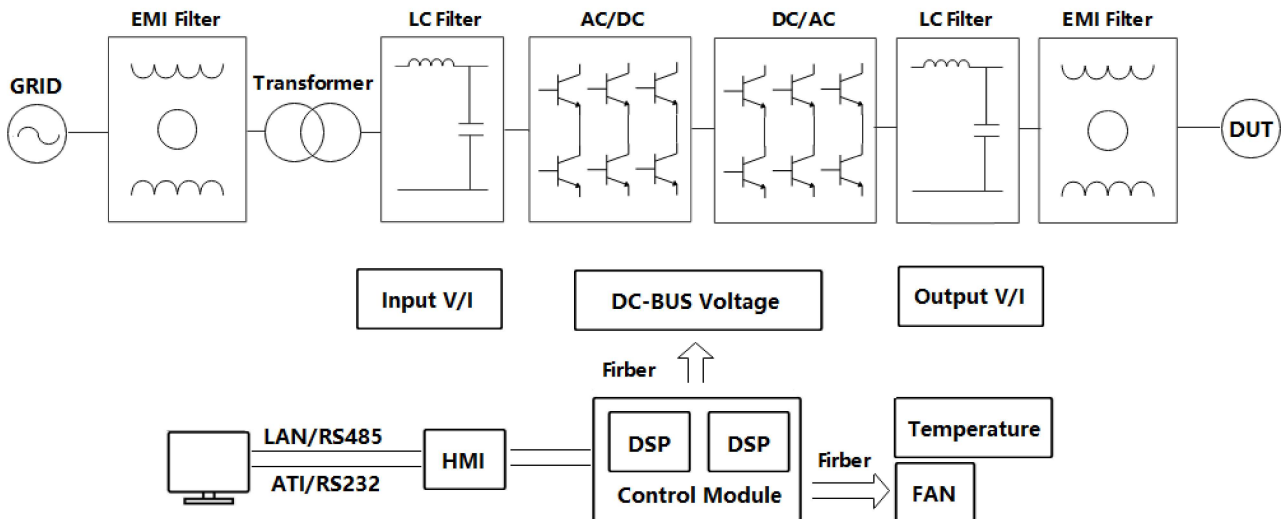
In the test procedure of IEC62116-2008, there is no need to set R, L, C directly, all related settings are to set QL, PAC, QAC by adjusting R, L, C value. In ESA-62116 solution, user can set these parameters directly, and equivalent R, L, C values will be displayed.

² ESA-62116 can only simulate RLC load for sine waveform, 50/60Hz input



Block Diagram

One 3-phase transformer is used on the input. The 3-phase AC input is rectified by four quadrant PWM converters, and in this topology, DC bus is generated, which provides power to the DC/AC power modules. Three DC/AC power modules are used, which corresponds to 3 phases AC output.

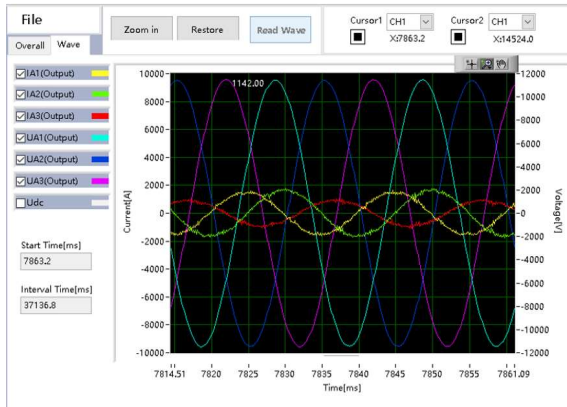


Note: The ESA series AC power supply topology with -TR option is different from the above figure.

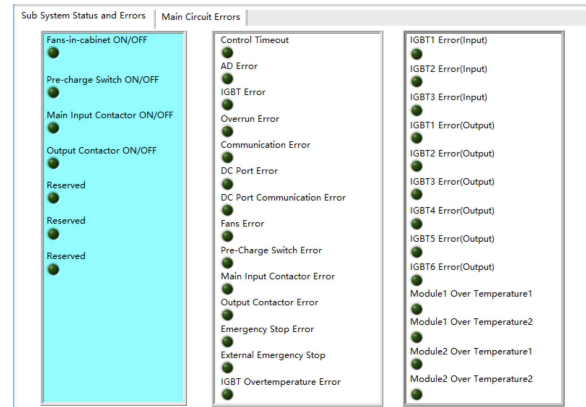
Graphical User Interface

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

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



Waveform Display



System Status

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

Input	
AC input Voltage	3P+N+PE, 380VLL±10%(std)
Frequency	47-63Hz
Efficiency	≥90%
Power Factor	0.95
THDi	≤3%
Output	
Output Modes	AC
Power Level	Single system 30-240KVA, customized up to 4MW and above
Voltage Ranges	0-300V L-N (std), voltage can be customized.
Current Ranges	Please refer to the Standard Models Specification
Frequency range	Standard 30-100Hz
Phase output	Phase B/C relative to phase A, 0.0~360.0°
Voltage Rise Time (10%~90%)	<1ms
Voltage Fall Time (90%~10%)	<1ms
Harmonic Generation	Up to 50th
Load Regulation	0.2%FS
Line Regulation	0.1%FS
Output Voltage THD	<1%FS (Resistive Load, @50/60Hz)
Power Accuracy	0.3%FS
Voltage Accuracy	0.1%FS
Current Accuracy	0.2%FS
Frequency Accuracy	0.01Hz
Phase accuracy	±0.3° @50Hz
Power Resolution	0.1kW
Voltage Resolution	0.01V
Current Resolution	0.1A
Frequency Resolution	0.01Hz

Phase Resolution	0.1°
Measurements	
Power Accuracy	0.3%FS
Voltage Accuracy	0.1%FS
Current Accuracy	0.2%FS
Frequency Accuracy	0.01Hz
Phase accuracy	±0.3° @50Hz
Others	
Standard Interface	LAN/RS485
Optional Interface	ATI/RS232
Protection	OVP, OCP, OPP, OTP
CE Conformity	EN 62040-1, EN 62040-2
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)
ESA 45-300-68-R	45kVA	300V L-N	68A/ph	800*800*2000	720
ESA 60-300-91-R	60kVA	300V L-N	91A/ph	800*800*2100	750
ESA 120-300-181-R	120kVA	300V L-N	181A/ph	1800*900*2200	1300
ESA 150-300-227-R	150kVA	300V L-N	227A/ph	1800*900*2200	1600
ESA 180-300-273-R	180kVA	300V L-N	273A/ph	1800*900*2200	1600
ESA 250-300-378-R	250kVA	300V L-N	378A/ph	1800*900*2200	2000
ESA 300-300-454-R	300kVA	300V L-N	454A/ph	2700*900*2200	2800
ESA 500-300-757-R	500kVA	300V L-N	757A/ph	3600*900*2200	4600

Note: Total weight < 1400KG, the cabinet bottom is wheel structure; otherwise, it is channel steel structure.

Options

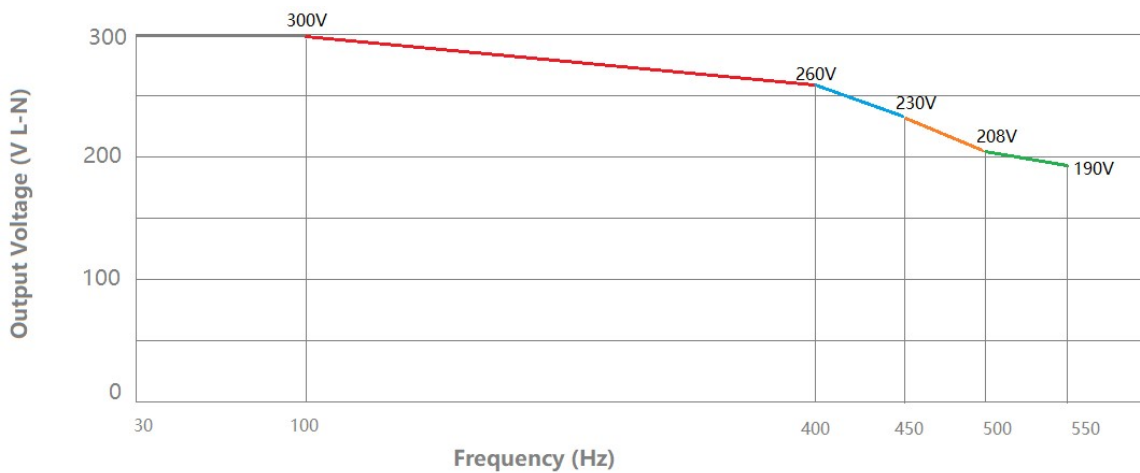
-232	RS232 program interface
-LD	Regenerative AC load function
-R	Regenerative mode
-ATI	Analog control interface (0~5V)
-DC	Extend output frequency to DC
-1P	Add single phase output
-IMP	Line impedance (RL) simulation
-MS	Master-Slave interface
-W	Use water-cooling
-TR	Change to transformer output topology
-62116	Power supply + Electronic RLC load for anti-islanding test

- HVXXX ³ Extend output voltage range to 400V, 530V or 700 V (L-N)
- CFG ⁴ Configurable Power/Voltage/Current range
- HF ⁵ AC output frequency extended to 550Hz (only for CV mode)

³ For -HVXXX option, the model number will be ESA AAA-HVXXX-CCC-DDD (AAA: power, XXX: voltage, CCC: current, DDD: other option). There is only one voltage range, for example, ESA 250-HV530-378, the output voltage range is 0~530VL-N. The current range is not decreased with -HVXXX option, which means, for example ESA 250-HV530-378 has the same current range as standard model ESA 250-300-378. The ESA units can output full power at 220VL-N.

⁴ Customized power/voltage/current range is possible with -CFG option. Please consult factory

⁵ Max VF Derating 300V L-N Range



AC Input Configuration ⁶

Please specify the input voltage (L-L)

/380, Input Voltage 380VLL±10%, 3P+N+PE/3P+PE

/400, Input Voltage 400VLL±10%, 3P+N+PE/3P+PE

/480, Input Voltage 480VLL±10%, 3P+N+PE/3P+PE

⁶ Other AC input is available, please consult factory.

Model Configuration

ESA AAA-BBB-CCC-DDD/EEE

AAA: Power, kVA

BBB: Voltage (L-N), V (std, 300V L-N)

CCC: Current (per Phase), A

DDD: Option

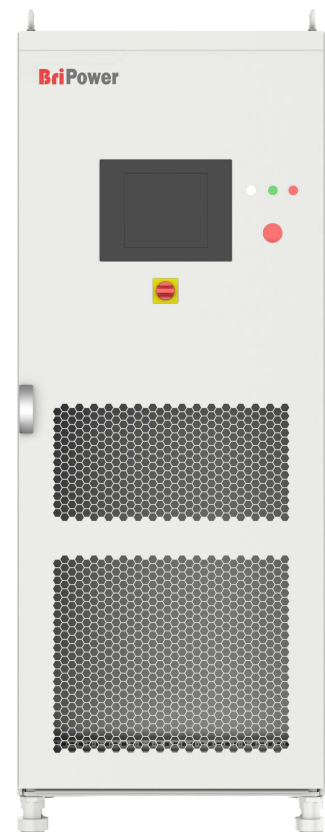
EEE: Input configuration

BriPower ESD Series

Programmable DC Power Supply

Features

- Single system up to 500kW, up to 4MW and above
- Output voltage up to 2000V(std)
- 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 (0 -90%) <1ms (-BSS option)
- Soft start: effectively restrain the impulse current when power on
- 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 (-CAN/-232/-ATI option)
- Emergency stop button and indicators on front panel
- TFT-Touch panel operation
- Mod-bus/SCPI protocols
- Output terminal insulation monitoring function (-INS option)
- Output contactor
- Remote sense
- CE conformity
- 13 months warranty



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 a reliable power supply product.

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 CAN, 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.

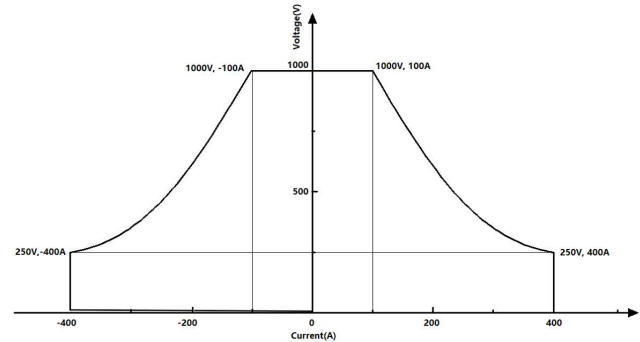
Re-regenerative DC Load (-LD option)¹

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.

¹ The -LD option must be used in combination with the -R option.

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 x1/x3/x4 current. For customized power/voltage/current, please consult the factory.

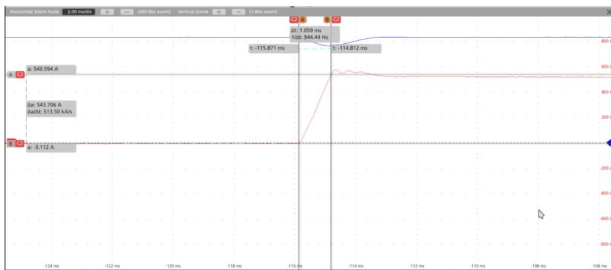


Example: 100kW, 1000V, ±400A

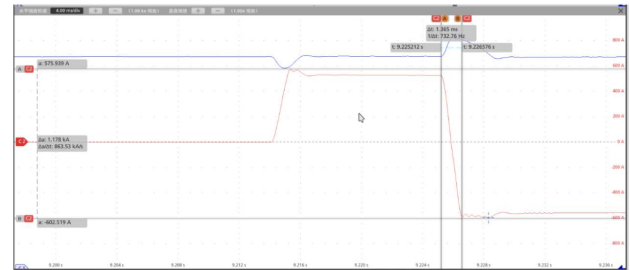
Fast current rising

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 (below waveforms are take ESD 200-600-600-R-BSS for example).

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



Current Rise Time (0~90%) ≤ 1ms



Current Drop Time (90~90%) ≤ 2ms

Low Voltage Operation Mode (-ZV option)

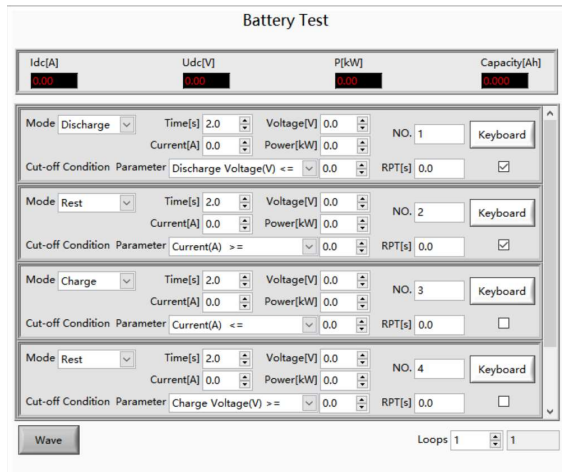
ESD series DC electronic load with -ZV option can produce large current that meets the requirements under the input condition close to 0.4V, which can evaluate the electrical characteristics of the fuel cell (such as VI), etc.

Battery Test

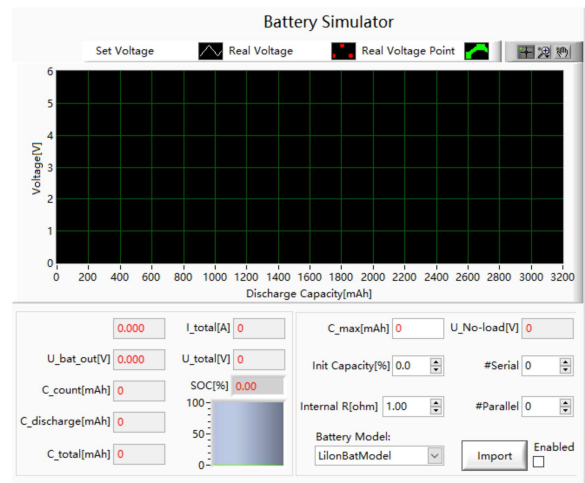
ESD series DC power supply can be used for characterization of power battery packs. It is used to test the charging and discharging performance, temperature rise characteristics, and cycle life of the power battery pack. Through the GUI software, different charging and discharging profiles can be programmed,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

Battery Simulation (-BSS option)

ESD Series DC power supplies provides GUI software to simulate the charging and discharging characteristics of the power battery pack/package and it provides battery simulation software, which can simulate different types of batteries, lithium-ion batteries, etc., supporting multiple parameter settings, including: battery capacity, the number of cells in series and parallel, the state of charge, etc.



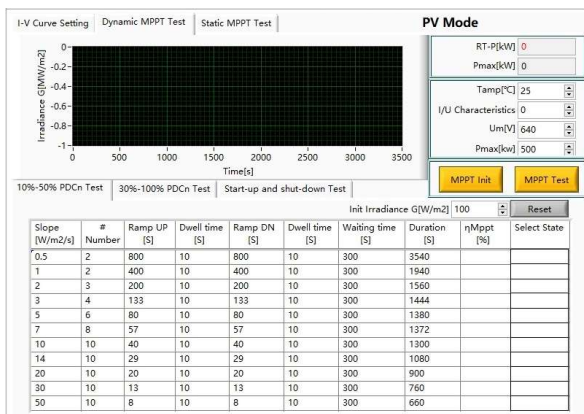
Battery Test



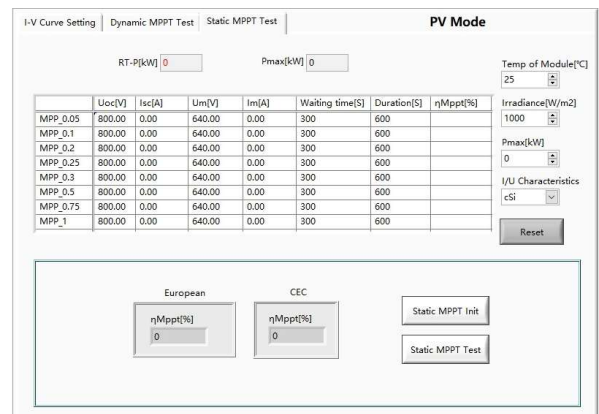
Battery Simulation

PV Simulation (-PV Option)

With -PV option, ESD series power supplies can be used to simulate IV curves of various solar panels, under various temperature and irradiance condition, and conduct static and dynamic MPPT tests according to EN 50530:2010. MPPT update rate: 200Hz. Irradiance levels: $0 \sim 1500 \text{ W/m}^2$. Temperature: $-10 \sim +100^\circ\text{C}$. Temperature coefficient: $+1\% \sim -1\%/^\circ\text{C}$.

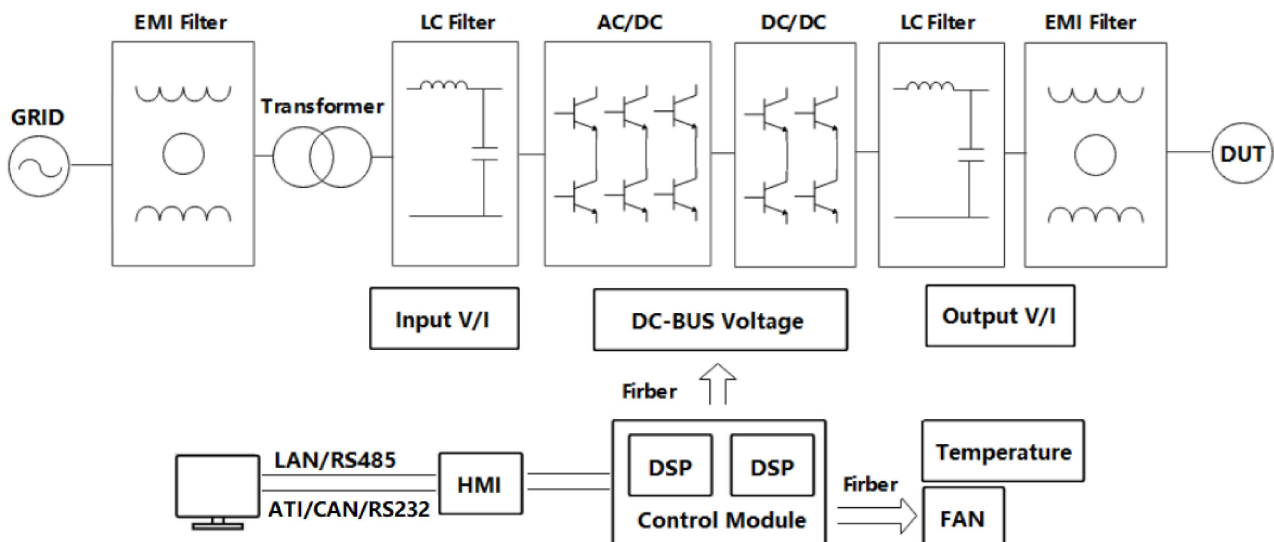


Dynamic MPPT Test



Static MPPT Test

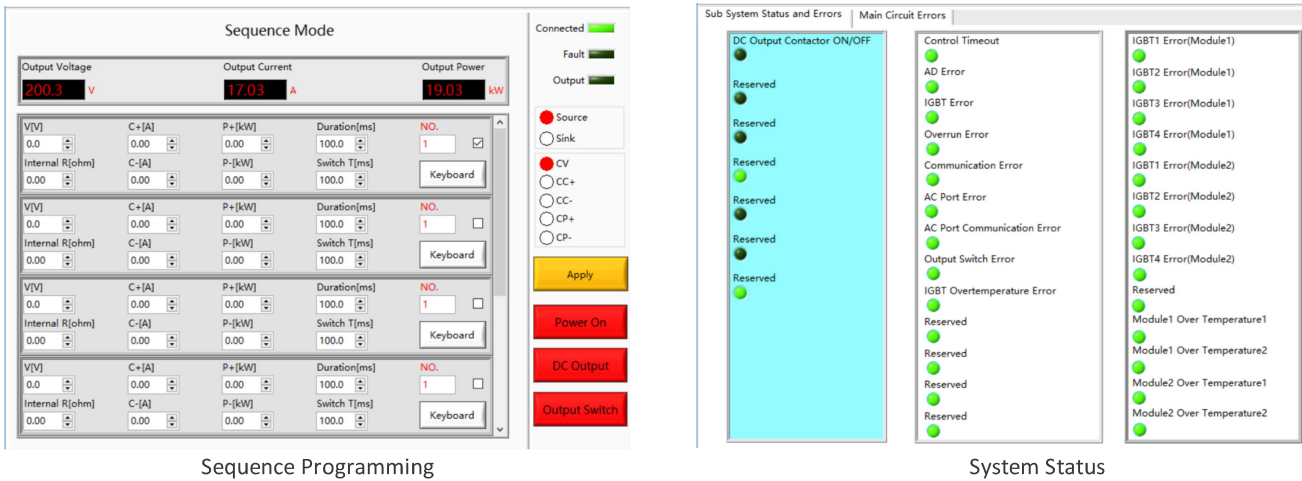
Block Diagram



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



Sequence Programming

System Status

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

AC Input	
AC input Voltage	3P+N+PE, 380VLL±10%(std)
Frequency	47-63Hz
Efficiency	≥90%
Power Factor	0.95
THDi	≤3%
Output	
Output Modes	CV, CC, CP and CR
Power Level	Up to 500kW in single controller, customized to 4MW and above.
Voltage Ranges	Up to 2000V
Current Ranges	Please refer to the Standard Models Specification
Load Regulation	0.1%FS
Line Regulation	0.1%FS
Voltage Ripple	0.1%FS; 0.05%FS@2000V
Stability	0.1%FS
Current Rise Time (0~90%)	<3ms (std), <1ms (-BSS Option)
Current Rise Time (-90%~90%)	<5ms (std), <2ms (-BSS Option)
Voltage Regulation Time (0-100% Load change)	<3ms (std), <1.5ms (-BSS Option)
Power Accuracy	0.3%FS
Voltage Accuracy	0.1%FS

Current 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
Measurements	
Measurement accuracy Power	0.3%FS
Measurement accuracy Voltage	0.1%FS
Measurement accuracy Current	0.3%FS
Others	
Standard Interface	LAN/RS485
Optional Interface	CAN/RS232/ATI
Protection	OVP, OCP, OPP, OTP
CE Conformity	EN 62040-1, EN 62040-2
Cooling	Forced Air Cooling
Temperature	Operating: 0~40°C, Storage: -20~85°C
Operating Humidity	20-90%RH (None Condensing)

Note:

1. Other Power/Voltage Level can be offered. Please consult factory
2. Total weight < 1400KG, the cabinet bottom is wheel structure; otherwise, it is channel steel structure.

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
- CH(x) x channels output

AC Input Configuration ²

Please specify the input voltage (L-L)

/380, Input Voltage 380VLL±10%, 3P+N+PE/3P+PE

/400, Input Voltage 400VLL±10%, 3P+N+PE/3P+PE

/480, Input Voltage 480VLL±10%, 3P+N+PE/3P+PE

² Other AC input is available, please consult factory.

Model Configuration

ESD AAA-BBB-CCC-DDD/EEE

AAA: Power, kW

BBB: Voltage range, V

CCC: Current range, A

DDD: Option

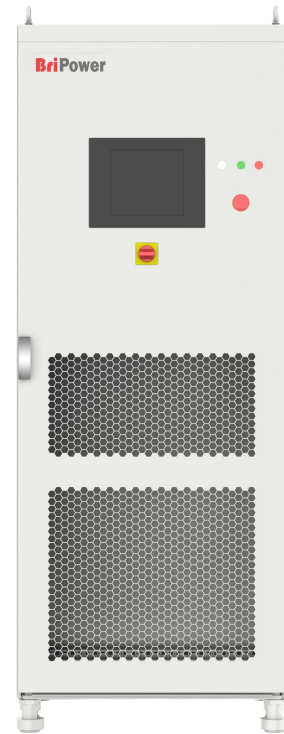
EEE: Input configuration

BriPower BSL Series

High Power DC Source & Load

Features

- Output Power: 100kW/150kW/200kW/250kW/300kW
- Output Voltage: 1000V/1500V/2000V
- Output Current: *2 / *3 / *4
- Auto-Ranging Output
- Soft start: effectively restrain the impulse current when power on
- Seamless transition between source and sink modes
- Current rise time (0% -90%) <5ms
- CC/CV/CP/CR mode available
- Regenerative DC load function
- Master-Slave interface
- LAN/RS485 interfaces
- Emergency stop button and indicators on front panel
- TFT-Touch panel operation
- Mod-bus protocol
- Output contactor
- Remote sense
- CE conformity
- 13 months Warranty



Overview

The BriPower BSL series is IGBT PWM switching DC Power Source & E-Load, which contains multi output power levels 100kW/150kW/200kW/250kW/300kW for single system, up to 4 individual systems can be paralleled to up to 1.2MW system. BSL series has an auto-ranging output function. BSL standard models provide 1000V/1500V/2000V voltage and x2/x3/x4 current.

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

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

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 interfaces are available for automated test applications.

Bi-Directional (Re-generative)

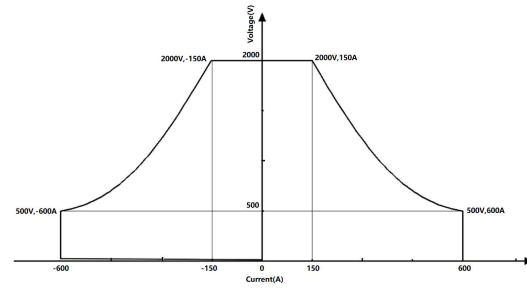
BSL series can operate in source and sink mode. It has the capability to return the energy fully back to the grid.

Re-generative DC Load

BSL series can be used as regenerative DC electronic load. DC load simulation includes constant current, constant resistance, constant voltage, and constant power modes.

Automatic wide range output

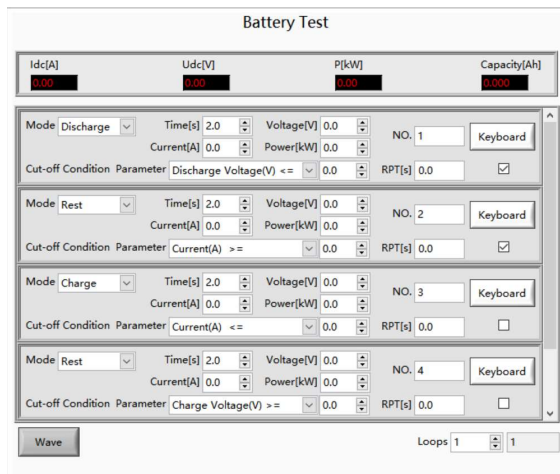
BSL series has an automatic wide-range output function, such as: high-voltage small current or low-voltage large current (also applicable in sink power mode). The same model of power supply can cover a wider range of power applications.



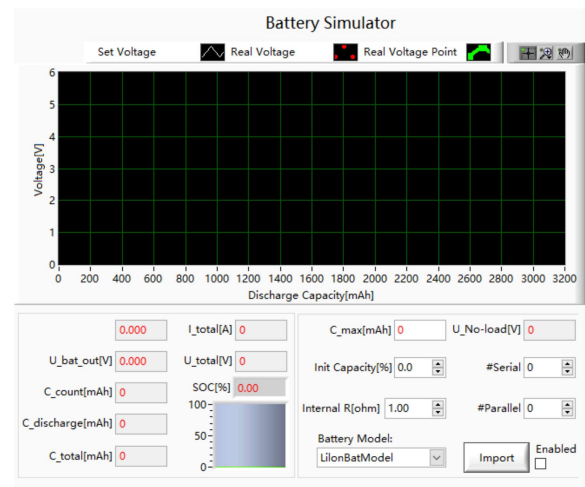
Example: 100kW, 1000V, ±400A

Battery Test

BSL series provides battery test software and 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 Test



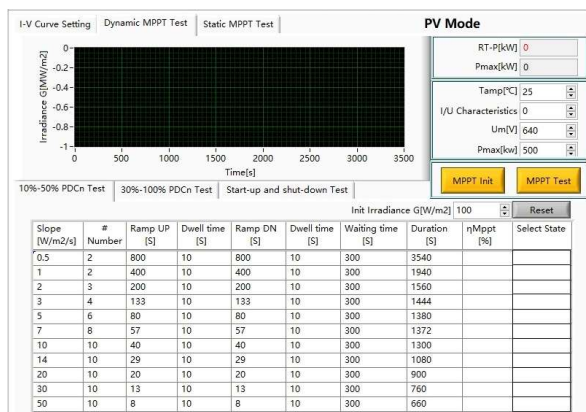
Battery Simulation

Battery Simulation

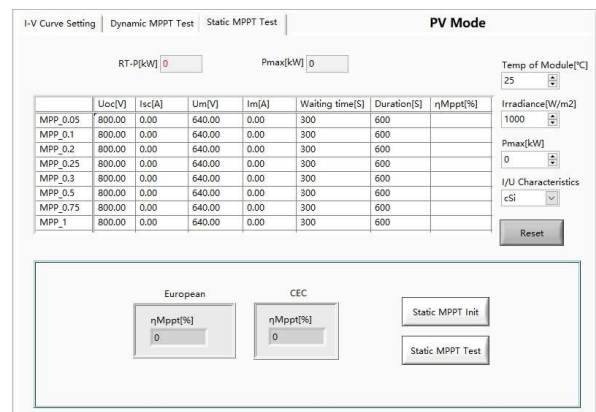
BSL Series provides battery simulation software and can simulate the charging and discharging characteristics of the power battery pack/package and provide a convenient and efficient testing method for the development and testing of new energy vehicle motors etc.

PV Simulation

BSL series provides PV simulation software and can be used to simulate IV curves of various solar panels, under various temperature and irradiance condition, and conduct static and dynamic MPPT tests according to EN 50530:2010. MPP Update Rate: 200Hz. Irradiance levels: 0 ~ 1500 W/m². Temperature: -10 ~ +100°C. Temperature coefficient: +1% ~ -1%/°C.

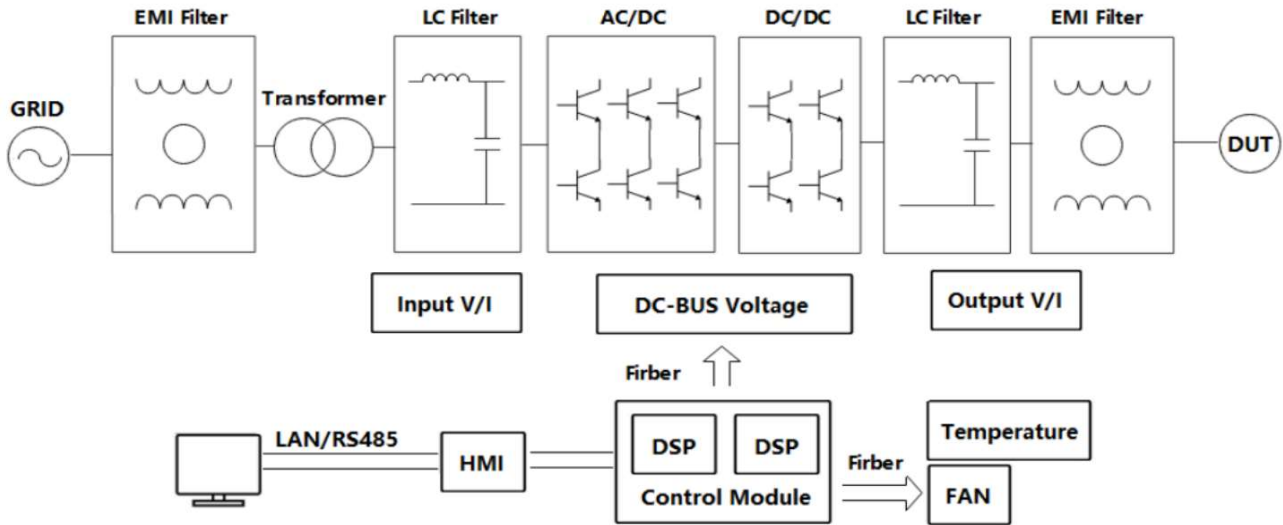


Dynamic MPPT Test



Static MPPT Test

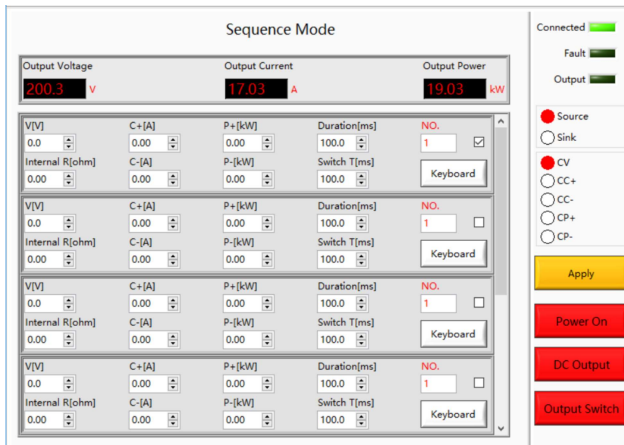
Block Diagram



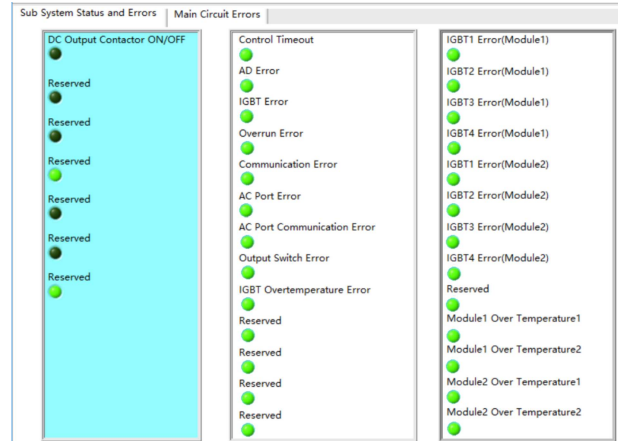
Graphical User Interface

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



Sequence Programming



System Status

General Specification

AC Input	
AC input Voltage	3P+N+PE, 380VLL±10%(std)
Frequency	47-63Hz
Efficiency	≥90%
Power Factor	0.95
THDi	≤3%

Output	
Output Modes	CV, CC, CP and CR
Load Regulation	0.1%FS
Line Regulation	0.1%FS
Voltage Ripple	0.2%FS
Stability	0.2%FS
Current Rise Time (0%~90%)	<5ms
Current Rise Time (-90%~90%)	<10ms
Voltage Regulation Time (0-100% Load change)	<5ms
Power Accuracy	0.3%FS
Voltage Accuracy	0.1%FS
Current Accuracy	0.3%FS
Power Resolution	0.1kW
Voltage Resolution	0.1V
Current Resolution	0.1A
Measurements	
Measurement accuracy Power	0.3%FS
Measurement accuracy Voltage	0.1%FS
Measurement accuracy Current	0.3%FS
Others	
Standard Interface	LAN/RS485
Protection	OVP, OCP, OPP, OTP
CE Conformity	EN 62040-1, EN 62040-2
Protection Level	IP21
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)
BSL 100-1000-200	100kW	1000V	200A	800*900*1900	1200
BSL 100-1000-300	100kW	1000V	300A	800*900*2100	1300
BSL 100-1000-400	100kW	1000V	400A	800*900*2200	1400
BSL 100-1500-133	100kW	1500V	133A	800*900*2100	1150
BSL 100-1500-200	100kW	1500V	200A	800*900*2100	1200
BSL 100-1500-266	100kW	1500V	266A	800*900*2200	1300
BSL 100-2000-100	100kW	2000V	100A	800*900*2100	1150
BSL 100-2000-150	100kW	2000V	150A	800*900*2100	1200
BSL 100-2000-200	100kW	2000V	200A	800*900*2200	1300
BSL 150-1000-300	150kW	1000V	300A	1000*900*1900	1400
BSL 150-1000-450	150kW	1000V	450A	1000*900*2100	1500
BSL 150-1000-600	150kW	1000V	600A	1000*900*2200	1600

BSL 150-1500-200	150kW	1500V	200A	1000*900*1900	1300
BSL 150-1500-300	150kW	1500V	300A	1000*900*2100	1400
BSL 150-1500-400	150kW	1500V	400A	1000*900*2200	1500
BSL 150-2000-150	150kW	2000V	150A	1000*900*1900	1300
BSL 150-2000-225	150kW	2000V	225A	1000*900*1900	1300
BSL 150-2000-300	150kW	2000V	300A	1000*900*2100	1400
BSL 200-1000-400	200kW	1000V	400A	1800*900*1800	1700
BSL 200-1000-600	200kW	1000V	600A	1800*900*2000	1850
BSL 200-1000-800	200kW	1000V	800A	1800*900*2200	2000
BSL 200-1500-266	200kW	1500V	266A	1800*900*1800	1600
BSL 200-1500-400	200kW	1500V	400A	1800*900*1800	1700
BSL 200-1500-533	200kW	1500V	533A	1800*900*2000	1800
BSL 200-2000-200	200kW	2000V	200A	1800*900*1800	1600
BSL 200-2000-300	200kW	2000V	300A	1800*900*1800	1680
BSL 200-2000-400	200kW	2000V	400A	1800*900*1800	1700
BSL 250-1000-500	250kW	1000V	500A	1800*900*2000	1900
BSL 250-1000-750	250kW	1000V	750A	1800*900*2200	2100
BSL 250-1000-1000	250kW	1000V	1000A	1800*900*2200	2300
BSL 250-1500-333	250kW	1500V	333A	1800*900*1800	1800
BSL 250-1500-500	250kW	1500V	500A	1800*900*2000	1900
BSL 250-1500-666	250kW	1500V	666A	1800*900*2200	2100
BSL 250-2000-250	250kW	2000V	250A	1800*900*1800	1800
BSL 250-2000-375	250kW	2000V	375A	1800*900*1800	1800
BSL 250-2000-500	250kW	2000V	500A	1800*900*2000	1900
BSL 300-1000-600	300kW	1000V	600A	1900*1000*2200	2400
BSL 300-1000-900	300kW	1000V	900A	2800*1000*2200	2600
BSL 300-1000-1200	300kW	1000V	1200A	2800*1000*2200	2800
BSL 300-1500-400	300kW	1500V	400A	1900*1000*2200	2300
BSL 300-1500-600	300kW	1500V	600A	1900*1000*2200	2400
BSL 300-1500-800	300kW	1500V	800A	2800*1000*2200	2550
BSL 300-2000-300	300kW	2000V	300A	1900*1000*2200	2300
BSL 300-2000-450	300kW	2000V	450A	1900*1000*2200	2300
BSL 300-2000-600	300kW	2000V	600A	1900*1000*2200	2400

Note: Total weight < 1400KG, the cabinet bottom is wheel structure; otherwise, it is channel steel structure.

AC Input Configuration ¹

Please specify the input voltage (L-L)

/380, Input Voltage 380VLL±10%, 3P+N+PE/3P+PE

/400, Input Voltage 400VLL±10%, 3P+N+PE/3P+PE

/480, Input Voltage 480VLL±10%, 3P+N+PE/3P+PE

¹ Other AC input is available, please consult factory.

Model Configuration

BSL AAA-BBB-CCC/DDD

AAA: Power, kW

BBB: Voltage range, V

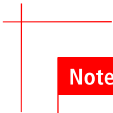
CCC: Current range, A

DDD: Input configuration

Notes

Lined area for notes.





Notes

Lined area for notes with horizontal ruling lines.

