OWH65 Series
Single-Channel High-Power Programmable DC Power Supply
User Manual

■ OWH6522

■ OWH6546

■ OWH6546A

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.

Table of Contents

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 Panel and User Interface

3.1.1 Front Panel

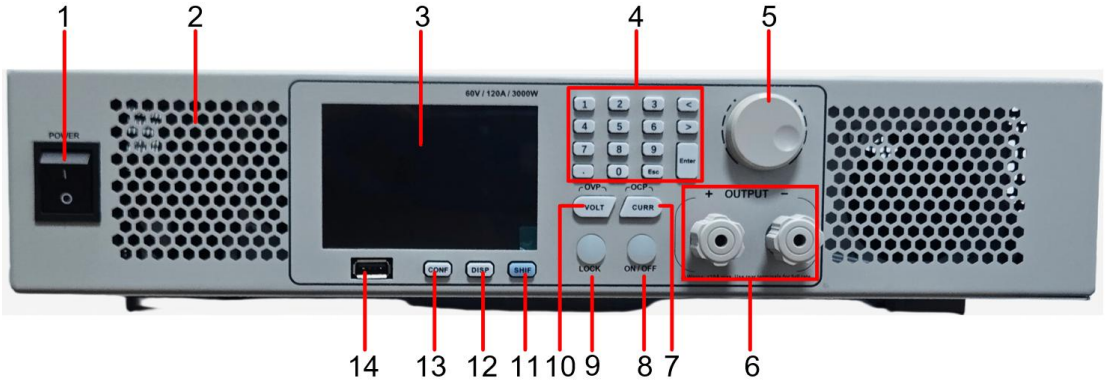


Figure 3- 1 6522 Series Front Panel Overview

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 screen**	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. Enter: Confirm parameter setting.
5	**Knob**	User can turn the knob to enter programming information or options. When a U flash drive is inserted, press and hold the knob for 3 seconds to save the current display interface in the U flash drive as a screenshot.
6	**DC source output terminal**	The output connection of the DC source.

7	**CURR**	Current setting button: When the user presses this button, the user enters the current setting mode; At this time, the user can use the numeric button or knob to input the set current value. In LIST mode, this button is used as a manual trigger button.
8	**ON/OFF**	Control output status: ON or OFF.
9	**LOCK**	Lock all keys and knobs; Cancel method: Press and hold the LOCK key to cancel the setting.
10	**VOLT**	Voltage setting button: When the user presses this button, the user enters the voltage setting mode; At this time, the user can use the digital button or knob to input the set voltage value. In LIST mode, this button is used as a manual trigger button.
11	**SHIF**	Multiplex function keys.
12	**DISP**	Toggle output digital display and waveform display.
13	**CONF**	Turn the interface to the configure page to set various functions.
14	**USB**	USB data interface.

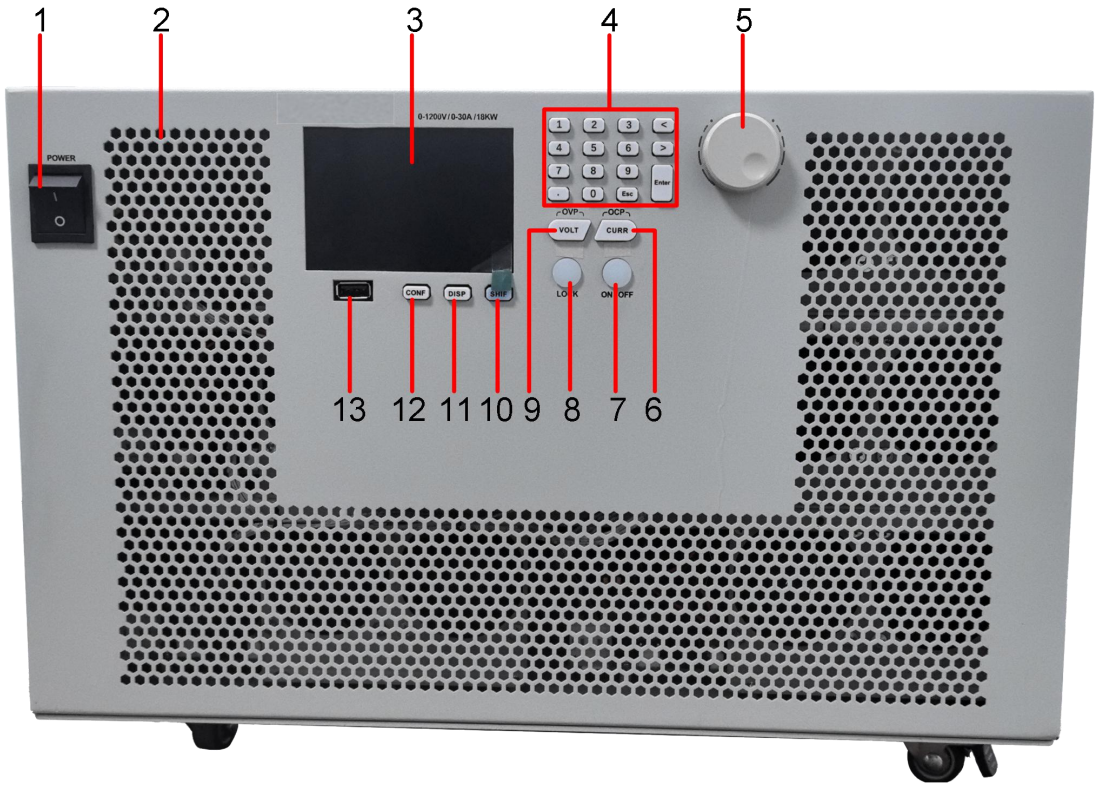


Figure 3- 2 6546 Series Front Panel Overview

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 screen**	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. Enter: Confirm parameter setting.
5	**Knob**	User can turn the knob to enter programming information or options. When a U flash drive is inserted, press and hold the knob for 3 seconds to save the current display interface in the U flash drive as a screenshot.

6	**CURR**	Current setting button: When the user presses this button, the user enters the current setting mode; At this time, the user can use the numeric button or knob to input the set current value. In LIST mode, this button is used as a manual trigger button.
7	**ON/OFF**	Control output status: ON or OFF.
8	**LOCK**	Lock all keys and knobs; Cancel method: Press and hold the LOCK key to cancel the setting.
9	**VOLT**	Voltage setting button: When the user presses this button, the user enters the voltage setting mode; At this time, the user can use the digital button or knob to input the set voltage value. In LIST mode, this button is used as a manual trigger button.
10	**SHIF**	Multiplex function keys.
11	**DISP**	Toggle output digital display and waveform display.
12	**CONF**	Turn the interface to the configure page to set various functions.
13	**USB**	USB data interface.

Key Indicator Light Description

On/Off :Press this button and the button light lights up.

3.1.2 Rear Panel

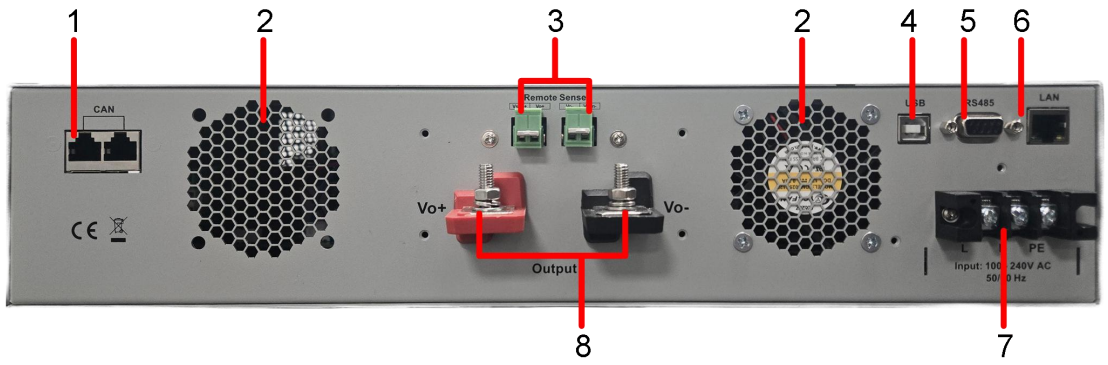


Figure 3- 3 6522 Series Rear Panel Overview

1	**CAN interface**	Multiple parallel machines CAN be made through the

		CAN port.
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	**Remote compensation**	This sampling connection terminal is connected to the load terminal and can compensate for the voltage drop on the line. Please confirm that Vsen+ is connected to output +, Vsen- is connected to output-, please do not connect reversely or float.
4	**USB Terminal**	The computer can be connected through the USB serial port.
5	**RS485 interface**	The computer can be connected through the RS485 port.
6	**LAN interface**	Ethernet remote communication controller can be connected to a computer through this interface for remote operation.
7	**AC Power connection terminal**	Power cord input AC power, from this connection terminal to the input terminal.
8	**DC output terminal**	DC power output terminal.

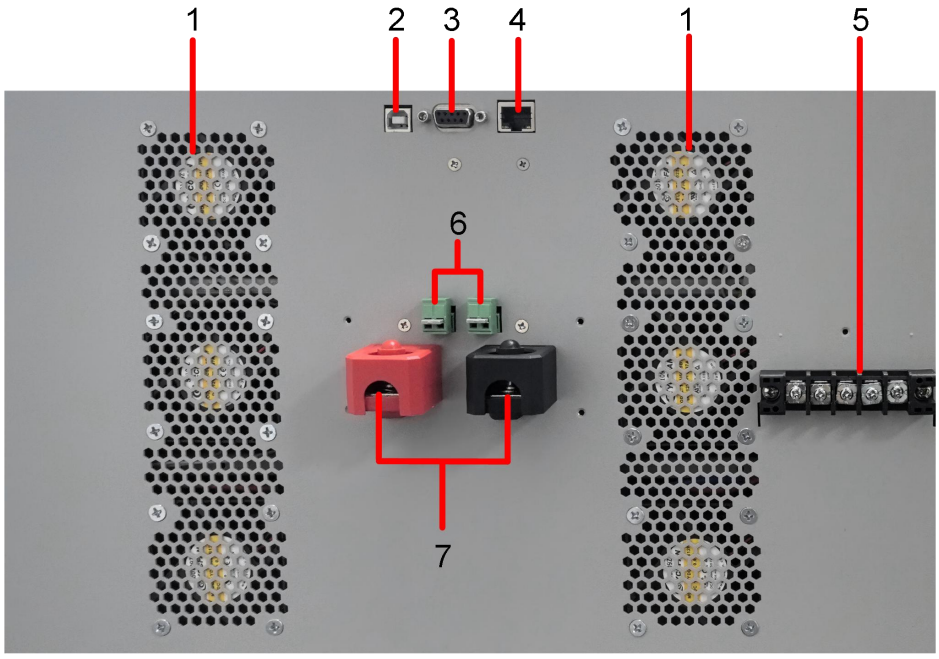


Figure 3- 4 6546 Series Rear Panel Overview

1	**Fan**	Do not block the outlet of the fan, otherwise the internal heat dissipation of the machine will lead to excessive internal temperature.

2	**USB Terminal**	The computer can be connected through the USB serial port.
3	**RS485 interface**	The computer can be connected through the RS485 port.
4	**LAN interface**	Ethernet remote communication controller can be connected to a computer through this interface for remote operation.
5	**AC Power connection terminal**	Power cord input AC power, from this connection terminal to the input terminal.
6	**Remote compensation**	This sampling connection terminal is connected to the load terminal and can compensate for the voltage drop on the line. Please confirm that Vsen+ is connected to output +, Vsen- is connected to output-, please do not connect reversely or float.
7	**DC output terminal**	DC power output terminal.

3.1.3 User Interface

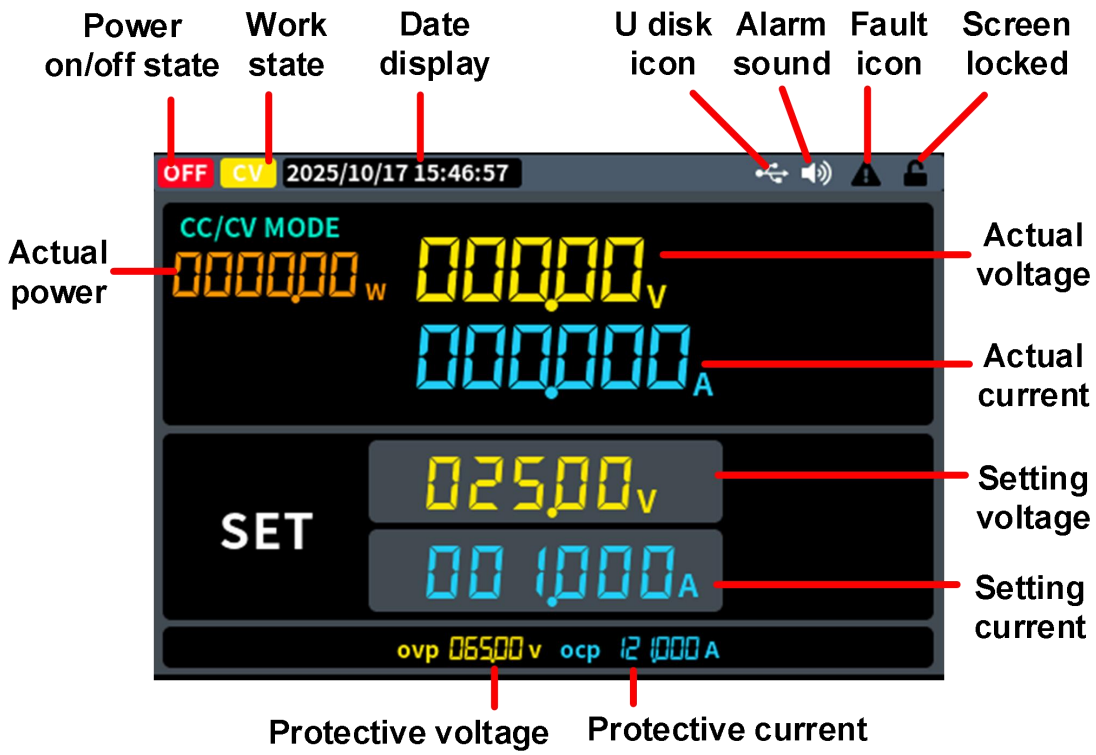


Figure 3- 5 User interface

Status Icon

Icon	Description
	The USB port of the panel is connected to storage media such as U disk

	Alarm sound is on
	Alarm mark: red-fault; Grey-Normal
	Panel keys are locked

- In CC/CV or LIST working mode, you can switch to the waveform display interface by pressing the **DISP** button.

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.

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

3.4 Output Inspection

The output check ensures that the instrument reaches the rated output value and can perform the front panel operation correctly. For some operations, see "Turn on/off Channel Output" and "Output Voltage/Current Setting" on page 14.

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.

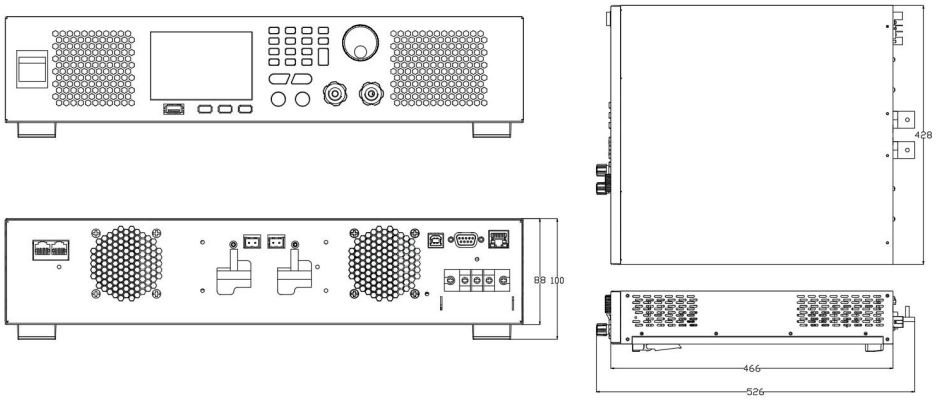
(7) Turn off the channel output and remove the short circuit from the output terminals.

3.5 Instrument Dimension Introduction

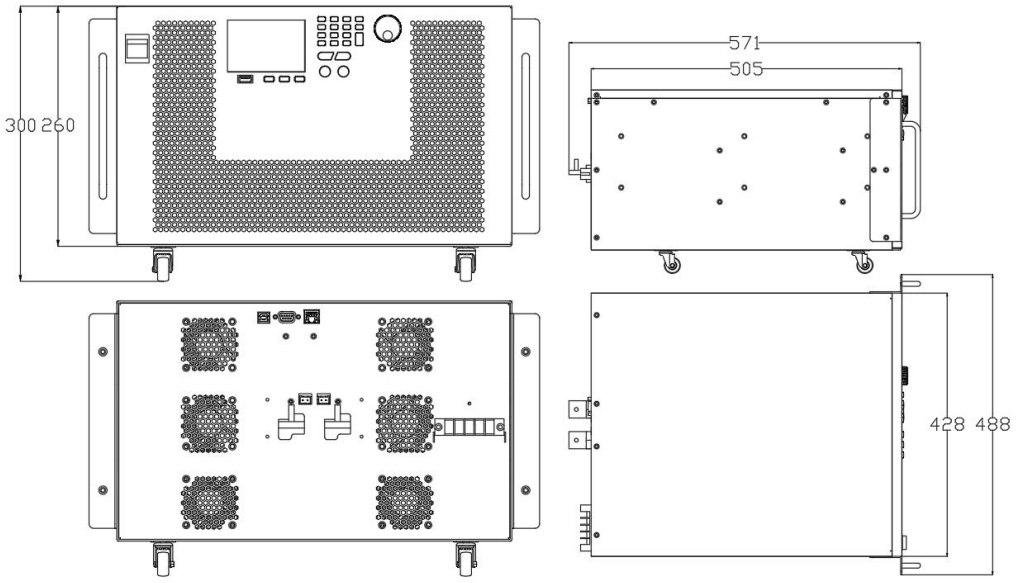
This series of instruments needs to be installed in a space with good ventilation and reasonable size. Please select the appropriate space for installation according to the following instrument size introduction.

Detailed structural dimension data are as follows (unit: mm).

6522 series model size chart:



6546 series model size chart:


300 260
571
505
428 488

4. Panel Operation

4.1 Turn on/off 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.

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 Output Voltage/Current Setting

4.3.1 Set the output voltage/current

Set the output voltage (CV MODE), there are the following two setting methods.

Method 1:

1. Press **VOLT** key, at this time, the voltage number of the user interface will display cursor.
2. Use the numeric **0-9** softkey to set desired voltage. Press **Enter** key to save voltage setting, or turn the **knob** to adjust directly to the set value.
3. Press **ON/OFF** key to output the setting voltage.

Method 2:

1. Press **VOLT** , at this time, the voltage number of the user interface will display cursor.
2. Use the left and right direction function keys to move the cursor to different bits, and turn the **knob** to increase or decrease the value.
3. Press **ON/OFF** key to output the setting voltage.

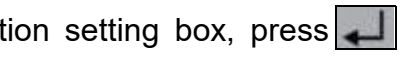
Note: The current setting must be greater than the load current to maintain the output in CV mode, otherwise the output voltage may not be equal to the set voltage.

Current (CC MODE) is set as follows:

Press the **CURR** key to set the rest in the same way as the voltage setting. Note that the voltage setting must be greater than the load voltage to maintain the output in CC mode, otherwise the output current will not be equal to the set current.

Note: When the input value is outside the rated range, set it according to the maximum limit or minimum limit.

4.4 Protection Settings

- The current output mode is set to CC/CV mode, press **CONF** to enter the system menu, rotate the knob to the protection setting box, press  enter the protection setting interface, use the **knob** or direction key (</>), select the protection parameter position of the corresponding channel, and press  , a light blue cursor appears at the position of the protection parameter, indicating that it has entered the editing state. The following methods can set numerical values:
  - Turn the **knob** to change the value of the current cursor, and press the </> arrow key to move the cursor position. Press down  key

confirms the current input.

- Use the **numeric keypad** to enter, after entering the required value, press key confirms the current input.

When the output voltage or current or on-load power exceeds the set value, the instrument power supply will disconnect the output, and the screen will pop up an overrun warning. Press down key or press the **On/Off** key of any channel to restore the alarm information, but the red alarm logo at the upper right of the screen will not disappear, and it can only be restored after the channel fault is resolved next time.

Note:
When the system automatically disconnects the output due to protection, after the user makes appropriate adjustments, the channel must be closed and then reopened before the output can be output normally.

This feature protects the load by preventing the power output from exceeding the load's rating.

4.5 System Settings

4.5.1 Language Setting

(1) Press the **CONF** key and press the **System Menu** to enter the System Settings menu.

(2) Press the **knob**, </> and other direction keys to select language settings. Press key, the drop-down optional box will pop up. The supported languages include Chinese, English, etc. Select the required language and

then press key confirmation.

4.5.2 Key Sound Setting

(1) Press the **CONF** function key and press the **System Menu** to enter the System Settings menu.

(2) Press the **knob**, </> and other direction keys to select the key sound setting. Press key, the drop-down selectable box will pop up, select the key sound to turn on or off, press key confirmation.

4.5.3 Alarm Sound Setting

(1) Press the **CONF** function key and press the **System Menu** to enter the System Settings menu.

(2) Press the **knob**, </> and other direction keys to select the alarm sound setting. Press key, the drop-down selectable box will pop up, select the key sound to turn on or off, press key confirmation. When the alarm sound is on, the status bar icon lights up. Beep when prompted by the system, such as cutting off the output due to overvoltage / overcurrent protection.

4.5.4 Date Setting

(1) Press the **CONF** function key and press the **System Menu** to enter the System Settings menu.

(2) Press the **knob**, </> and other arrow keys to select the date setting. Press the </> arrow key to move the cursor, use the knob or press the numeric key to set the desired value, press key confirmation.

4.5.5 Time setting

(1) Press the **CONF** function key and press the **System Menu** to enter the System Settings menu.

(2) Press the **knob**, </> and other direction keys to select the time setting. Press the </> arrow key to move the cursor, use the knob or press the numeric key to set the desired value, press key confirmation.

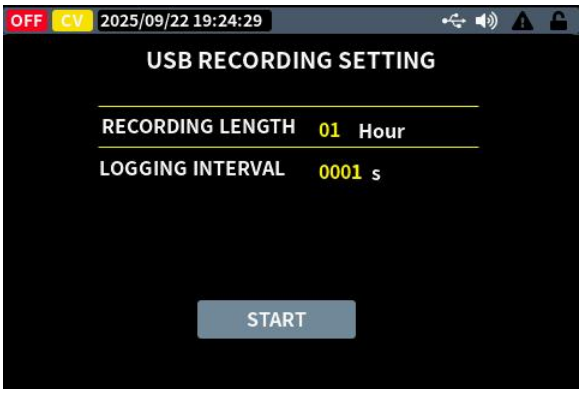
4.5.6 Backlight Setting

(1) Press the **CONF** function key and press the **System Menu** to enter the System Settings menu.

(2) Press the **knob**, </> and other direction keys to select the backlight setting. Press key to enter the edit state, press the knob or press </> key to set the required value, press key confirmation.

4.5.7 USB Recording Settings (Run Record Save)

Insert a USB flash drive to view the main interface symbol brightens, press the **CONF** key, select the system settings box, and press key, enter the system settings interface, USB recording settings and USB firmware upgrade functions are turned on, rotate the knob or press the direction key, select USB recording settings, press key to enter the USB recording setting interface. The parameters that can be set are recording length (unit hours, minimum 1 hour, maximum 72 hours) and recording time interval (unit seconds, minimum 1 second, maximum 9999 seconds). After setting, select Start recording confirmation, and the running data will be automatically recorded to the USB flash drive. When you need to interrupt the recording function, enter the USB recording settings in the same way and select End Recording.



4.5.8 USB Firmware Upgrade

The instrument firmware can be updated with a USB storage device via the

front panel USB connector.

USB storage device requirements:

This instrument only supports USB storage devices with FAT32 file system. If the USB storage device cannot be used properly, please format the USB storage device to a FAT32 file system and try again, or replace the USB storage device and try again.

Note: Updating the instrument firmware is a sensitive operation, to prevent damage to the instrument, please do not power off the instrument or unplug the USB storage device during the update process.

Copy the firmware to be upgraded to a U disk, file path requirements: 0:\ xxx\, insert the U disk, and view the main interface  brightens, press the **CONF** key, select the system settings box, and press  key, enter the system settings interface, USB recording settings and USB firmware upgrade functions are turned on, rotate the knob or press the direction key, select USB firmware upgrade, press  key to enter the USB record setting interface, the system will automatically identify the file name and number of files that can be upgraded, select the firmware index number to be upgraded, and press Confirm Upgrade. Once the upgrade is complete, the screen restarts.

4.5.9 Factory Reset

(1) Press the **CONF** function key and press the **System Menu** to enter the System Settings menu.

(2) Select the knob, or press the direction keys to select factory reset, press  , a pop-up window prompts to restore factory settings to confirm or cancel. Turn the knob or press the </> direction key to select confirm or cancel, and press  key confirmation. If you press OK to restore the factory settings, the screen will go off for 3 ~ 5 seconds and then restart, and the parameters will be restored to the factory settings.

4.6 Output Mode Setting

System output modes include CC/CV mode, LIST mode, and PV mode (optional function).

The steps to set the output mode are as follows:

(1) Press the **CONF** function key, press the knob or direction key, select the mode setting, and press ↵ to the mode settings menu.

(2) Press ↵ key, pop-up CC/CV, LIST mode and PV mode drop-down selection boxes, select the required output mode, and press ↵ key to confirm.

4.6.1 CC/CV Setting

In CC/CV mode, the working priority mode of each power channel can be set, and the rising slope of voltage or current can be set.

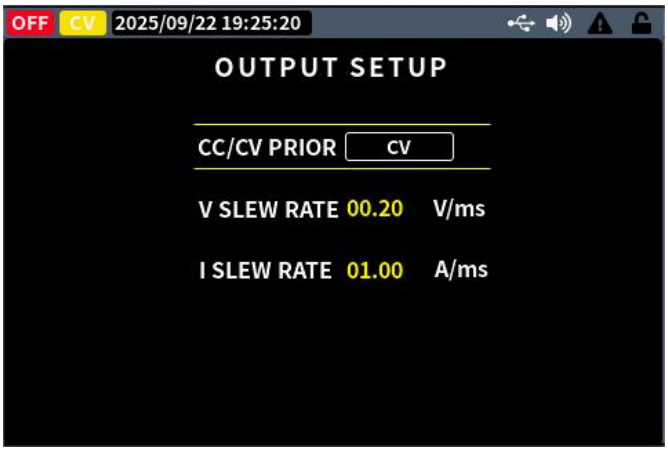
The steps to output settings are as follows:

(1) Press the **CONF** function key, press the knob or direction key, select the output setting, and press ↵ to the mode settings menu.

(2) Rotate the knob or use the directional keys to select the desired channel priority mode. Press ↵ to bring up the CV/CC selection box, choose your preferred operating priority mode, then press ↵ again to confirm.

(3) Rotate the knob or use the directional keys to select the desired voltage slew rate or current slew rate setting. Press ↵ to enter edit mode, use the directional or numeric keys to input the value, then press ↵ to confirm.

Note:
The voltage slope setting range is 0.02 V/ms ~ 0.2 V/ms, and the current slope setting range is 0.02 A/ms ~ 1A/ms. If it exceeds this range, it is set according to the maximum or minimum limit.



4.6.2 LIST Setting

The LIST mode supports a maximum of 100-step series programming, the single-step time range can be set to 1s-9999s or INF (unlimited), and supports automatic operation and manual trigger operation modes. The main interface of LIST mode is as follows.

The main interface is divided into three functional modules, editing lists, importing data and exporting data.

Functional module	**Function description**
Edit List	Supports step/cycle setting, parameter editing (voltage/current/time), row and column insertion and deletion operations.
Import data	Support CSV file import (compatible with Excel editing).
Export data	Generate standard CSV files to U flash drive, and the file names are automatically numbered.

Three functions can be selected through the knob, confirmed by **ENTER** to ENTER the next operation, such as editing production of new list, and editing

list by selecting.

Function description of List mode LIST editing interface:

- **Total number of steps:** Supports setting the total number of steps in the list ranging from 1 to 100 steps; If the input is out of range, the system limits the default to 100 steps.
- **Cycle:** Supports setting the number of loop executions, ranging from 1-9999; When set to "0", indicates that the list will be executed in an infinite loop.
- Running mode:

  Automatic mode: the list is automatically and continuously executed according to the set parameter timing;

  Manual mode: Each step needs to be executed by pressing the **VOLT** key or **CURR** key to realize the step.
- Table editing interval: Supports step-by-step editing of each parameter item in the list, including voltage, current and duration, etc.

After editing the LIST parameters, the user can also directly turn ON the computer by pressing the **ON/OFF** button. The system will automatically load the curve edit curve, transpose the LIST main page and run the LIST curve. On the main running page, you can see the current voltage, current, current steps/total steps, current cycles/total cycles, and historical voltage and current curves.

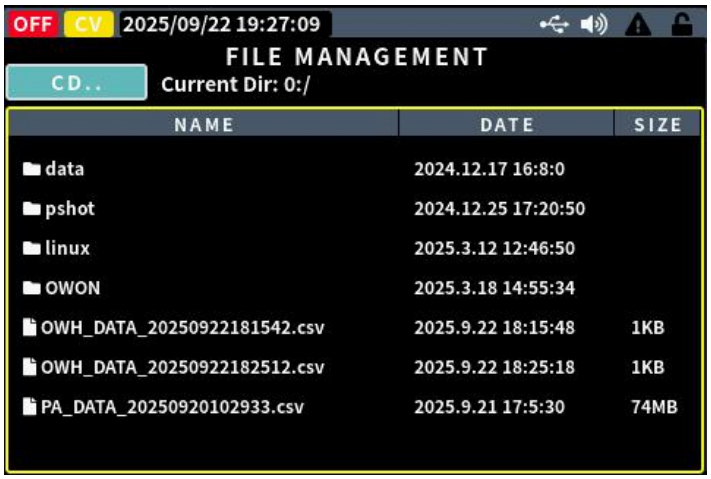
User can also edit and save curves through import and export. Rotate the knob, select the import option box, press the **Enter** key to jump to the file management page, select the LIST curve to be imported through the knob, and then press the **Enter** key to import the curve. At the same time, the page switches back to the LIST setting main boundary, and the total number of steps, The voltage, current and time of each step are loaded to the page. Finally, press **ON/OFF** to power ON, the panel will send the curve, and at the same time, the page will jump to LIST to run the main page.

CSV. File Format Definition

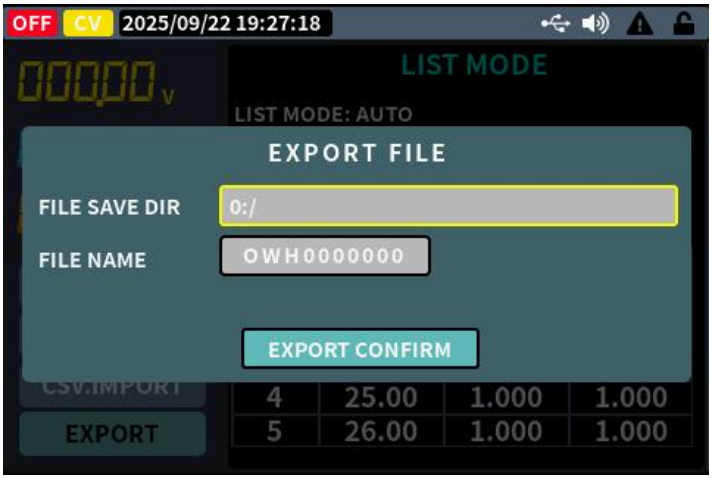
				Notes
#TotalSteps	2			//Total steps
#Cycles	20			//number of cycles
#Mode	Auto			//Auto/Manual
STEP	VOLT	CURR	TIME	//Voltage unit is V, current unit is A, time unit is s
#1	21	2	1	//First step
#2	22	2	2	//Step 2

Note:

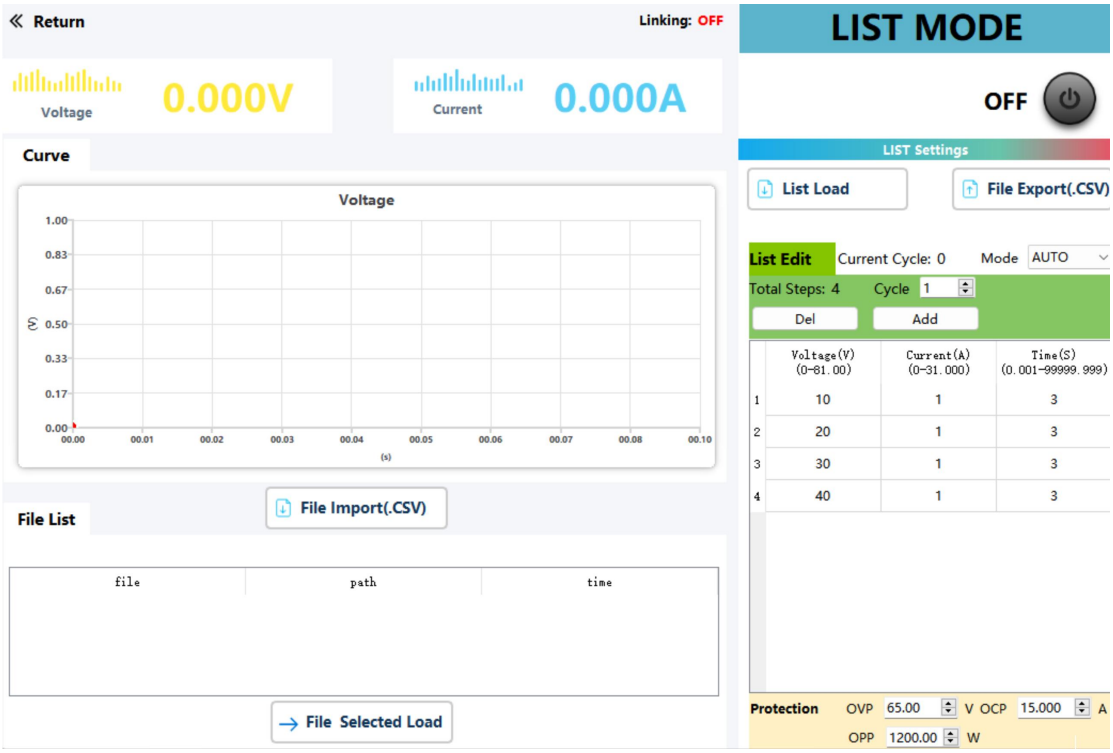
1. **Chinese/full-width characters are prohibited.**
2. **File saving, Excel editing and saving need to select CSV UTF-8 format to save.**



When users need to export curves, rotate the knob to highlight the **Export** dialog box, then press ↵ to jump to the file management page. The system will automatically name the file based on the current time. After saving, press the **EXIT** key to exit the file management interface and return to the LIST setting interface. The remaining operations are similar to import.



If you need to edit multiple steps, it is recommended that users directly use the host computer to operate. The following is the main interface of the LIST host computer:



4.6.3 PV Settings (optional function)

The programmable DC power supply has P-V curve simulation function, which can simulate the IV output characteristics of various solar panels (monocrystalline silicon cells, polycrystalline silicon cells, thin film cells) under different environmental conditions (including temperature, light, shadow attenuation, aging degree), with testing Static MPPT performance, built-in EN50530, Sandia photovoltaic curve models. Equipped with standard photovoltaic curve simulation software, it can control multiple power supplies and realize MPPT tracking testing. It can provide testing and verification for grid-connected inverters, string inverters, light-storage integrated machines, and energy storage converters, providing users with efficient testing solutions.

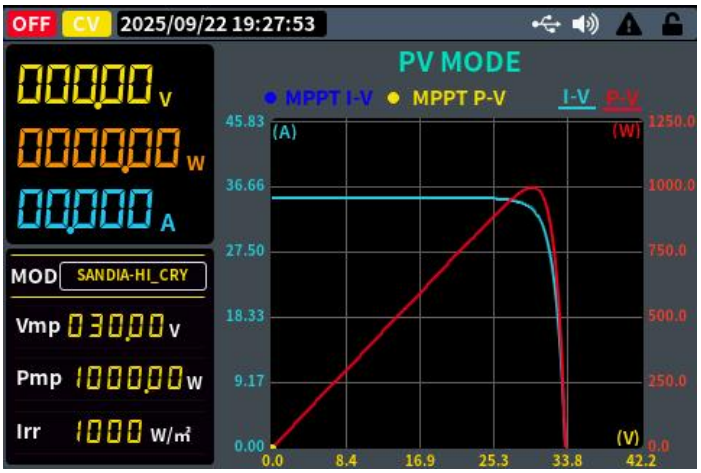
Note: PV mode is an optional function, which is distinguished by the model suffix with S. If you are not clear, please consult our company'S after-sales service or agent.

After setting the output mode of the adjustable DC power supply to PV mode, you can directly jump to the parameter setting interface of PV mode

when you click Output Setting.

- Settable model, Vmp, Pmp, Irr

Models	Curve Type	Material
EN50530-cSi	EN50530	cSi
EN50530-Films	EN50530	Film
SANDIA-Film	SANDIA	Film
SANDIA-Standard	SANDIA SANDIA	Criteria
SANDIA-high efficiency crystal	SANDIA SANDIA	High efficiency crystal



- Press Front Panel < DISP > → to switch between home page and curve page in turn
- Navigate the cursor to the option you want to set through the panel knob → press < ENTER > → knob adjustment or press the numeric button of the panel < 0-9 > to adjust → press < ENTER > to confirm the completion of editing.

- Press the front panel < CONF > → knob to select [Output Settings] → press < ENTER > to confirm
- Navigate the cursor to the option you want to set through the panel knob → press < ENTER > → knob adjustment or press the numeric button of the panel < 0-9 > to adjust → press < ENTER > to confirm the completion of editing.
- Gray means non-editable

For the complete functions of PV, please use the host computer. In addition to panel parameter settings, the host computer can also support static MPPT testing. The host computer photovoltaic simulator homepage is shown in the figure below.

4.7 Remote Setting

Press the **CONF** function key and press remote settings to enter the communication settings menu. The communication methods include USB, RS485, Ethernet and other three modes.

4.7.1 USB/RS485 and Other serial ports

(1) Rotate the knob or press the directional keys to select the communication interface. Press ↵ to pop up the communication method selection dropdown box; choose either USB or RS485, then press ↵ to confirm.

(2) Rotate the knob or use the directional keys to select the Baud Rate. Press ↵ to pop up the selection dropdown box. The available options are: 2400, 4800, 9600, 19200, 38400, 57600, and 115200. The factory default is set to 115200. Press ↵ to confirm. Ensure that the instrument's baud rate setting matches that of the connected computer.

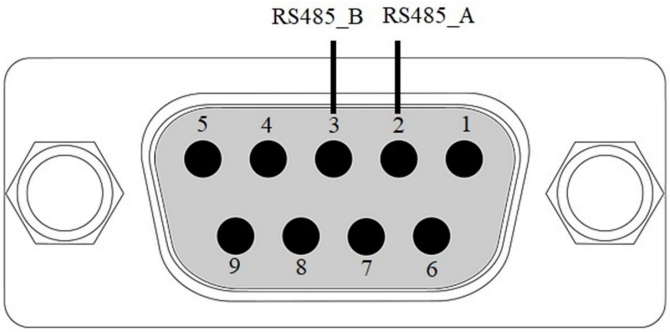
Note:

Other communication parameters (fixed, not configurable by the user)

- Data bits: 8 bits
- Parity bit: None
- Stop bits: 1 bit

RS485 is DB9 terminal block:

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



4.7.2 Network Setting

(1) Rotate the knob or press the directional keys to select the communication interface. Press  to pop up the communication method dropdown box, select LAN, then press  to confirm.

(2) Rotate the knob or use the directional keys to select DHCP. Press  to pop up the On/Off dropdown box, make your selection, then press  to confirm. The default status is Off.

Note: The network parameters of the equipment cannot be changed by default. If you need to change them, you need to use the host computer to change them. The host computer software can be downloaded from our official website or contact our after-sales staff.

4.8 System Information

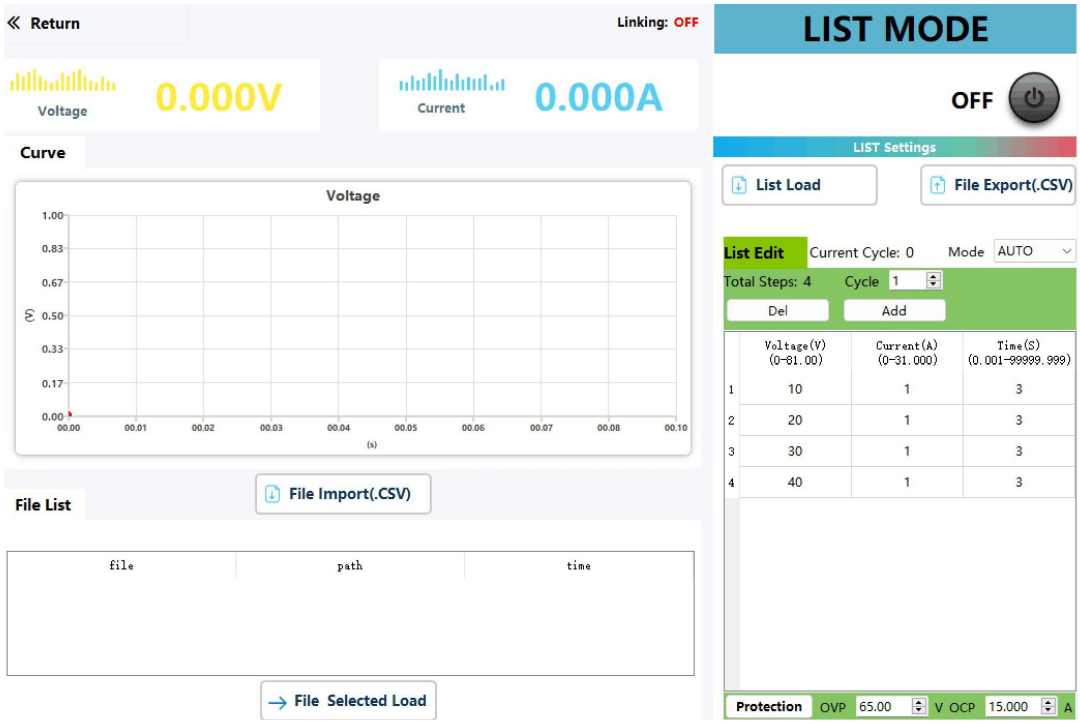
4.8.1 View System Information

Press the **CONF** function key, press the system information to enter the system information menu, and the screen displays the model, version, serial number, etc. of the machine.

5. Host Computer Introduction

1. Please go to the official website or contact the local distributor or our sales specialist to download or ask for the software.

2. Connect the host computer by connecting the USB CDC/LAN port on the back panel. After the instrument is successfully connected, enter the mode setting to remotely operate the instrument.



6. Troubleshooting

1. The instrument is powered on but no Display.

- 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 us for our service.

2. The output is abnormal:

- Check if the output voltage is set to 0V. If so, set it to other value.
- Check if the output current is set to 0A. If so, set it to other value.
- When in programmable output status, check if there is any voltage/current value is set to 0. If so, set it to other value.
- If the problem still exists, please contact us for our service.

7. Technical Specifications

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

7.1 OWH6546 (A) Parameters

Model		OWH6546	OWH6546A
Rated output (0℃-40℃)	Output voltage range	0 -1200V	0-1200V
	OVP OVP	1V-1250V	1V-1250V
	Output current range	0-30A	0-20A
	OCP	1A-35A	1A-25A
	Max. power	18kW	12kW
Input voltage	Volt/freq.	3P4W, 380Vac+/-10%; 45Hz-65Hz (L1/L2/L3-N)	
Load regulation ratio	CV	≤300mV	≤300mV
	CC	≤15mA	≤45mA
Power regulation rate	CV	≤300mV	≤300mV
	CC	≤15mA	≤45mA
Setting Resolution	Voltage	10mV	10mV
	Current	1mA	1mA
Readback resolution	Voltage	10mV	10mV
	Current	1mA	1mA
Setting Accuracy	Voltage	≤0.05% ± 500mV	≤0.05% ± 500mV
	Current	≤0.1% ± 30mA	≤0.1% ± 90mA
Readback accuracy	Voltage	≤0.05% ± 500mV	≤0.05% ± 500mV
	Current	≤0.1% ± 30mA	≤0.1% ± 90mA
Ripple Noise (*)	Voltage	≤2Vp-p	≤2Vp-p
	Current	≤150mArms	≤300mArms
Output temperature drift coefficient	Voltage	100ppm/℃	100ppm/℃
	Current	200ppm/℃	200ppm/℃

(0℃-40℃)			
Read back temperature drift coefficient	**Voltage**	100ppm/℃	100ppm/℃
	Current	200ppm/℃	200ppm/℃
Dynamic response (10%-90% rated load)		≤5.0ms	≤5.0ms
Operating temperature range		0-40℃	0-40℃
Display		3.9 "color LCD screen	3.9 "color LCD screen
Communication interface		USB, LAN, RS485	USB, LAN, RS485
Dimensions (mm)		428W * 274.4H * 511.5D	428W * 274.4H * 511.5D
Weight		Approx. 30kg	Approx. 30kg

*: Tested with a 10μF electrolytic capacitor in parallel with a 0.1μF ceramic capacitor at the output, under a noise bandwidth of 20MHz and a ripple bandwidth of 1MHz.

7.2 OWH6522 Parameters

Model		**OWH6522**
Rated output (0 ℃ -40 ℃)	**Voltage**	0 - 60V
	OVP	1 - 65V
	Current	0 - 120A
	OCP	1 - 121A
	Power	3000W
Power supply voltage	**Volt./Freq.**	198V-240Vac; 45Hz-65Hz
Load regulation ratio *	CV	≤30mV
	CC	≤60mA
Power regulation rate	CV	≤30mV
	CC	≤60mA
Set Resolution	Voltage	10mV
	Current	1mA
Readback resolution	Voltage	10mV
	Current	1mA
Setting accuracy	Voltage	≤0.05% ± 30mV

	Current	≤0.1% ± 120mA
Readback resolution	Voltage	≤0.05% ± 30mV
Readback accuracy	Voltage	≤0.1% ± 120mA
Ripple/noise	Voltage	≤80mVp-p
	Current	≤120mArms
Output temperature coefficient (0℃-40℃)	Voltage	100ppm/℃
	Current	200ppm/℃
Read back temperature coefficient	Voltage	100ppm/℃
	Current	200ppm/℃
Transient recovery time (10%-90% rated load)		≤5.0ms
Operating temperature		0-40℃
Display		4.3 inch color LCD display
Interface		USB, LAN, RS485
Dimensions (mm)		428 (W) X 88.0 (H) X 446.2 (D)
Weight		Approx. 13kg

*: The detection point of this indicator is the voltage compensation terminal.
Adjustment interval: The recommended calibration interval is one year.

8. Appendix

8.1 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 accessories:

Power cord

User Manual

USB cable

Optional accessories:

Banana head to crocodile clip cable

8.2 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.