



**Economy Single Channel Output DC
Power Supply
User Manual**

■ SP3051

■ SP3101

■ SP6031

■ SP6051

■ P4305

■ P4603

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1. General Safety Requirements

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

Only a qualified person should perform internal 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 terminals.
- **Check all Terminal Ratings.** To avoid fire or shock hazard, check all ratings and markings on this product. Refer to the user manual for more information about ratings before connecting to the instrument.
- **Do not operate without covers.** Do not operate the instrument with covers or panels removed.
- **Use the Proper Fuse.** Use only the specified type and rating fuse for this instrument.
- **Avoid exposed circuit.** Be careful when working on exposed circuitry to avoid risk of electric shock or other injury.
- **Do not operate if any damage.** If you suspect damage to the instrument, have it inspected by qualified service personnel before further use.
- **Use your instrument in a well-ventilated area.** Please keep well ventilated and inspect the intake and fan regularly.
- **Do not operate in damp conditions.** To avoid short circuiting to the interior of the device or electric shock, please do not operate in a humid environment.
- **Do not operate in an explosive atmosphere.** To avoid damages to the device or personal injuries, it is important to operate the device away from an explosive atmosphere.
- **Keep product 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 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: Indicates an immediate hazard or injury possibility.

Warning: Indicates a possible hazard or injury.

Caution: Indicates potential damage to the instrument or other property.

Safety Symbols

Symbols on the product. The following symbols may appear on the product:



Hazardous Voltage



Refer to Manual



Protective Earth Terminal



Chassis Ground



Public Ground

3. Quick Review

3.1 Panel and Interface

3.1.1 Front Panel

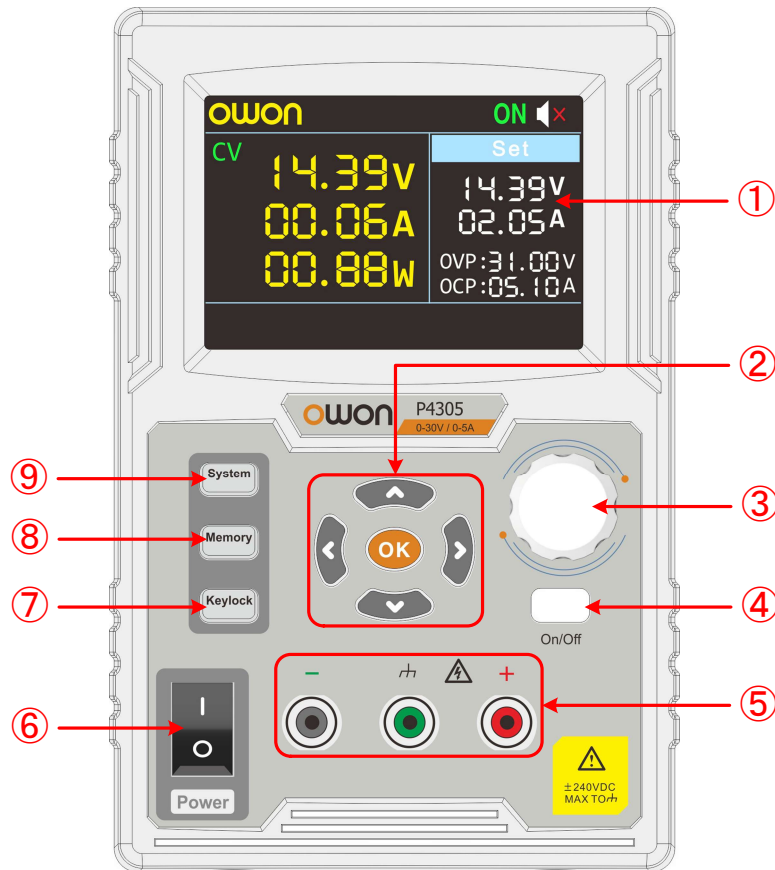


Figure 3-1 Front Panel Overview

①	Display Area	Display user interface.
②	Direction Key	Select menu;select parameters; Edit the cursor.
	OK Key	Enter the menu or confirm the entered parameters.
③	Knob	Select the main menu or change the value,function equals to the confirmation key.
④	On/Off Key	Turn on/off the channel.
⑤	Channel Output Terminal	Output access of chanel.
⑥	Power Button	Turn on/off the instrument.

1. General Safety Requirements

-
- | | |
|----------------------|--|
| ⑦ Keylock Key | Long press this button for more than 5 seconds to lock the panel button. Pressing any other button while locked does not work. Long press this button for more than 5 seconds to unlock. |
| ⑧ Memory Key | 5 sets of channel parameters can be stored for quick output. |
| ⑨ System Key | System settings, interface settings, system information. |
-

Button light instruction

On/Off key: The key lights up when the channel turns on.

3.1.2 Rear Panel

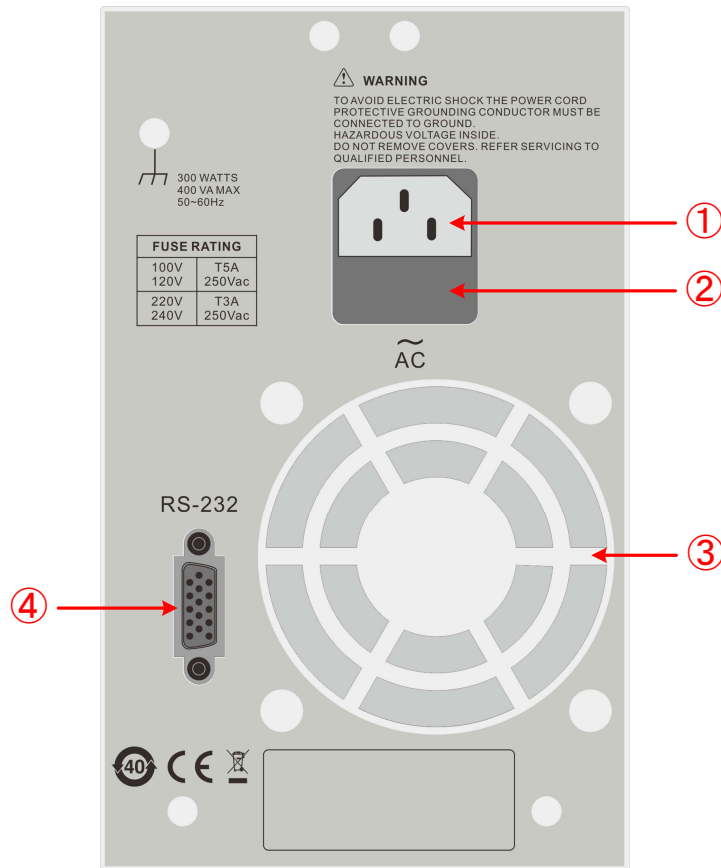


Figure 3-2 Rear Panel Overview

-
- | | |
|------------------------------|---|
| ① AC Power Input Jack | AC power input interface |
| ② Fuse | Power fuse |
| ③ Air Vent | Air vent |
| ④ COM Interface | Connect the serial port of the instrument and external device |
-

3.1.3 User Interface

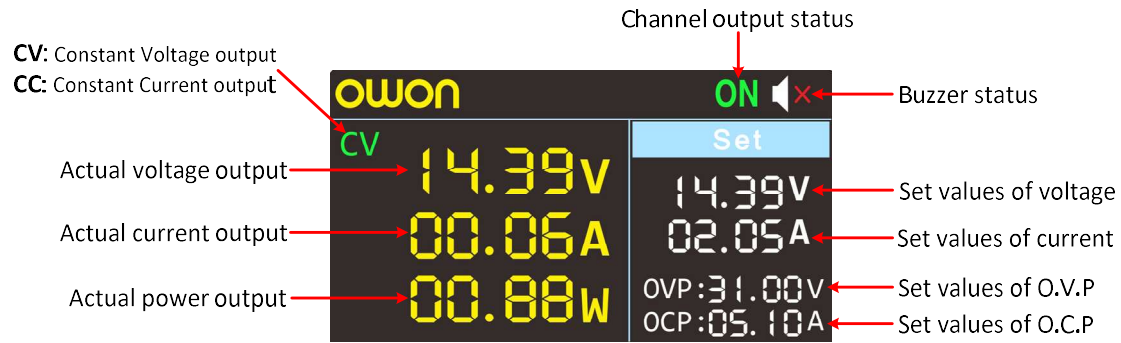


Figure 3-3 User Interface

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:

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.

Check the Accessories The supplied accessories have been already described in the "Appendix A: Enclosure" 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 the distributor of OWON responsible for this service or the OWON's local offices.

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

3.3 Power Inspection

- (1) Use the power cord supplied with the accessories to connect the instrument to the AC power.



Warning:

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

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

3.4 Output Inspection

Output inspection is to ensure that the instrument can achieve its rated outputs and properly respond to operation from the front panel. For the procedures below, it is suggested that you read "*Turn On/Off the Channel Output*" on page 8 and "*Set the Output Voltage/Current*" on page 8.

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 that 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 with a short across the power supply's output:

- (1) 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.
- (2) Set the output voltage to the maximum rating on this channel.

3.Quick Review

- . (3) Turn on the channel output. Ensure the channel you used is in Constant Current output mode.
- . (4) 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.
- . (5) Check that if the output current can be adjusted from zero to the maximum rating.
- . (6) Turn off the channel output and remove the short circuit from the output terminals.

4. Panel Operation

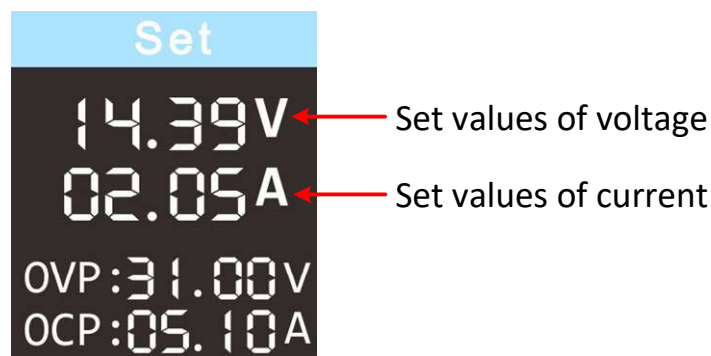
4.1 Turn On/Off the Channel Output

Press the **On/Off** key to turn on/off the channel;

4.2 Set the Output Voltage/Current

In the channel setting area, press the \uparrow / \downarrow keys to move the red cursor between parameters.

After selecting the output voltage/current setting value, turn the **knob** to change the current cursor value, and press \leftarrow / \rightarrow key to move the cursor position. Press the **knob** or press the **OK** on the panel to confirm the current input.



Note: The minimum of channel output current is 50mA

4.3 Over Voltage/Current Protection

When the Over Voltage Protection (O.V.P) or Over Current Protection (O.C.P) is enabled, once the output voltage/current reaches the set value of O.V.P/O.C.P, the instrument will cut off the output, a warning will show on the screen.

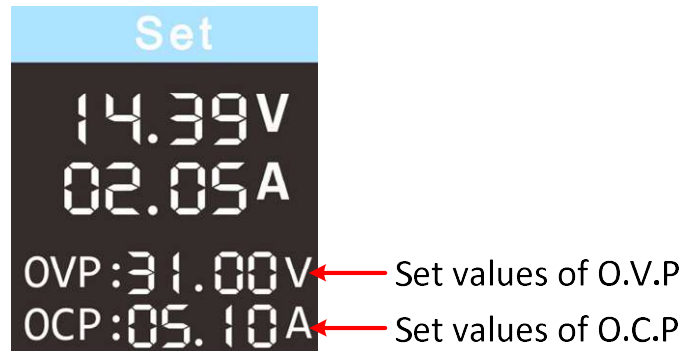
Note:

When the instrument disables the output due to protection, after you make some adjustments, the channel must be restarted to output normally.

This function can keep the power output from exceeding the load rating to protect the load.

In the channel setting area, press the \uparrow / \downarrow keys to move the red cursor between parameters.

After selecting the overvoltage/overcurrent protection value, turn the **knob** to change the current cursor value, and press the \leftarrow / \rightarrow direction key to move the cursor position. Press the **knob** or press the **OK** button on the panel to confirm the current input.



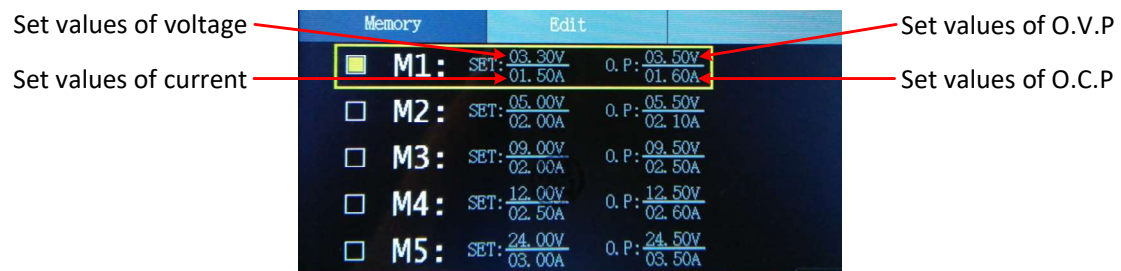
4.4 Memory key shortcut settings

Press **Memory** key on front panel, the M1, M2, and M3 keys can store five sets of channel parameters M1, M2, M3, M4, and M5, respectively, for quick output.

4.4.1 Quick output

To output a set of parameters from M1 to M5, follow these steps:








- (1) Press **Memory** key on front panel, the shortcut interface will display.
- (2) Press ∇ key and shows the yellow select box. Press \wedge / ∇ to move the select box.
- (3) After selecting the certain parameter, press **knob** or **OK** on the panel to confirm the input value.



4.4.2 Edit

To edit the channel parameters of M1 to M5, follow these steps:




- (1) Press the front panel **Memory** button, the screen displays the quick setup interface.
- (2) Press the \rightarrow arrow keys to display the editing interface

- (3) Press the  keys to show a red cursor
- (4) Press the  /  /  /  keys to move the red cursor between parameters. Turn the **knob** to change the current cursor value, press the  /  arrow keys to move the cursor.




	Memory		Edit			
	M1	M2	M3	M4	M5	
Set values of voltage →	Vo1t	03.30V	05.00V	09.00V	12.00V	24.00V
Set values of current →	Curr	01.50A	02.00A	02.00A	02.50A	03.00A
Set values of O.V.P →	O. V. P	03.50V	05.50V	09.50V	12.50V	24.50V
Set values of O.C.P →	O. C. P	01.60A	02.10A	02.50A	02.60A	03.50A

4.5 System Settings





4.5.1 Display Brightness

Press the System softkey and turn the **knob** to highlight the **System** main menu. Press the  keys to highlight the Brightness submenu. Press the  /  keys to adjust the brightness of the screen. The adjustment range is from 1 to 99.




4.5.2 Language Setting

Press the **System** softkey and turn the **knob** to select the [Setup] menu. Press the  arrow keys to choose the language. Press the  /  arrow keys to select the desired language. Supported languages include Chinese and English.

4.5.3 Buzzer

Press the **System** softkey and turn the **knob** to select the [Setup] menu. Press the  arrow keys to choose buzzer submenu. Press the  /  arrow keys to toggle the beeper on/off. When the buzzer is on, the status bar icon  lights up. When the system prompts, it beeps, such as when the output is cut due to overvoltage/overcurrent protection.

4.6 Interface Setting

- (1) Press the  arrow keys to select the **baud rate**, and press the  /  arrow keys to set the baud rate of the RS232 serial interface. The optional values for the baud rate are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, and the factory

default setting is 115200. Make sure the instrument's baud rate setting matches the baud rate setting of the computer you are using.

- (2) Press the arrow keys to select the **check digit** and press the / arrow keys to toggle None, Odd, Even.
- (3) Press the arrow keys to select the **stop bit**, and press the / arrow keys to toggle 1 or 2.

Note: The **data bits** submenu cannot be set, and the data bits are fixed at 8 bits.

4.7 System Information

4.7.1 Review System Information

Press the **System** softkey and turn the **knob** to select the **[SYSTEM]** menu. The screen shows the model number, version number, and serial number of the machine.

4.7.2 Restore Factory Settings

Press the **System** softkey and turn the **knob** to select the **[SYSTEM]** menu. Press arrow keys to select the **Factory Reset** submenu. Press **OK** to restore the factory default settings. See the factory setting detail table below

Ouput	Voltage	Current
	5 V	2 A

Limit	Voltage	Current
	MAXOUT	MAXOUT

System	Backlight		50%		
	Buzzer		On		
	Port	Port Setting	Baud Rate	115200	
			Data Digit	8	
			Parity Check	None	
Stop Digit			1		

5. 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 **OWON** 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 **OWON** for our service. [?](#)

6. Technical Specification

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

SP3051			
Specification		Channel	Comment
Input Power	Working Voltage Range	198-264V ac	
	Working Frequency Range	45-65Hz	
	Power (220Vac, full load)	≥87%	
	Full load input current (220Vac)	≤1.4A	
	Full load input current (220Vac)	≤80mA	
Nominated Output (0°C-40°C)	Voltage	0-30V	
	Voltage Limiting	31V	
	Current	0-5A	
	Power	150W	
Load Regulation (%of output+offset)	Voltage	≤30mV	0-100%
	Current	≤50mA	90%-10% Rated Voltage
Line Regulation (%of output+offset)	Voltage	≤10mV	198-264Vac
	Current	≤20mA	198-264Vac
Preset Resolution	Voltage	10mV	
	Current	10mA	
Readback Resolution	Voltage	10mV	
	Current	10mA	
Preset Data Accuracy (12个月内) (25°C±5°C) (%of output+offset)	Voltage	≤0.3%+10 mV	
	Current	≤0.3%+20 mA	
Readback Data Accuracy (25°C±5°C) (%of output+offset)	Voltage	≤0.3%+10 mV	
	Current	≤0.3%+20 mA	
Ripple and Noise (20Hz-20MHz)	Voltage (Vp-p)	≤30mVp-p	
	Current (rms)	≤3mVrms	
	Current (Ap-p)	≤30mAp-p	
Output Temperature	Voltage	≤0.3%+10 mV	

4. Panel Operation

Factor (0°C-40°C) (%of output+offset)	Current	≤0.3%+20 mA	
Readback Data Temperature Factor (%of output+offset)	Voltage	≤0.3%+10 mV	
	Current	≤0.3%+20 mA	
Transient response time	Time	≤1.0ms	(50%-100% Rated Load)

Display

Item	Description
Display Type	3.7 inches Color LCD
Resolution	480 × 320 pixels
Color	65536 color, TFT

Power

Item	Description	
Power	110 VAC ± 10% or 220 VAC ± 10% (Power is supplied according to the marking on the left side of the power input socket on the rear panel of the instrument); AC input 50/60 Hz	
Fuse	110 V	250 V, F5A
	220 V	250 V, F3A

Environment

Item	Description
Temperature	Working Temperature: 0°C~40°C Storage Temperature: -20°C~60°C
Relative Humidity	≤90%
Height	3,000 meters while operating 15,000 while silence
Cooling way	Fan cooling

Mechanical Specification

Item	Description
Size	295mm (Width) × 117mm (Height) × 194mm (Depth)
Weight	P series: approx. 12.0 Kg (without package) SP series: approx. 3 Kg (without package)

Adjustment interval: It is recommended that the calibration interval be one year.

7. Appendix

7.1 Appendix A: Accessories

(The accessories subject to final delivery.)

standard:



power cord



CD



User Manual



Fuse

optional:



**Banana plug to
crocodile clip test
leads**

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:

5.Troubleshooting

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

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.
