

WA SERIES

Regenerative Grid Simulator

The WA Series Regenerative Grid Simulator is a programmable regenerative AC power source developed based on the 3rd-generation SiC technology, featuring AC/DC four-quadrant operation capability.

It can operate as an AC power source to meet general grid compliance test requirements, outputting stable voltage and frequency, and providing voltage variation, frequency variation, and phase variation. It supports the simulation of various power quality conditions including harmonics, three-phase unbalance, voltage sag, and flicker.

Meanwhile, it can absorb energy regenerated by the load and feed it back to the grid, with a regeneration efficiency of up to 91%.

It is a bidirectional power supply with high precision, high dynamics, high standards, and full-featured grid characteristic simulation.



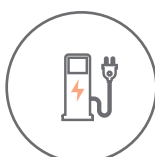
⚡ Features

- > Integrated AC source & load, bidirectional power flow and seamless switching over full power range.
- > High power density: up to 21 kVA in 3U.
- > High-efficiency energy regeneration.
- > Adopts silicon carbide (SiC) technology.
- > Supports master-slave parallel operation.
- > Touchscreen design with simple and intuitive UI.
- > Built-in extensive waveform library.
- > Phase angle adjustable from 0° to 360°.
- > Harmonic simulation and analysis up to 50th order.
- > Complies with grid code testing including LVRT, phase jump, frequency variation, harmonic injection, etc.
- > Comprehensive protection functions.

Product Application



OBC/BOBC



EV Charger / Charging Module



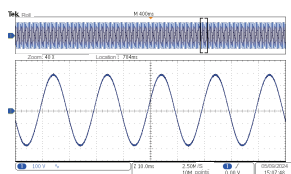
PV Inverter



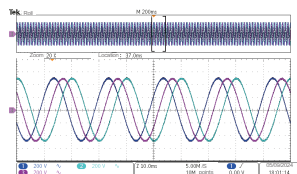
Energy Storage System (ESS)

Multi-phase output

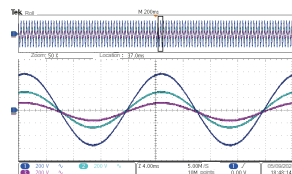
It has multi-phase output capability, and can choose from three modes: single-phase, split-phase, and three-phase. In single-phase mode, it can provide high current, and in split-phase/three-phase mode, it can provide low current, and can simulate three-phase imbalance, phase loss, etc. In split-phase mode, it can test up to 3 devices under test at the same time, improving equipment utilization, saving space and cost.



▲ Single-phase output



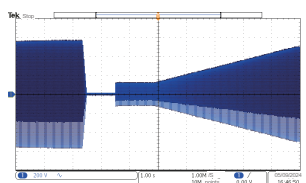
▲ Three-phase output



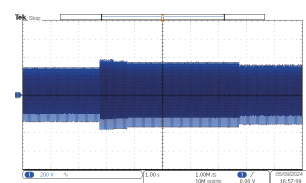
▲ Phase split multi-channel output

Programming function

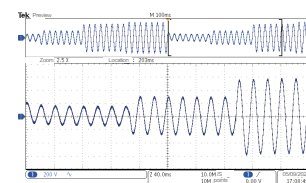
It has the function of generating arbitrary waveforms. It can use functions such as LIST and WAVE to simulate various working conditions of the power grid through simple step settings, such as voltage sag, voltage rise, voltage fluctuation, power frequency change, etc., to verify the power grid adaptability and high and low voltage ride-through capabilities of the equipment under test.



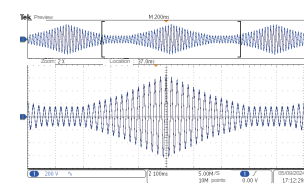
▲ LVRT



▲ HVRT



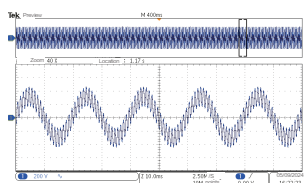
▲ List Step



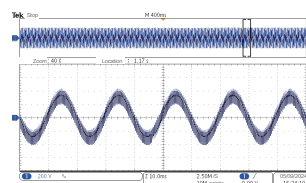
▲ Wave Gradient

Harmonic injection

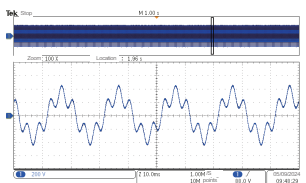
It has the function of simulating real power grid harmonics. Through simple parameter settings, it can simulate up to 50 power grid harmonics, with a maximum harmonic content of 40%, meeting the test requirements of IEC61000-4-13, GB/T 17626.13 and other standards for equipment EMC immunity.



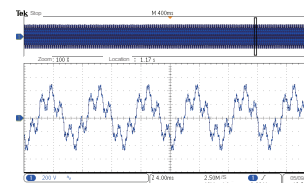
▲ 20th harmonic content 40%@50Hz



▲ 50th harmonic content 26%@50Hz



▲ 5th harmonic content 40%@150Hz



▲ 25th harmonic content 20%@150Hz

Measurement function

Based on high-precision sampling system and advanced DSP technology, it can measure each phase voltage, current, active/reactive power, power factor, etc. in real time, and can display up to 50 harmonic data. Each harmonic data is displayed in the form of numbers and charts, which is convenient for users to conduct simple analysis of real-time working conditions when other power analysis instruments are lacking.

⚡ Technical Parameters

Specifications and Models		WA121-450-105	
Rated Power		21kVA	
Three-Phase Maximum Current		35 A _{rms}	
Single-Phase Maximum Current		105 A _{rms}	
Output Parameters (Source Mode)	Voltage	Scope	0 ~ 450 V _{rms} (L-N)
		Resolution	0.01V
		Accuracy	±0.1%F.S.
		Voltage Distortion	≤0.5%@50Hz/60Hz
			≤1%@15Hz ~ 200Hz
		Load Regulation	±0.1%F.S.
		Source Regulation Rate	±0.1%F.S. @10% change
	Frequency	Scope	15 ~ 200Hz
		Resolution	0.01Hz
		Accuracy	±0.01%F.S.
	Phase	Scope	0° ~ 359.9°
		Resolution	0.1°
		Accuracy	±0.1°
	Harmonic	Maximum Times	50次@50Hz/60Hz
		Phase Angle Range	0° ~ 359.9°
Load Parameters (Load Mode)	Input Voltage		30 ~ 450V _{rms}
	Frequency Range		30 ~ 100Hz
Input Parameters	Connection Method		Three-phase three-wire + PE
	Frequency		47 ~ 63Hz
	Voltage Range		(380 ~ 480V) ± 10%
Other Parameters	Common Interface		Type-B USB、LAN、CAN
	Protection Level		IP21
	Cooling Method		Forced Air Cooling
	Structural Dimensions (W*H*D)		485mm*132.5mm*770mm

⚡ Specification and Models

Model	Voltage	Current	Power	Size
WA-006-450-105	450V	105A	6 kVA	3U
WA-009-450-105	450V	105A	9 kVA	3U
WA-012-450-105	450V	105A	12 kVA	3U
WA-015-450-105	450V	105A	15 kVA	3U
WA-018-450-105	450V	105A	18 kVA	3U
WA-020-450-105	450V	105A	20 kVA	3U