OWH67B Series Programmable Bidirectional DC Power Supply

User Manual

For product support, visit:www.owon.com.hk/download

※：The illustrations, interface, icons and characters in the user manual may be slightly different from the actual product. Please refer to the actual product.

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General Warranty

We warrant that the product will be free from defects in materials and workmanship for a period of 2 years from the date of purchase of the product by the original purchaser from our company. The warranty period for accessories such as probes, battery is 12 months. This warranty only applies to the original purchaser and is not transferable to a third party.

If the product proves defective during the warranty period, we will either repair the defective product without charge for parts and labour, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by our company for warranty work may be new or reconditioned like new. All replaced parts, modules and products become the property of our company.

In order to obtain service under this warranty, the customer must notify our company of the defect before the expiration of the warranty period. Customer shall be responsible for packaging and shipping the defective product to the designated service centre, a copy of the customers proof of purchase is also required.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. We shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than our company representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of not our supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

Please contact the nearest Sales and Service Offices for services.

Excepting the after-sales services provided in this summary or the applicable warranty statements, we will not offer any guarantee for maintenance definitely declared or hinted, including but not limited to the implied guarantee for marketability and special-purpose acceptability. We should not take any responsibilities for any indirect, special or consequent damages.

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1. General Safety Requirement

Before any operations, please read the following safety precautions to avoid any possible bodily injury and prevent this product or any other products connected from damage. In order to avoid any contingent danger, this product is only used within the range specified.

Only the qualified technicians can implement the maintenance.

To avoid Fire or Personal Injury:

Use Proper Power Cord. Use only the power cord supplied with the product and certified to use in your country.

Product Grounded. This instrument is grounded through the power cord grounding conductor. To avoid electric shock, the grounding conductor must be grounded. The product must be grounded properly before any connection with its input or output terminal.

Limit operation to the specified measurement category, voltage, or amperage ratings.

Check all Terminal Ratings. To avoid fire or shock hazard, check all ratings and markers on the instrument. Refer to the user's manual for more information about ratings before connecting the instrument. Do not exceed any of ratings defined in the following section.

Do not operate without covers. Do not operate the instrument with covers or panels removed.

Use Proper Fuse. Use only the specified type and rating fuse for this instrument.

Avoid exposed circuit. Do not touch exposed junctions and components when the instrument is powered.

Do not operate if in any doubt. If you suspect damage occurs to the instrument, have it inspected by qualified service personnel before further operations.

Use your instrument in a well-ventilated area. Inadequate ventilation may cause an increasing of temperature or damages to the instrument. Please keep the instrument well ventilated, and inspect the air outlet and the fan regularly.

Do not operate in wet conditions. To avoid short circuit inside the instrument or electric shock, never operate the instrument in a humid environment.

Do not operate in an explosive atmosphere. In order to avoid damages to the device or personal injuries, it is important to operate the device away from an explosive atmosphere.

Keep instrument surfaces clean and dry. To avoid the influence of dust or moisture in air, please keep the surface of device clean and dry.

2. Safety Terms and Symbols

Safety Terms

Terms in this Manual. The following terms may appear in this manual:



Warning: Warning indicates the conditions or practices that could result in injury or loss of life.



Caution: Caution indicates the conditions or practices that could result in damage to this product or other property.

Terms on the Product. The following terms may appear on this product:

Danger: It indicates an injury or hazard may immediately happen.

Warning: It indicates an injury or hazard may be accessible potentially.

Caution: It indicates a potential damage to the instrument or other property might occur.

Safety Symbols

Symbols on the Product. The following symbol may appear on the product:



Hazardous Voltage



Refer to Manual



Protective Earth Terminal



Chassis Ground

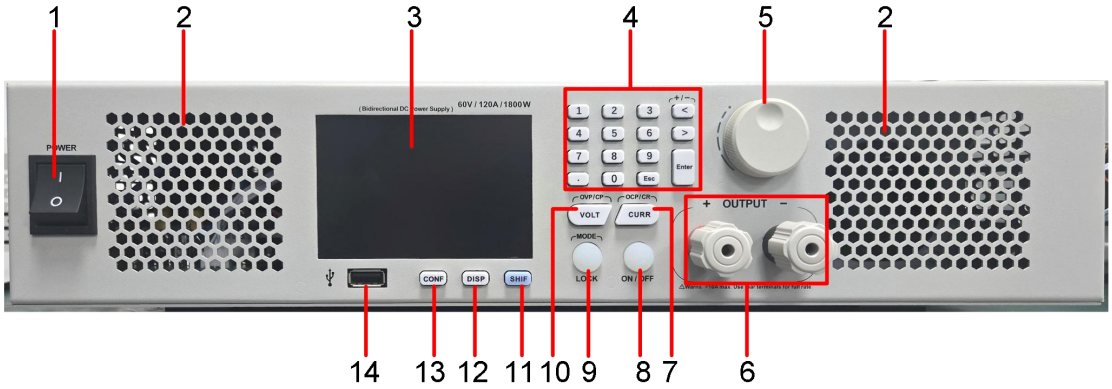


Public Ground

3. Quick Start

3.1 Front Panel and Interface

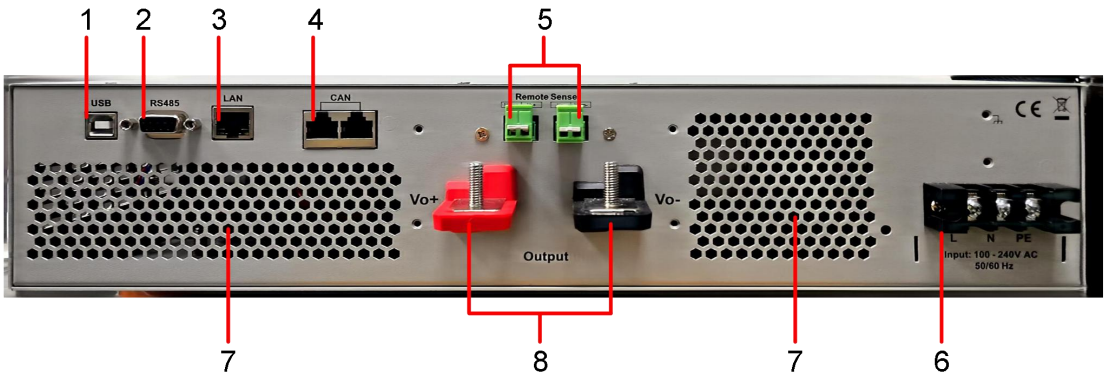
3.1.1 Front Panel



1	**Power button**	Turn on/off instrument.
2	**Fan**	Do not block the outlet of the fan, otherwise the internal heat dissipation of the machine will lead to excessive internal temperature.
3	**Display area**	TFT color screen display, output Settings and measurement results.
4	**0-9 and .** **Esc** **< >** **Enter**	Number and dot key:input number; Esc key: return to the previous page. < > Cursor movement key: Use to move the cursor left and right to the desired parameter position. SHIF+<: polarity switching. Enter: Confirm parameter setting.
5	**Knob**	Users can turn the knob to enter programming information or options.
6	**Output terminal**	Front panel output terminal.

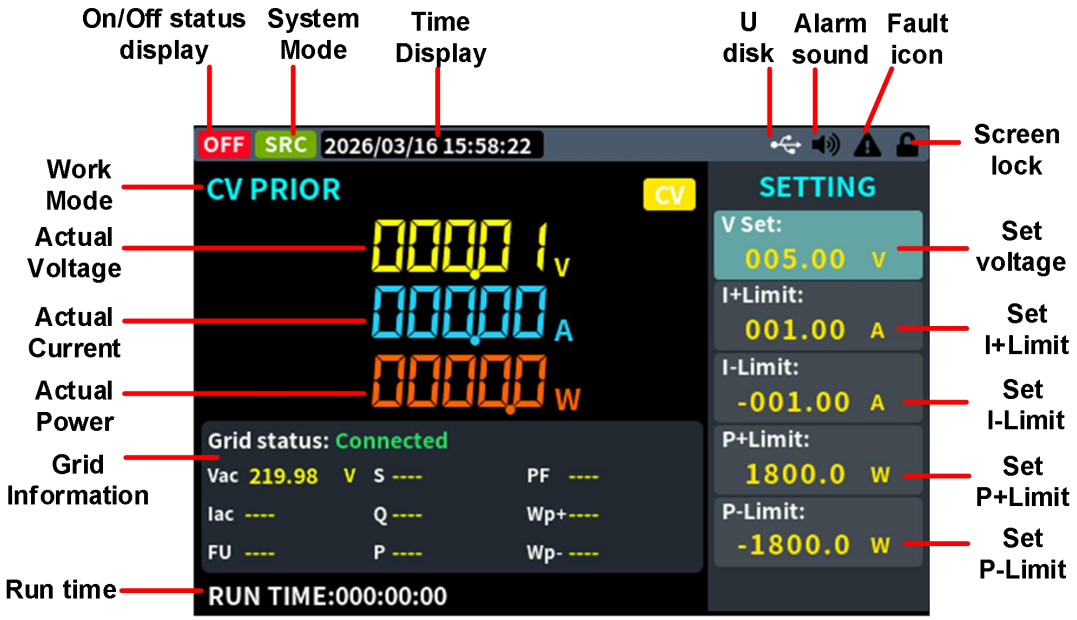
7	**CURR**	Current setting key: press it to enter the current setting mode, at the same time, user can input current value by numeric box or knob. SHIF+CURR: quick setting for OCP. In electronic load mode, the CURR key is used for CC mode setting, while SHIFT + CURR is used for CR mode setting.
8	**ON/OFF**	Control the output status: ON or OFF.
9	**LOCK**	Press and hold the lock; during remote control, long press to return to local operation mode.
10	**VOLT**	Voltage setting key: press it to enter the voltage setting mode, at the same time, user can input voltage value by numeric box or knob. SHIF+VOLT: quick setting for OVP. In LIST mode, this button is defined as the manual trigger button. In electronic load mode, the VOLT key is used for CV mode setting, while SHIFT + CURR is used for CP mode setting.
11	**SHIF**	Reuse function keys.
12	**DISP**	Switch between output curve and value display.
13	**CONF**	Switch the page into configure page, to set up various functions.
14	**USB**	USB data interface.

3.1.2 Rear Panel



1	**USB terminal**	The computer can be connected through the USB port.
2	**RS485 interface**	The computer can be connected through the RS485 port.
3	**LAN interface**	Ethernet remote communication controller can be connected to a computer through this interface for remote operation.
4	**CAN interface**	Multiple parallel machines can be made through the CAN port.
5	**Remote compensation**	DC power supply remote sense terminals: Connect these terminals to the load side to compensate for voltage drop on the power cables. Ensure that Vsen+ is connected to the positive output (+) and Vsen- is connected to the negative output (–). Do not reverse the polarity or leave them floating.
6	**AC Power connection terminal**	Power cord input AC power, from this connection terminal to the input terminal.
7	**Fan**	Do not block the outlet of the fan, otherwise the internal heat dissipation of the machine will lead to excessive internal temperature.
8	**DC output terminal**	DC power supply rear panel output terminals.

3.1.3 User Interface



Status Icon

Icon	Description
	The panel keys are locked
	Panel USB data cable is transmitting
	Enable beeper
	A failure alarm

3.2 General Inspection

After you get a new DC power supply, it is recommended that you should make a check on the instrument according to the following steps:

1. **Check whether there is any damage caused by transportation.**
   If it is found that the packaging carton or the foamed plastic protection cushion has suffered serious damage, do not throw it away first till the complete device and its accessories succeed in the electrical and mechanical property tests.
2. **Check the Accessories.**
   The supplied accessories have been already described in Appendix A:

Accessories of this manual. You can check whether there is any loss of accessories with reference to this description. If it is found that there is any accessory lost or damaged, please get in touch with our distributor responsible for this service or our local offices.

3. **Check the Complete Instrument.**
   If it is found that there is damage on the first appearance of the instrument, or the instrument cannot work normally, or fails in the performance test, please get in touch with our distributor responsible for this business or our local offices. If there is damage to the instrument caused by the transportation, please keep the package. With the transportation department or our distributor responsible for this business informed about it, a repairing or replacement of the instrument will be arranged by us.

3.3 Power-on Inspection

(1) Connect the instrument to an AC power source using the power cord supplied with the accessory.



Warning:

To prevent electric shock, make sure the instrument is properly grounded.

Before wiring, ensure that the power supply voltage matches the rated input voltage of this instrument. During wiring, make sure the power is off and no hazardous voltage exists at the terminals.

(2) Press the **power button** on the front panel and the startup screen will be displayed on the screen.

3.4 Output Inspection

Output inspection is to ensure that the instrument can achieve its rated outputs and properly respond to operation from the front panel.



Warning:

Please verify the voltage withstand and polarity requirements of the instrument’s output terminals and remote sensing connections. Do not reverse the +/-

connections or exceed the rated output voltage, as improper operation may result in fatal injury or equipment damage.

3.4.1 Voltage Output Inspection

The following steps verify basic voltage functions without load:

(1) When the instrument is under no load, select a channel and ensure the output current setting for this channel is not at zero.

(2) Turn on the channel output, then ensure the channel is in Constant Voltage output mode.

(3) Set some different voltage values on this channel; check if the actual voltage value displayed is close to the set voltage value, and also that the actual current value displayed is nearly to zero.

(4) Check if the output voltage can be adjusted from zero to the maximum rating.

3.4.2 Current Output Inspection

The following steps check basic current functions to directly short the output two terminals:

(1) Starting up.

(2) Connect a short across (+) and (-) output terminals with an insulated test lead on this channel. Use a wire size sufficient to handle the maximum current.

(3) Set the output voltage to the maximum rating on this channel.

(4) Turn on the channel output. Ensure the channel you used is in Constant Current output mode.

(5) Set some different current values on this channel; check if the actual current value displayed is close to the set current value, and to check if the actual voltage value displayed is nearly zero.

(6) Check that if the output current can be adjusted from zero to the maximum rating.

(7) Turn off the channel output and remove the short circuit from the output terminals.

4. Functional features and Panel operation

This chapter will describe program power supply function feature and panel operations in details,it will be divided into the following sections:

- Turn on/off channel output
- Local/Remote mode operation switch
- Bidirectional Power supply function
- Load function
- Battery simulator function
- Photovoltaic Simulator Function
- System menu function
- Waveform display function
- Remote measurement function

4.1 Turn On/Off the Channel Output

Press the **ON/OFF** key to turn on/off the channel. When the **ON/OFF** key is bright, the output is turned ON; when the **ON/OFF** key light is off, the output is turned off. When the power is turned on, the panel defaults to the main interface to display the current state.



Press the button, the indicator light shows that the output is open; Press the key again and the indicator light goes off to indicate that the output is off.

Description:

After the power supply is connected with the object to be tested, press the **ON/OFF** key to open the output to avoid the possible ignition phenomenon. If

there is no power output after the output is turned on, please check the voltage and current setting value, please set the voltage and current is according the setting values and not 0 value,and then turn on the output.

4.2 Local/Remote mode Operation switch

The power supply provides both local and remote operation mode, and the two modes can be switched by communication commands. In power initialization mode, the machine is operated locally by default.

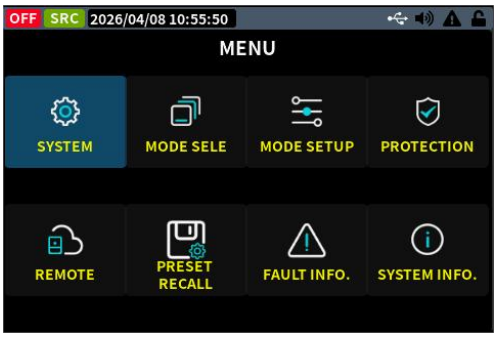
- Local operation mode: Use the keys on the panel to perform relevant operations.
- Remote operation mode: The power supply is connected to the PC, and the PC performs relevant operations on the power supply. When the power is in remote mode, all the buttons in the panel do not work except for the LOCK key. You can switch to local operation mode by press and hold **LOCK** key. When the operation mode is changed, it will not affect the output parameters of the power supply.

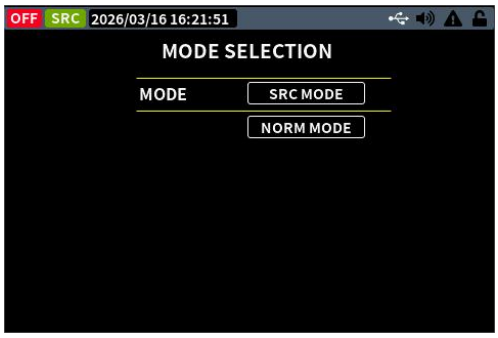
4.3 Bidirectional Power Supply Function

4.3.1 Normal Mode

In normal mode of the bidirectional power supply, the unit can perform the Source function to supply power, while also possessing Sink capability to draw current. It enables high-speed switching between source and sink current modes, allowing rapid, continuous and seamless transition between outputting and absorbing current, effectively avoiding voltage or current overshoot. The operating mode of the power supply — either general mode or LIST mode — can be selected via the system menu. In general mode, the unit

further supports two operating modes: Constant Voltage Source (CV) and Constant Current Source (CC).



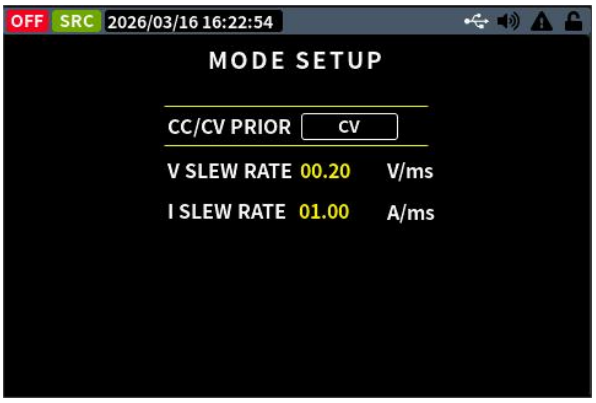


In Constant Voltage (CV) mode, the output is regulated by a constant voltage feedback loop. As long as the load current remains within the configured positive/negative current and positive/negative power limits, the output voltage will be maintained at the programmed set value. CV mode is suitable for resistive or high-impedance loads, as well as loads sensitive to voltage overshoot. Do not use CV mode for low-impedance sources such as batteries, power supplies, or large charged capacitors.

In Constant Current (CC) mode, the output is controlled by a bidirectional constant current feedback loop, which maintains the output or sinking current at the set value. The output current will be held at the programmed level as long as the load voltage remains within the configured voltage and power limit ranges. CC mode is suitable for batteries, power supplies, large charged capacitors, and loads sensitive to current overshoot. During programming, turn-on/turn-off transitions, and seamless switching between positive and negative current, CC mode minimizes current overshoot.

CC/CV Select:

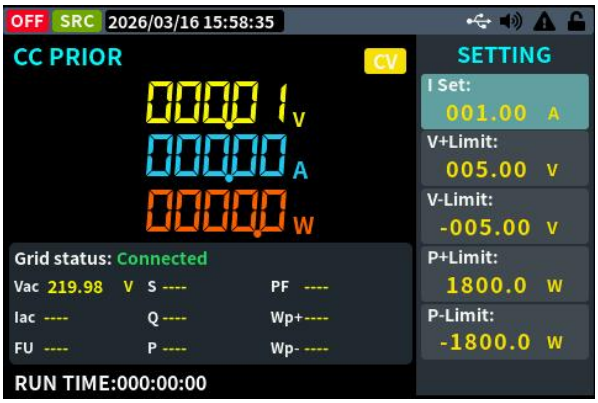
In power supply mode, Constant Voltage (CV) and Constant Current (CC) modes can be selected via the mode setting interface. When CV mode is selected, the voltage slew rate can be configured within a range of 0.02~10.0 V/ms. When CC mode is selected, the current slew rate can be configured within a range of 0.02~10.0 A/ms.



- In Constant Voltage (CV) mode, the setting items on the main interface include: Voltage Set Value (VSet), Positive Current Limit (I+Limit), Negative Current Limit (I-Limit), Positive Power Limit (P+Limit), and Negative Power Limit (P-Limit).



- In Constant Current (CC) mode, the setting items on the main interface include: Current Set Value (ISet), Positive Voltage Limit (V+Limit), Negative Voltage Limit (V-Limit), Positive Power Limit (P+Limit), and Negative Power Limit (P-Limit).

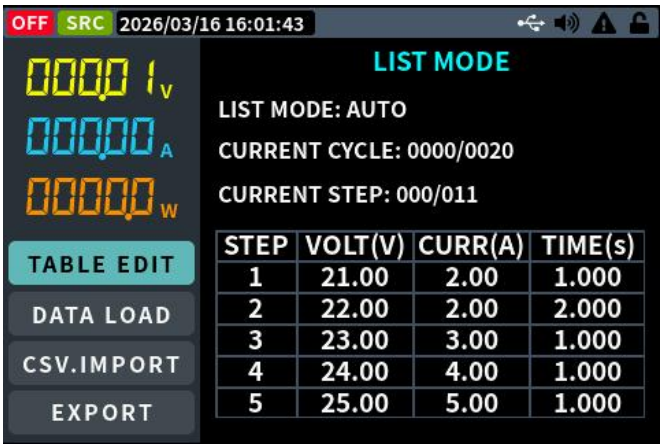


- **Note:** In the Sink mode, a minimum operating voltage is required. The minimum operating voltage specifications for models of different voltage classes are listed below.

Voltage level	Load Current	Minimum Operate Voltage (MOV)
60V	-Imax	2.6V@120A

4.3.2 LIST Mode

LIST mode supports sequential programming of up to 100 steps. The time range for each step can be set from 1 s to 9999.99 s or INF (infinite). Both auto-run and manual trigger operation modes are supported. The main interface of LIST mode is shown below.



The main interface is divided into three functional modules: Edit List, Import Data, and Export Data.

Function	Description
Edit List	Supports setting of steps and cycle counts, parameter editing (voltage / current / time), as well as insertion and deletion of rows and columns.
Import Data	Supports CSV file import (compatible with Excel editing).
Export Data	Generates standard CSV files to a USB flash drive with automatically numbered filenames.

Three functions can be selected via the knob, and Enter is pressed to confirm and proceed to the next operation. Examples include creating and editing a new list, as well as selecting and editing an existing list.



LIST Mode List Editing Interface Function Description:

- Total Steps: The total number of list steps can be set from 1–100 steps. If the input value is out of range, the system will limit it to 100 steps by default.
- Cycle Count: The number of execution cycles can be set from 1–9999. When set to 0, the list will run in an infinite loop.
- Operating Mode:

  Auto Mode: The list runs automatically and continuously according to the programmed parameter sequence.

  Manual Mode: Each step requires pressing the **VOLT** key to proceed.
- Table Editing Area: Supports step-by-step editing of parameters in the list, including voltage, current, duration, etc.



After editing the LIST parameters, users can also directly start the computer by pressing the **ON/OFF** button. The system will automatically load the curve, edit the curve, go to the main page of the LIST and run the LIST

curve. On the running main page, can see the current voltage/current/step /total step/cycle times/total cycle times, and historical voltage and current curves.

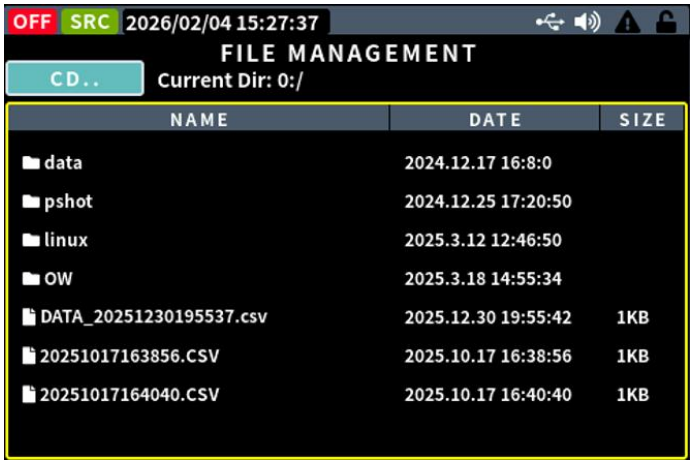
Users can also edit and save curves by means of import and export. Through the **knob**, select the **IMP.**, and press **Enter** to jump to the file management page. Select the LIST curve that needs to be imported by the **knob**, and then press the **knob** or **Enter** key to import the curve, at the same time, the page switches back to the LIST setting screen, the total number of steps to import the curve, the voltage, current, and time for each step are loaded to the page. Finally, through the **knob**, select the "LOAD", and the panel will send the curve. At the same time, the page jumps to the main page of LIST operation, and press the **ON/OFF** button to run the LIST curve.

CSV. File format Define

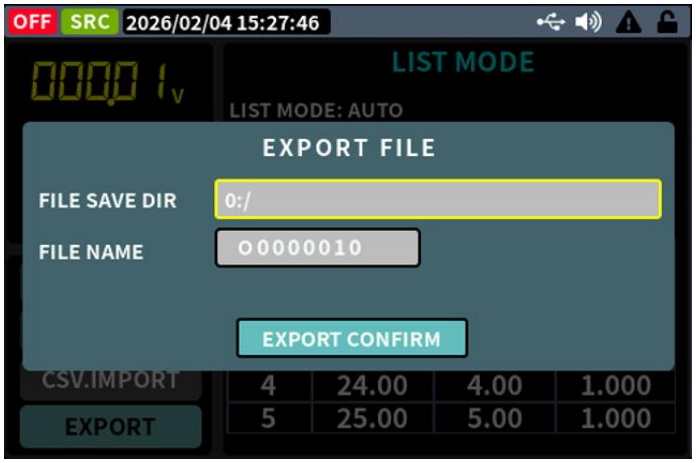
				Note
#TotalSteps	2			// Total steps
#Cycles	20			// Cycle counts
#Mode	Auto			// Operating mode（Auto/Manual）
STEP	VOLT	CURR	TIME	// Voltage unit is V, current unit is A, time unit is s
#1	21	2	1	// First step
#2	22	2	2	// Second Step

Note:

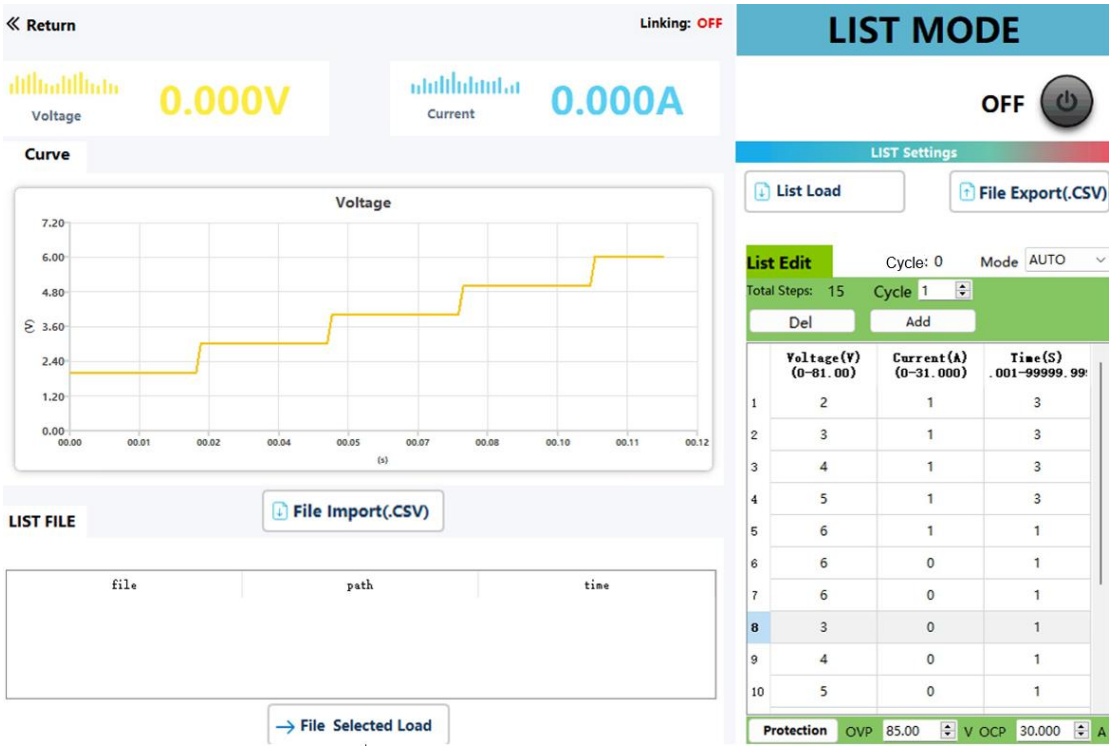
1. **Chinese and full-width characters are prohibited.**
2. **When saving files edited in Excel, select CSV UTF-8 format for saving.**



When the user needs to export the curve, through the **knob**, select the **EXP.**, and press the ↵ key to jump to the file management page. By default, the system names the file according to the time. After saving, the **EXIT** key is used to exit the file management interface and return to the LIST setting interface. The remaining operations are similar to the import.



For a large number of steps to be edited, it is recommended to operate directly via the host computer software. The main interface of the LIST host computer software is shown below:

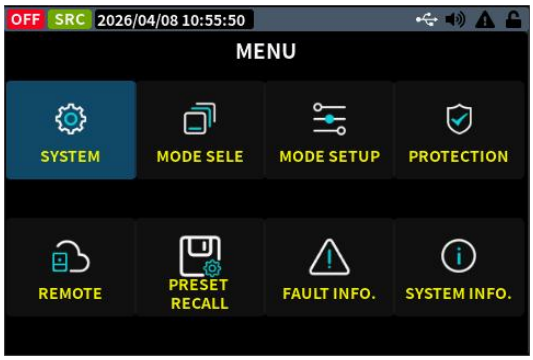


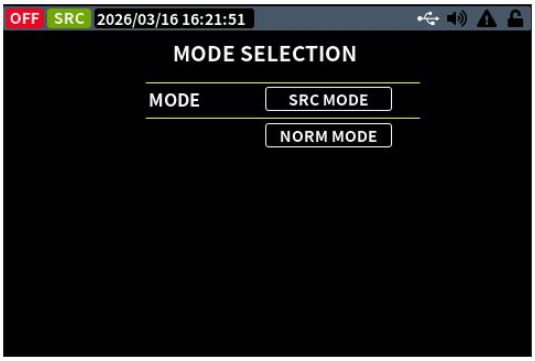
4.4 Load Mode

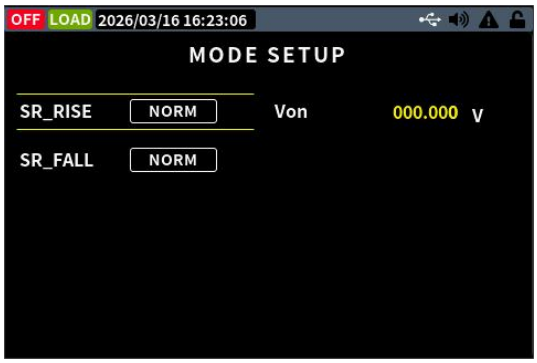
When operating in regenerative load mode, the following 4 operating modes are supported:

- CC mode
- CV mode
- CR mode
- CP mode

Operating modes including Constant Current, Constant Voltage, Constant Resistance, and Constant Power can be selected via the system menu. In addition, after selecting load mode, the rising and falling slew rates of current as well as the load voltage can be configured in the mode settings.

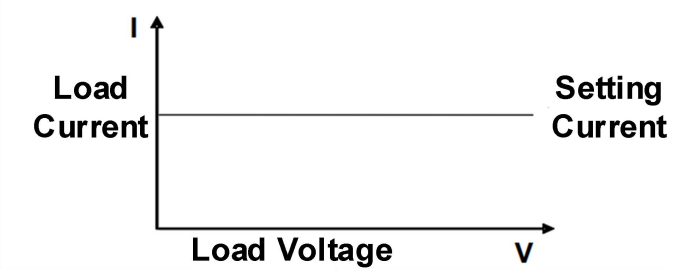






4.4.1 Constant Current Mode Operation (CC)

In constant current mode, the electronic load draws a constant current regardless of input voltage variations.The relationship between voltage and current is shown in the figure below.



CC Mode - Voltage and Current Relationship



CC Mode Operation Interface

Setting Output Current (CC MODE):

1. Select electronic load CC mode from system settings, or use **SHIF**+ **LOCK** to switch to electronic load mode, then press **CURR** to enter CC mode.
2. Press **Enter** to enter the current setting edit box. Use numeric keys 0–9 and softkeys to set the desired current value. Press **Enter** to confirm the current setting, or turn the knob directly to adjust to the set value.
3. Press **ON/OFF** to output the set current.

In CC mode, the following parameters can also be set.

Operation Steps

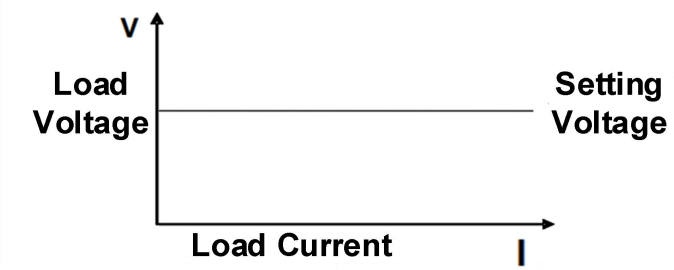
1. Press CONF to enter the parameter setting interface.
2. Set current rising slope.
3. Set current falling slope.
4. Set load voltage.
5. Set OCP, OVP, OPP.

Note:

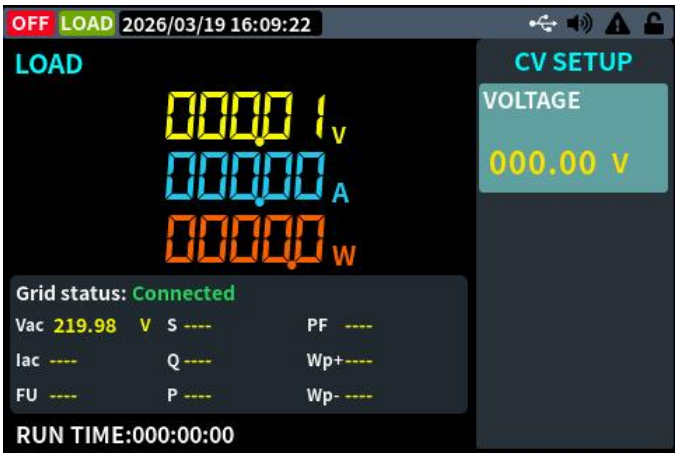
If the current set in CC mode exceeds the maximum power divided by the present voltage, the actual operating current in CC mode will be limited to maximum power / present voltage.

4.4.2 Constant Voltage Mode Operation (CV)

In constant voltage mode, the electronic load draws sufficient current to maintain the input voltage at the set value. The relationship between voltage and current is shown in the figure below.



CV Mode - Voltage and Current Relationship



CV Mode Operation Interface

Setting Output Voltage (CV MODE):

1. Select electronic load CV mode from system settings, or use **SHIF**+ **LOCK** to switch to electronic load mode, then press **VOLT** to enter CV mode.
2. Press **Enter** to enter the current setting edit box. Use numeric keys 0–9 and softkeys to set the desired voltage value. Press **Enter** to confirm the voltage setting, or turn the knob directly to adjust to the set value.
3. Press **ON/OFF** to output the set voltage.

In CV mode, the following parameters can also be set.

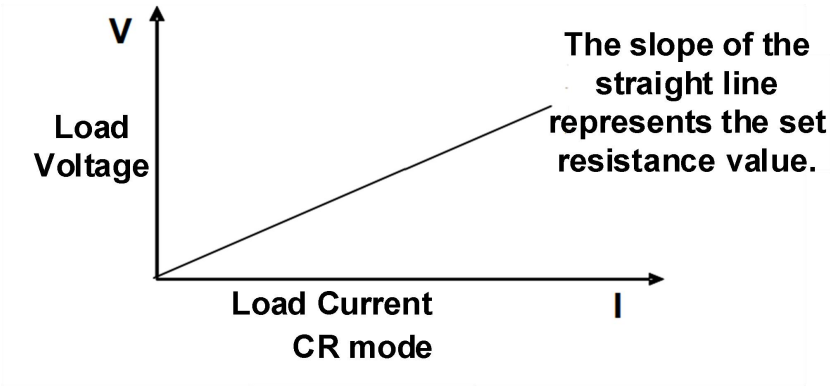
Operation Steps

1. Press CONF to enter the parameter setting interface.
2. Set load voltage.
3. Set voltage rising / falling slope

   a) high b) medium c) slow
4. Set OCP, OVP, OPP.

4.4.3 Constant Resistance Mode Operation (CR)

In constant resistance mode, the electronic load acts as an equivalent fixed resistor. It linearly varies the current with changes in input voltage. The relationship between voltage and current is shown in the figure below.



CR Mode - Voltage and Current Relationship



CR Mode Operation Interface

Setting Output Resistance (CR MODE):

1. Select electronic load CR mode from system settings, or use **SHIF**+ **LOCK** to switch to electronic load mode, then press **SHIF**+ **VOLT** to enter CR mode.
2. Press **Enter** to enter the current setting edit box. Use numeric keys 0–9 and softkeys to set the desired resistance value. Press **Enter** to confirm the resistance setting, or turn the knob directly to adjust to the set value.
3. Press **ON/OFF** to output the set resistance.

In CR mode, the following parameters can also be set.

Operation Steps

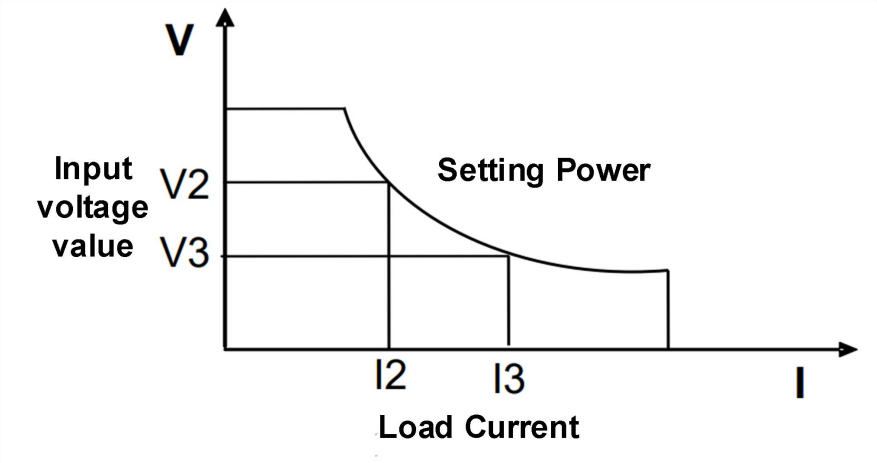
1. Press CONF to enter the parameter setting interface.
2. Set load voltage.
3. Set resistance rising / falling slope
   a) high b) medium c) slow
4. Set OCP, OVP, OPP.

Note:

If the resistance set in CR mode is less than (present voltage * present voltage) / maximum power, the actual operating resistance in CR mode will be limited to (present voltage * present voltage) / maximum power.

4.4.4 Constant Power Mode Operation (CP)

In constant power mode, the electronic load dissipates constant power. As shown in the figure below, if the input voltage increases, the input current decreases. The relationship between voltage and current is shown in the figure below.



CP Mode - Voltage and Current Relationship



CP Mode Operation Interface

Setting Output Power (CP MODE):

1. Select electronic load CP mode from system settings, or use **SHIF**+ **LOCK** to switch to electronic load mode, then press **SHIF**+ **CURR** to enter CP mode.
2. Press **Enter** to enter the current setting edit box. Use numeric keys 0–9 and softkeys to set the desired power value. Press **Enter** to confirm the power setting, or turn the knob directly to adjust to the set value.
3. Press **ON/OFF** to output the set power.

In CP mode, the following parameters can also be set.

Operation Steps

1. Press CONF to enter the parameter setting interface.
2. Set load voltage.

3. Set power rising / falling slope

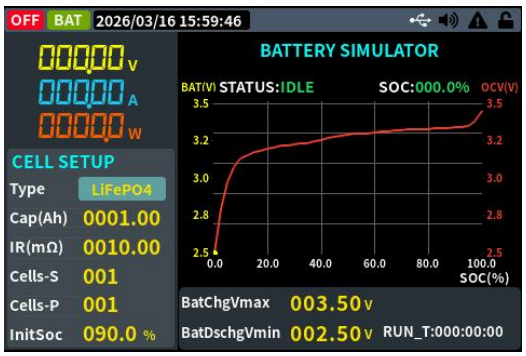
   a) high b) medium c) slow

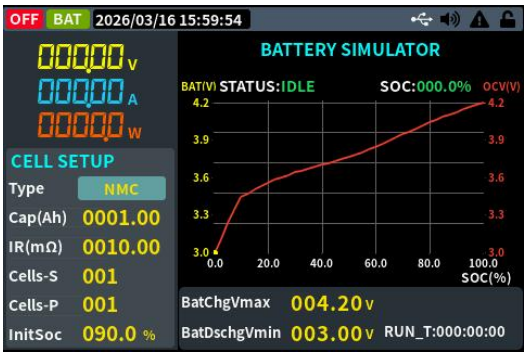
4. Set OCP, OVP, OPP.

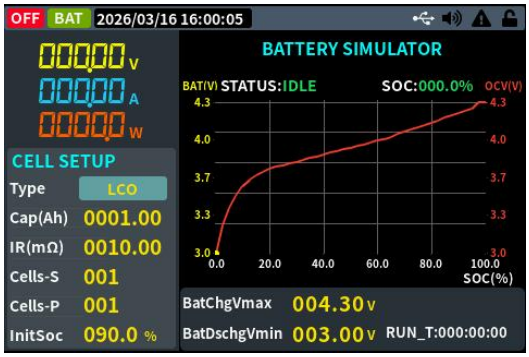
4.5 Battery Simulator

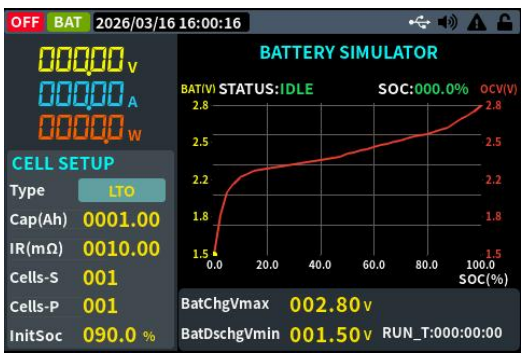
The power supply can also function as a battery simulator. It is a high-precision, programmable device with bidirectional energy flow, used to accurately simulate the electrical behavior of various battery chemistries under different SOC conditions, dynamic current profiles, internal resistance variations, and transient response conditions. The system simulates the physical characteristics of real batteries through an equivalent circuit model, SOC–OCV curve model, and dynamic RC network model.

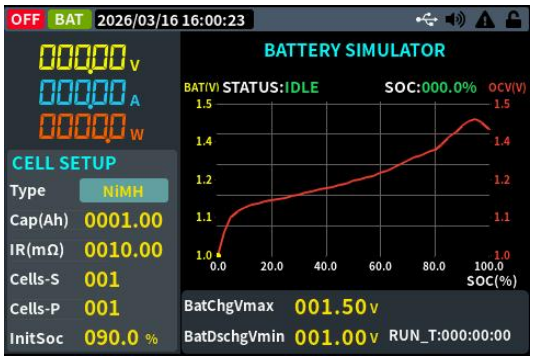
This device is equipped with multiple typical battery models including LiFePO4 and ternary lithium, allowing flexible construction of simulation systems for single cells, battery packs, and complex series-parallel configurations.

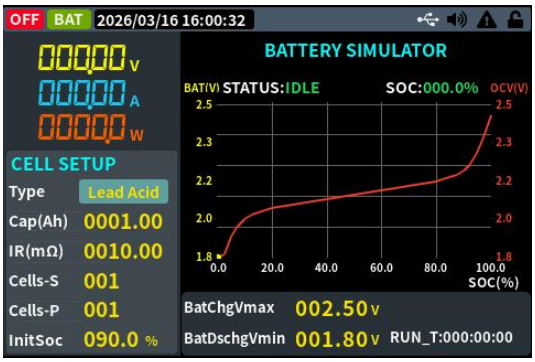


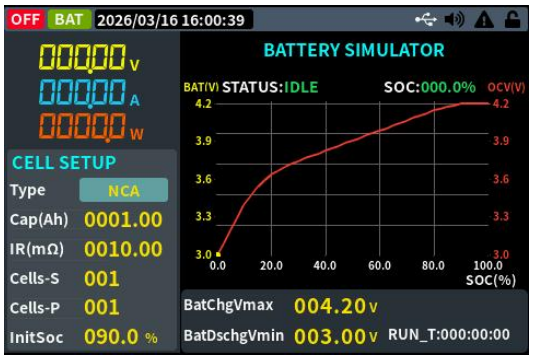












Name	Description
Type	LFP/NCM/LCO/LTO/NiMH/ Lead-Acid/ NCA
Capacity	0.01-9999.99Ah
Internal Resistance	0-9999.99mΩ
Series	1-Vmax/Maximum Cell Voltage
Parallel	1-999
Initial SOC	0-100.0%
Charge BAT(Vmax)	BAT(Vmin) - Number of Series Cells × Maximum Cell Charging Voltage
Discharge BAT(Vmin)	Number of Series Cells × Minimum Cell Discharging Voltage-BAT(Vmax)

Supported Battery Types

The system integrates models for the following 7 mainstream battery chemistries:

Num.	Battery Type	Nominal Cell Voltage Range
1	LFP ($LiFePO_4$)	2.5 – 3.65 V
2	NMC	3.0 – 4.2 V
3	LMO	3.0 – 4.2 V
4	LCO	3.0 – 4.2 V

5	LTO	1.8 – 2.7 V
6	NiMH	1.0 – 1.45 V
7	Lead-Acid	1.75 – 2.4 V

Battery Simulator Operation Steps：

1. Select battery simulator mode from system settings.
2. Turn the knob to select drop-down or setting boxes for editing, including cell type, capacity, internal resistance, series count, parallel count, initial SOC, maximum charge voltage and minimum discharge voltage.
3. Press **Enter** to enter edit mode. Use numeric keys 0–9 and soft keys to set the required values. Press **Enter** to confirm the settings, or turn the knob directly to adjust to the set values.
4. Press **ON/OFF** to start the battery simulator.

4.6 Photovoltaic Simulator

Programmable DC power supply features PV curve simulation, capable of simulating IV output characteristics of various solar panels (monocrystalline, polycrystalline, thin-film cells) under different environmental conditions including temperature, irradiance, shading attenuation and aging. It supports Static MPPT efficiency testing with built-in EN50530, Sandia PV models and user-defined curve models. Standard PV curve simulation software is provided to control multiple power supplies for MPPT tracking tests, offering test and verification for grid-tied inverters, string inverters, PV-storage integrated machines and energy storage converters, delivering efficient test solutions for users.

Note: PV mode is an optional function, distinguished by model suffix S. If unclear, consult our after-sales service or distributor.

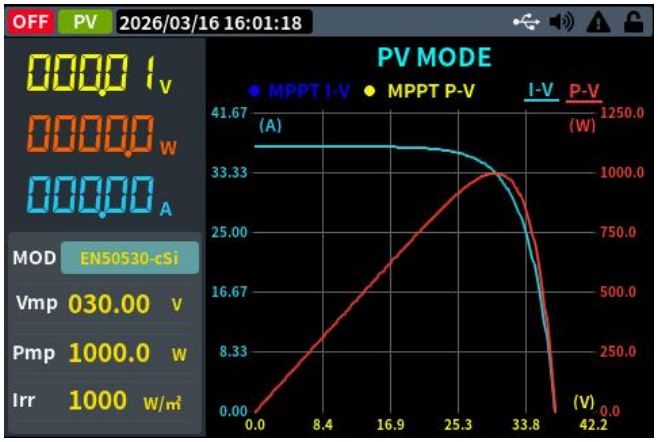
After setting the output mode of the adjustable DC power supply to PV mode, clicking Output Settings will directly jump to the parameter setting interface of PV mode.



On the PV setting interface, users can conveniently set the PV curve type, including EN50530, Sandia and user-defined curve.

- Type/Material type setting: Turn the **knob**, select the **TYPE** and **MATERIAL TYPE** in turn. Press **Enter** , **Esc** or **knob** to enter or exit editing.Select different curve types (EN50530, Sandia) and material types, and the setting interface will switch to the setting box of the corresponding curve. For example: Select the EN50530 curve type and material (THIN-FILM,c-Si), the corresponding parameters to be set include: maximum voltage, maximum power, test temperature (usually 25℃), ambient temperature, light intensity. Select the Sandia curve type and material (THIN_FILM,STD-CRY, HI-CRY), the corresponding parameters to be set include: maximum voltage, maximum power, test temperature (usually 25℃), ambient temperature, light intensity.
- Set the maximum voltage: This maximum voltage is the maximum power point voltage of the simulated PV curve in volts.
- Set the maximum power: The maximum power is the maximum power value corresponding to the PV curve under the test temperature (usually 25℃) and standard light intensity (1000W/m2).

- Test temperature: It is usually 25 ℃ and is used to provide standard PV curves.
- Ambient temperature: When the simulated PV is running, the actual ambient temperature, when the ambient temperature is different, the maximum voltage and maximum power of the PV curve are also different.
- Light intensity: When the simulated PV is running, the actual light intensity change, the value range is 0-1000 W/m^2, the weaker the light, the smaller the output power.
- Press the **ON/OFF** to load curve:When the parameters of all steps are set, press the power button to run the PV curve.



For the complete function of PV, please use the host computer. Besides panel parameter setting, the host computer can also support the test of static MPPT. The home page of the host computer PV simulator is shown in the following figure.

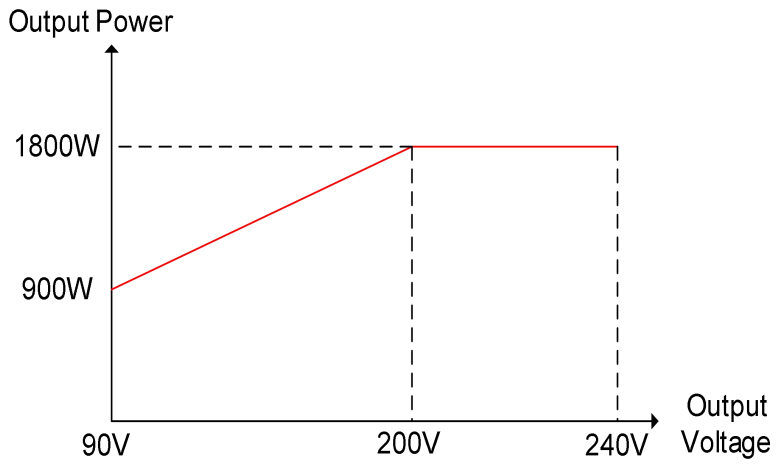


4.7 Input current limitation and output power derating

To ensure the input AC cable does not exceed its rated current capacity, the system incorporates an intelligent output power derating mechanism. This mechanism dynamically adjusts the maximum output power (Pout) based on the input voltage (Vin), maintaining the input current within safe operating limits.

- For OWH67B018-60, the input current is limited to 13 A max.

This means when the input voltage drops below the nominal range, the maximum output power will derate accordingly to prevent input current overload, and the warning message of “INPUT POWER LIMIT” will be shown on the screen. Please refer to the Pout vs. Vin characteristics curve below for detailed derating behavior under low AC input voltage condition.



4.8 System Menu Function

System function Settings provide users with various system function Settings for program power supply. The system functions include the following:

1. System Setup
2. Mode Choose
3. Mode Setup
4. Protect Setup
5. Remote Setup
6. Storage Setup
7. Fault Information
8. System Information

Detailed operation steps:

Press **CONF** key to enter “Function menu” options setting.

1. Turn the **knob** to select desired setting item.
2. Press **Enter** to confirm.
3. Press **Esc** or **CONF** to return CONFIG PAGE.

Note:

1. If want to cancel setting, press **Esc** to return the CONFIG PAGE.

Menu ad shown below:

Primary Menu	Secondary Menu			Home Screen Display	
System Setup	Language Setup: Chinese/English				
	Backlight: 10%-100%				
	Key Sound Setup: ON/OFF				
	Alarm Sound Setup: ON/OFF				
	Data Setup: YEAR/MONTH/DAY				
	Time Setup: HOUR/MINUTE/SECOND				
	Data Record			Length	01-9999h
				Time Interval	1-9999s
Mode Choose	Select Mode	Voltage Mode	General Mode		
			List Mode		
		Load Mode	CC		
			CV		
			CR		
			CP		
		Battery Simulator			
		PV Simulator			
Mode Setup	Power Supply Mode	General	CV/CC	CV:VSet, I+Limit,I-Limit,P+Limit, PLimit-	Voltage Slope: 0.02-10.0V/ms
				CC:I Set, V+Limit, V-Limit,P+Limit ,P-Limit	Current Slope: 0.02-10.0A/ms
		List		Total Steps	1-100
				Total Cycle	0: Infinity 1-9999
				Run Mode	Auto/Manual
				Parameter Table	Step/Voltage/ Current/Time
	Load Mode	CC	Rise Slope CC: 0.01-2000.00A/ms		

			Fall Slope CC: 0.01-2000.00A/ms		
			Load voltage: 0-Vmax		
		CV	Rise Slope CV:high/medium/slow		
			Fall Slope CV:high/medium/slow		
			Load voltage: 0-Vmax		
		CR	Rise Slope CP:high/medium/slow		
			Fall Slope CP:high/medium/slow		
			Load voltage: 0-Vmax		
		CP	Rise Slope CP:high/medium/slow		
			Fall Slope CP:high/medium/slow		
			Load voltage: 0-Vmax		
	Battery Simulator			Type	LFP/NCM/LCO/LTO/NiMH/Lead-Acid/NCA
				Capacity (Ah)	0.01-9999.99Ah
				IR(mΩ)	0-9999.99mΩ
				Series	1-Vmax/Maximum cell voltage
				Parallel	1-999
				SOC	0-100.0%

			Charge BAT Vmax	BAT(Vmin)-Number of series cells * Maximum charging voltage per cell
			Discharge BAT Vmin	Number of series cells * Minimum discharge voltage per cell-BAT(Vmax)
	PV Mode		Pmp	Type: EN50530/SANDIA
			Vmp	Type: EN50530/SANDIA/Custom
			FF	Type: EN50530/SANDIA
			Irr	Type: EN50530/SANDIA
			Test Temperature	Type: EN50530/SANDIA
			Environment Temperature	Type: EN50530/SANDIA
			Imp	Type: Custom
			Voc	Type: Custom
			Isc	Type: Custom
Protect Setup	Protect Setup	OVP: 0.00-65.00V	Default is 65V	
		OCP: 0-125.0A	Default is 125A	
		OPP: 10-2000.0W	Default is 2000W	
Remote Setup	USB(RS232)	Baud rate:2400-115200	Default is 115200	
		Communication protocol: SCPI		
	RS485	Baud rate:2400-115200	Default is 115200	

		Communication protocol: SCPI		
	LAN	DHCP: Off/On	Default is off	
		Communication protocol: SCPI		
		IP Setup: 000.000.000.000		
		Device network information: IP address gateway Subnet mask		
Preset Recall	Table Select: CC/CV			
	Recall select: Confirm select			
	Storage Table Edit CV: VSet/I+Limt/I-Limit/P+Limit/P-Limit CC: ISet/V+Limt/V-Limit/P+Limit/P-Limit			
Fault Info	Main AC Fault: Error: (code)			
	Output Fault: Error: (code)			
	Internal Fault 1: Error: (code)			
	Internal Fault 2: Error: (code)			
	Comm Fault: Error: (code)			
	Power Limit Warning: Error: (code)			
System Info	Model			

4.8.1 System Setup

Select **SYSTEM SETUP**, press **Enter** key to enter “SYSTEM” options setting, as shown in the below figure.



4.8.2 Mode Setup

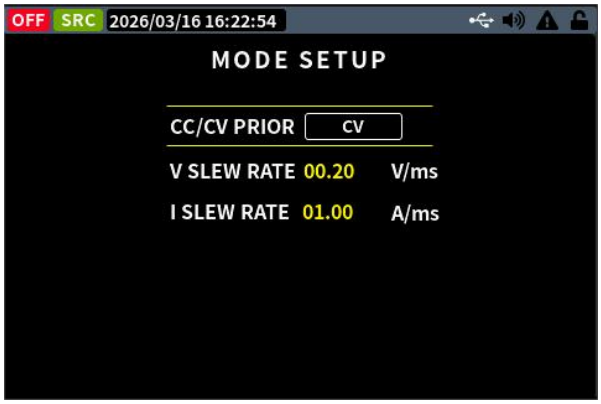
Select **MODE SETUP**, press **Enter** key to enter “MODE” options setting, Products support four output modes.

- Power Supply mode - General / List
- Load mode - CC/CV/CR/CP
- Battery Simulator
- PV Simulator

The mode setting edit box can be determined by selecting any of the modes by the knob. After pressing **ON/OFF** key, the mode is locked and cannot be edited. If you need to change to another mode, you need to power off and re-select the corresponding mode.

4.8.3 Output Setup

The mode setup is associated with the output setup. After selecting the output mode of the mode setting, it can be directly associated with the setting interface of the corresponding mode when clicking the output setting. For example: when the output mode is set to normal mode, and then click output setting to directly enter CC/CV setting interface, including voltage / current slope.



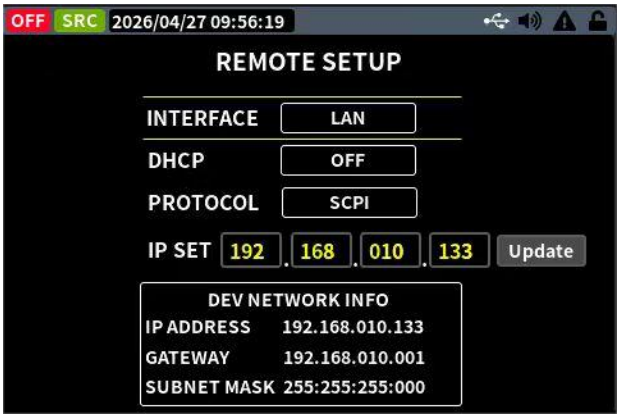
4.8.4 Protect Setup

Products can flexibly set OVP (Over-Voltage Protection), OCP (Over-Current Protection), OPP (Over Power Protection) functions according to user need.



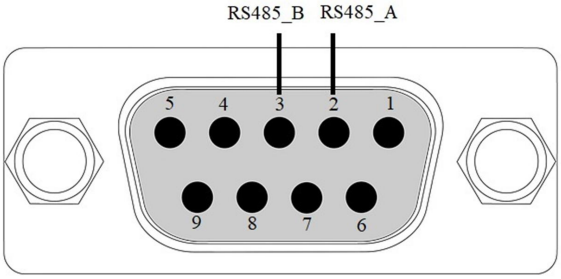
4.8.5 Remote Setup

Products are equipped with a variety of communication interface, USB serial port, RS485 and LAN functions.



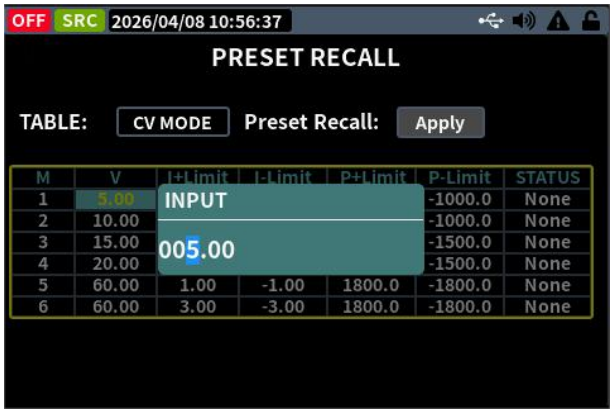
RS485 is DB9 terminal:

Pin	Function
Pin 2	RS485_A
Pin3	RS485_B
Pin1,4,5,6,7,8,9	NC



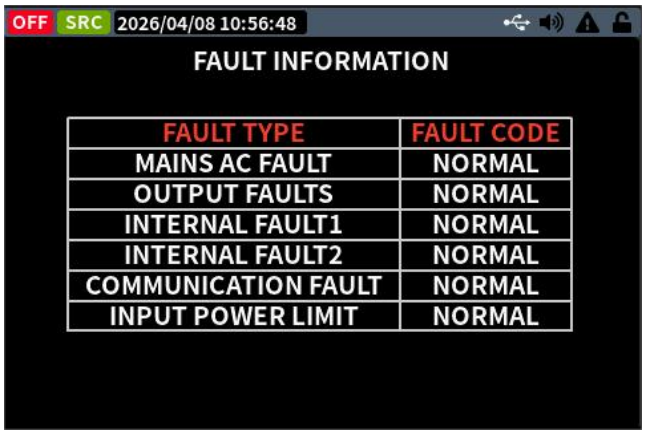
4.8.6 Preset Recall

The general power supply mode supports the quick recall function of parameters. Enter the preset recall interface, select either Constant Voltage Source (CV) or Constant Current Source (CC) mode, and edit the setting parameters. Finally, select the corresponding parameters and update them to the panel. After a power cycle, the instrument will use these parameters by default, which is suitable for production line applications.



4.8.7 Fault Information

In the event of a device fault, enter the alarm information interface to view the fault code.

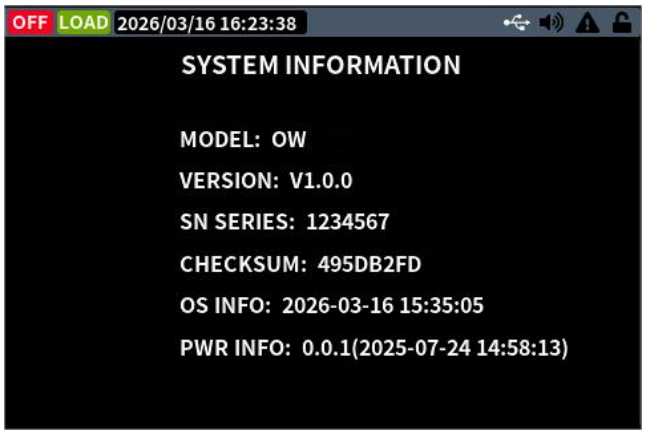


Fault Type	ERROR CODE	Fault cause Description
Main AC Fault	0x0001	Mains Power Loss
	0x0002	Grid Under Voltage

	0x0004	Grid Over Voltage
	0x0008	Grid Over Frequency
	0x0010	Grid Under Frequency
	0x0020	Grid Short Circuit
	0x0040	Grid Overload Alarm
	0x0080	Grid Overload Protection
	0x0100	Grid Fuse Abnormality
	0x0200	Grid Relay Abnormality
Internal Fault 1	0x0001	Bus Over Voltage
	0x0002	Bus Under Voltage
Internal Fault 2	0x0002	Internal Control Power Supply Over/Under Voltage
	0x0004	Heatsink Over Temperature
	0x0008	Hardware TZ Protection
	0x0010	Parameter Storage Error
	0x0020	Model&Firmware Mismatch Error
Output Fault (OVP)	0x0002	Output Over Voltage (OVP)
Output Fault (OCP)	0x0008	Output Under Voltage (OCP)
Output Fault (OPP)	0x0010	Output Over Power (OPP）
Comm Fault	0x0001	Communication Fault Fault Between Panel & Power Board
Power Limit Warning	0x0001	Output Power Limiting

4.8.8 System Information

The screen displays the model, version, serial, and checksum of the machine.



4.9 Waveform display Function

When operating in power supply mode, LIST mode, and PV mode, the instrument provides a real-time intuitive local waveform display function, allowing direct reading of the present voltage and current, as well as the curve status over a period of time. Press the **DISP** key to switch between numeric and waveform display pages.



5. Troubleshooting

1. **The instrument is powered on but no display. Please following the steps:**

   - Check if the power is connected properly.
   - Check if the fuse which is below the AC Power socket is used appropriately and in good condition (the cover can be pried open with a straight screwdriver).
   - Restart the instrument after the steps above.
   - If the problem still exists, please contact our customer service.

6. Technical Specifications

The instrument must be operated continuously for more than 30 minutes at the specified operating temperature to achieve the following specifications:

Model		OWH67B018-60	OWH67B036-60
Rated Output (0℃-40℃)	Output voltage	0 - 60V	0 - 60V
	Output current	-120A ~120A	-240A ~240A
	Output power	-1.8kW-1.8kW	-3.6kW-3.6kW
AC Input	Volt./Freq./Curr.	100V-240Vac; 45Hz-65Hz; 13Arms Max	100V-240Vac; 45Hz-65Hz; 16Arms Max
Load regulation(%of output+offset)[1]	CV	≤0.03% +0.03%FS	≤0.03% +0.03%FS
	CC	≤0.05% +0.05%FS	≤0.05% +0.05%FS
Input power regulation (%of output+offset)	CV	≤0.03% +0.03%FS	≤0.03% +0.03%FS
	CC	≤0.05% +0.05%FS	≤0.05% +0.05%FS
Setting resolution	Voltage	10mV	10mV
	Current	10mA	10mA
Readback resolution	Voltage	10mV	10mV
	Current	10mA	10mA
Setting accuracy	Voltage	≤0.05% +0.05%FS	≤0.05% +0.05%FS
	Current	≤0.1% +0.1%FS	≤0.1% +0.1%FS
Readback accuracy	Voltage	≤0.05% +0.05%FS	≤0.05% +0.05%FS
	Current	≤0.1% +0.1%FS	≤0.1% +0.1%FS
Ripple noise[2]	Voltage	≤80mVp-p	≤120mVp-p
	Current	≤120mArms	≤200mArms
Temperature coefficient(0℃-40℃)	Voltage	100ppm/℃	100ppm/℃
	Current	200ppm/℃	200ppm/℃
Transient response (10%-90% rated load)		≤5.0ms	≤5.0ms
Minimum operation voltage MOV		2.6V@120A	3V@240A
Working temperature		0-40℃	0-40℃
Display		3.95-inch TFT LCD	3.95-inch TFT LCD
Interface		USB, LAN, RS485	USB, LAN, RS485
Dimension (W x H x D)		428mmX 88.0mmX 446.2mm	428mmX 176.0mmX 446.2mm
Weight		Approx. 12kg	Approx. 24kg

[1]: The voltage regulation test points serve as the output voltage compensation sense points.

[2]: Noise bandwidth: 20 MHz. Test with a 10 μF electrolytic capacitor connected in parallel with a 0.1 μF ceramic capacitor at the output.

Interval Period of Adjustment:

One year is recommended for the calibration interval period.

7. Appendix

7.1 Appendix A: Accessories

(The accessories subject to final delivery.)
Note: Due to differences in models, the accessories included may vary. Please refer to the actual items received.

Standard



Power Cord



Quick Guide



USB Cable



Remote sense terminals



AC terminal protective cover

Optional



Banana plug to alligator clip cable



L-shaped fixed bracket



DC terminal protective cover

7.2 Appendix B: General Care and Cleaning

General Care

Do not store or leave the instrument where the liquid crystal display could be exposed to direct sunlight for long periods of time.

Caution: To avoid any damage to the instrument, do not exposed it to any sprays, liquids, or solvents.

Cleaning

Inspect the instrument as often as operating conditions require. To clean the instrument exterior, perform the following steps:

1. Wipe the dust from the instrument surface with a soft cloth. Take care not to scratch the transparent LCD protection screen when cleaning.

2. Disconnect power before cleaning your instrument. Clean the instrument with a damp soft cloth (not dripping with water). It is recommended to clean with soft detergent or fresh water. To avoid damage to the instrument, do not use any corrosive chemical cleaning agents.



Warning:

Before re-applying power, ensure that the instrument is completely dry, avoiding any electric shock or electrical short circuit resulting from moisture.