

BLITZPower

High Power Grid Simulator
GAC series

0V to 860V, 300kVA to 10MVA



Regenerative AC Source & Load

blitz-power.com

HIGH POWER CAPACITY WITH PARALLEL OPERATION

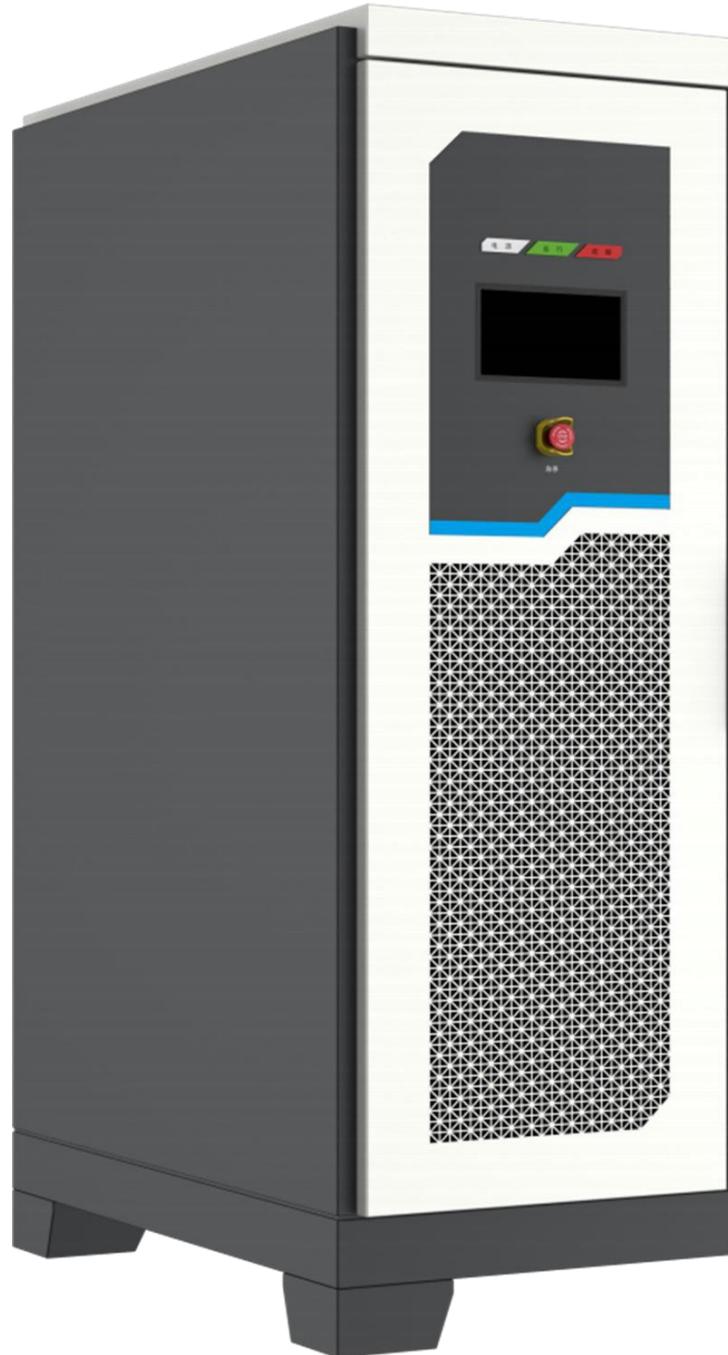
With 300kVA - 1MVA of unit capacity, the total capacity can be expanded up to 10MW by parallel connections.

860V
MAXIMUM
AC OUTPUT
VOLTAGE

10MVA
MAXIMUM
AC OUTPUT
POWER

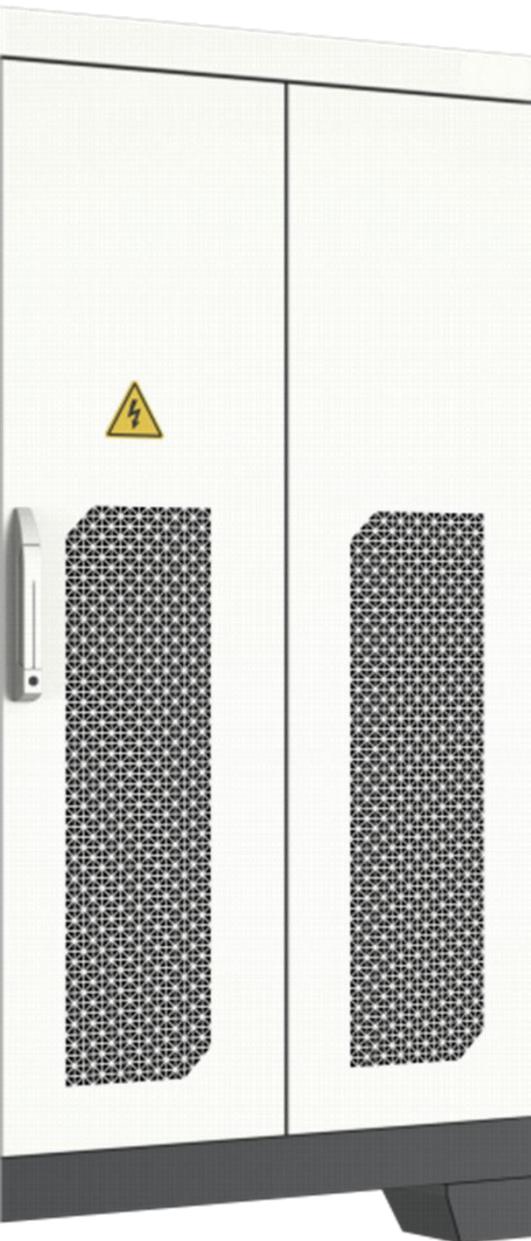
MULTI-
OUTPUT
MODE

Multiple AC power supply cabinets can individually operate in single mode to configure multi-channel output, or in Master/Slave mode to configure single-channel output with combined capacity.



FULLY TEST AC POWER WITH 4-QUADRANT

Full four-quadrant control enables reliable and efficient conversion of desired voltage and current, and AC load function with power regenerated to the grid.



RLC
**REGENERATIVE
AC LOAD**

0.1°
**PHASE ANGLE
RESOLUTION**

359.9°
**PHASE ANGLE
CONTROL**

COMPREHENSIVE PHASE CONTROL

Simultaneous control of three phases up to 359.9° by unit angle of 0.1°, and phase angle of each of A, B, and C can be changed with the accuracy of 0.1%.

Ratings, types and voltages

GAC series

Model	Output Power [kVA]	Voltage Range [V] @ L-N	Frequency Range [Hz]	Max. Current [A] @ 3 phase	Size (WHD) [mm]	Weight [kg]
GAC300500A	300	0-450	40-70	500	2410x1955x1200	2,630
GAC400600A	400	0-450	40-70	600	2410x1955x1200	2,920
GAC500800A	500	0-450	40-70	800	3410x1955x1400	3,860
GAC600900A	600	0-450	40-70	900	3410x1955x1400	4,410
GAC7501K2A	750	0-450	40-70	1200	3410x1955x1400	5,310
GAC1K01K6A	1000	0-450	40-70	1600	6810x1955x1400	7,720
GAC300300B	300	0-700	40-70	300	2410x1955x1200	2,560
GAC400400B	400	0-700	40-70	400	2410x1955x1200	2,770
GAC500500B	500	0-700	40-70	500	2410x1955x1200	2,960
GAC600600B	600	0-700	40-70	600	3410x1955x1200	3,670
GAC750700B	750	0-700	40-70	700	3410x1955x1400	5,080
GAC1K01K0B	1000	0-700	40-70	1000	3410x1955x1400	5,810
GAC300300C	300	0-860	40-70	300	2410x1955x1200	2,560
GAC400400C	400	0-860	40-70	400	2410x1955x1200	2,770
GAC500500C	500	0-860	40-70	500	2410x1955x1200	2,960
GAC600600C	600	0-860	40-70	600	3410x1955x1200	3,670
GAC750700C	750	0-860	40-70	700	3410x1955x1400	5,080
GAC1K01K0C	1000	0-860	40-70	1000	3410x1955x1400	5,810

Technical data

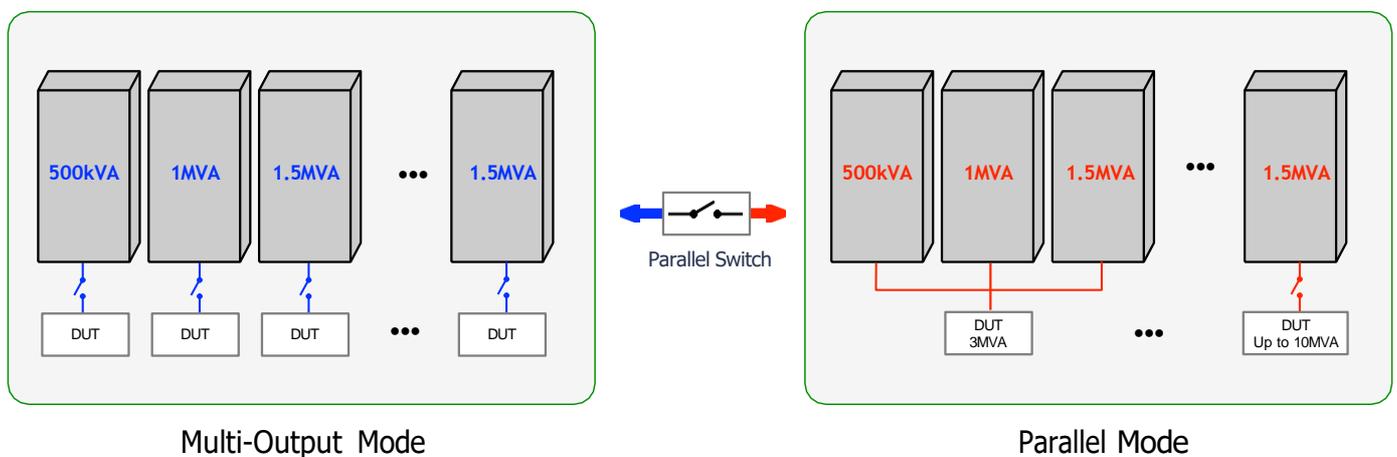
GAC series		Specification
AC Input		
Voltage, Phases	380V±15%, 3ph+PE	
Frequency	47Hz to 63Hz	
Harmonic current	<3%	
Power factor	0.99	
AC Output Voltage		
Accuracy	±0.1% F.S.	
Resolution	0.01A	
Load regulation	±0.05% F.S. @ Linear load	
Line regulation	±0.05% F.S. @10%	
Voltage slew rate	AC>1.0V/us	
Response time	<1ms (10%-90%Umax)	
Voltage distortion	Less than 0.5% @50Hz/60Hz ≥ 220V for no-load	
	Less than 1% @50Hz/60Hz ≥ 220V for linear load	
	Less than 1.0% @ other frequency ≥ 220V for no-load	
	Less than 1.5% @ other frequency ≥ 220V for linear load	
AC Output Current		
Accuracy	±0.2% F.S.	
Resolution	0.01V	
Output Frequency		
Accuracy	±0.01%	
Resolution	0.001Hz	
Range	40-70Hz	
Phase Angle Control		
Accuracy	±0.3°	
Resolution	±0.1°	
Phase angle range	0 - 359.9°	
Phase control	Single-phase, Three-phase, Three-phase independent	
Voltage Ride Through		
Mode	ZVRT / LVRT / HVRT	
Setting parameter	Voltage, frequency, phase, rise time, hold time, trigger phase angle and pulse output	

Technical data

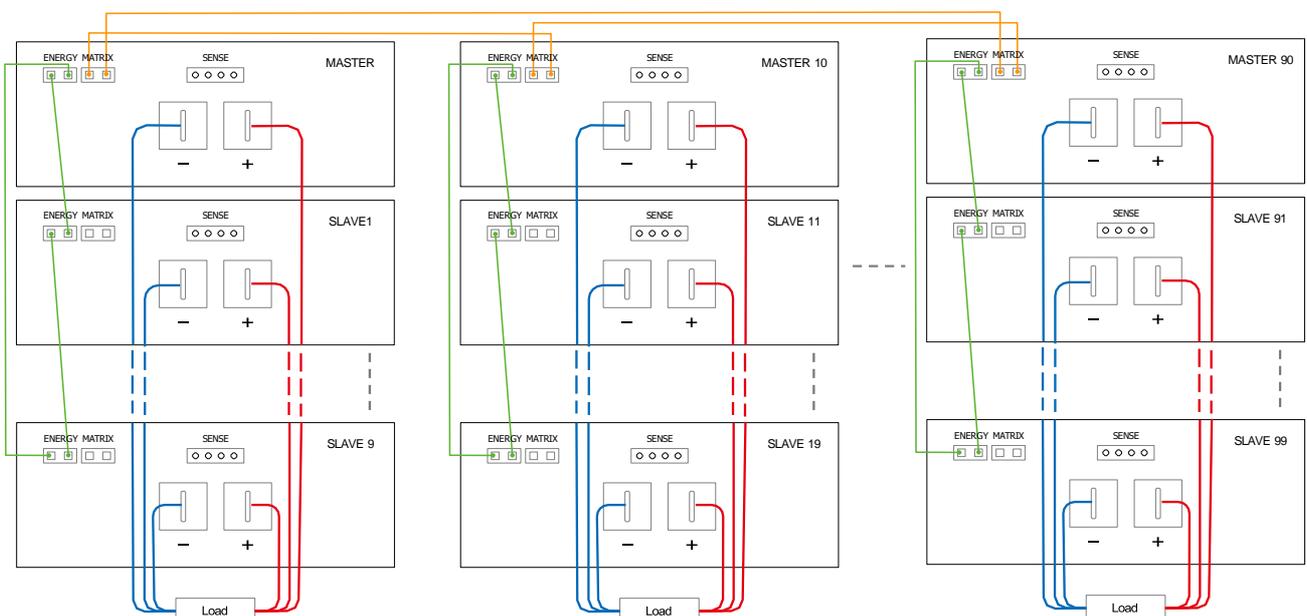
GAC series		Specification
Harmonic Injection		
Order	50th@50Hz/60Hz	
Content	Max 40% for 2-10 single harmonics, less than 40% for 2-10 total harmonics	
	Max 20% for 10-20 single harmonics, less than 20% for 10-20 total harmonics	
	Max 10% for 21-30 single harmonics, and no more than 10% for total harmonics	
	Max 5% for 31-50 single harmonics, and no more than 5% for total harmonics	
	It can simultaneously synthesis 49 harmonics	
Amplitude error	±5% harmonic of set value	
Preview function	Harmonic synthesis waveform can be previewed	
Editing mode	Import, export, read, storage	
Inter Harmonic		
Frequency range	1Hz-3,000Hz, content <10%	
Programming steps	100 steps	
Programming parameters	Content, start frequency, end frequency, step length, execution time, interval time, cycle times and sequence	
Editing mode	Add, delete, import, export, store, read	
Flicker		
Flicker level	1.0-10.0, totally 10 levels in total, and one-key calling	
Adjustment step length	1	
Accuracy	±0.2	
Preview function	Preview of flicker trend chart, pst can be visualized	
Resolution	0.01V	
Three-phase unbalance		
Adjustment mode	Three-phase voltage, single phase; unbalance factor	
Unbalance factor range (%)	1~100	
Unbalance factor step length (%)	1	
Accuracy (%)	±0.5%	
Preview function	Three-phase unbalance trend chart can be previewed	
Measurement		
Voltage accuracy	±0.1% F.S.	
Frequency accuracy	±0.01%	
Current accuracy	±0.2% F.S.	
Active power accuracy	±0.3% F.S.	
Apparent power accuracy	±0.3% F.S.	

High Power Scalable Design

The GAC series support multi-unit parallel operation and adopts high-speed fiber optic communication technology, featuring strong anti-interference capability and zero latency. The system supports expansion up to 10MVA, with technical specifications equivalent to a single unit capacity of 300kVA - 1MVA. It enables multi-position, high-capacity, and multi-voltage level test setups, significantly improving testing efficiency for customers. In particular, the parallel-connected panels can be used in multi-output mode by separating the outputs according to the user's needs, allowing multiple test equipment to be tested at the same time, maximizing user convenience and saving a lot of costs.

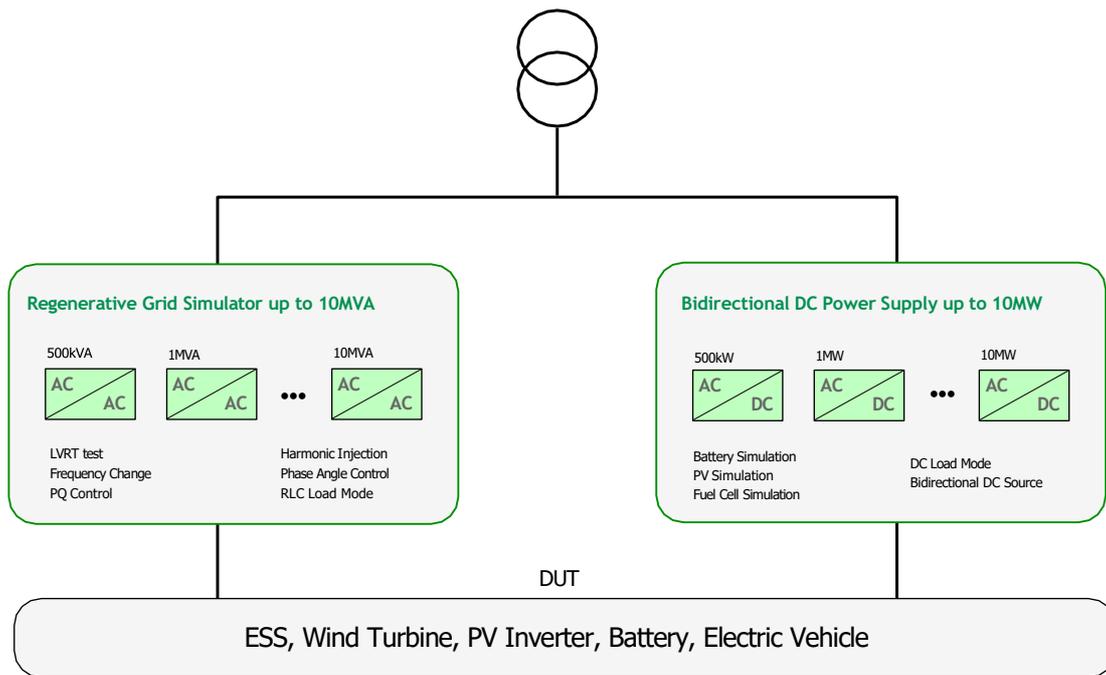


Output Expansion up to 10MVA with Master / Slave Control



Application

The GAC are innovative products used in a variety of applications due to its unique technology and optimal performance. It can perform bidirectional AC power supply and act as regenerative AC loads, which can be utilized for long-term reliability testing applications including tests for ESS, PV inverter, wind turbine, electric vehicle DC charging stations, and a variety of grid-connected systems. They are particularly well suited for applications that require accurate and extremely fast response times when simulating AC power characteristics.



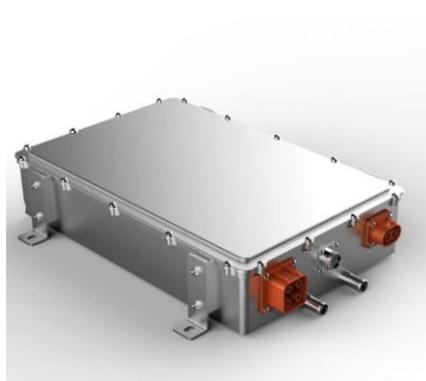
ESS Testing



PV Inverter Testing



Wind Turbine Testing



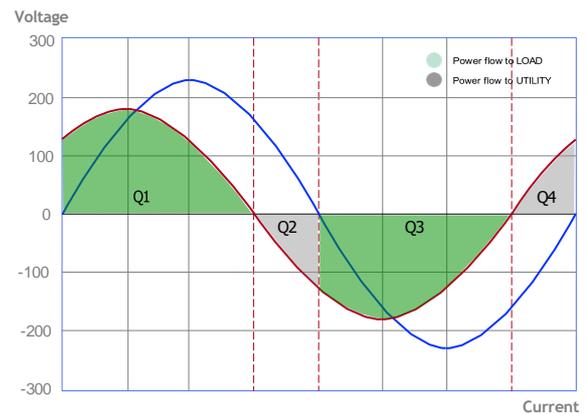
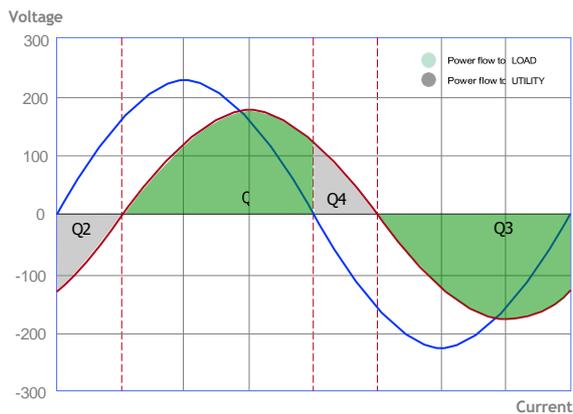
AC/DC Power Supply Testing



EV Charger & EVSE Testing

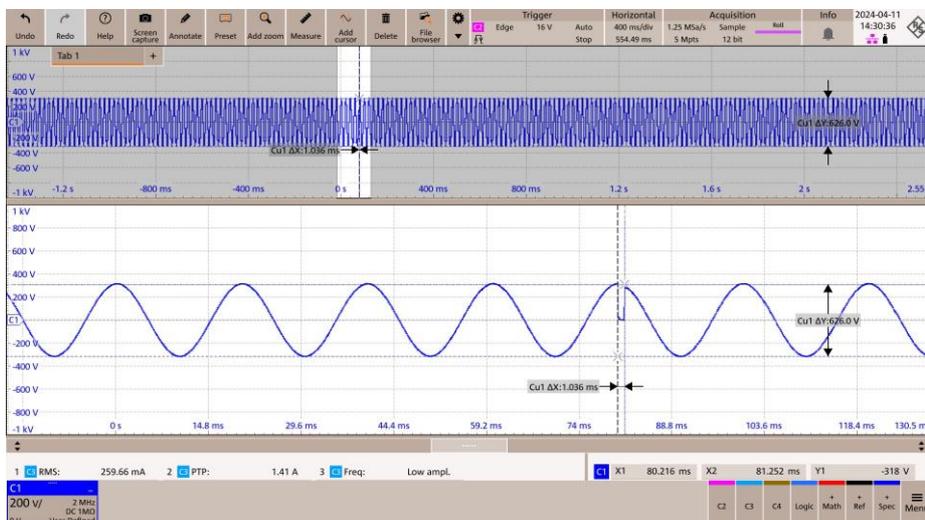
4-Quadrant Control

With four-quadrant control, GAC series can test PV inverters, V2G, EV chargers, EVSE, batteries, UPS, and AC/DC power supplies. It has a built-in load option as standard and can operate in any four-quadrant with programmable phase control. It can simulate inductive and capacitive loads, allowing you to test a full range of AC power loads.



High Dynamics

The output voltage slew rate of power supply is up to 1V/us, which can simulate the 1ms continuous interruption from the power grid.

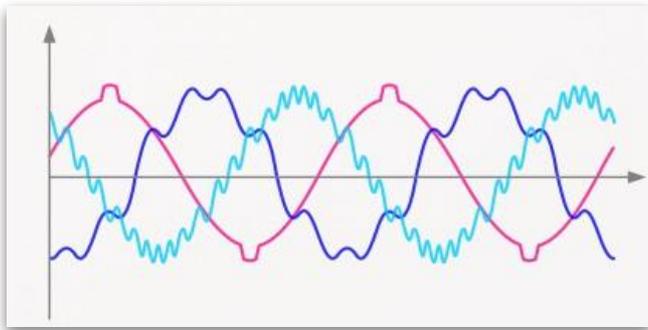


1ms Interruption

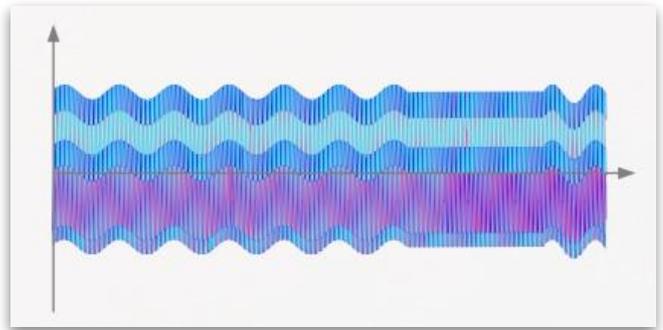
Harmonics / Inter-harmonics

The 49 harmonics can be superimposed simultaneously, and the total harmonic content can be set up to 40%

The power supply has two harmonic injection modes, the three-phase independent injection and the three-phase linkage injection, allowing the superimposition of 2-50th of harmonics with 50Hz or 60Hz basic frequency, or allowing the superimposition of 1Hz-3000Hz inter-harmonics to form the distorted waveform of output voltage. It can be used for the tests under GB/T 14549-1993, and GB/T 24337-2009. The power supply has 27 built-in DST waveforms and 100 customized waveforms that can be called by one click.

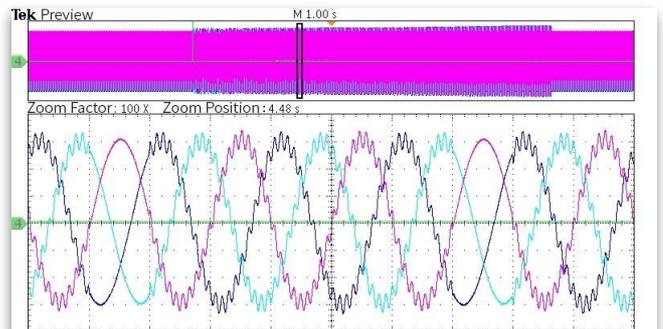
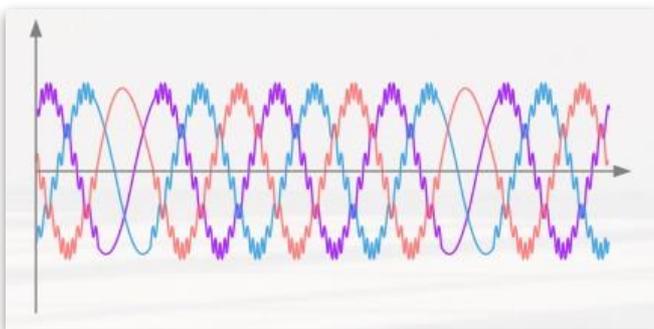


Harmonic Superposition Waveform



Inter-harmonic Superposition Waveform

Starting frequency, ending frequency, interval and the like can be set for inter-harmonics to test the inter-harmonic sweep frequency, so as to meet the tests of IEC61000-4-13 standard.

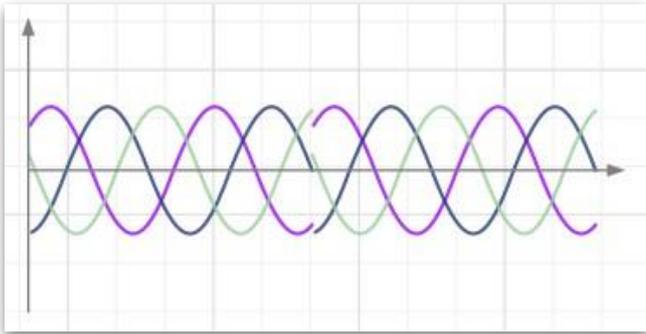


Inter-harmonic Sweep

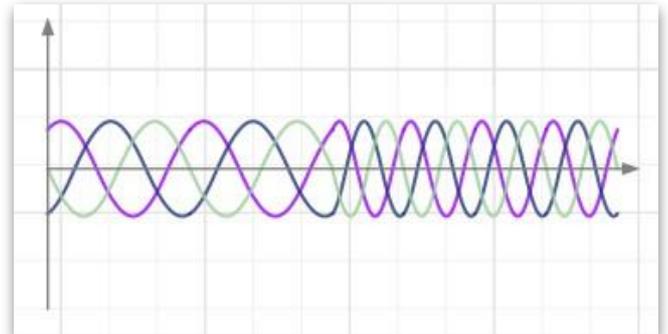
Independent setting of three phases

Simulate normal and abnormal characteristics of various power grids

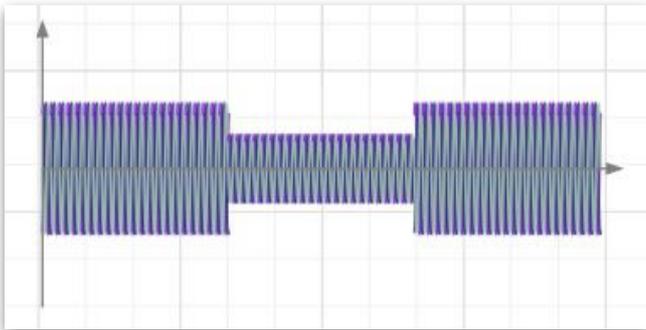
The three-phase output of the power supply can be set independently, which can simulate the normal and abnormal characteristics of three-phase balance or unbalance of various power grids. It can be set by individual or multiple programmable output on voltage, phase etc. of both single-phase and multi-phase.



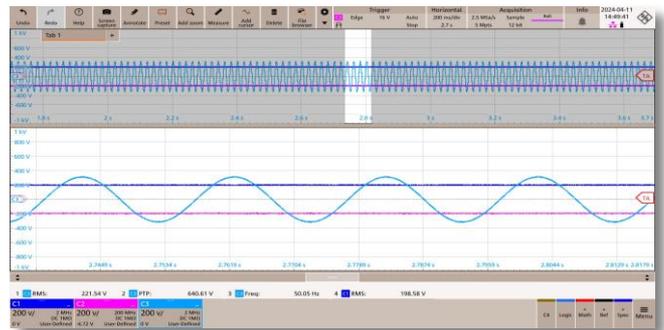
Phase Change



Frequency Change



Voltage Change

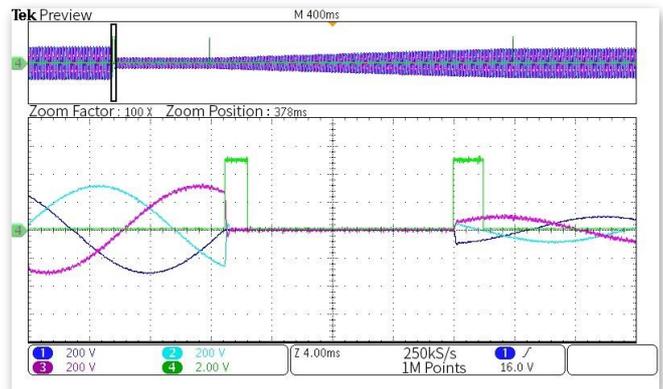
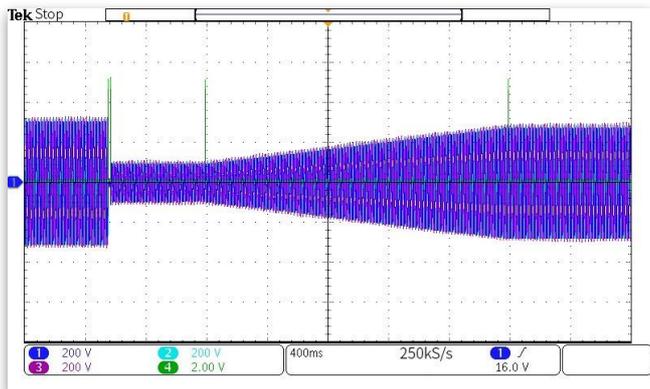


Phase Split

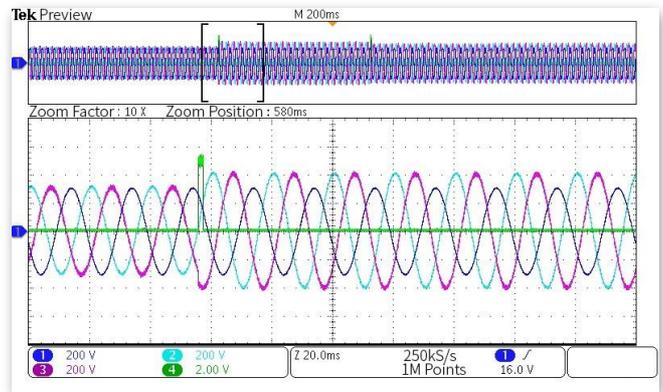
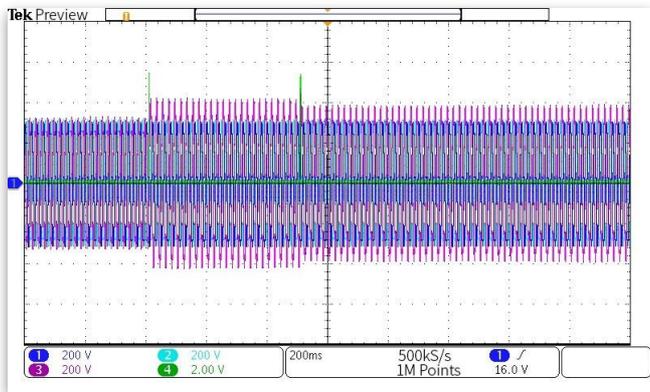
Voltage Ride Through

Typical rise / fall time within 1ms

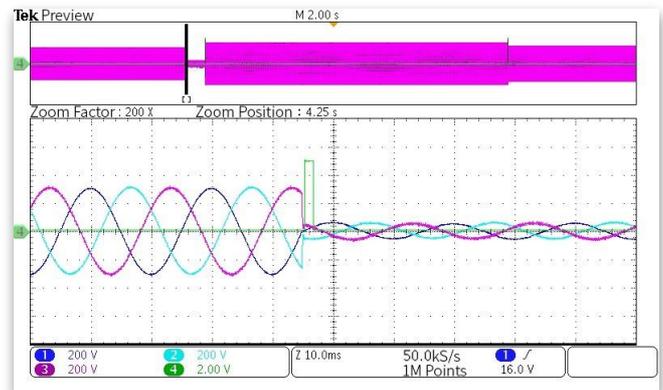
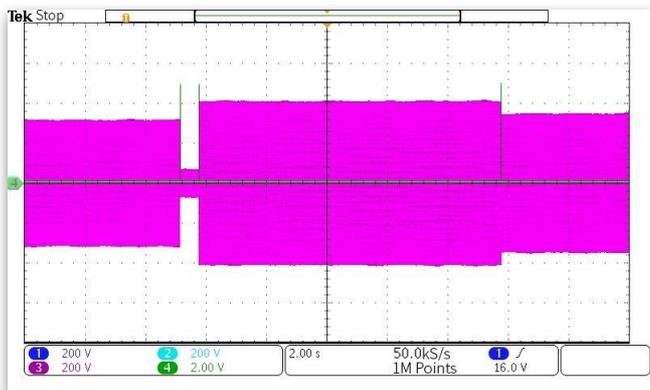
The single-phase, two-phase, and three-phase H/LVRT tests can be performed for the power supply. The trigger phase angles of the ride through points can be set for the power supply to meet the requirements of tests under various standards. The minimum setting voltage of power supply is less than 5V, and the rise/fall time is 1ms.



Three-Phase Low Voltage Ride Through



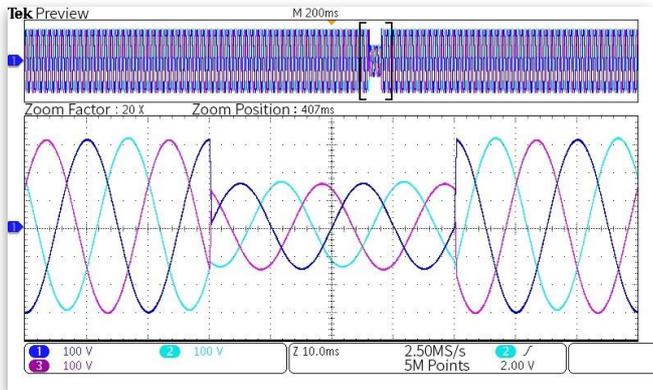
Single-Phase High Voltage Ride Through



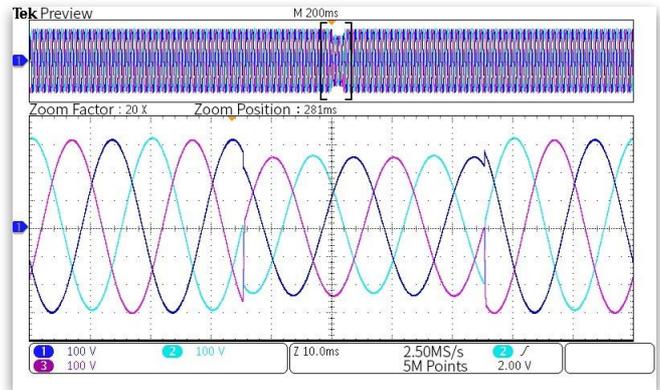
Three-Phase High Voltage Ride Through

Voltage Ride Through

Phase A, B and C can be changed at the same time for low voltage ride through, phase B and C can be switched for low voltage ride through, so as to meet the tests of VDE-AR-N 4105 regulations.



Three-Phase Change LVRT

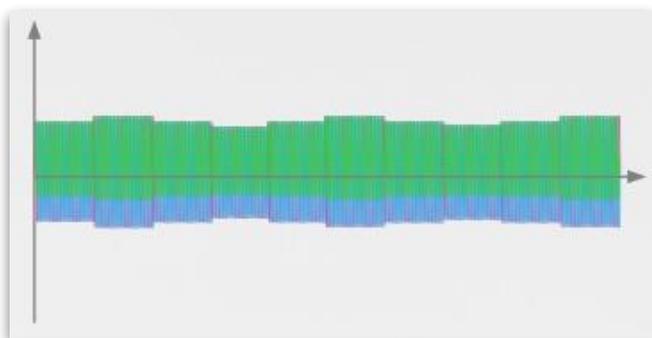


B-C Phase Shift LVRT

Flicker Simulation

Levels 1~10 can be called directly

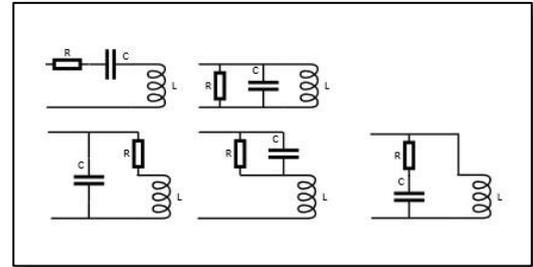
The power supply supports the setting of flicker levels: the flicker trend chart can be previewed, and the pst can be visualized. The flicker characteristics of the power grid can be easily simulated to test flicker adaptability of the test object.



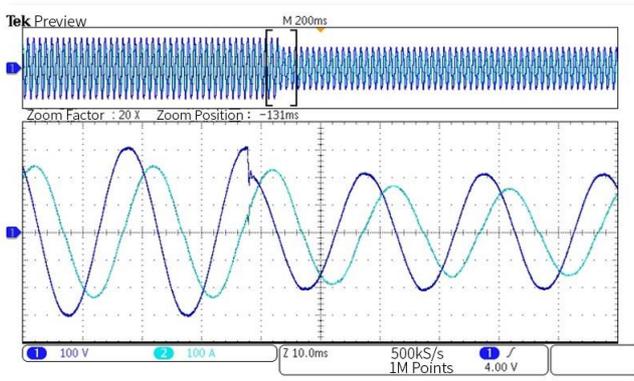
Flicker simulation waveform

Linear load characteristic simulation

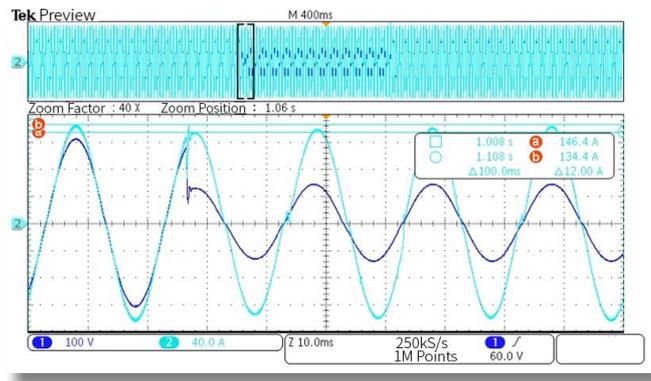
The GAC series feedback AC source & load integrated machine has 5 built-in RLC network models, which can flexibly adjust the parameters to simulate the linear load characteristics, in order to fully validate the product performance in different impedance modes.



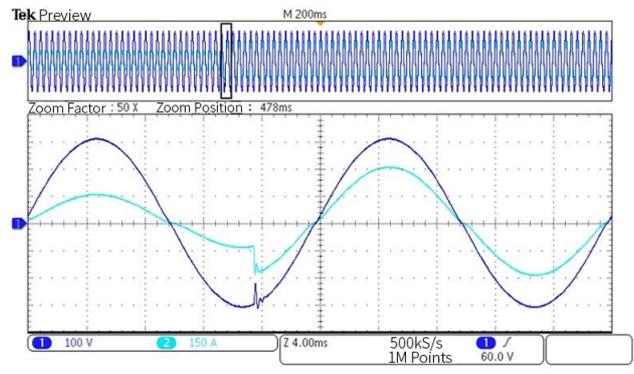
RLC Load Network Topology



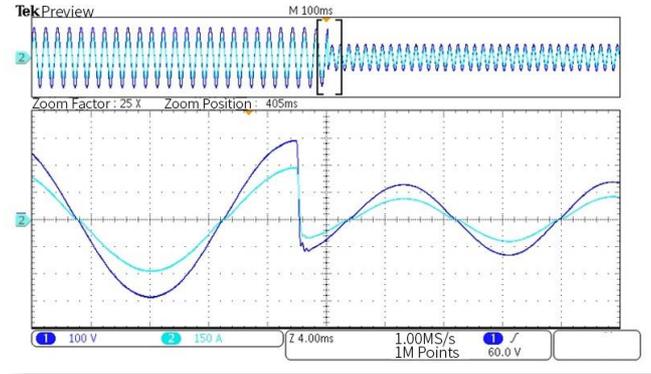
RLC mode : voltage amplitude transient change and power factor adjustment



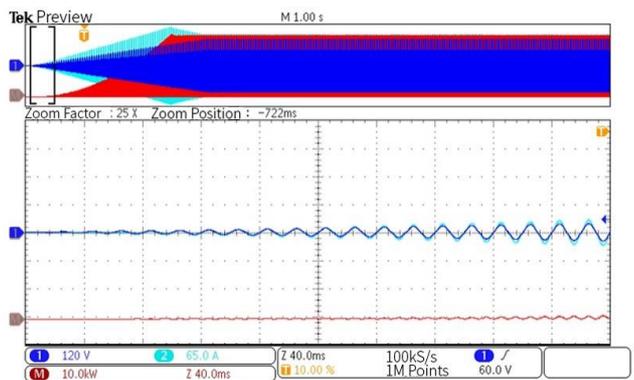
CR mode : voltage amplitude, phase, frequency Transient change



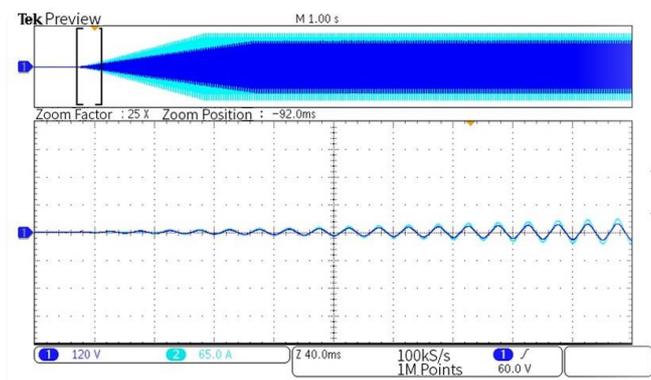
CR mode : resistance transient change



Voltage amplitude change in CC mode

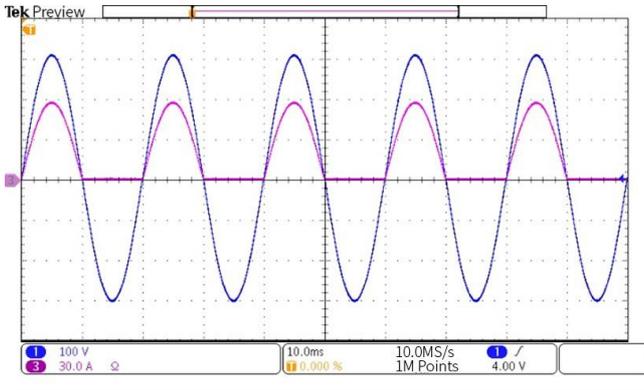


Zero-voltage startup to CP

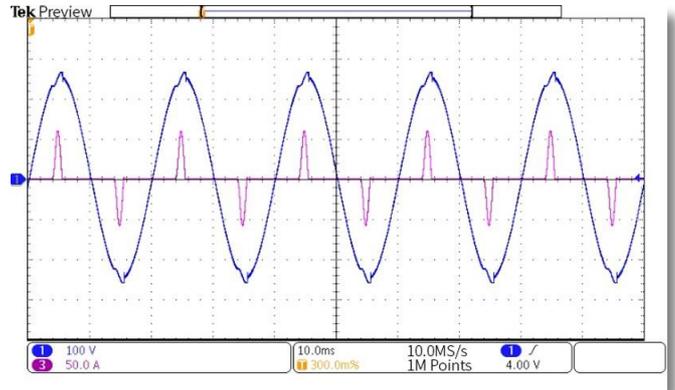


Zero-voltage startup to CC

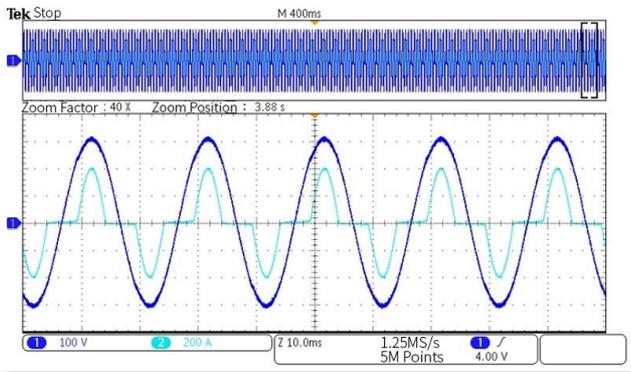
Nonlinear load characteristic simulation



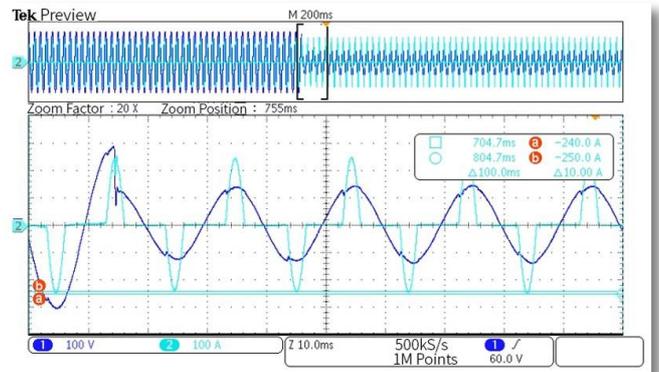
Rectified load : half-wave rectification waveform



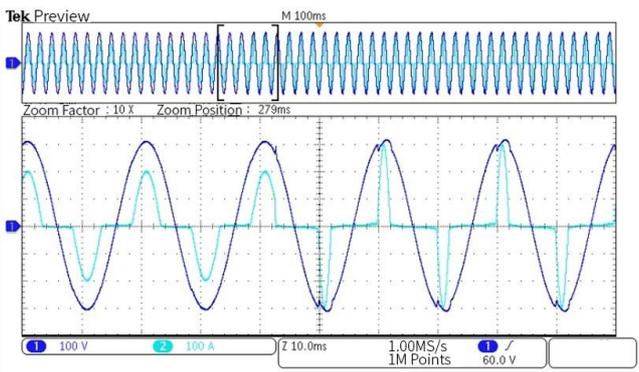
Rectified load : CF=4 waveform



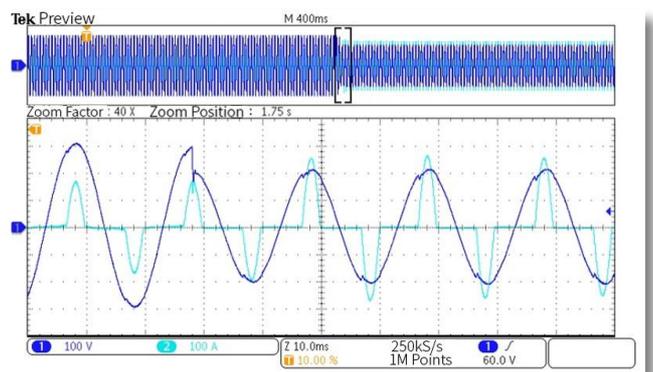
CF=2 single-phase current in CC mode



Rectified load in CC mode CF=2
Voltage amplitude transiently changes by 120V at 90° position



CF sudden change in CC mode :
CF changed from 2 to 3



CP mode : voltage amplitude transient change
CF=2.5

Powerful Software



Provides Diverse Simulation Modes

Low Voltage Ride-Through (LVRT) and Area Electrical Power System (EPS) Disturbance Simulation

GAC series can easily simulate tests such as LVRT test patterns with provided software, accurately control user-defined waveforms, and add features depending on the test environments.

