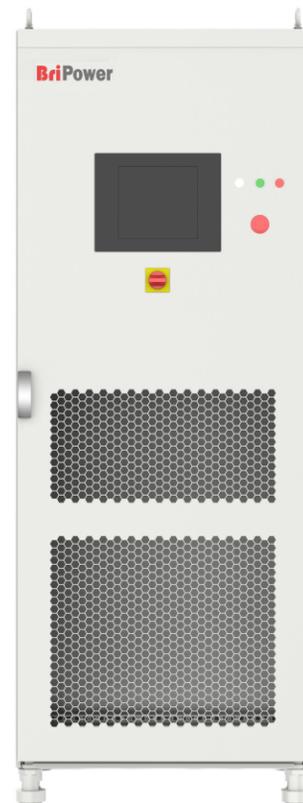


# BriPower Bi-Directional AC Power Supply

## ESA-E 45-300-68

### Features

- Output power: 45KVA, 0~300V L-N, 0~68A/ph
- 4 quadrant operation, regenerative up to 100% of rated output power back to grid
- Independent three-phase output
- Up to 50th harmonic waveform generation
- Soft start: effectively restrain the impulse current when power on
- Voltage drop simulation (LVRT for inverter test)
- Regenerative AC load function
- 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
- Transformer output topology
- TFT-Touch panel operation
- LAN/RS485 interfaces
- Mod-bus/scpi protocols
- Emergency stop button
- Output contactor
- Remote sense
- CE conformity



### Overview

The BriPower ESA-E 45-300-68 is a high-performance and multi-functional grid simulator, which using advanced PWM technology. ESA-E-45-300-68 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-E can also be used as regenerative AC electronic load.

ESA-E 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-E 45 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 interfaces are available for automated test applications.

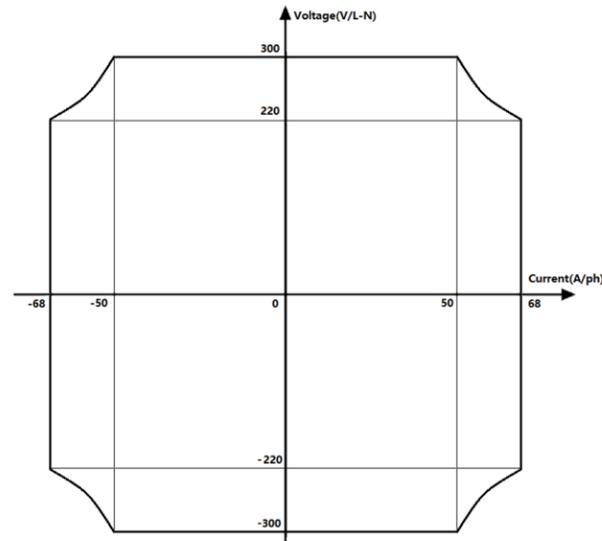
### Bi-Directional (Re-generative)

ESA-E 45-300-68 can operate in source and sink mode. It has the capability to return the energy fully back to the grid.



## Constant Power output

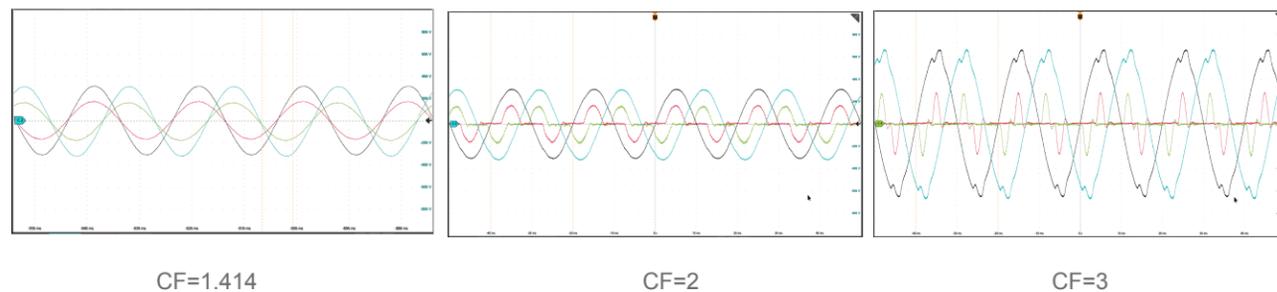
ESA-E 45-300-68 has an automatic wide-range output function. Under the condition of rated output power, the output range of voltage/ current can be adjusted, such as: high-voltage small current or low-voltage large current (also applicable in sink power mode). The same type of power supply can cover a wider range of power applications.



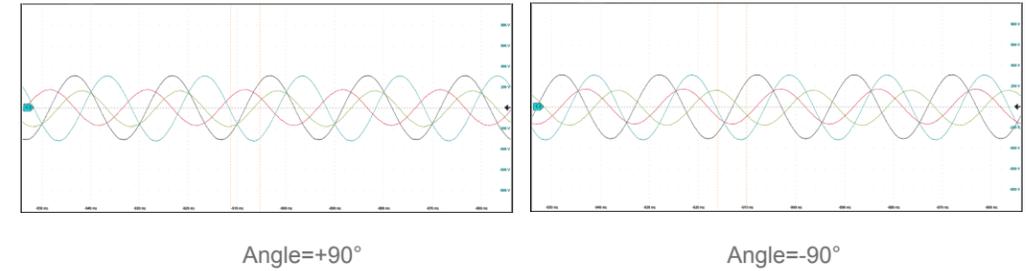
Example: 45kVA, 300V L-N, 68A/ph

## Re-generative AC Load

ESA-E 45-300-68 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.



<sup>1</sup>ESA-E 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.



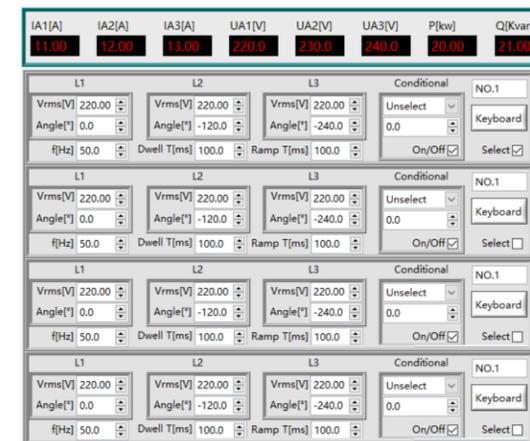
## Grid Simulation

ESA-E 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-E has various simulation functions, including: voltage and frequency fluctuations, voltage sags, low/zero voltage ride through, three-phase unbalance, harmonics and inter-harmonics. ESA-E 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.



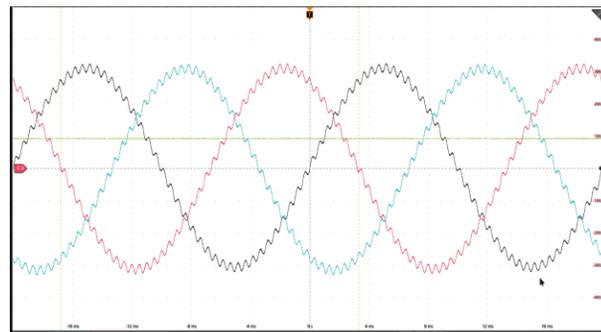
Sequence programming



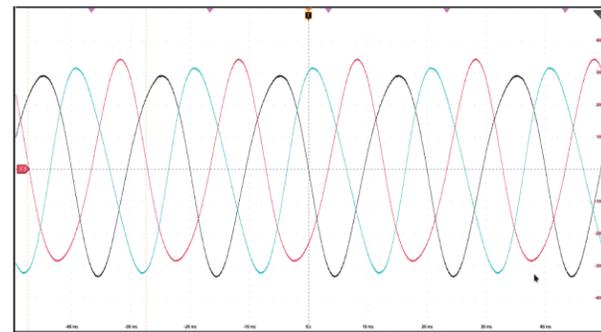
Harmonic/Inter-harmonic editing

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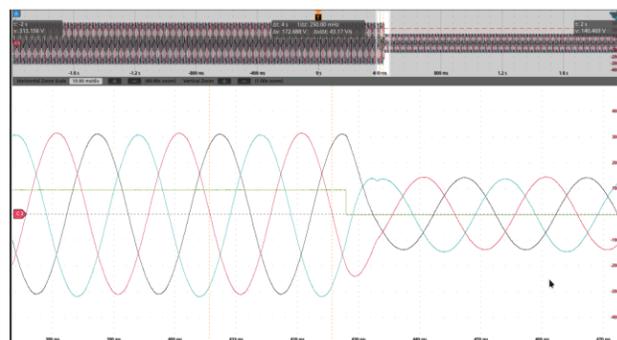
Harmonic waveform



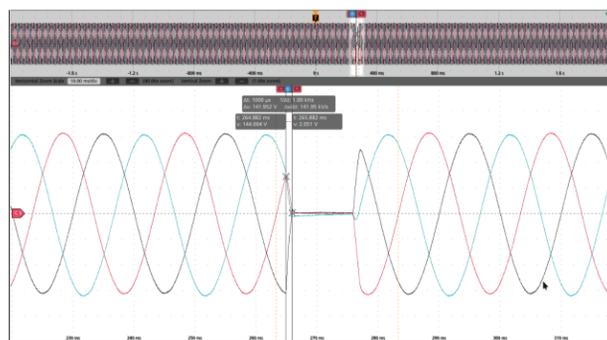
Inter-harmonic waveform

## Voltage drop simulation (LVRT for inverter test)

ESA-E provides firmware and software support for low/zero voltage ride through tests for PV inverters.



Voltage drop



Zero voltage ride

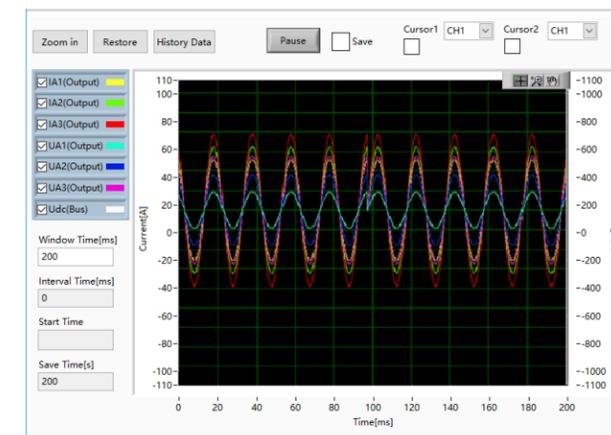
## Transformer output topology

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.

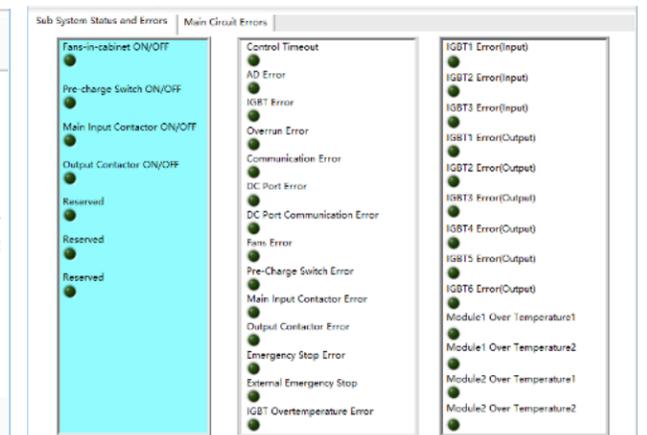
## Graphical User Interface

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



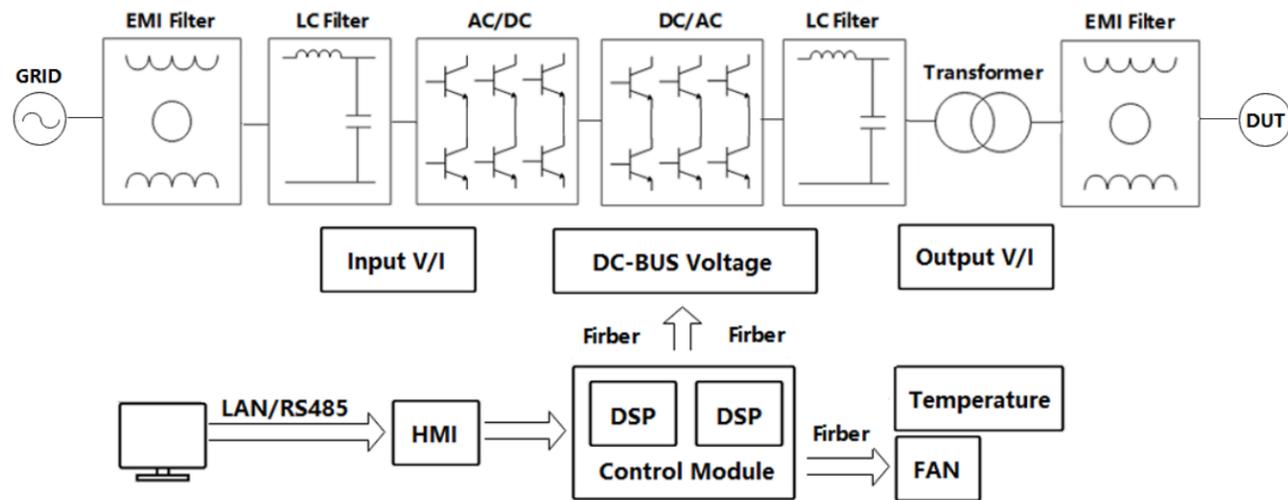
Waveform Display



System Status



## Block Diagram



## Specification

<b>Model</b>	<b>ESA-E 45-300-68</b>
<b>Input</b>	
AC input Voltage	3P+N+PE, 380VLL±10%(std)
Frequency	47-63Hz
Efficiency	≥90%
Power Factor	0.95

<b>Output</b>	
Output Modes	AC
Power Level	45KVA
Voltage Ranges	0-300V L-N
Current Ranges	68A/ph

Frequency range	40-70Hz
Phase output	Phase B/C relative to phase A, 0.0~360.0°
Harmonic Generation	Up to 50 <sup>th</sup>
Load Regulation	0.2%FS
Line Regulation	0.1%FS
THD	<1% (Resistive Load)
Power Accuracy	0.5%FS
Voltage Accuracy	0.3%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

<b>Measurements</b>	
Power Accuracy	0.5%FS
Voltage Accuracy	0.3%FS
Current Accuracy	0.3%FS
Frequency Accuracy	0.01Hz
Phase accuracy	<1.2° (@50Hz)

Others	
Standard Interface	LAN/RS485
Protection	OVP, OCP, OPP, 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)
Dimension (W*D*H mm)	800*800*2000
Weight (kg)	About 720

## 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

## 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. **BriPower is valuable to customer especially High Power and High Voltage.**

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