

PROGRAMMABLE POWER SUPPLY

USER MANUAL

PROGRAMMABLE POWER SUPPLY

Foreword

Please read the following safety precautions before using this product to avoid personal injury and prevent damage to this product or products connected to this product. To avoid possible danger, be sure to use this product as specified.

- Use a suitable power cord.** Avoid fire or personal injury.
- Ground the product.** This product is grounded through the ground wire of the power cord. The ground wire must be connected to the ground.
- Don't block and isolate the machine's air inlets and fan vents.**
- Don't open the cover.** Do not allow the product when the cover or panel is open.
- Don't operate the product if you suspect it is malfunctioning.**
- Use a suitable fuse.**
- Don't operate in a humid environment.**
- Don't operate in a flammable,explosive or humid environment.**

The main function

1. Single output, use MCU to precisely control the output voltage and current.
2. Can set output over-voltage, over-current protection, the machine has overload and over-temperature protection.
- 3.Can save two sets of preset data
- 4.Full digital panel operation, use code switch to adjust
- 5.Constant voltage / constant current automatic switching.
- 6.USB communication interface, support Modbus.
- 7.The USB charging interface provides a fixed 5V voltage output and 2A current output.

Thank you for your trust in our products. After purchasing DC power series products, for better use, please read the instructions carefully before use and keep them in a safe place.

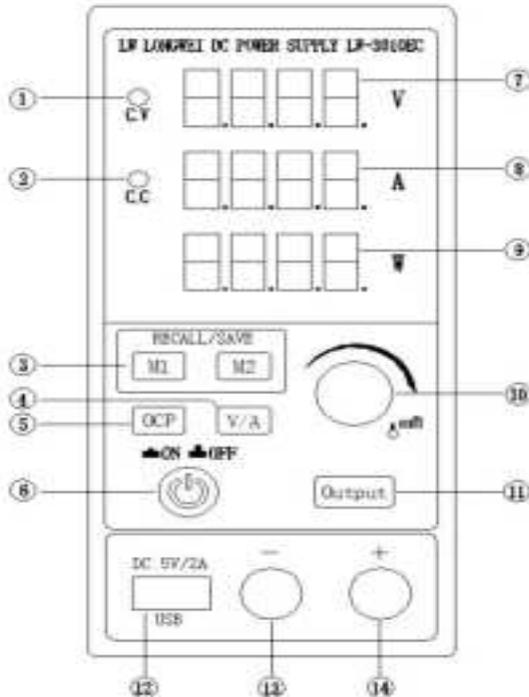
1. Specification

Note: The following indicators are measured after warming up for 20 minutes and the ambient temperature is $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

Model	305	3010	603	605	1003
Output voltage	0-32V	0-32V	0-62V	0-62V	0-102V
Output current	0-5A	0-10A	0-3A	0-5A	0-3A
Power effect					
Voltage	$\leq 0.2\%$	$\leq 0.2\%$	$\leq 0.2\%$	$\leq 0.3\%$	$\leq 0.3\%$
Current	$\leq 0.2\%$	$\leq 0.2\%$	$\leq 0.2\%$	$\leq 0.3\%$	$\leq 0.3\%$
Load effect					
Voltage	$\leq 0.25\%$				
Current	$\leq 0.25\%$				
Ripple					
Voltage	$\leq 30\text{mV}$ rms	$\leq 30\text{mV}$ rms	$\leq 50\text{mV}$ rms	$\leq 50\text{mV}$ rms	$\leq 60\text{mV}$ rms
Current	$\leq 20\text{mA}$ rms	$\leq 25\text{mA}$ rms	$\leq 20\text{mA}$ rms	$\leq 20\text{mA}$ rms	$\leq 20\text{mA}$ rms
Output resolution					
Voltage	0.01V	0.01V	0.01V	0.01V	0.1V
Current	0.001A	0.01A	0.001A	0.001A	0.001A
Operating environment					

Altitude	$\leq 2000\text{m}$
Ambient temperature	$-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$
Relative humidity	$\leq 80\%$
Storage environment	
Ambient temperature	$-40\sim+85^{\circ}\text{C}$
Relative humidity	$\leq 80\%$
Input power	50/60HZ, AC220V/110V $\pm 10\%$ (Switch)
Interface (optional)	
Remote control interface	Choose one of three: USB、RS485、RS232
Annex	
Standard accessories	Power host 1set、 Input power cord 1pcs、 Manual 1pcs
Size and weight	
Size	215(L)*151(W)*70(H)mm
Weight	1.5kg

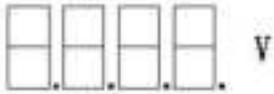
2. Panel description



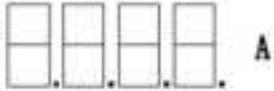
Front panel

- ① Constant voltage indicator
- ② Constant current indicator
- ③ Save key/Recall key
- ④ Current and voltage switch key
- ⑤ Overcurrent protection key
- ⑥ Power switch
- ⑦ Voltage display
- ⑧ Current display
- ⑨ Power display
- ⑩ Adjusting knob
- ⑪ Output start key /Output stop key
- ⑫ 5V2AUSB interface
- ⑬ Output negative
- ⑭ Output positive

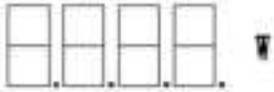
Digital tube display



V:Display output voltage and voltage setting value.

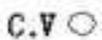


A:Display output current and current setting value.

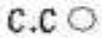


W:Display the output power value, when the output is stopped, it is displayed as"OFF".

Status display

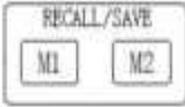


C.V is the output constant voltage indicator. This indicator is on when the power supply works in constant voltage mode.



C.C is the output constant current indicator. This indicator is on when the power supply works in constant current mode.

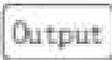
Panel operation introduction



When this key is pressed, the stored content will be save or recall.



Turn on or off the over current setting; when the over current protection is turned on, this button will light up.



Turn on or off the output; when the output is turned on, this button will light up.



Current and voltage switch key.



Press this knob to increase the adjustment rate of the knob from small to large, and perform coarse and fine adjustment of voltage and current.



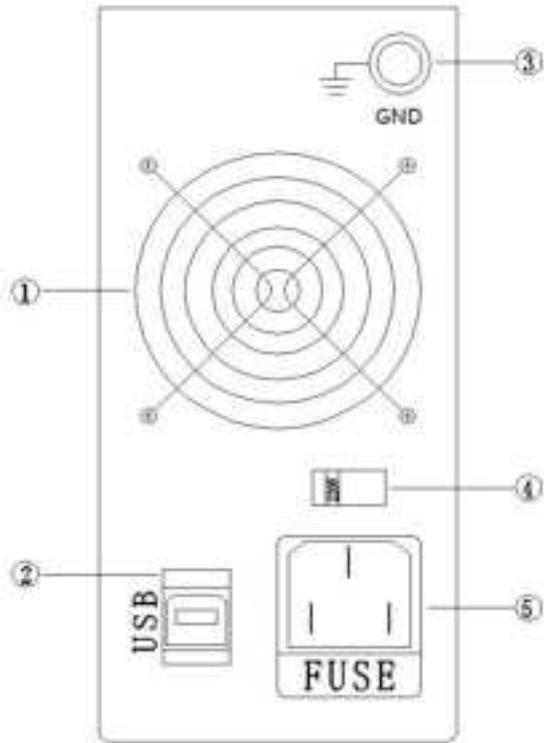
Power switch button, press to turn on the power, bounce to turn off the power.



USB interface, DC output 5V/2A.



Positive and negative output terminals.



BACK PANEL

- ① Fan vent
- ② USB communication interface
- ③ Ground terminal
- ④ 110V/220V switch
- ⑤ Power socket (fuse)

3. Use operation

1. Output voltage and current settings.

① Connect the load to the positive and negative output terminals on the front panel.

② Set the output voltage and current.

When you press the "V/A" button, you can switch between the voltage adjustment and current adjustment keys, and use the knob to adjust the voltage and current; when you press the knob, you can choose to operate at different positions of the digital tube for adjustment.

③ Press "Output", the button lights up, and the output is turned on. According to the load status, the CV light or CC light is on.

2. Output on/off

When the "Output" key is pressed, the output starts and the key lights up. Press the output button again, the output is turned off, and the button light is dim.

Note: When the overcurrent protection is activated and the output current reaches the maximum current setting, the output will automatically stop.

3. Buzzer on/off

The buzzer is turned on by default when powering on. Press and hold "OCP" for 2 seconds to turn off the buzzer; press and hold "OCP" again for 2 seconds to turn on the buzzer.

Note: When the overcurrent protection is activated and the

overcurrent protection occurs, the buzzer will sound an alarm.

4. Save/recall settings

① Save settings.(The machine provides 2 sets of save)

Press the M1-M2, such as "M2", the M2 button will light up, and the digital tube will display the currently stored voltage and current values. At this time, you can set the voltage and current. After the digital tube stops flashing, the power supply will automatically save the newly set voltage and current values in the M2 group.

Save settings.(The machine provides 2 sets of save)

② Recall settings

Press the M1-M2, such as "M2" , the M2 button will light up. The digital tube displays the stored voltage and current values, and recalls the saved voltage and current values. At this time, you can press the "ON/OFF" button to start the output.

5. Overcurrent protection

Over current protection, that is, when the actual current exceeds this value, the output stops. This prevents sudden changes in load current and stops the output. Press the "OCP" button, the button will light up, the output current setting value will be converted to the overcurrent protection value, and the power supply will enter the overcurrent protection mode. When the actual current reaches or exceeds the overcurrent value, the output stops, the buzzer buzzes, and "OCP" is displayed. Press "OCP" again, the button will dim, and the overcurrent protection will exit.

4.Constant current / Constant voltage

The DC power supply can automatically switch between constant voltage mode (C.V) and constant current mode (C.C) according to the conditions of the load.

When the output current is less than the current output setting value, the DC power supply works in constant voltage mode, the front panel indicator (C.V) is on, the output voltage is constant, and the output current varies with the load.

When the output current reaches the set value, the power supply enters the constant current mode (C.C), the indicator (C.C) on the front panel lights up, the current output will be constant at the preset value, and the output voltage will change with the load. When the output current is less than the preset value, the DC power supply will automatically return to the constant voltage mode (C.V).

5.Remote control

There is a USB communication interface at the back of the power supply, which can be connected to a PC through a USB data cable for serial communication and be controlled remotely. You can also choose 485 or 232 communication interface according to your needs.

COM port setting	Set the COM port on the PC as follows
Baud rate(B): 9600	Data (D): 8 Check (P): None
Stop (S): 1	Control (F): None

Note: For communication protocol and syntax, please refer to “Modbus Communication Protocol Programming Guide”

6.Common problem

Problem1: The buzzer does not sound.

Answer 1: Check if the buzzer switch is turned on.

Problem 2: Press the Output button, there is no power output.

Answer 2: Check if the current is set to 0A, set a larger current and try again.

Question 3: Press the Output button, the output voltage rises slowly.

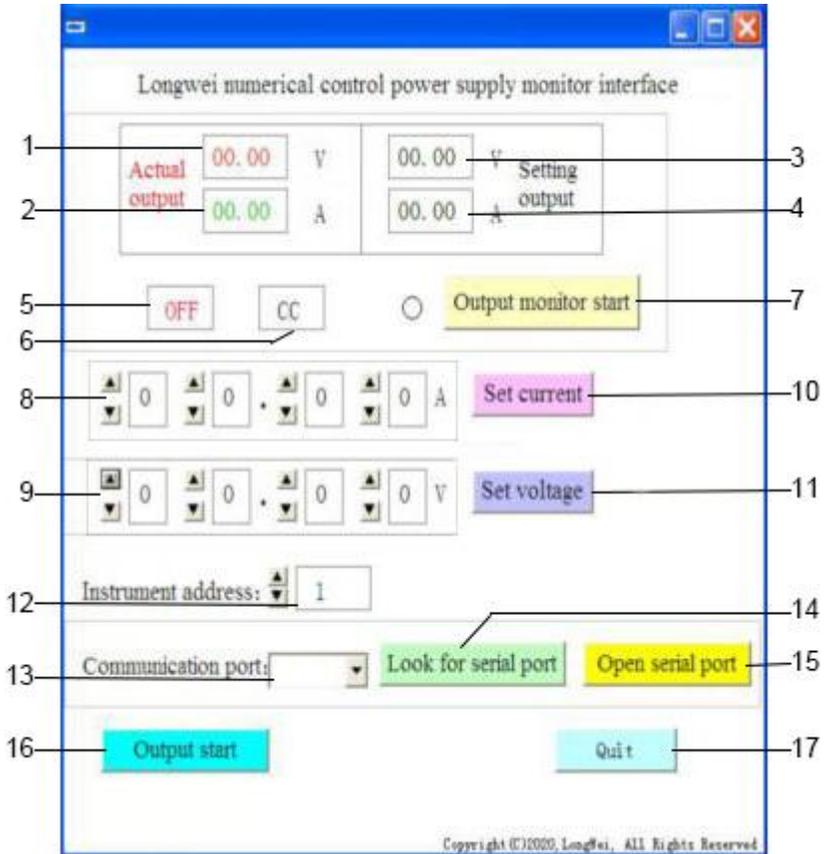
Answer 3: The current setting is too small, just set a larger current.

Question 4: The voltage and current data are not saved.

Answer 4: Shut down when the value is still flashing, it will be saved automatically after the value stops flashing.

7.Computer software interface description

The software is installed on the computer to monitor the status and value of the power supply in real time and control the parameters of the power supply.



1. The actual output voltage of the power supply.
2. The actual output current of the power supply.
3. Set voltage value of power supply.
4. Set current value of power supply.

5. Output status indication: “ON” means the output is started, and “OFF” means the output is stopped.

6. Display power status: "CV" indicates constant voltage status, "CC" indicates constant current status, and "OC" indicates overcurrent status.

7. Output monitoring start button: press to start monitoring, press again to close monitoring.

8. Operate on the output current value.

9. Operate on the output voltage value.

10. Communication control of set current to power supply.

11. Communication control of set voltage to power supply.

12. Select the instrument address for RS485 communication.

13. Displays the port number. The port number is generally between COM1-COM16. Select the corresponding port number from the drop-down list.

14. Look for serial port button. Press to find available port numbers.

15. Open the serial port button and press to open the communication port.

16. The output start button turns on and off the power output.

17. Exit software button, press exit software.

1.Serial driver installation and control software

Install the driver "CH341.exe". Click to open CH341.exe driver installation.

Install the software "NC Power Monitoring Assistant.exe".

2.Look for serial port button Look for serial port



Open the monitoring assistant software and click "Look for serial port", the communication port will display COM1 ~ COM16. If there are multiple display options, you can open the computer device manager, find the port bar, select the port number corresponding to CH341, and select COM2 as shown in the figure below.

3.Open serial button Open serial port

After looking for the serial port and selecting the port, opening the serial port will connect the computer to the power supply. "Port COMA is already open" will be displayed in the lower left corner after successful opening.

4.Output start button

After the serial port is turned on and the power supply is successfully connected to the computer, you can start the power supply output. Click this button when “Output Start” is displayed, the power supply will start output, and the display will change to “Output Stop”. Click the button when "Output Stop" is displayed, the power supply will stop output, and the display will change to "Output Start".

5.Set current button

In different positions on the left, scroll up and down to set the value, and then click the Set Current button. The control software will send the set value to the power supply, and the power supply will respond to change the set current value.

6.Set voltage button

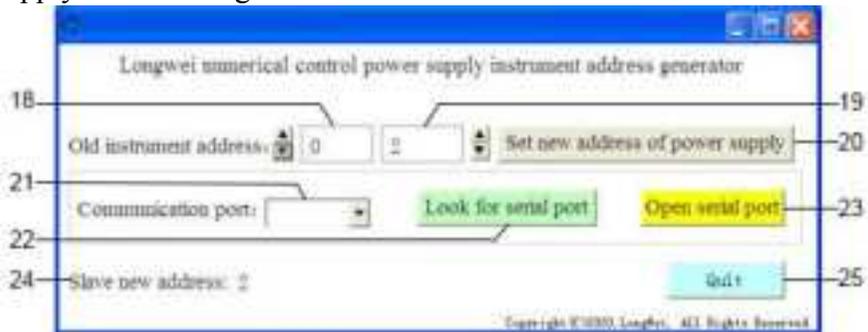
In different positions on the left, scroll up and down to set the value, and then click the set voltage button. The control software will send the set value to the power supply, and the power supply will respond to change the set voltage value.

7.Output monitor start

Click "Output monitoring start", the output window displays the actual output voltage and current value, and the status (constant voltage, constant current or over current) is displayed. At the same time, the key display changes to "output monitoring stop".

8. Instrument address setting Instrument address: ▲▼

The default communication address of the machine is 1. When multi-machine slave control is needed, a new communication address needs to be set for each machine. Using the "Address Generator" software, the communication address of the power supply can be changed.



18. The current communication address of the power supply, just use 0.
19. New communication address to be set by the power supply.
20. Set new address of programmable power.
21. Displays the port number. The port number is generally between COM1-COM16. Select the corresponding port number in the drop-down list.
22. Look for the port, Press to find available port numbers.
23. Open the serial port button and press to open the communication port.
24. Show new the communication address.
25. Exit software button, press exit software.

8. Notes and statements

(1) Please use the software according to the operating instructions to reduce the chance of software bugs.

(2) If there is a bug, please restart the software.

(3) Before opening the software, please open the serial port, and then perform other operations. Click the "Output Monitor Start" button to start monitoring.

(4) Frequently receiving data between the computer and the power supply will occupy a certain amount of memory and cause a certain stall. Please do not open too much software and leave enough memory to prevent the software from becoming unresponsive and stuck.

(5) RS485 communication can connect up to 32pcs of power supplies.

9. Communication FAQ

(1) If the driver is still not installed successfully, please download the driver and install it yourself.

(2) Can't find or open the serial port, please refer to Open Serial Port in the operating instructions. If the USB-SERIAL CH341 (COMA) suddenly disappears or is not found, please restart your computer.

(3) None of the above methods can work. Please check whether the RS485 data cable and the power supply are properly connected.

Standard accessories

Power host	1 set
Input power cord	1 pcs
Manual	1 pcs