# ACP20&30 Series AC Power Source Quick Guide

**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.

# 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

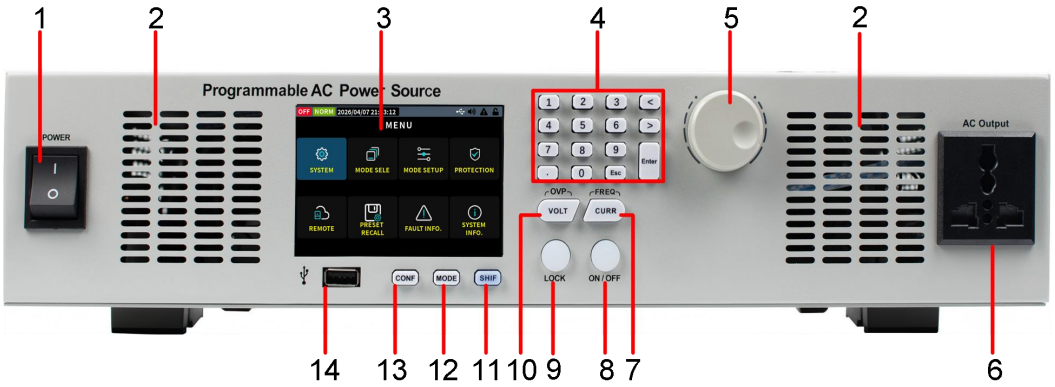



Figure 3- 1 Front Panel Overview

| 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;<br>Esc key: return to the previous page.<br>< > Cursor movement key: Use to move the cursor left and right to the desired parameter position.<br>Enter: Confirm parameter setting. |
| 5 | **Knob** | User can turn the knob to enter programming information or options.<br>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.<br>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.<br>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

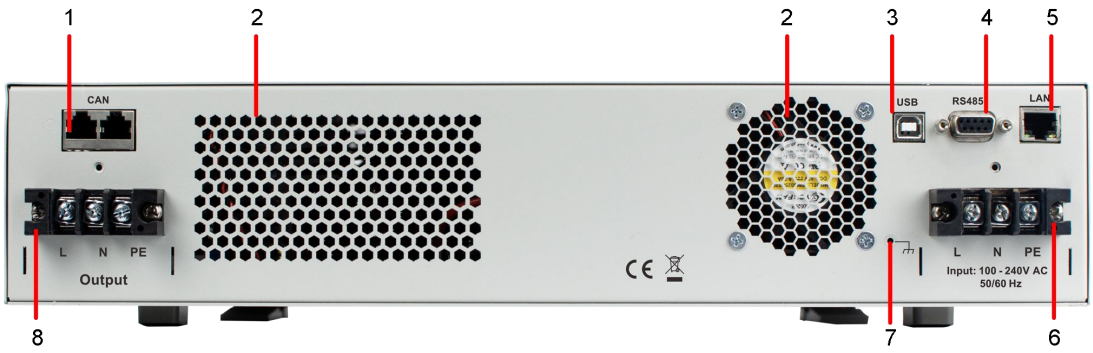



Figure 3- 2 Rear Panel Overview

| 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

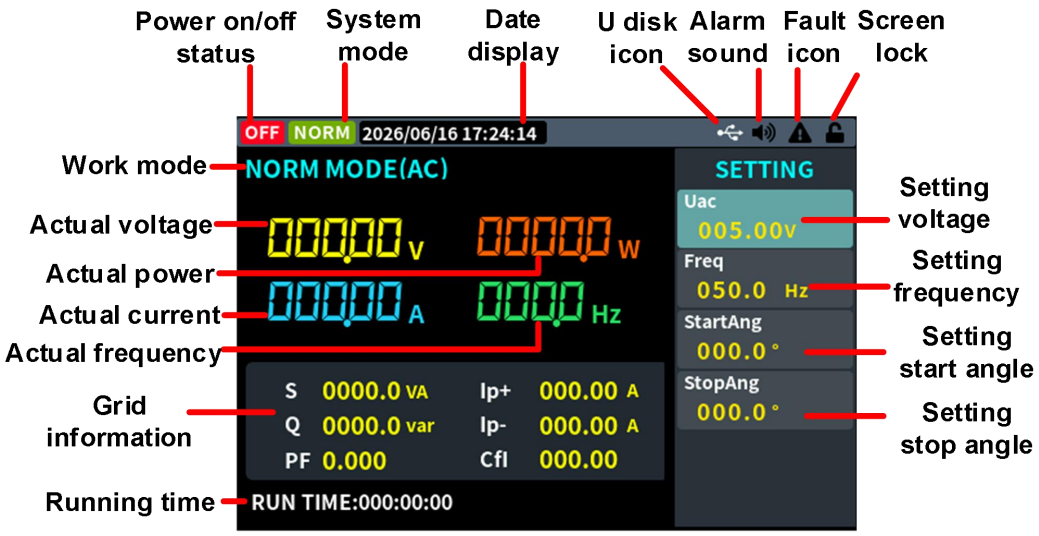



Figure 3-3 User Interface

**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. 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.

# 5. Appendix

## 5.1 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**

## 5.2 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.

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