ACP20&30 Series AC Power Source 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 Product Introductions

This high-performance programmable AC power supply adopts digital power technology and supports AC/DC output with a maximum single-unit power of 3 kVA. Its AC output frequency ranges from 40 Hz to 400 Hz, AC voltage from 0 V to 300 V, and DC voltage from -450 V to 450 V. Built-in List waveform generator and mains sag simulation functions enable simulation of various grid conditions. Widely applied in electronic product R&D testing, production line quality verification, power electronics laboratories and other fields, it meets diversified testing requirements ranging from basic compliance tests to complex electrical characteristic research.

Key Highlights:

- AC output voltage: 0~300 Vrms; output frequency: 40~400 Hz; maximum power: 3 kVA
- DC output voltage: -450 V ~ 450 V; output current: 0 – 10 A; maximum power: 3 kW (available on specific models only)
- Supports Normal Mode, LIST Mode and Surge/Sag Mode to fit various test scenarios
- Configurable start and stop phase angles for output waveforms
- Built-in Relay Ctrl output control provides electrical isolation between the unit and DUT
- LIST Mode with grid waveform replication simulates instantaneous power interruption
- Adjustable voltage amplitude and duration for grid surge/sag accurately simulate abnormal grid voltage conditions, complying with immunity test standards for electrical products
- Comprehensive protections against over-temperature, over-current (peak & RMS), over-power and over-voltage
- Standard communication interfaces: USB, RS232, LAN, dual CAN ports; compatible with SCPI commands and Modbus protocol
- Front-panel USB port supports file import/export and data storage

3.2 General Inspection

After you get a new 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 Panel Introductions

3.3.1 Front Panel

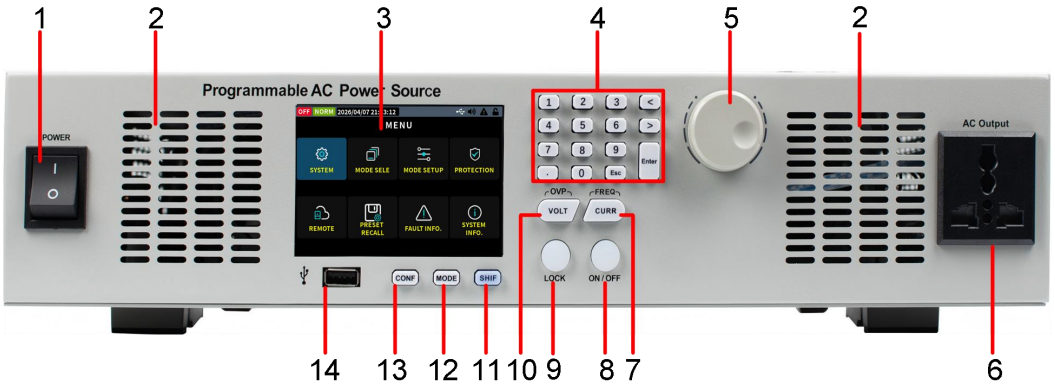


Figure 3- 1 Front Panel Overview

Num.	Description	
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	**Output terminal**	The output connection of the AC source.
7	**CURR**	Press this key under Normal (AC) Mode to access the current protection limit setting screen. Under Normal (DC) Mode, press this key to enter the output current configuration page.
8	**ON/OFF**	Control output status: ON or OFF.
9	**LOCK**	Lock all keys and knobs. Unlock method: Press and hold the LOCK key to release the lock.
10	**VOLT**	Press this key to enter the output voltage setting mode. Users can input the target output voltage via numeric keys or the knob. This key acts as a manual trigger key under LIST Mode.
11	**SHIF**	Multiplex function keys.
12	**MODE**	Switch among three modes: Normal Mode, LIST Mode and Surge & Sag Mode.
13	**CONF**	Turn the interface to the configure page to set various functions.
14	**USB**	USB data interface.

3.3.2 Rear Panel

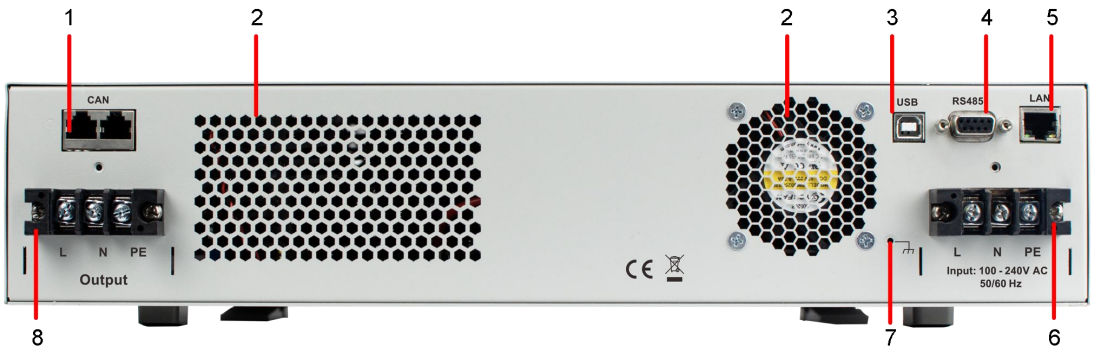


Figure 3- 2 Rear Panel Overview

Num.	Description

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	**USB Terminal**	The computer can be connected through the USB serial port.
4	**RS485 interface**	The computer can be connected through the RS485 port.
5	**LAN interface**	Ethernet remote communication controller can be connected to a computer through this interface for remote operation.
6	**AC Power connection terminal**	Power cord input AC power, from this connection terminal to the input terminal.
7	**Ground terminal**	For equipment grounding.
8	**Output terminal**	Rear panel AC/DC output terminals.

3.3.3 User Interface

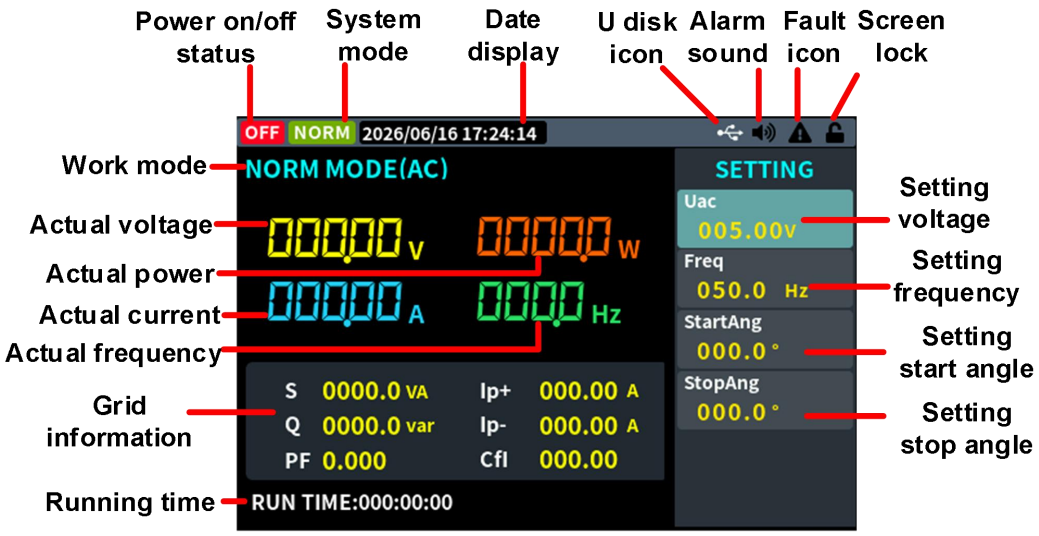


Figure 3-3 User Interface

Status Icon

Icon	Description
	Power on/off status display
	NORM / LIST / S&S
	Current time display
	LOG record time display
	Shortcut Icon
	USB icon
	Key Beep Status: On (white), Off (black)
	Alarm Icon: Warning active (red), Disabled (black)
	Key Lock: Locked (yellow), Unlocked (black)

3.4 Power-on Inspection

Read all general safety precautions before operating the instrument.

- Verify that the supply voltage matches the instrument rated voltage before powering on; mismatched voltage will damage the equipment.
- Plug the main power cord into a mains socket with protective earth ground. Do not use extension cords without protective grounding. Confirm reliable grounding of the instrument prior to operation.
- Observe polarity markings and maximum voltage/current ratings before wiring; improper connection will damage the instrument.

1. Press the power button on the front panel to activate the display screen.
2. Select the **CONF** menu to enter the system configuration page. Press the **SYSTEM INFO** key to open the system information interface, where you can view the model number, serial number, firmware version and other details.

3.5 Pre-Connection Precautions

- Connect the main power plug to a mains socket equipped with protective earth ground. Do not use extension cords without protective grounding.

- Ensure no bare wire is exposed from the input terminals after wiring. Tighten the terminal screws firmly to prevent cables from falling off.
- Use measuring cables that meet rated specifications, with sufficient voltage withstand capacity and current carrying capacity. For 20A measurement, adopt copper wires with a cross-sectional area larger than 4 mm^2 .

4. Features and Front Panel Operation

This chapter will provide a detailed description of the features and functions of the AC electronic load, as well as the panel menu operations. It will be divided into the following sections:

- Turn on/off channel output
- Local/Remote mode operation switch
- System menu function
- Work mode switch
- Normal mode
- LIST mode
- Surge and Sag Mode

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.

Descriptions:

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 System Menu Function

System function settings allow users to configure various system parameters of the programmable AC power supply, which include the items below.

1. System setting
2. Mode select
3. Mode setting
4. Protection setting
5. Remote control setting
6. Preset recall
7. Fault information
8. System information

Detail operation:

Press **CONF** to enter “Function menu” item setting.

1. Rotary the **knob** to select the item you want to set.
2. Press **Enter** to confirm.
3. Press **Esc** or **CONF** to return the function menu.

Description:

1. To cancel the setting, press the **Esc** key to return to the function menu page.

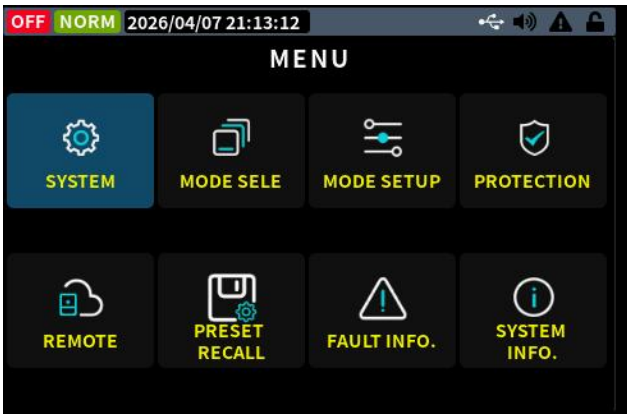
The menu of the device is as follows:

Menu	Settings		
System Setup	Language setting		
	Backlight setting: 10%-100%		
	Key sound setting: On/Off		
	Alarm setting: On/Off		
	Date setting: Year/month/day		
	Time setting: Hour:minute:second		
	Data record		
Mode Select	Mode select	Normal mode	AC/DC
		LIST mode	
		Surge / Sag Mode	
Mode Setting	Normal mode (AC)	Voltage scale	
		Voltage Limit	
		Frequency Limit	
		Active Damping	
		Damping Strength	
	Normal mode (DC)	Voltage Limit	
		Current Limit	
	LIST mode		
	Surge / Sag Mode	Carry out mode	
		Start angle	
		Angle Width	
		Drop Value Options: Percentage / Voltage Value	
		Setting value	Percentage
			Voltage value
		Continuous Sag Count	
Protect Setting	Protect setting (AC)	OVP	
		OCP_RMS	
		OPP	
		OCP	
		OCP_RMS_T	
		OPP_T	
	Protect setting (DC)	OVP	
		OCP	
		OPP	
Remote Control	USB(RS232)	Baud rate	
		Communication protocol	

Setting	RS485	Baud rate
		Communication protocol
	LAN	DHCP
		Communication protocol
		IP setting
		Network information: IP address, gateway, sub-mask
Preset Recall	Table Selection: Normal Mode	
	Preset Recall: Confirm Selection	
	Stored Table Edit: Voltage / Frequency / Start Angle / Stop Angle	
Fault Information	Mains fault: Error: (code)	
	Output fault: Error: (code)	
	Internal fault 1: Error: (code)	
	Internal fault 2: Error: (code)	
	Communication fault: Error: (code)	
System Information	Model	

4.3.1 System Setting

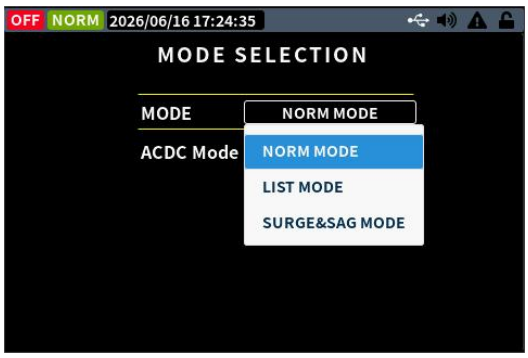
Select System Settings and press the **Enter** key to enter the System configuration page, as shown in the figure below.

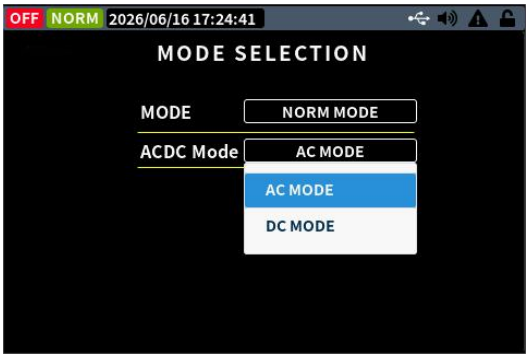


4.3.2 Mode Select

Select Mode Selection and press **Enter** to choose output modes: Normal Mode, LIST Mode, Surge & Sag Mode. For models supporting AC/DC output, you may further select AC or DC output under Normal Mode. Models with AC-

only function default to AC output once Normal Mode is selected.

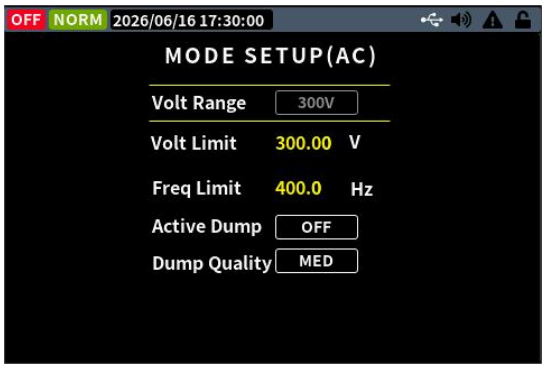




Any mode can be selected via the knob in the output mode edit box for confirmation. After pressing the **ON/OFF** power key, the selected mode will be locked and cannot be edited. To switch to another mode, power off the instrument and reselect the desired mode.

4.3.3 Mode Setting

The system Mode Settings are linked to Mode Selection. After selecting an operation mode, tapping Output Settings will directly jump to the configuration interface corresponding to the selected mode. When Normal Mode is chosen, its relevant settings are shown below. For AC Mode, configurable items include fixed voltage range, output voltage, frequency, Active Damping and Damping Strength. For DC Mode, configurable items include voltage limit and current limit.



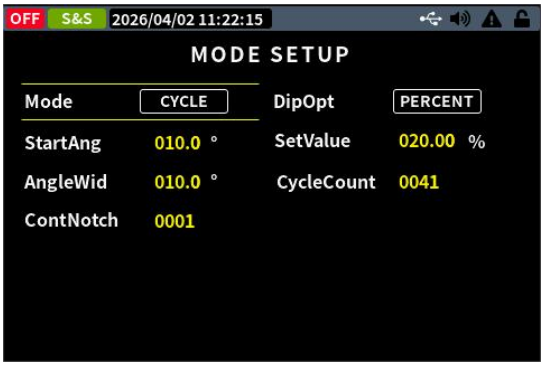


When LIST Mode is selected as the operation mode, its corresponding configuration interface is shown below. The setting items include Edit List, Load List, Import Data and Export Data.





When Surge & Sag Mode is selected as the operation mode, its corresponding configuration interface is shown below. Setting items include Execution Mode, Start Angle, Angle Width, Continuous Sag Count, Drop Value Options, Set Value and Cycle Count.



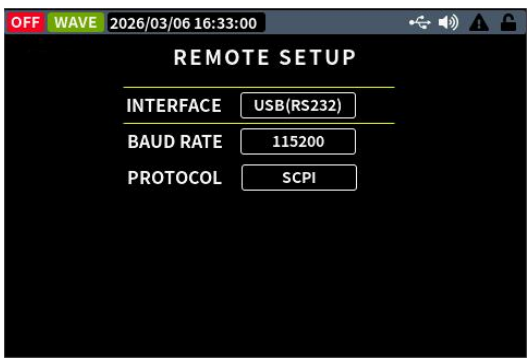
4.3.4 Protect Setting

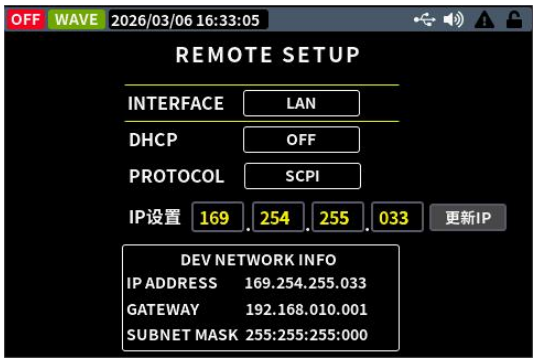
This product allows flexible configuration of OVP (Peak Overvoltage), OCP (Peak Overcurrent), OCP_RMS (RMS Overcurrent) with its delay time OCP_RMS_T, as well as OPP (Average Overpower) with its delay time OPP_T according to user requirements. Users can quickly access this page via the shortcut **SHIF**+**VOLT**, **SHIF**+**CURR** or enter through the system menu by pressing the **CONF** key.



4.3.5 Remote Control Setting

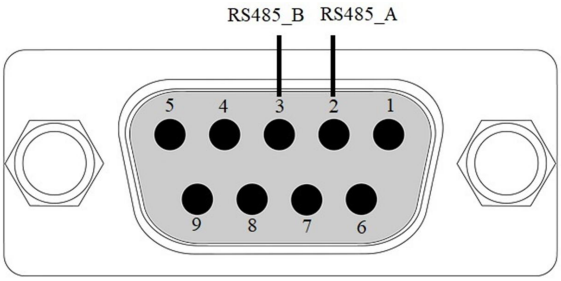
The instrument is equipped with multiple communication interfaces: USB serial port, RS485 and LAN.





RS485 is DB9 terminal block:

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



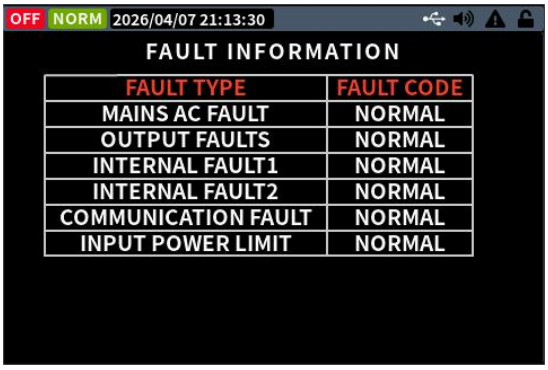
4.3.6 Preset Recall

Normal Mode supports quick parameter recall. Enter the Preset Recall interface to edit parameters, select target parameters and synchronize them to the panel. The parameters will be retained after power cycle, which is suitable for production line applications.



4.3.7 Fault Information

When the equipment malfunctions, you can access the alarm information page to check the fault codes.

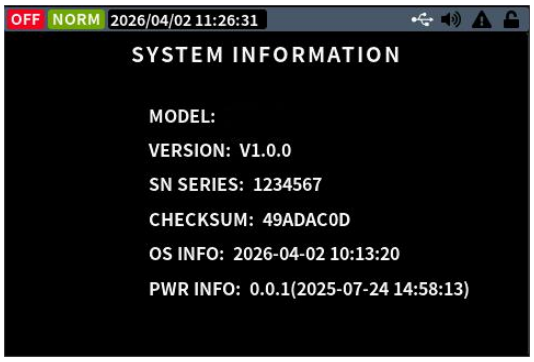


Fault Type	Fault Code	Description
Mains Fault	0x0001	Mains Power Loss
	0x0002	Mains Undervoltage
	0x0004	Mains Overvoltage
Internal Fault 1	0x0001	Bus Overvoltage
	0x0002	Bus Undervoltage
Internal Fault 2	0x0002	Internal Control Power Over/Undervoltage
	0x0004	Heatsink Overtemperature
	0x0008	Hardware TZ Protection
	0x0010	Parameter Storage Error
	0x0020	Model Firmware Mismatch Error
	0x0040	NTC Disconnected
Output Fault (OVP)	0x0002	Output Overvoltage (OVP)

Output Fault (OCP)	0x0008	Output Overcurrent (OCP)
Output Fault (OPP)	0x0010	Output Overpower (OPP)
Communication Fault	0x0001	Front Panel & Power Board Communication Fault
Power Limit Alarm	0x0001	Output Power Limiting

4.3.8 System Information

The screen displays the model, firmware version, serial number and checksum of the equipment.

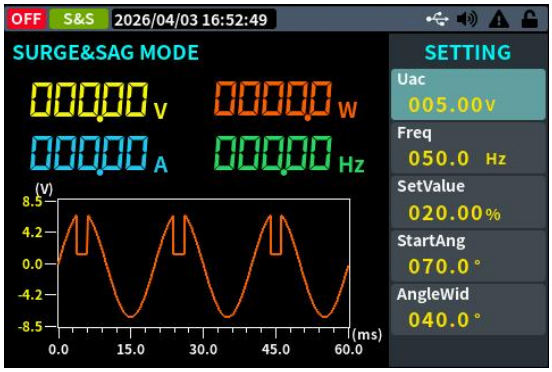


4.4 Work Mode Switch

The programmable AC power supply supports three operation modes: Normal Mode (NORM), List Mode (LIST), and Surge & Sag Mode (S&S). The main interface is shown in the figure below.







Two methods are available to switch between the three operation modes.

Method 1:

1. Press the **MODE** key to cycle through Normal Mode, LIST Mode and Surge & Sag Mode.

Method 2:

1. Press the **CONF** key to enter the system menu interface.
2. Use the left/right arrow keys or the knob to move the cursor to Mode Setting.
3. Press the **Enter** key or turn the knob to enter Mode Setting.
4. Select the target mode via the knob.

4.5 Normal Mode

4.5.1 Normal Mode (AC)

Normal Mode (NORM) is the default operating mode of the device, which generates standard sine wave output. Parameters including voltage, frequency and phase can be adjusted continuously to meet daily steady-state power supply and basic test requirements. In Normal Mode, the AC power supply supports independent configuration of four core parameters: output voltage, output frequency, start angle and stop angle.



Setting Procedures:

1. Rotate the **knob** to select the parameter items on the right side of the main interface, including voltage, frequency, start angle and stop angle. The background of the selected item will be highlighted in reverse color.
2. Short-press the **knob** or the **Enter** key to enter the editing state.
3. Adjust values by rotating the **knob** or input via the numeric keypad. Press the **ESC** key to exit editing and hide the cursor.
4. Short-press the **knob** or **Enter** key to confirm. The cursor will disappear and the new settings take effect with the output updated instantly.
5. Press the **ON/OFF** key to enable or disable waveform output.

4.5.2 Normal Mode (DC)

For models with AC/DC dual output functions, Normal Mode (DC) provides DC power output. Parameters such as voltage and current can be continuously adjusted, realizing dual-purpose function with one unit.



Setting Procedures:

1. Rotate the **knob** to select the voltage and current parameter items on the

right side of the main interface; the background of the selected item will be highlighted in reverse color.

2. Short-press the **knob** or the **Enter** key to enter the editing state.
3. Rotate the **knob** or use the numeric keypad to edit values. Press the **ESC** key to exit editing mode and hide the cursor.
4. Short-press the **knob** or **Enter** key to confirm. Once the cursor disappears, the settings take effect and the output updates immediately.
5. Press the **ON/OFF** key to enable or disable waveform output.
6. Operation for positive/negative voltage selection:
   When editing voltage via numeric keys, press **SHIFT**+**<** to switch between positive and negative values. During editing, a "+" or "-" sign indicating the current polarity will display on the left of the value. Press **SHIFT**+**<** to directly toggle the polarity of the input value. When entering values via the keypad, press **SHIFT**+**<** to adjust the polarity of the pending input, then press **Enter** or short-press the knob to confirm the value.

4.6 LIST Mode

LIST Mode supports up to 100 programmable sequence steps. Each step allows configuration of AC voltage, AC frequency and cycle count, with the cycle count ranging from 1 to 9999.



The main interface consists of three functional modules: Edit List, Import Data and Export Data.

Function Module	**Function Description**
Edit List	Supports setting of voltage, frequency and cycle count, as well as row and column insertion and deletion operations.

Import Data	Supports importing CSV files (compatible with Excel editing).
Export Data	Generates standard CSV files and saves them to the USB flash drive with auto-numbered filenames.

Three functions can be selected by rotating the knob, and press **Enter** to confirm and proceed to the next operation. For example, select Edit List to create and edit a new sequence list.



Function Description of LIST Mode List Editing Interface:

- Total Steps: The total number of sequence steps can be set from 1 to 100. Any input exceeding this range will be automatically capped at 100 steps by the system.
- Cycle Times: The execution cycle count ranges from 1 to 9999. If set to "0", the sequence will run in infinite loop.
- Operation Mode:

  Auto Mode: The sequence runs continuously and automatically in accordance with the preset parameter timing.

  Manual Mode: Press the **VOLT** key to trigger execution of each single step.
- Table Editing Area: Supports step-by-step editing of all parameters in the sequence, including voltage, frequency, cycle count and other items.



After finishing LIST parameter editing, users can directly start output via the **ON/OFF** key. The system will automatically load the edited sequence, switch to the LIST main page and run the LIST sequence. The running main page displays real-time information including current voltage, current frequency, current step / total steps, current cycle count / total cycle times.

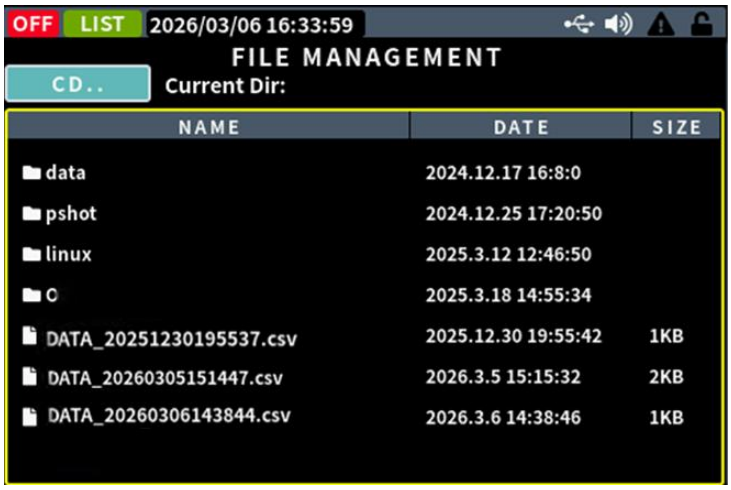
Users can also edit and save sequences via import and export functions. Rotate the knob to select the Import option box, then press the **Enter** key to jump to the file management page. Rotate the knob to pick the target LIST sequence file, and press **Enter** to complete import. The interface will automatically switch back to the LIST main setting page, with total steps, voltage, frequency and cycle count of each step loaded to the screen. Finally, press the **ON/OFF** key to activate output. The panel will send the sequence parameters to the power unit, and the screen will switch to the LIST running page to execute the sequence.

Definition of CSV File Format

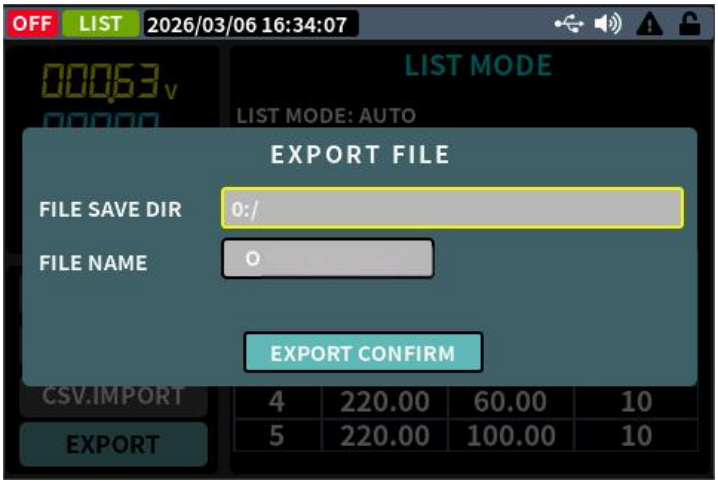
				Remark
#TotalSteps	2			// Total steps
#Cycles	20			// Cycle times
#Mode	Auto			// Operation mode (Auto/Manual)
STEP	VOLT	FREQ	TIMEs	//Voltage unit: V; Frequency unit: Hz
#1	21	2	1	// Step 1
#2	22	2	2	// Step 2

Note:

1. **Chinese characters and full-width characters are prohibited.**
2. **For file saving and editing in Excel, select CSV UTF-8 format to save the file.**



When users need to export the sequence, rotate the knob to select the Export option box and press the Enter key to jump to the file management page. The system automatically names files based on the timestamp. After saving, press the **EXIT** key to exit the file management interface and return to the LIST setting page. Subsequent operations are similar to the import process.



If a large number of steps need to be edited, users are recommended to operate via the upper computer. The main interface of the LIST upper computer is shown below:

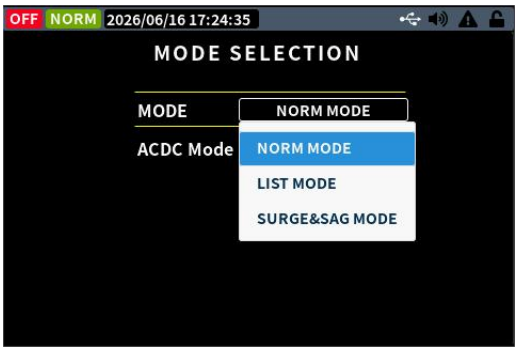


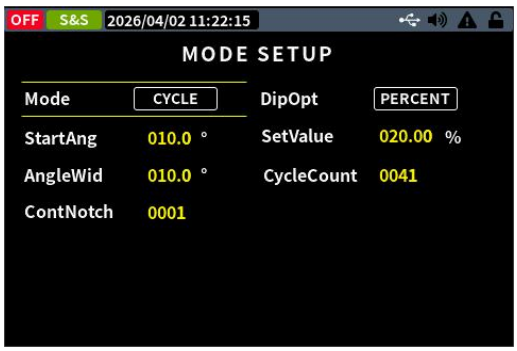
4.7 Surge and Sag Mode

The AC power supply is equipped with surge and sag simulation functions. Users can superimpose surge or sag waveforms on the output waveform as required to simulate abnormal voltage fluctuations in circuit systems, so as to test the performance of the DUT under such conditions.

Setting Procedures:

1. Select Surge & Sag Mode via the **MODE** key or **CONF** menu.
2. Enter the Surge and Sag Mode configuration page through the system menu.

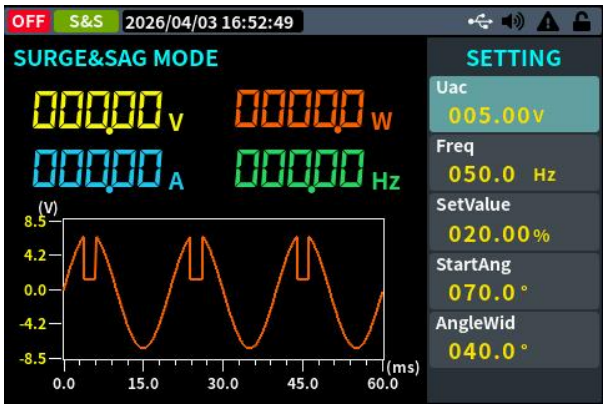




3. Use the arrow keys or knob to select execution mode, start angle, angle width, consecutive sag count, dip value and cycle count one by one to

enter editing mode. Edit values via the numeric keypad or knob. Press the **Esc** key to exit editing and hide the cursor.

4. After configuration, press **Esc** or **CONF** to return to the main Surge and Sag interface.



5. Quick configuration of partial surge/sag parameters is available via the setting boxes on the main interface. Press **Enter** or short-press the knob to enter editing.
6. Press the **ON/OFF** key to enable or disable waveform output.

4.8 Adjustment of Output Voltage, Current and Power

The voltage and current output of the programmable AC power supply are limited by the maximum power rating, as the voltage, current and power limits interact with one another.

4.9 Input Current Limitation and Output Power Derating

To prevent the AC input cable from exceeding its rated current capacity, the device adopts an intelligent output power derating mechanism. This mechanism dynamically adjusts the maximum output power (Pout) according to the input voltage (Vin) to keep the input current within a safe operating range.The maximum input current limit is 16 A.

This means when the input voltage drops below the rated range, the output

power will be reduced accordingly to avoid input current overload. A warning message "INPUT POWER LIMIT" will be displayed on the screen in this case.

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		ACP2000	ACP3000	ACP3045
Rate Output (0℃-40℃)	AC Output voltage	0-300V		
	DC Output voltage	--	--	- 450V~450V
	AC Output current	0-15Arms, 45Apeak	0-15Arms, 45Apeak	0-15Arms, 45Apeak
	DC Output current	--	--	0-10A
	AC Output Frequency	40-400Hz	40-400Hz	40-400Hz
	AC Output power	2kVA	3kVA	
Input	Volt/freq./Curr	100V-240Vac; 45Hz-65Hz; 16Arms Max		
Load regulation		≤0.1%FS(Resistive Load)	≤0.1%FS(Resistive Load)	≤0.1%FS(Resistive Load)
Line regulation		≤0.5%FS(Resistive Load)	≤0.5%FS(Resistive Load)	≤0.5%FS(Resistive Load)
Setting resolution	Voltage	10mV	10mV	10mV
	Current	10mA	10mA	10mA
Readback resolution	Voltage	10mV	10mV	10mV
	Current	10mA	10mA	10mA
Setting accuracy	Voltage	≤0.2%+600mV	≤0.2%+600mV	≤0.2%+600mV (AC) ≤0.2%+600mV (DC)
	Current	--	--	≤0.2%+30mA (DC)
Readback accuracy	Voltage	≤0.2%+600mV	≤0.2%+600mV	≤0.2%+600mV (AC) ≤0.2%+600mV (DC)
	Current	--	--	≤0.2%+30mA (DC)
Phase angle	Start angle	0-360°	0-360°	0-360°
	Stop angle	0-360°	0-360°	0-360°
Total Harmonic Distortion(THD)*		≤0.6%	≤0.6%	≤0.6%
Crest Factor (CF)		3	3	3
Temp. coefficient		±(0.04% per degree from 25℃)	±(0.04% per degree from 25℃)	±(0.04% per degree from 25℃)
Working temperature		0-40℃	0-40℃	0-40℃
Display		3.95-inch TFT LCD	3.95-inch TFT LCD	3.95-inch TFT LCD
Interface		USB，LAN，RS485	USB，LAN，RS485	USB，LAN，RS485
Dimensions(W*H*D)(mm)		428 X 88.0 X 446.2	428 X 88.0 X 446.2	428 X 88.0 X 446.2
Weight		Approx. 11kg		

[1]: THD test, 220V@40-200Hz, no load.

All parameters mentioned above without DC annotation refer to those under AC mode.

If there are any changes to parameters, no separate notice will be given. Please refer to the website update for the latest information.

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.)

Standard



Power Cord



Quick Guide



USB Cable

Optional



Banana head to crocodile clip cable



L-shaped fixed bracket

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.