- Single system from 30kVA to 500kVA and parallel up to 2MVA and above
- 4 quadrant operation, regenerative up to 100% of rated output power back to grid (-R option)
- Independent three-phase output
- Up to 40th harmonic waveform generation
- Voltage drop simulation (LVRT for inverter test)
- 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 and 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
- Extend output frequency to DC (-DC option)
- Add single phase output (-1P option)
- Use water-cooling (-W option)
- Master-Slave interface (-MS option)
- TFT-Touch panel operation
- LAN/RS485 interfaces (standard) RS232/Analog control interfaces (optional)
- Mod-bus/SCPI protocols
- Emergency stop button
- Switchable insulation monitoring
- Output contactor
- Remote sense
- CE conformity
- Customized voltage, current and power ranges

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 500kVA for single system, and up to 4 individual systems can be paralleled to achieve power levels up to 2MVA. Customized system output power level goes up to 4MVA and above.

ESA series uses bi-directional design, which can be used as 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)

With touch panel on the front panel, user can control the power source with GUI software. System status indicators and emergency stop button are installed on the front panel. Programming interfaces including RS485 and LAN interfaces are standard, and optional RS232, 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

Highly customizable Output Power, Voltage and Current is available with the ESA Series. Please consult us with your required specification for a customized offer. The customization is basically standard with all our units. We provide with every quote the customized specification.

ESA 120-300-182
300V L-N, 182A/phase output
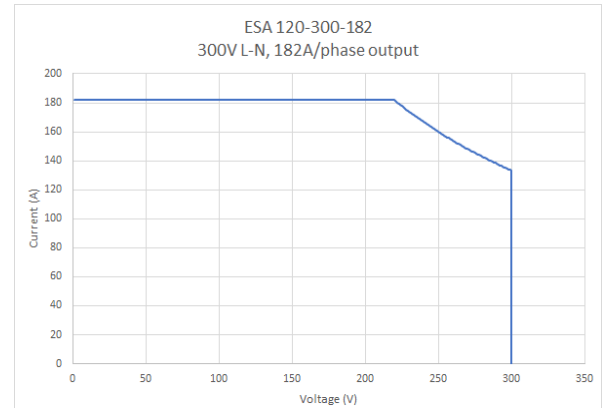
Re-generative AC Load -LD option [1]

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. **Rectifier mode** can be used to simulate non-linear loads, the CC/CP mode and CF 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 |

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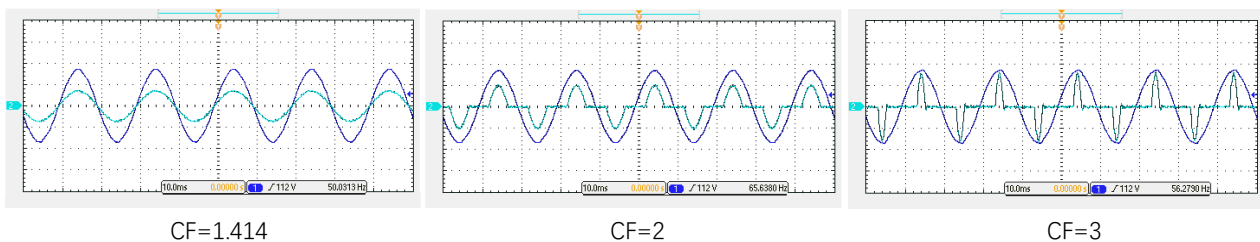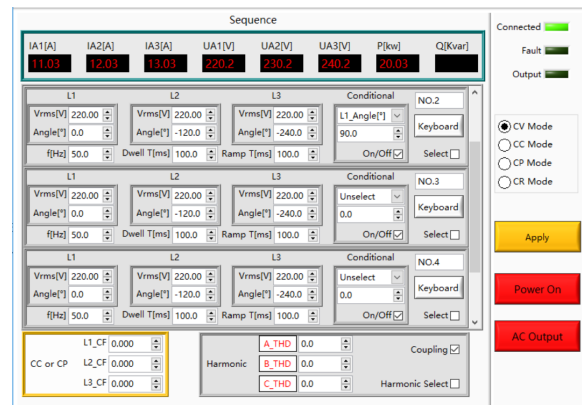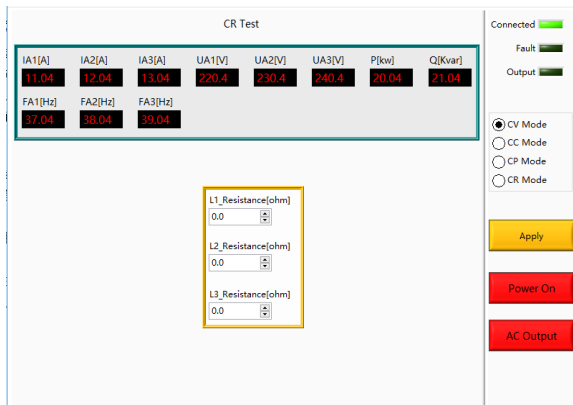
[1] In old versions, -LD included the function to set the R, L, and C values independently. Since this function cannot be provided with other functions at the same time, this function has been deleted.

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, low/zero voltage ride through test, anti-islanding test, etc. ESA series have Various simulation functions, including: voltage and frequency fluctuations, voltage sags, 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 and OFF output phase angle, dwell time, switching time can be programmed. Three-phase can be independently programmed.
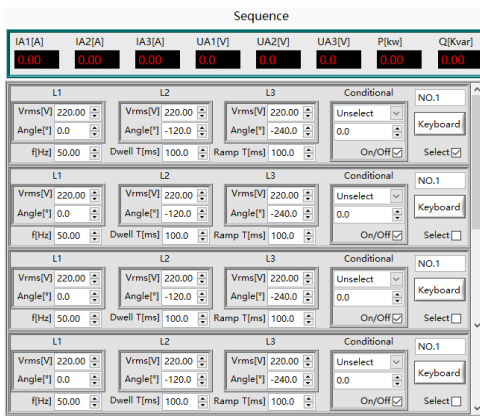

Sequence Programming
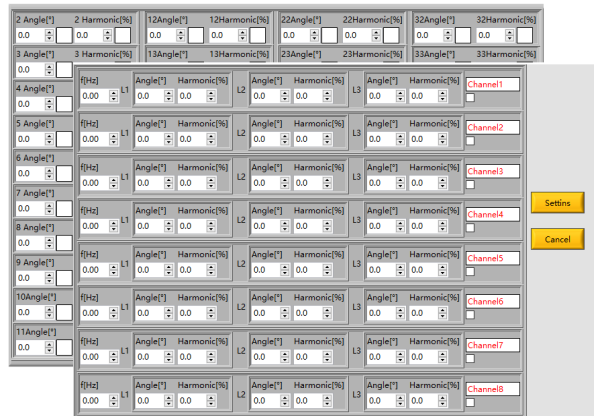
Harmonic/Inter-harmonic generation

Harmonic and inter-harmonic waveforms

DSP+FPGA technology are use in ESA series to generate up to 40th harmonic. And ESA supports inter-harmonics editing. User can program the phase angle and amplitude of the harmonic through the GUI, allowing generate three-phase harmonic/inter-harmonic waveforms independently.
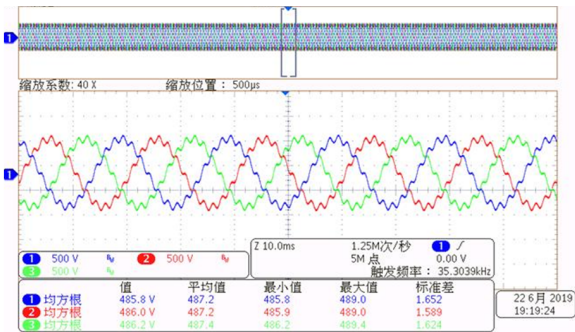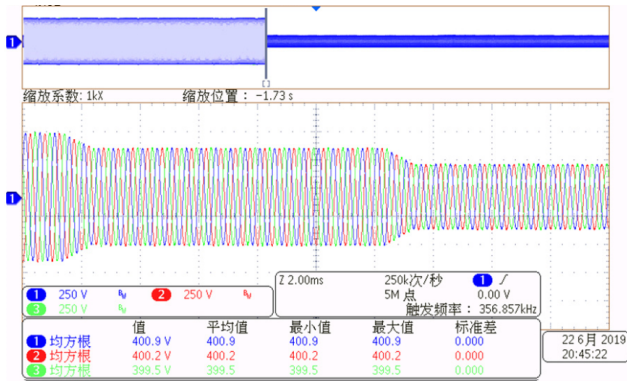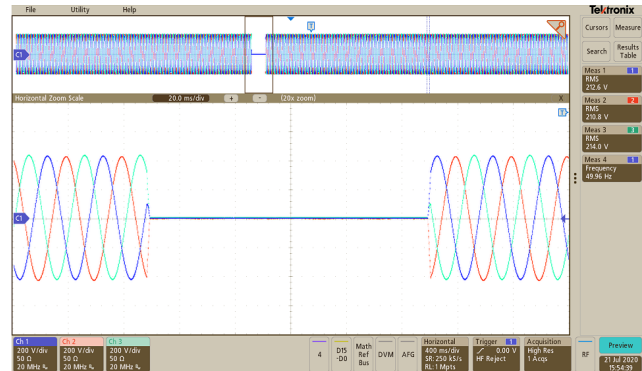

Harmonic waveform
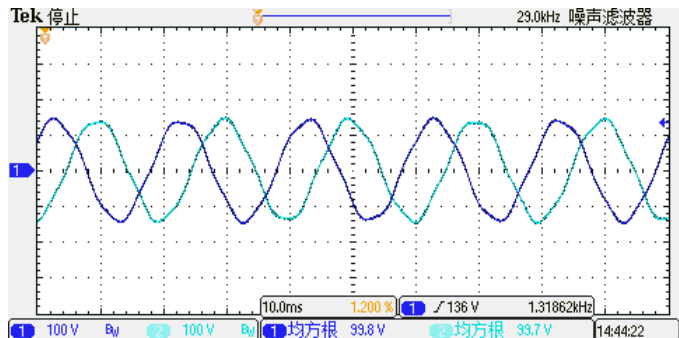
Interharmonic waveform

Voltage drop simulation (LVRT for inverter test)

ESA series provide firmware and software support for low/zero voltage ride through test for PV inverters.

Voltage drop

Zero voltage ride

Extends to DC output -DC option

ESA can also be DC output, the frequency range will be DC~100Hz, in both source and sink modes. The DC voltage range is 420V (std), and accuracy is 0.2%FS. The output mode can be AC, DC or AC+DC.

Line impedance (RL) Simulation -IMP option

ESA 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.

Graphical User Interface

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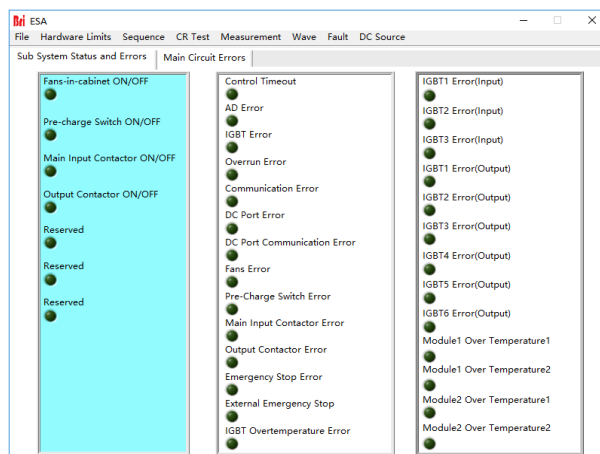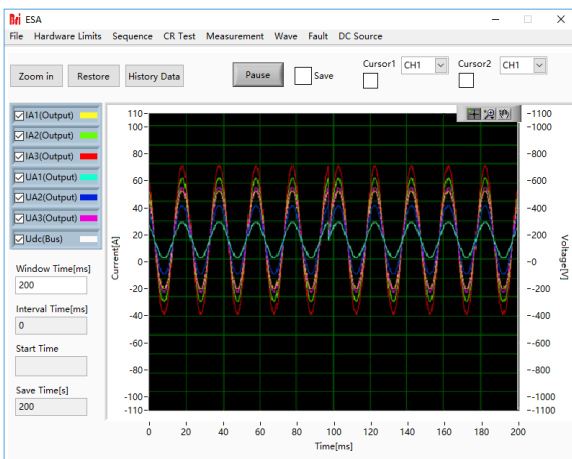
Block Diagram
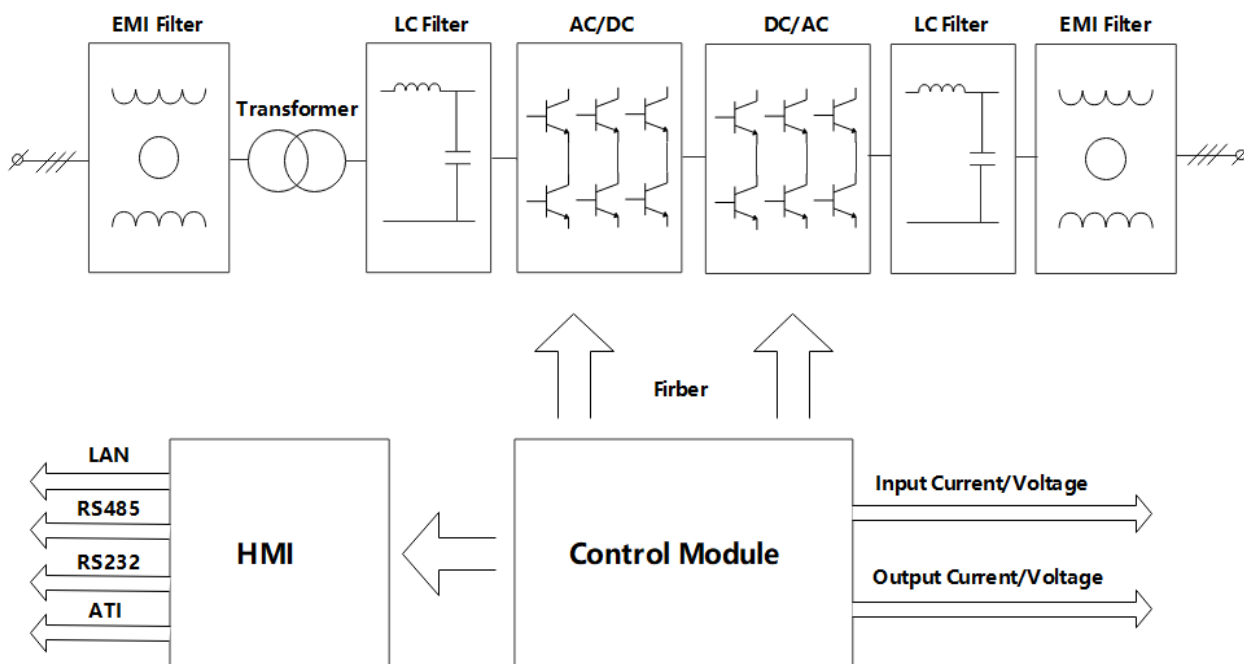
One 3-phase transformer is used on the input. The 3-phase AC input is rectified by four quadrant PWM converters, and in this topology, DC bus is generated, which provides power to the DC/AC power modules. Three DC/AC power modules are used, which corresponds to 3 phases AC output.

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

Input	
AC input Voltage	3P+N+PE, 380VLL±10%(std)
Frequency	47-63Hz
Efficiency	≥90%
Power Factor	0.95
Output	
Output Modes	AC
Power Level	30kVA – 500kVA in single controller. 2MVA max power available. Power Level can be customized.
Voltage Ranges	0-300V L-N (std), voltage can be customized.
Current Ranges	Customizable for customer need.
Frequency range	Standard 30-100Hz
Phase output	Phase B/C relative to phase A, 0.0~360.0°

Harmonic Generation	Up to 40th
Load Regulation	0.2%FS
Line Regulation	0.1%FS
THD	<1% (Resistive Load)
Power Accuracy	0.5%FS
Voltage Accuracy	0.5%FS
Current Accuracy	0.3%FS
Frequency Accuracy	0.01Hz
Phase accuracy	<1.2° (@50Hz)
Power Resolution	0.1kW
Voltage Resolution	0.1V
Current Resolution	0.1A
Frequency Resolution	0.01Hz
Measurements	
Power Accuracy	0.5%FS
Voltage Accuracy	0.5%FS
Current Accuracy	0.3%FS
Frequency Accuracy	0.01Hz
Phase accuracy	<1.2° (@50Hz)
Others	
Protection	OVP, OCP, OTP
Regulatory	CE Conformity
Cooling	Forced Air Cooling
Temperature	Operating: 0~40°C Storage: -20~85°C
Operating Humidity	20-90%RH (None Condensing)

Standard Models Specification

Power Level	30kVA	60kVA	120kVA	250kVA	500kVA
Voltage Range	0-300V L-N				

Output current	46A/ph	91A/ph	182A/ph	379A/ph	758A/ph
Dimension (W*D*H mm)	800*800*1900	800*800*2200	2*800*800*2200	2*900*900*2200	4*900*900*2200
Weight	<800kg	<1000kg	<1700kg	<2500kg	<5000kg

* Other Power/Voltage Level can be offered. Please consult factory

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

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

Model Configuration
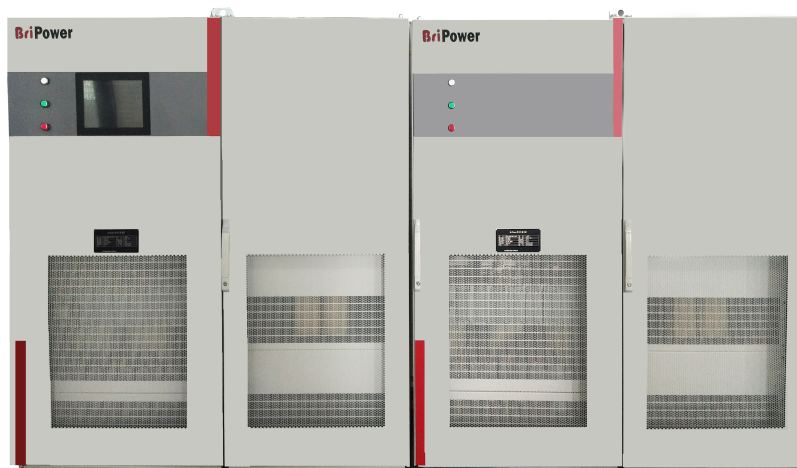
ESA AAA-BBB-CCC-DDD/EEE

AAA: Power, kVA

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

CCC: Current (per Phase), A

DDD: Option

EEE： Input configuration

Picture of ESA 400kVA System

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.

Factory: Nanjing Bridge New Energy Technology Co., Ltd
Sales Company: Shanghai Bridge Electronic Technology Co., Ltd
General information: info@bridgetech.cn
Technical Support: support@bridgetech.cn
Repair &Calibration: service@bridgetech.cn
Tel: 40010-18618
Int'l Sales: contact@bridgetech.com.sg