

# BI-DIRECTIONAL PROGRAMMABLE AC POWER SUPPLY

G6000 SERIES



The G6000 series is a four-quadrant AC power supply featuring high precision, high power density, and high dynamic performance. As a source, it supports adjustment of three phases separately, while having LIST/PULSE/STEP and other programming functions to simulate the disturbance characteristics of grid voltage and frequency. It also has waveform editing, harmonic and inter-harmonic modes, able to simulate abnormal grid conditions and test the grid tolerance of the device under test (DUT). As a load, it has built-in AC load models to simulate different load characteristics.

## Features

- | Automatic switching of the source-load function
- | AC electronic load
- | AC power output range: 0 ~ 18kVA
- | AC current output range: 0 ~ 90A
- | AC voltage output range: 0 ~ 450V (L-N)
- | Maximum DC voltage output: 650V
- | Parallel connection: up to 6 units
- | Single phase or three-phase output
- | Able to simulate instantaneous grid interruption of 1ms
- | Built-in waveforms: triangle, square, clipped sine, trapezoid, and sawtooth.
- | Harmonics and inter-harmonics superposition
- | Harmonics analyzer
- | Communication interfaces: RS232/LAN/USB/Digital IO/Analog IO
- | Protections: OVP, OCP, OPP

## Model Selection

Model	Voltage	Current	Power	Resolution	Accuracy (Voltage/Current)	Size
<b>Pro</b>						
G6000PG-12K-0450-0090	450V	90A	12kVA	0.01V/0.01A	≤0.05%+0.05%F.S./0.1%+0.1%F.S.	3U
G6000PG-18K-0450-0090	450V	90A	18kVA	0.01V/0.01A	≤0.05%+0.05%F.S./0.1%+0.1%F.S.	3U
<b>Ultra</b>						
G6000UG-12K-0450-0090	450V	90A	12kVA	0.01V/0.01A	≤0.05%+0.05%F.S./0.1%+0.1%F.S.	3U
G6000UG-18K-0450-0090	450V	90A	18kVA	0.01V/0.01A	≤0.05%+0.05%F.S./0.1%+0.1%F.S.	3U

**Normal**  
Fundamental,  
Cost-effective

**Pro**  
Fully-featured,  
Multi-scenario

**Ultra**  
Ultimate experience,  
Lab testing-oriented

Version	Normal	Pro	Ultra
<b>Features</b>			
Four-quadrant	-	★	★
Unidirectional	★	-	-
AC	★	★	★
DC	-	★	★
AC+DC	-	★	★
List/Pulse/Step	★	★	★
Waveform editing	-	★	★
Harmonic mode	-	★	★
Inter-harmonic mode	-	★	★
Harmonic display	-	★	★
AC load(CC/CR/CP/RLC/PQ modes)	-	-	★

Note: "★" means Yes; "-" means not available.

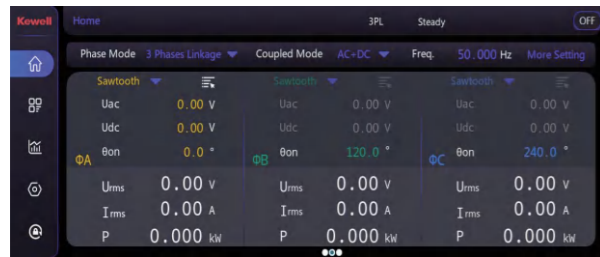
## Product Applications

- | Simulating the voltage change in grid
- | Simulating the frequency change in grid
- | Simulating grid anomalies
- | LVRT/HVRT test
- | Testing PV energy storage
- | Testing on-board chargers
- | Simulating/Replacing AC power supply and load testing environment

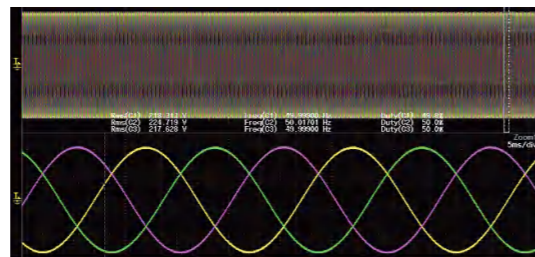
## Product Functions

### Sine Wave Mode

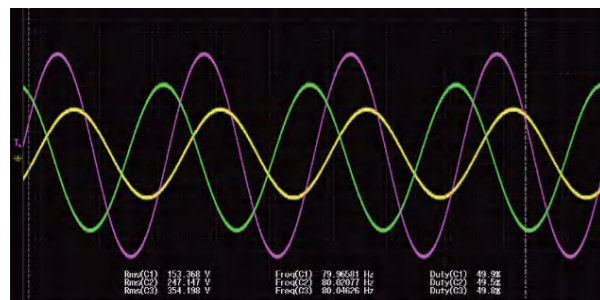
Users can set the voltage, phase, amplitude, and frequency of the output, minimum step size: 0.01V, 0.01Hz; the output mode can be three-phase sync./three-phase independent/single phase.



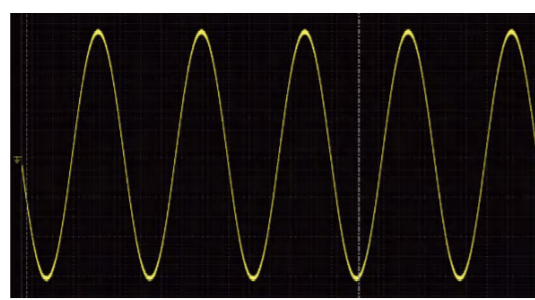
Sine wave mode



Three-phase sync. @220V, phase difference: 120°



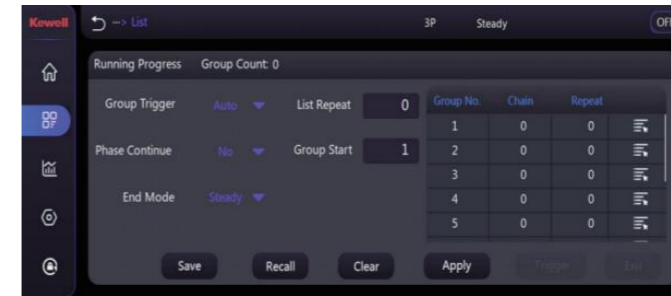
Three-phase independent @different amplitude  
Phase A: 60°, Phase B: 200°, Phase C: 100°



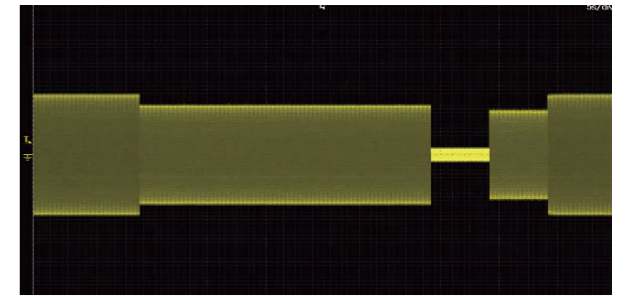
Single phase @220V

### LIST/STEP/PULSE Mode

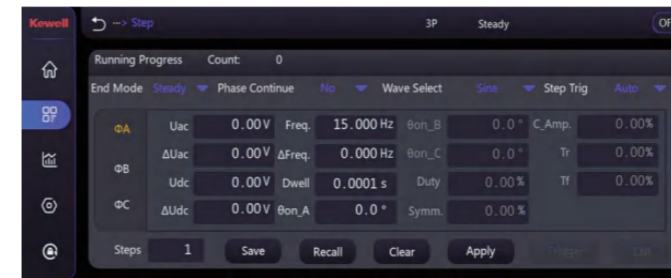
The G6000 series has multiple programming output modes such as LIST, STEP and PULSE. LIST mode supports editing of more complex test waveforms, with up to 10 groups of steps, each group having up to 20 sequences to be set. The steps can be set in cycle.



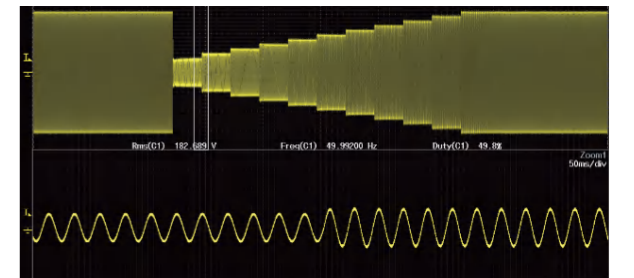
LIST mode



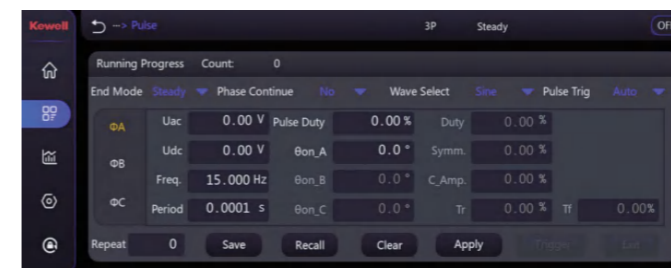
LIST mode @voltage: 220-180-20-160V step change



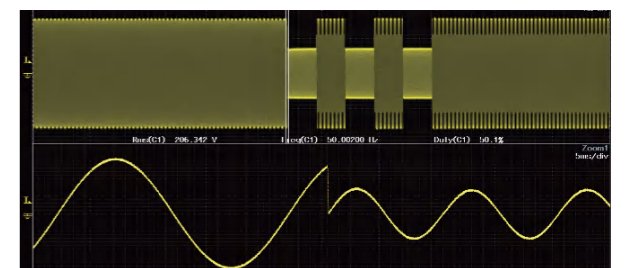
STEP mode



STEP mode @voltage: 50-220V, frequency: 45-65Hz,  
gradient change in 10s



PULSE mode



PULSE mode @total cycle of 1s, pulse time: 50%,  
pulse voltage: 100V, frequency: 100Hz

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Users can also select high voltage ride through (HVRT), low voltage ride through (LVRT), and high and low voltage ride through combined test functions. The G6000 series supports single-phase, two-phase and three-phase ride through tests.

Voltage: 220V, ZVRT duration: 1ms, phase A drop phase angle: 180°

Voltage: 220V, phase A drop phase angle: 270° (ZVRT)

Nominal voltage: 220V, LVRT: 20%, HVRT: 130%, phase A drop phase angle: 0°

## Harmonic & Inter-harmonic Mode

In harmonic superposition mode, users can set the harmonic amplitude of each voltage component to simulate abnormal grid environment and thereby test the grid withstand of the DUT. (2nd-100th harmonic superimposition, up to 99 kinds of harmonics to be superimposed simultaneously)

Harmonic mode

	N	%	θ (°)	N	%	θ (°)
ΦA	2	0.00	0.00	7	0.00	0.00
ΦB	3	0.00	0.00	8	0.00	0.00
ΦC	4	0.00	0.00	9	0.00	0.00
	5	0.00	0.00	10	0.00	0.00
	6	0.00	0.00	11	0.00	0.00

Fundamental wave @50Hz, 2nd-100th harmonics with a content of 5%-10%

Inter-harmonic mode

Inter-harmonic content: 10%, frequency start @200Hz, end @600Hz

## Special Waves Mode

The G6000 series has different types of built-in waveforms including triangle, square, clipped sine wave, trapezoid, and sawtooth. Users may call a selected waveform via the software or the menu and display it on the LCD screen.

Triangle wave @phase A-220V, 50% symmetry

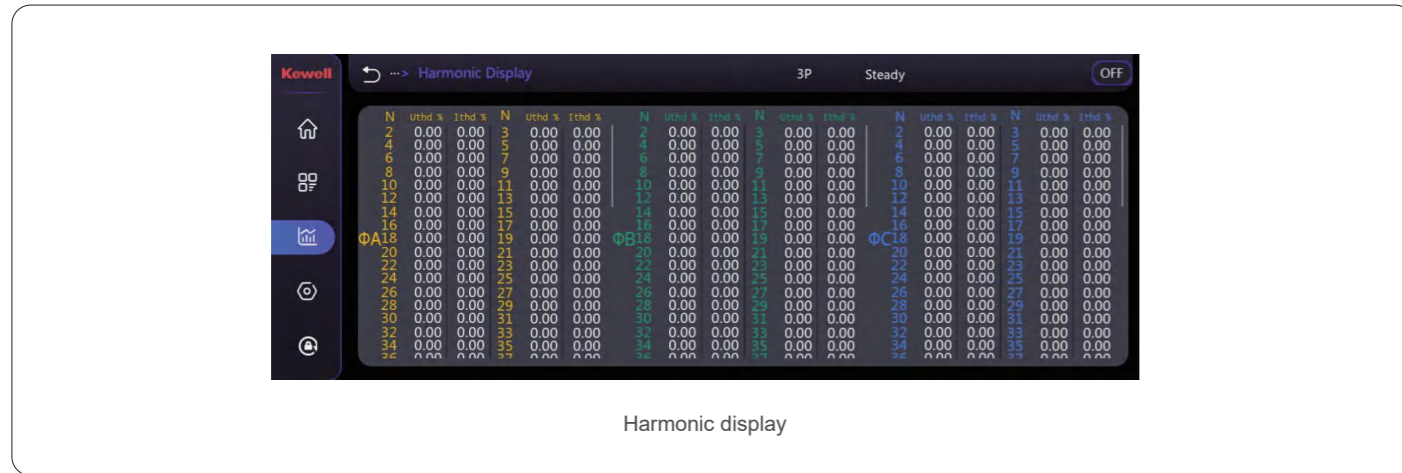
Square wave @phase A-220V, 50% duty cycle

Sawtooth @phase A-220V

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## Harmonic Display

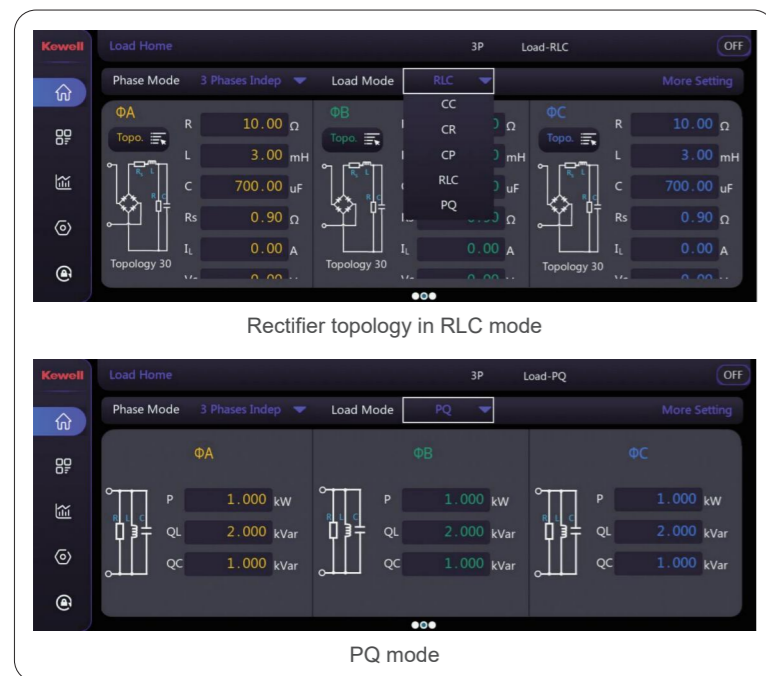
The G6000 series features harmonic analysis function that covers voltage harmonic measurements and current harmonic measurements. In harmonic mode, it tests voltage and current THD and the phase difference between harmonics and fundamental wave. In addition, it supports multiple harmonic measurements and display of the results in a list in an intuitive way.



Harmonic display

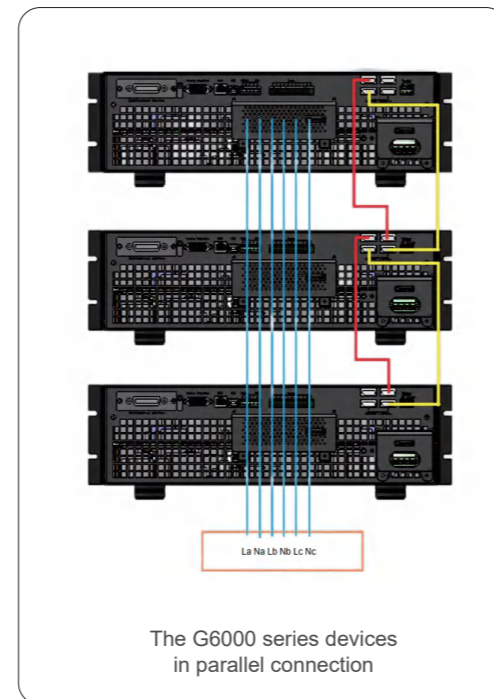
## Load Function

For G6000 Ultra version, the load mode includes five steady-state load modes: CC, CR, CP, RLC and PQ. In the RLC mode, it has built-in 14 typical topology of RLC load.



## Parallel Connection

Parallel connection of multiple G6000 series units provides higher current and larger power output.

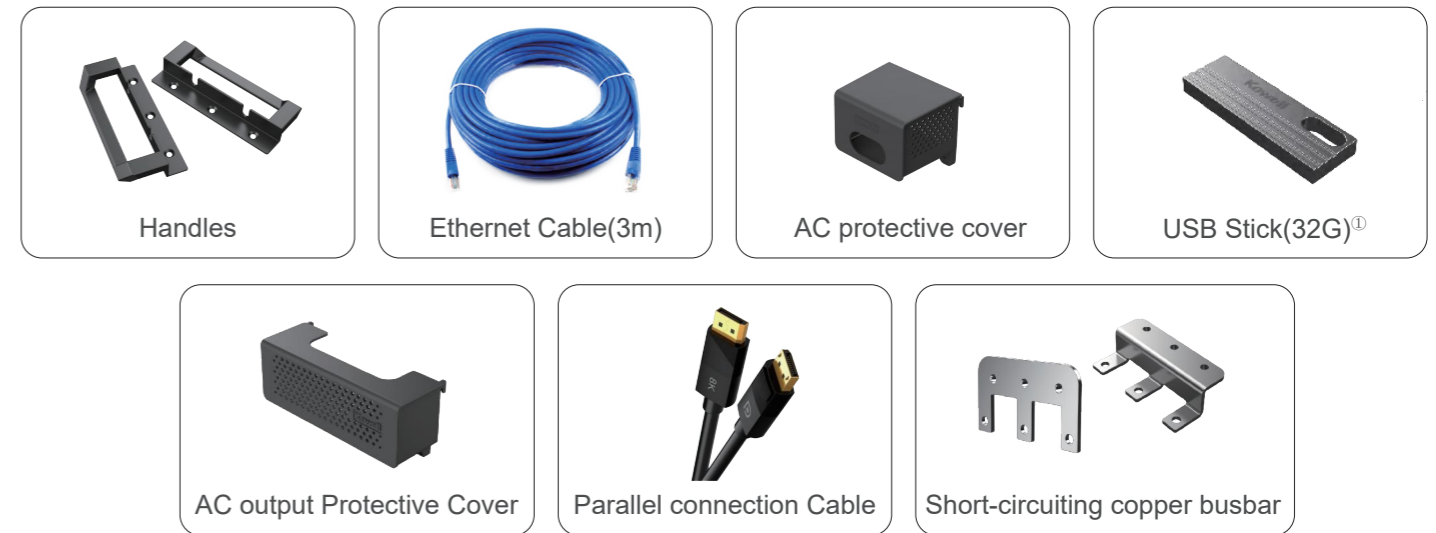


## Model Appearance



Model	Number	Dimensions (W*D*H)	Weight(Cabinet alone)
HK-15U	2~3 devices	610*1026*1006mm	130kg
HK-29U	4~6 devices	610*1026*1554mm	220kg

## Standard Accessories



Note: <sup>①</sup> The USB stick contains the software package (license will be provided by Kewell free of charge).

