Kewell

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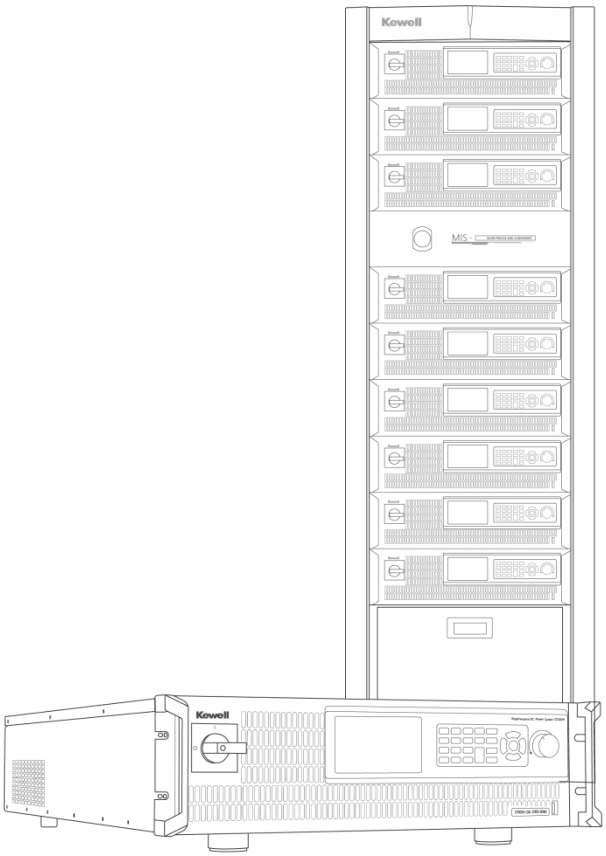


S7000UG SERIES

BI-DIRECTIONAL PROGRAMMABLE DC SOURCE-LOAD SYSTEM

Jul. 2025 Version: A8

KEWELL TECHNOLOGY CO., LTD.

www.kewelltest.com

CONTENTS

1 Summary

S7000UG Series is a bi-directional programmable DC power supply (hereinafter referred to as S7000) supporting energy regenerative feature.

As a DC source, it supports dual quadrant energy flow.

High conversion efficiency and high power density. 3U-sized enables it to power up to 15kW. Support parallel operation of multiple devices. Human-machine interface: Colorful touchscreen and knob. It can be applied in battery testing, battery storage inverter testing, electronic testing of EV, etc.

S7000 Low voltage series

2 Advantages

2.1 High Power Density

Up to 30kW in 3U, compact, lightweight, and space efficient.

2.2 Fast Dynamic Response

Microsecond response for sudden loading/unloading, with response time as fast as 500us.

2.3 Parallel

Flexible paralleling for higher power.

2.4 Built-in Standard Curves

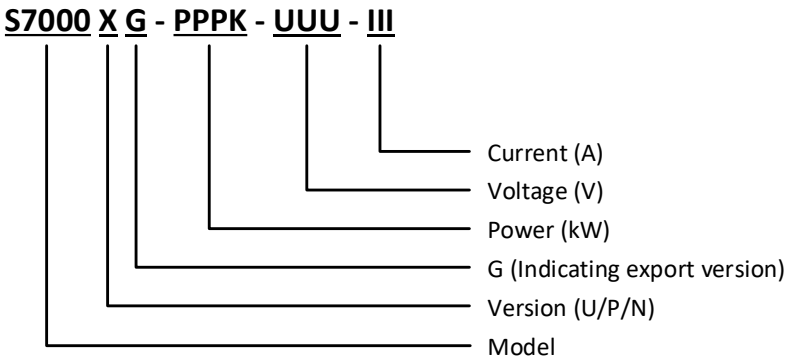
Built-in standard curves such as EN50530, can be called up by one click.

2.5 CC/CV Priority

CV mode supports voltage switching at high speed while CC mode supports switching without overshoot, meeting the test requirements of various scenarios.

3 Product Specifications

3.1 Product Naming



3.2 Product Portfolio

- **Ultra**

Model	Power [kW]	Voltage [V]	Current [A]
S7000UG-10K-0100-0400	10kW	100V	400A
S7000UG-15K-0100-0600	15kW	100V	600A

3.3 Functions

Version	Ultra
Bidirectional DC Power Supply	●
IV Simulation	●
Battery Test	●
Battery Simulation	●
Custom Waveforms	●
Automotive Power Curve	●
DC Electronic load	●

Note:

● come with standard equipment

- none

4 Technical Parameters

4.1 Technical Parameters

Model		S7000UG-10K-0100-0400	S7000UG-15K-0100-0600
Power Supply			
Rated	Voltage	100V	100V
	Current	400A	600A
	Power	10kW	15kW
Read-back Resolution	Voltage	0.01V	
	Current	0.01A	
	Power	1W	
Accuracy	Voltage	≤0.02%F.S.	
	Current	≤0.1% F.S.	
Line Regulation	Voltage	≤0.02%F.S.	
	Current	≤0.02%F.S.	
Load Regulation	Voltage	≤0.05%F.S.	
	Current	≤0.05%F.S.	
Ripple	Voltage Vpp (20MHz)	< 100mV	
	Voltage (rms)	< 20mV	
	Current (rms)	< 200mA	
Slew Rate /Slope	Voltage (no load)	0.001V/ms ~ 10V/ms	
	Voltage (full load)	0.001V/ms ~ 5V/ms	
	Current	0.001 ~ 450A/ms	
Dynamic Response Time		< 500μs	
Overshoot/Drop*1		4%	
AC Input	Voltage	342 ~ 528Vac	
	Frequency	47Hz ~ 63Hz	
	Max. current	19A	28.7A
	Max. apparent power	11.3KVA	17KVA
Load			
Rated	Input voltage	100V	100V
	Input current	400A	600A
	Input power	10kW	15kW
	Input resistance	360Ω	
	Max. operating voltage	1V@400A	1V@600A
Read-back Resolution	Voltage	0.01V	
	Current	0.01A	

Model		S7000UG-10K-0100-0400	S7000UG-15K-0100-0600
	Power	1W	
	Resistance	0.01Ω	
Accuracy	Voltage	≤0.02%F.S.	
	Current	≤0.1% F.S.	
	Power	≤0.3% F.S.	
	Resistance	≤1%Rmax (0 ~ 10%Rmax); ≤5%Rmax (10% ~ Rmax)	
General Parameters			
Withstand Voltage		1000Vdc	
Efficiency		92%	
Power Factor		> 0.99	
Protection		OVP, OCP, OPP, OTP, anti-islanding, Sense reverse connection protection	
Communication*2		RS232/LAN/USB/Analog IO/Digital IO	
IP Grade		IP20	
Storage Temperature		-20℃ ~ +70℃	
Ambient Temperature		0 ~ 40℃	
Humidity		0 ~ 90%RH, 25℃ non-condensing	
Altitude		2000m	
Dimensions (mm)		699(D)*445(W)*133(H)	
Weight (net weight)		≈35kg	≈37kg

*1: Rated voltage fluctuation value at sudden change of 0-50% resistive load (at maximum voltage slew rate).

*2: The standard machine is not equipped with CAN interface for the time being.

The above specifications are subject to updates without further notice.

4.2 Optional Configuration

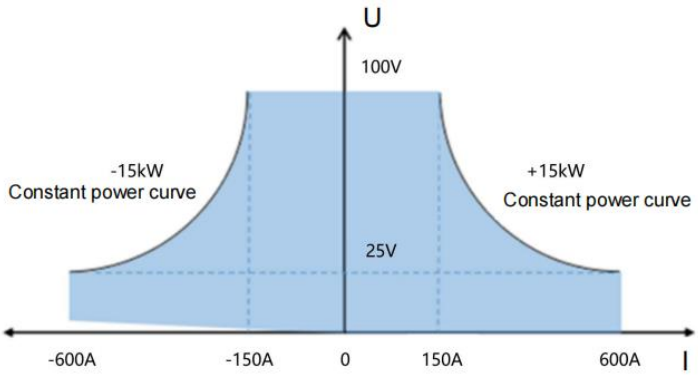
Optional Configuration	
GPIB	Communication interface

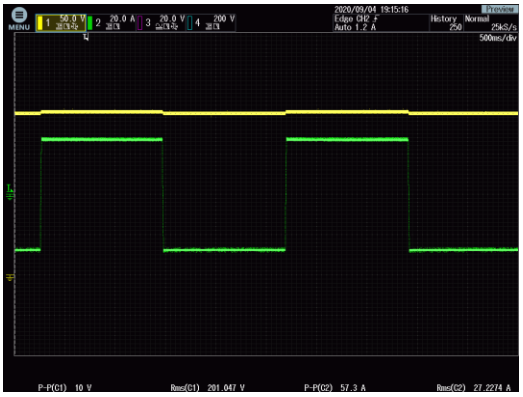
5 Functions

5.1 Bi-directional DC Power Supply

- **Bi-directional DC Power Supply**

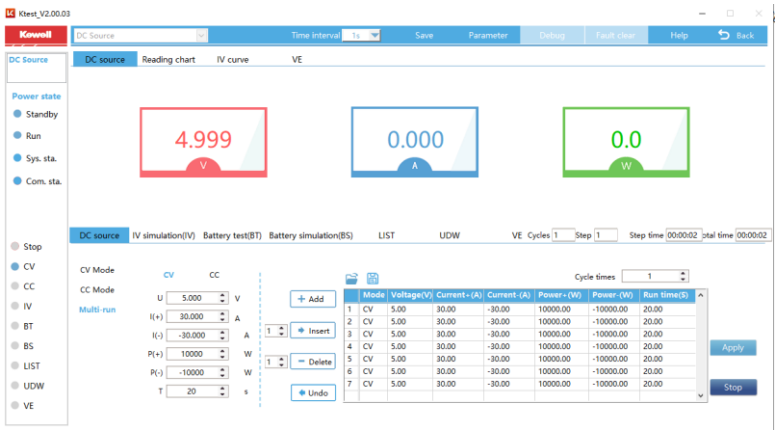
S7000 is a high-speed bi-directional power supply that enables high-speed conversion between source and load modes. The current can be seamlessly switched during bi-directional conversion, effectively avoiding voltage and current overshoot. Widely used in the fields such as battery, charging pile, and power conversion system (PCS).





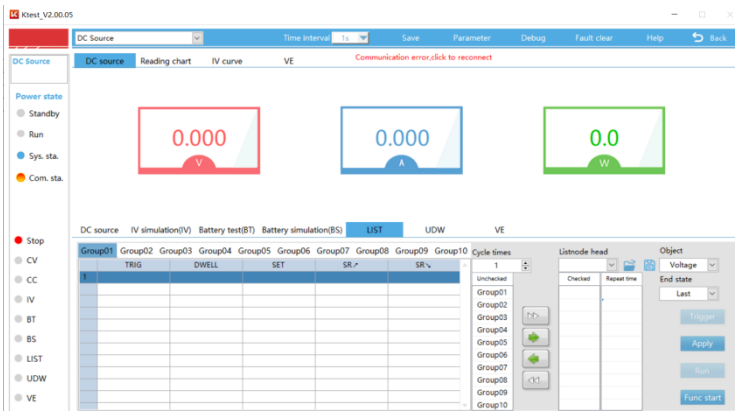
- **Multi-step operation:**

Up to 999 work steps editable, work steps can be set in cycles.



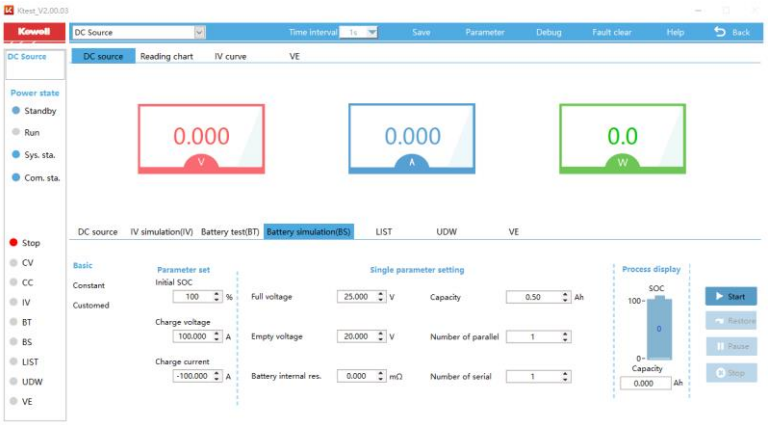
- **List**

It is equipped with List Output mode and supporting file programming for 10 groups, in each of which up to 10 sequences can also be edited. Single Step can be set as short as 1ms. Analogue time-order change can be simulated under CV mode. Loop nesting function is supported, which can be set repeatedly from 1 to 65535 times.

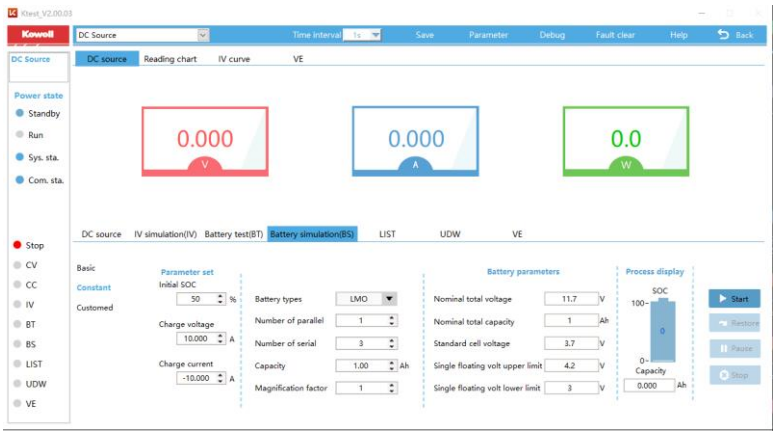


5.2 Battery Simulation

Standard mode: parameters: [Initial Soc], [Discharge Limit], [Charge Limit], [Fully-charged Voltage], [Fully-discharged Voltage], [Battery Internal Resistance], [Capacity], [Number in Parallel], [Number in Series] can be set for testing.

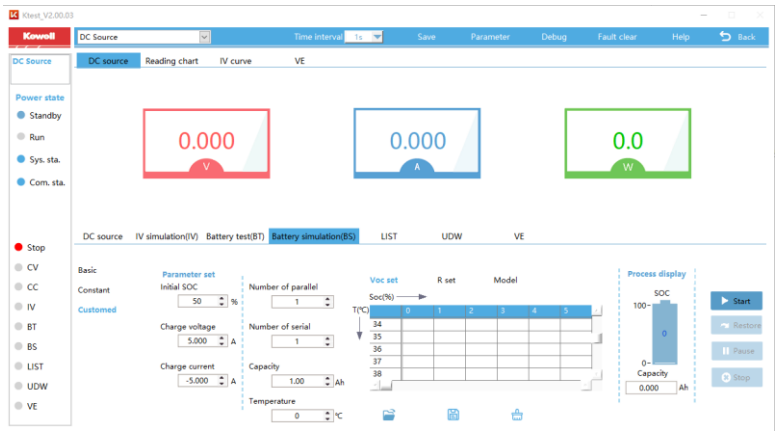


Fixed battery type mode: Lithium manganese oxide, lithium cobalt oxide, lithium iron carbonate, nickel-metal hydride batteries, ternary lithium, lithium titanate and other battery types can be selected for simulation.



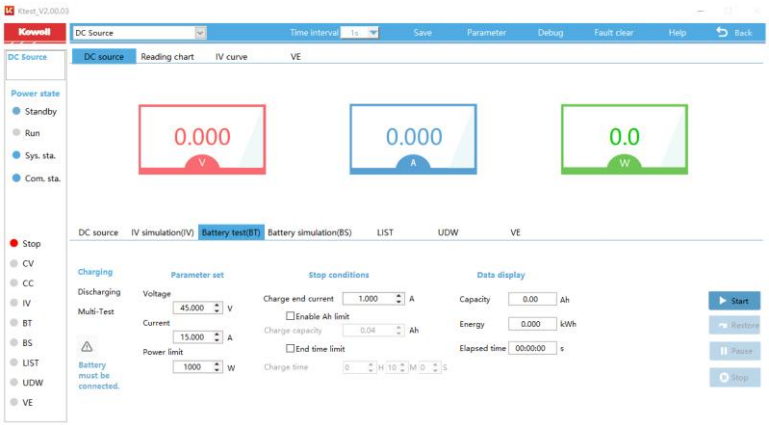
Custom battery type: At a given temperature and SoC, fill in the open circuit voltage and internal resistance in

the sheet, or import the Excel file written in advance, then set other parameters, and click to start running.

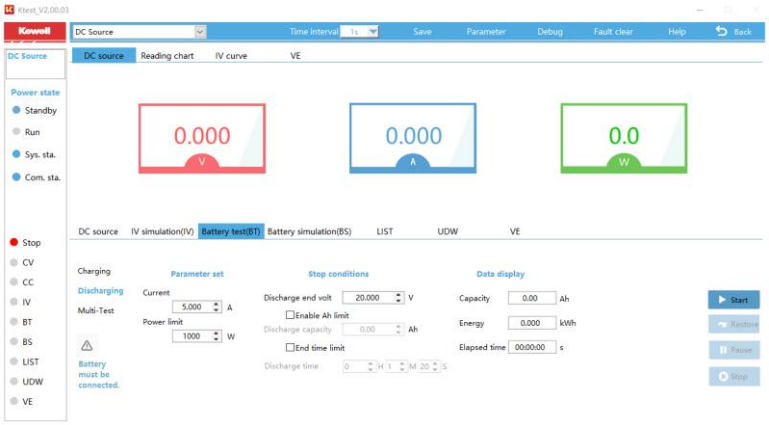


5.3 Battery Pack Charge-discharge Function

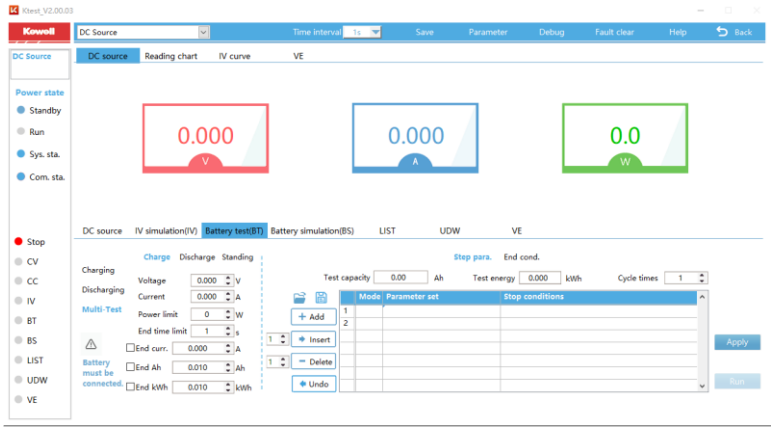
Static charging mode: parameters such as charging voltage, charging current and charging power can be set, while the charging cut-off conditions including end-of-charge current, capacity and time can also be set.



Static discharging mode: parameters such as discharge current and discharge power can be set, as well as discharge cut-off conditions including end-of-discharge voltage, capacity and time.



In the battery test mode, users can set parameters such as static charging and discharging mode and standby time to simulate different operating conditions.

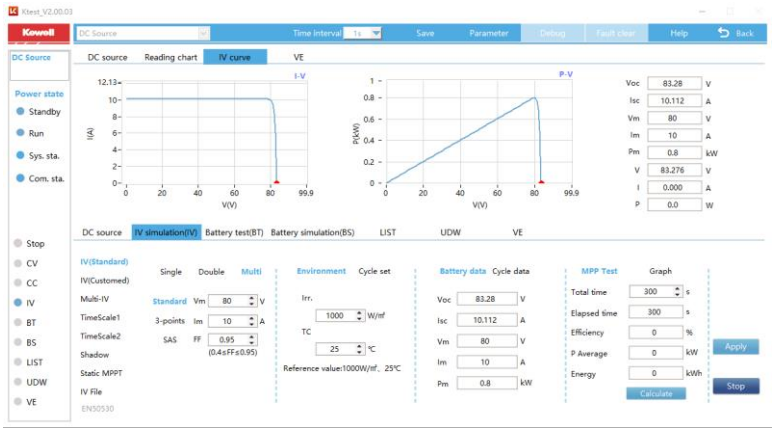


Note: Battery testing requires a soft-start box between the DC output and the battery to ensure that the circuit is disconnected before wiring.

5.4 IV Simulation

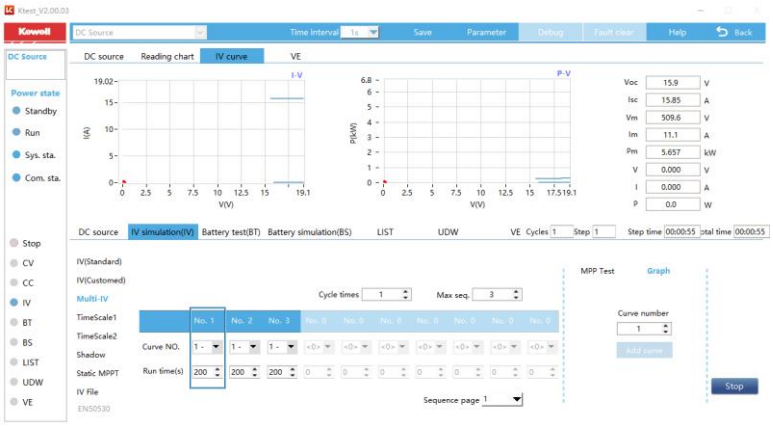
Photovoltaic array simulation.

Three modes: single-point, double-point and multi-point setting.



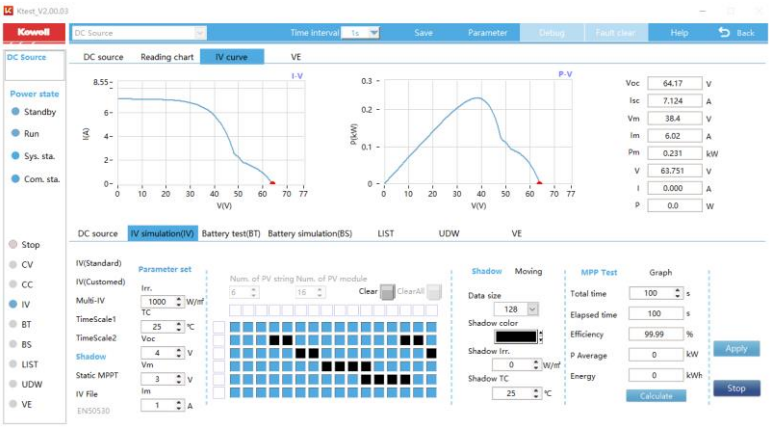
- **Multi-step IV mode**

Up to 100 IV curves can be set. Users can also select to import IV curve files to run.



- **Shadow (Multimodal shadow curve) function**

S7000 can simulate the IV curve (multimodal shadow curve) of shaded solar panels. Users can set the irradiance, temperature, array type, shadow movement direction, etc.

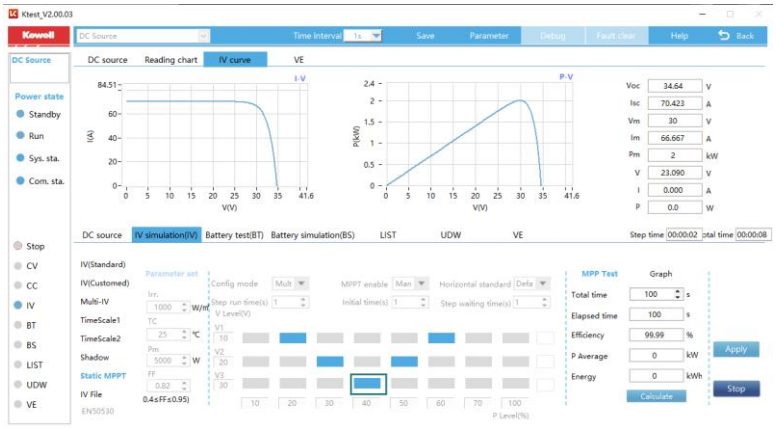


- **Time scaling**

S7000 can simulate the typical output changes of solar panels in a given period of time. The characteristic mode, array type, irradiance and temperature parameters can be set.

- **Static MPPT test**

Users can select single or multi-step configuration mode to test static MPPT performance.

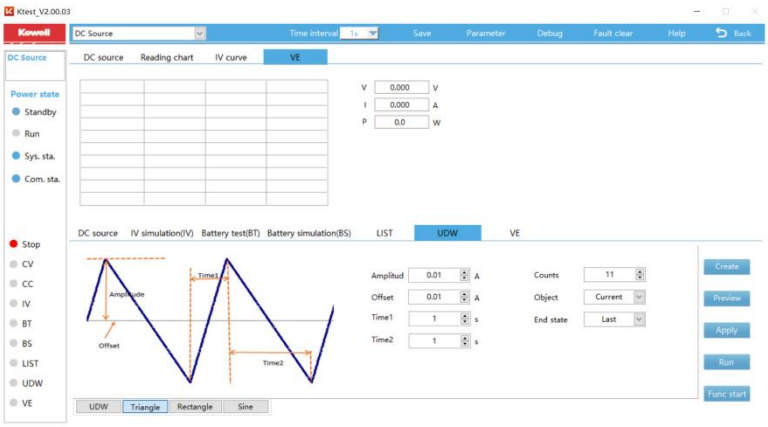


- **Dynamic MPPT test**

S7000 has the built-in dynamic test environment of EN50530 standard, with three power bands "1%-10%", "10%-50%" and "30%-100%", supporting detailed testing of the MPPT performance of the PV inverter.

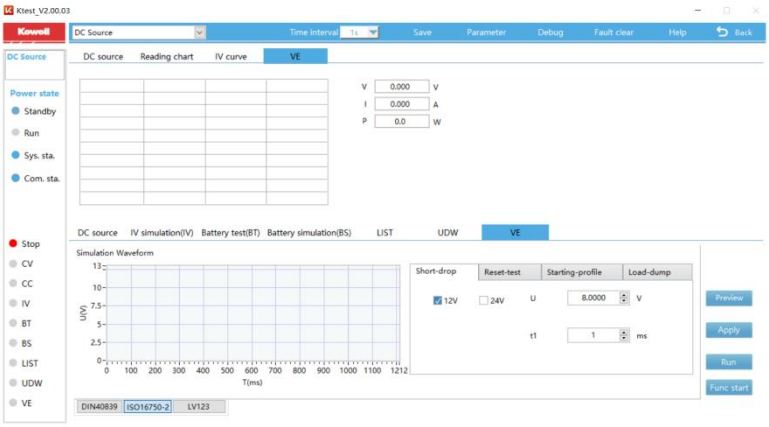
5.5 Custom Waveforms

Built-in triangle, square and sine waveforms. Also supports custom waveforms through programming.



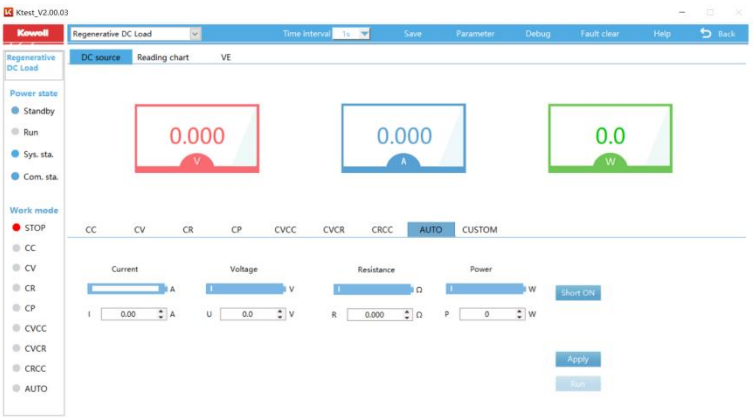
5.6 Automotive Power Curve

Built-in industry standards such as ISO16750-2, LV123, DIN40839, etc., one click to call.



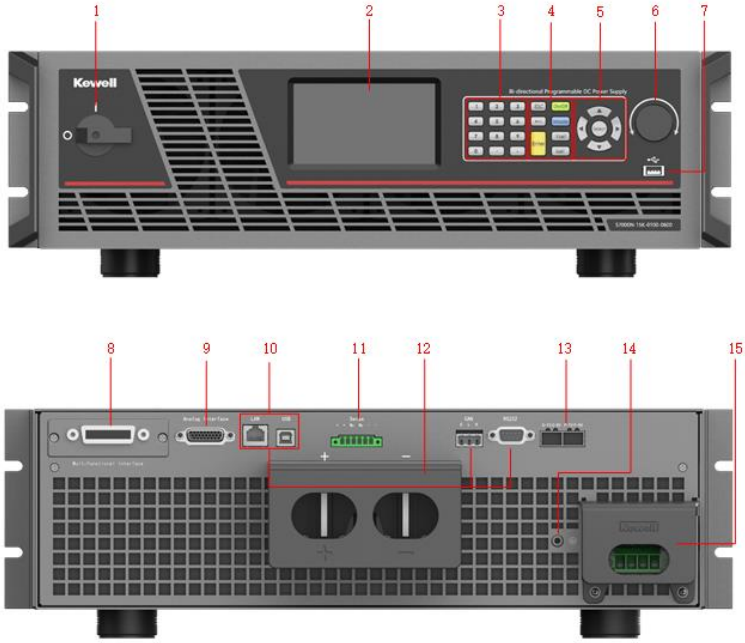
5.7 Regenerative Load Function

S7000 supports a variety of operating modes, including basic operation modes: CC, CV, CP, CR and composite operation modes: CV+CC, CV+CR, CC+CR, CV+CC+CP+CR.



6 Appearance

6.1 Single Device



No.	Name
1	Power switch
2	TFT touch screen
3	Numeric keypad
4	Function keypad
5	Arrow keys
6	Pushable knob
7	USB
8	Multifunctional interface
9	Analog interface
10	Communication interface
11	Remote sense
12	DC output
13	Parallel interface
14	Grounding interface
15	AC Input

S7000 Low voltage Series

6.2 Rack Solution

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
HK-42U	7~9 devices	610*1026*1999mm	280kg