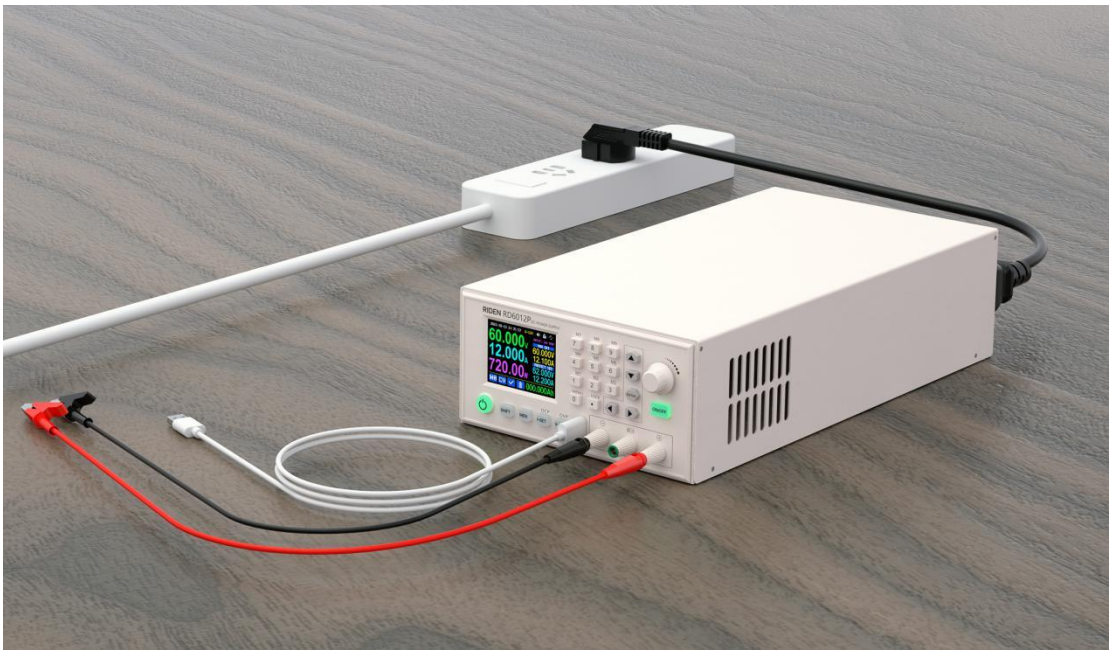
Constant Voltage and Constant Current DC Power Supply Instruction

Model: RD6006(W)-A/RD6012(W)-A/RD6018(W)-A/RD6024(W)-A

Date: 2022.10.15

Thank you for purchasing the constant voltage constant current DC power supply produced by Hangzhou Ruideng Technology Co., Ltd. In order to let you know more about the full function of this product, get a better experience and avoid misuse. Please read this instruction carefully before using it. Keep it for future reference. This manual is suitable for RD series assembled set users.

Note: This instruction is corresponding to RD6006/(V1.38), RD6012(V1.35), RD6018(V1.37), RD6024(V1.37),RD6006P(V1.41), RD6012P(V1.44) the page and operation may be different under different firmware versions, please pay attention when using it. We do recommend you to download the latest firmware for better experience.



Content

1.1 Accessory List

	
RD power supply*1	X25A output cable*1
	
Input AC Power Cord*1（AC cord in kind prevail）	Micro Communication cable*1 (inside X25A bag)
	
External Temperature Sensor*1	Backup Fuse*1

1.2 Technical Parameter

Model	RD6006	RD6012	RD6018	RD6024	RD6006P	RD6012P
Output voltage range	0-60.00V				0-60.000V	
Output current range	0-6.000A	0-12.00A	0-18.00A	0-24.00A	0-6.0000A	0-12.000A
Output power range	0-360W	0-720W	(AC220V)0-1080W (AC110V)0-950W	(AC220V)0-1140W (AC110V)0-950W	0-360W	0-720W
Input voltage resolution	0.01V					
Output voltage resolution	0.01V				0.001V	
Output current resolution	0.001A	0.01A			0.0001A	0.001A/ 0.0001A
Battery voltage resolution	0.01V					

Input voltage accuracy	±(1%+5 digits)					
Output voltage accuracy	±(0.3%+3 digits)				±(0.5‰+4 digits)①	
Model	RD6006	RD6012	RD6018	RD6024	RD6006P	RD6012P
Output current accuracy	±(0.5%+5 digits)				±(1‰+6 digits)	
Battery voltage accuracy	±(0.5%+3 digits)					
Default battery charging cutoff current	10mA	100mA			10mA	
Output ripple typical (VPP)	100mV	250mV@6A		100mV@12A; 150mV@24A	20mV②	
Working temperature range	-10℃~40℃					
External sensor Temperature detection range:	-10℃~100℃/0℉~200℉					
External sensor Temperature detection accuracy:	±3℃/±6℉					
Constant voltage mode response time	2ms（0.1A-5A Load）					
Constant voltage mode load regulation	±(0.1%+2 digits)					
Constant current mode load regulation	±(0.1%+3 digits)					
Capacity measurement range	0-9999.99Ah					
Energy measurement range	0-9999.99Wh					
Capacity and energy statistical error	±2%					
Cooling fan start condition	Output voltage >40V or Output current>4A or System temperature >45℃	Output current>8A or System temperature>45℃			Output current>4A or System temperature>50℃	
Cooling fan shut down condition when working	Output voltage <40V and Output current <3.9A and System temperature	Output current <7.9A and System temperature <45℃			Output current <3.9A and System temperature <50℃	

	<45℃					
Over temperature protection	System temperature >80℃					
Screen brightness setting	0-5(6 level)					
Screen	2.4 inch color HD display					
N.W.	2.4 kg	2.8kg	3.1 kg	3.1 kg	2.4 kg	2.8kg
Product dimension (cm)	About 17.3*9.2*33.6 cm					
USB communication	YES					
WiFi communication	YES					

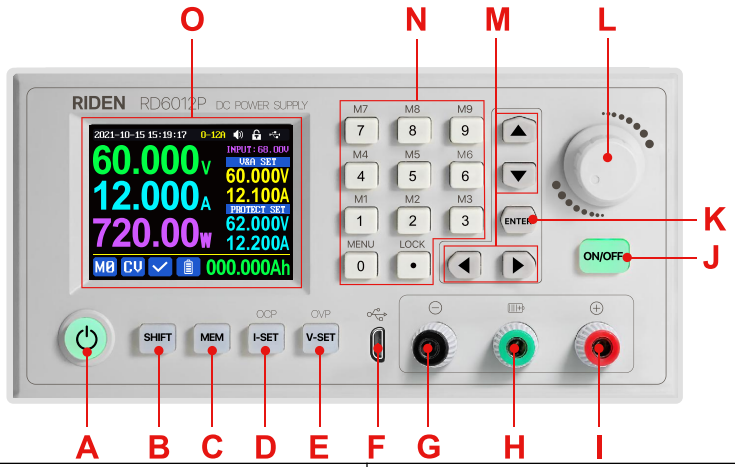
①：Accuracy test method:1 digit is the minimum resolution, so the error under 5V is ±(5*0.5‰+4*0.001)=±0.0065V.

②：Ripple measurement method: noise and ripple are measured at X1 range, AC coupling, 20 MHz of bandwidth on your oscilloscope with a 0.1uF parallel capacitor at the output terminals, pure resistor as load.

We will use RD6012P to introduce the appearance and operation

1.3 Panel Instruction

1.3.1 Front Panel



A: Power button	B: SHIFT Second function button
C: Quick storage button	D: Current/Over current protection setting
E: Voltage/Over voltage protection setting	F: Micro USB port
G: Power supply output negative terminal/ Battery charging negative terminal	H: Battery charging positive terminal (Dedicated terminal for battery charging)

I: Power supply output positive terminal	J: Output switch
K: Enter/ Confirm button	L: encoder potentiometer/Cancel button
M: Direction button	N: keypad
O: Screen	

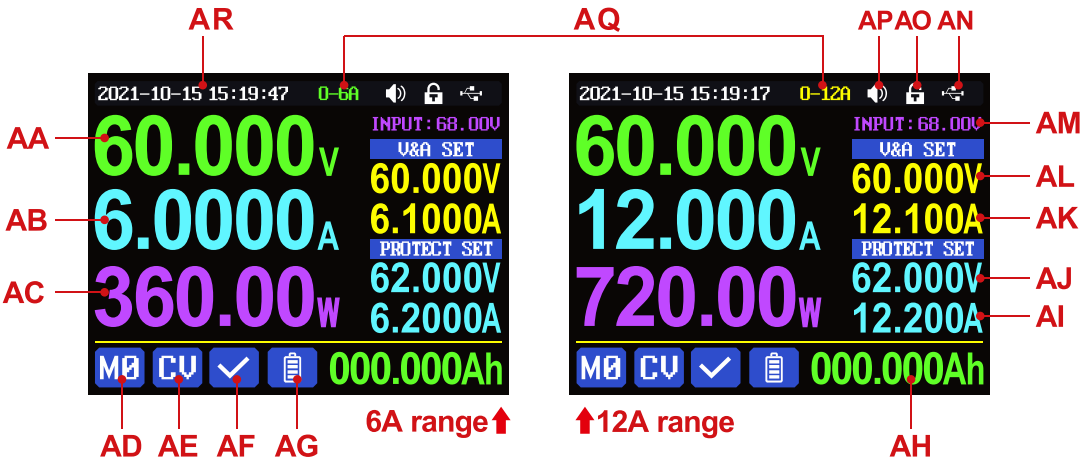
1.3.2 Back Panel

P: Input power socket	Q: Rocker switch
R: External temperature sensor socket	S: Heat dissipation holes

1.4 Operation Instruction

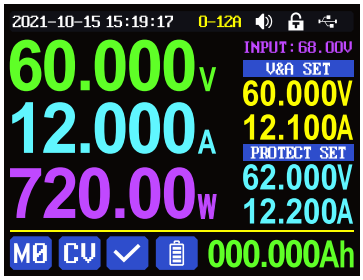
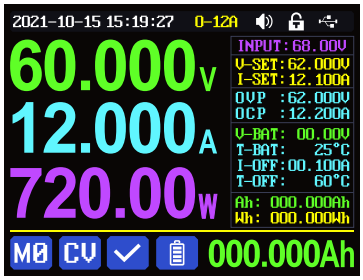
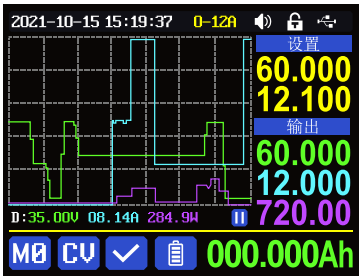
After power-on, it will show boot image first, and then enters the main page.

1.4.1 Main Page



AA: Actual output voltage value	AB: Actual output current value
AC: Output power	AD: Current data group
AE: Constant voltage Constant current status	AF: Protection status indication
AG: Battery charging indication	AH: Battery related information display area
AI: Over current protection value(OCP)	AJ: Over voltage protection value(OVP)
AK: Output current preset value	AL: Output voltage preset value

AM: Input voltage	AN: Communication interface
AO: Button lock status	AP: Button tune
AQ: Current range (only for RD6012P user)	AR: Date time

		
Traditional Style	Detail Style	Curve Style

At main page you can press button to change the display style between Traditional Style, Detail Style and Curve Style, the display style will not be saved automatically, you need to set default Home Style at section [1.4.2.6 Main Page Style Setting.]

1.4.2 Operation Introduction

In the menu operation, the icon in red or cursor is the currently selected menu, press ENTER to confirm or enter, press the encoder potentiometer to cancel or return, press the direction button to move the cursor or switch menu, rotate the encoder potentiometer to change the setting, the settings will be automatically saved when returning from the menu page. Press and hold the 0 button and power on to restore the factory settings, press and hold the 1 button and power on to restore the factory calibration value, press and hold ENTER and power on to enter the boot mode.

1.4.2.1 Battery Charging Function Introduction

Battery charging operation video：
https://drive.google.com/drive/folders/1g8v_11X9uwRM1P4GPwKhnP4NopKIUm1s?usp=sharing

After power on, at battery related information display area, external temperature, capacity and energy will loop display. When the output is turned on: capacity, energy will be automatically accumulated, and automatically cleared after power off.

The green terminal is connected to the positive electrode of the battery, and the black terminal

is connected to the negative electrode of the battery. After the battery is correctly connected, the battery charging indicator turns red and the battery is connected. Press ON/OFF to start charging, the battery charging indicator turns green . When the actual output current is lower than cut off current value (10 mA, can be set by user), or the temperature that the external temperature sensor tested is greater than the cut off temperature value, the output will be cut off automatically. Battery with protection board needs to be charged with red and black terminals. The charging voltage and current should be set on your own.

It is strongly recommended to use the original charger to charge the battery. The charging function of this machine can only serve as a temporary replacement, not for long-term use. You need to know the battery parameter well so that you can use it to charge, There is a risk of fire and explosion during the charging process if you use the wrong way to charge.

1.4.2.2 Main Page Output Voltage and Current Setting

Output voltage and current setting operation video：
https://drive.google.com/drive/folders/1NZW7k3-Kyc5YgIh-bWn8gBGaY5xo7_Lm?usp=sharing

Press or button can switch the current range between 6A and 12A (only for RD6012P user). When you change the current range, the output will be turned off.

Press I-SET button to set the output current value, you can use encoder potentiometer to adjust the setting value, and it will be applied directly. And you will not set the value which exceeds the limit in this way, press button to move the cursor. When press the encoder potentiometer to return, it will be auto saved to M0, Of course you can use keypad to type in the value, and press ENTER to confirm, and it will save the set value and set current range to M0, if you set a value exceeds the limit, it will prompt like what shows in **Figure 1**. If you set the wrong value, you can press encoder potentiometer to cancel.

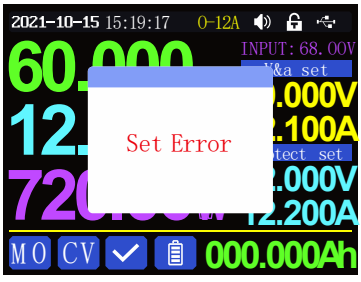


Figure 1

Press V-SET button to set the output voltage value, the operation way is similar to output current setting.

Press SHIFT + I-SET button / SHIFT + V-SET button to set the over current protection/ over voltage protection value. The operation method is similar to output current setting. If you want to set the

over current auto cut off function, your OCP value should be lower than the Current setting value.

When the device is under constant voltage mode, it will show CV, and it will show CC when under constant current mode; when the device works normally it will show ✓ at protection status indication, when the actual output current value is higher than the OCP value, the output will be cut off automatically, and show OCP, when the actual output voltage value is higher than the OVP value, the output will be cut off automatically, and show OVP, when the system temperature is higher than 80℃, the output will be cut off automatically, and show OTP.

1.4.2.3 Data Group Quick Storage and Call out

Data group quick store and call out operation video：
https://drive.google.com/drive/folders/139d28IHpZEgpNEC6pfBVruNF3b9FRVWW?usp=sharing

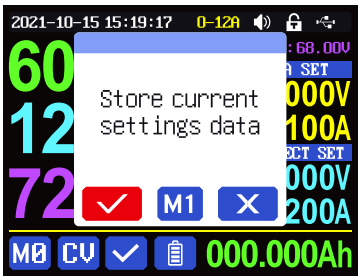


Figure 2

Press MEM + keypad button 1-9, you can store the output voltage value, OCP value, OVP value, over current protection value into the corresponding data group(as shown in **Figure 2**).

then press ENTER to confirm, it will show M1 at bottom left, you can press ▶ button and choose "X", then press ENTER to cancel, after change the setting value it will show M0.

Press SHIFT + keypad button 1-9 to quick call out the saved data (as shown above in **Figure 3**) from the corresponding data group. Press ENTER to confirm, It will show M8,

after change the setting value it will show M0. When disable the "Take OK" option, it will be called out directly to change the data setting value, no prompt.

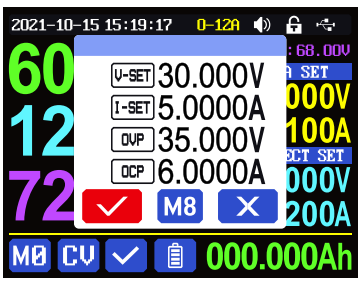
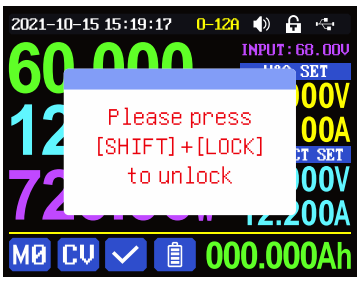


Figure 3



M0 is the default data group, when you edit the settings and press ENTER button or rotate encoder potentiometer to change the setting and press encoder potentiometer to return, it will be stored into M0 automatically, or you go to the data group setting menu, change the setting and press encoder potentiometer to return, it will save too, and it will not save by other settings.

Figure 4

1.4.2.4 Keypad lock and unlock

Keypad lock operation video：
https://drive.google.com/drive/folders/121yIfNLh3099AU4tUkxtC5q34XT3snn1?usp=sharing

Press SHIFT + • to lock or unlock the keypad. And the keypad will be automatically locked when communication starts, there will be displayed on the top (cannot unlock manually), at this time, the power button can be used, pressing other button will show(as shown in Figure 4), the keypad will be automatically unlocked after 3 seconds when the connection disconnected, there will be displayed.

1.4.2.5 System Setting

System setting operation video：
https://drive.google.com/drive/folders/1JCPJkD92Iv2Qtplmd6rs1pQmajs1EsVB?usp=sharing

Figure 5

Press SHIFT + 0 to enter the system setting menu, the icon in Red shows the menu being chosen, press ENTER or ▼ to enter the sub-menu, the option in blue is the option being chosen, you can rotate the encoder potentiometer to change setting, and you can press ◀ ▶ button to select menu.

Settings Sub-menu(Figure 5):

System language is is set to English by default. You can also set Simplified Chinese, French, Germany and Russian language.

Take OK is set to ON by default, when you quickly call out a data group, there will be a prompt to let you confirm, if you set OFF for this option, the settings will be edited directly when call out a data group.

Take Out is set to OFF by default, when call out a data group, the output is turned off, when set

it ON, it will output directly when call out a data group.

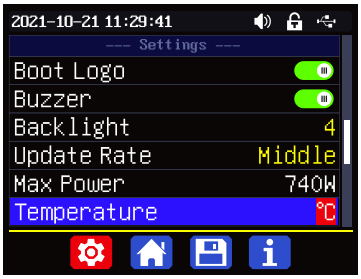


Figure 6

Figure 7

Boot Power is set to OFF by default, when boot the device the output is cut off, when set it on, it will automatically turn on the output after booting.

Boot Logo is set to ON by default, when boot the device, it will show the boot logo first, then enter the main interface, when set it OFF, it will enter the main interface directly.

Buzzer is set to ON by default,it will show on the top, and you can hear the beep when press the button. When set it OFF, it will show , there will not be beep when press the button.

Backlight is set to level 4 by default, it can be set between level 0-5.

Update Rate is set to Low by default, you can set it low/mid/high, it is the fresh rate of the real output voltage and current.

Max Power is set to 740W by default, you can set it between 0-740W, it is the max output power. On the top you can see the *1 icon, it is the adjustment magnification, you can press or to choose the different magnification so that you can set the value quickly, The max output is default voltage priority mode, when the setting voltage*setting current is higher than the max power, the device will automatically

decrease the output current setting value. When used together with low power power source, it is recommended to set the value as the rated power of the power source*95% (default setting no need to edit);

Temperature unit is ℃ by default, it can be switched between ℃ and ℉ (**Figure 6**);

Battery Charger Sub-menu(Figure 7):

Cut-Off Current is set to 10mA by default and it can be edited. On the top you can see the *1 icon, it is the adjustment magnification, you can press or to choose the different magnification so that you can set the value quickly, when the real output current is lower than this set value, the output will be cut off automatically.

Cut-Off Temp. is set to 60℃ by default, when the external temperature sensor detect over 60℃, the output will be cut off automatically.

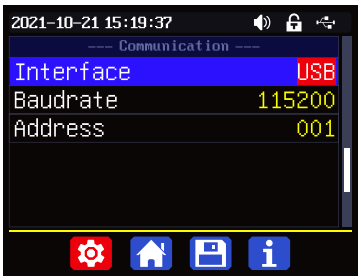


Figure 8

Communication Sub-menu(Figure 8):

Interface is set to USB by default, you can also set it to WIFI/TTL/RS45, USB means the micro USB port, you can see on the top when set it USB, and when the communication starts, it will show ; You need to insert a WIFI board to use the WIFI function, and it will show on the top, and when the communication starts, it will show ; TTL is not available now; You need to insert RS485 module to use RS485, and it will show on the top, and when the communication starts, it will show .

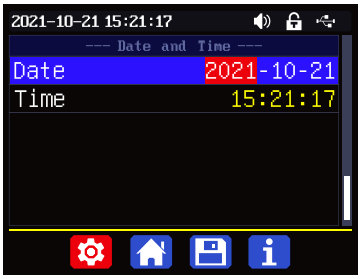


Figure 9

Figure 10

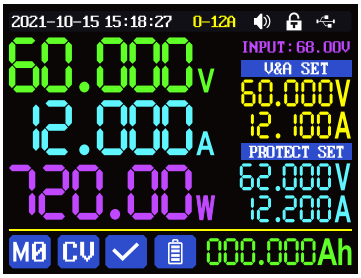


Figure 11

Address is set to 001 by default, you can set it between 001 and 255;

The Baud rate and address on the device should be same with the information on PC software or APP. You can see more communication at PC software and APP section.

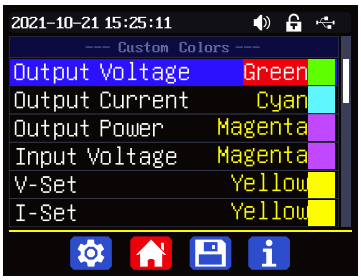


Figure 12

Date and Time Sub-Menu(Figure 9):

Date and Time can be set from Year 2000 to 2100, press ◀ or ▶ you can select the option, and use encoder potentiometer can adjust the value, it will be applied immediately when you change the value, please do not set the wrong Date. You can also use the PC software or Phone APP to synchronize the time, for operation you can check the PC or APP communication section in the completed manual

1.4.2.6 Main Page Display Style Setting

Main interface display style setting operation video:
https://drive.google.com/drive/folders/1gMkuCZrr_G-PlyHqO-i6fxdS-XRvuOIG?usp=sharing

You can press SHIFT + 0 to enter the system setting menu, then press ▶ and it will be switched to display style menu(as shown in **Figure 10**): you can press ENTER or ▼ to enter the sub-menu.

Layout Sub-menu:

Digits Style is set to Normal by default, you can set it to Normal/7-Seg V1/7-Seg V2(display style as shown in **Figure 11**).

Home Style is set to 0(traditional style), you can also set it to 1(Detail Style) or 2(Curve Style), the display style you choose will become the default style after power on.

Custom Colors(Figure 12):

You can set the the display colors for output voltage, output current, output power.....as shown in figure 10 and figure 11. You can choose from 15 colors. After change the color, you need to turn on the Custom Colors option to apply the settings(as shown in **Figure 13**).

1.4.2.7 Storage Data Setting

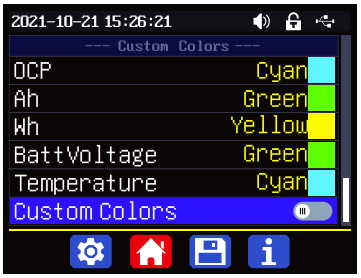


Figure 13

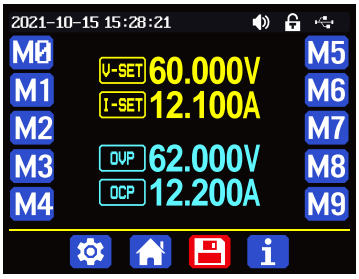


Figure 14

Data group setting in manual operation video:
https://drive.google.com/drive/folders/13APYtlRAaMcKmStbWM8toB8oOW5wi4ph?usp=sharing

You can press SHIFT + 0 to enter the system setting menu, and then press ▶ button twice to enter the data storage setting menu(as shown in **Figure 14**).

Press the Enter button to enter the sub-menu, press the direction button to choose the data group, you can rotate the encoder potentiometer to switch 6A and 12A range(only for RD6012P user), then set the value.

Press I-SET button to set the output current value, you can use encoder potentiometer to adjust the value directly. And you will not set the value which exceeds the limit in this way, press ◀ ▶ button to move the cursor. Of course you can use keypad to type in the value, and press ENTER to confirm. If you set the wrong value, you can press encoder potentiometer to cancel.

Press V-SET button to set the output voltage value, the operation way is similar to output current setting.

Press SHIFT + I-SET button / SHIFT + V-SET button to set the over current protection/ over voltage protection value. The operation method is similar to output current setting.

After setting, press the encoder potentiometer to return and save setting.

1.4.2.8 System Information

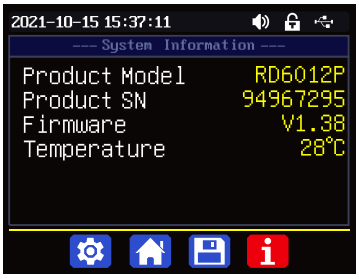


Figure 15

System information operation video:
https://drive.google.com/drive/folders/1APFNHtOufuh46rc5i2XTZKrQoTqgHdUr?usp=sharing

You can press SHIFT + 0 to enter the system setting menu, and then press ▶ button 3 times to enter the system information menu(as shown in **Figure 15**).

Product Model is the device name, Product SN is product serial number, Firmware is the firmware version, Temperature is the System temperature.

Android APP Instruction

2.1 Mobile Phone APP Installation

Only RD6012P-W supports WIFI connection. If you want to use the APP, you need to order a WiFi board.

This App only supports Android 5.0 to Android 10.0 operating system, and there may be incompatibilities problems between APP and operating system, please install and test the software before buying the product. It will apply for location service, please agree and turn on the location service. After downloading the mobile APP zip-file, please install the APP from file manager. Don't install or remove Wi-Fi module when the powered on, otherwise it will be damaged. This instruction is made for version 1.0.9, there will be little difference between different versions, and we do recommend you to download the latest APP for better experience.

2.1.1 APP Download

You can download the APP in Google Play by searching "RDPower".
You can also download the RD60XX APP zip-file in this URL:
https://drive.google.com/drive/folders/1V0l6P1sIJilN1yBOsTO9YGLVdkuO0cX9?usp=sharing
If you cannot find the app in both ways, contact the seller to get it.

2.2 Installation Introduction

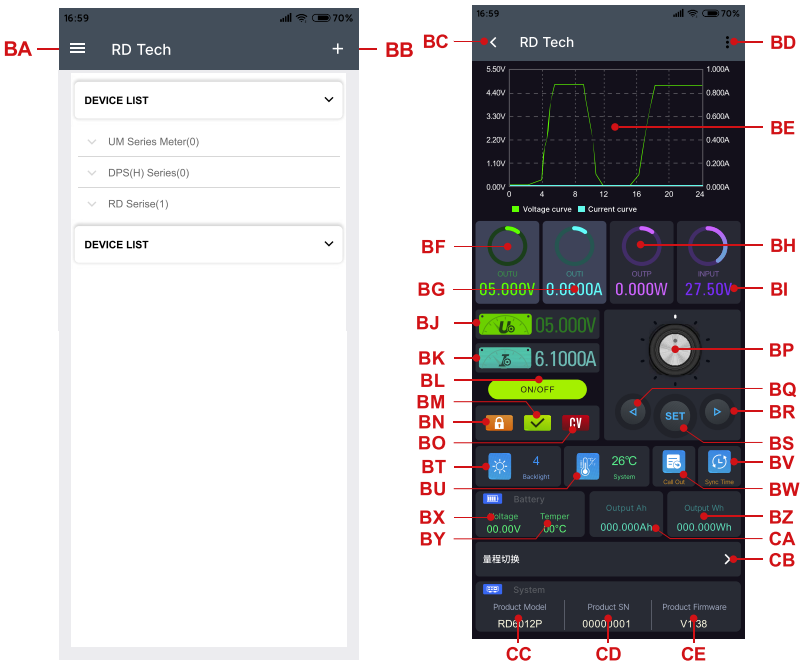
Android APP download and connection video instruction:
https://drive.google.com/drive/folders/15GfqS3vN3prvdVYOT1_yGHjkz0jHk_LO?usp=sharing

2.2.1 APP Update

Click the APP icon, After the APP starts, it will automatically detect whether there is a new version, and it will remind you by popping the window. You need to check if there is a new version by manual detecting. If you download the APP from Google Play, you need to detect new version by yourself.

2.2.2 APP Interface Display

When finish the installation and succeed in connection, it will show the main page as shown in the picture below.



BA: sidebar	BQ: move the cursor to the left
BB: add device	BR: move the cursor to the right
BC: return	BS: set button
BD: more options	BT: screen brightness
BE: curve	BU: system temperature
BF: actual output voltage	BV: sync time
BG: actual output current	BW: data group quick call out
BH: actual output power	BX: battery voltage
BI:input voltage	BY: external sensor temperature detecting value
BJ: preset voltage value	BZ: accumulated output capacity
BK: preset current value	CA: accumulated output energy
BL: ON/OFF button	CB: device
BM: protection status indication	CC: device name
BN: keypad lock indication	CD: product SN number
BO: constant voltage/current status indicator	CE: product firmware version
BP: adjust wheel	

2.2.3 APP Operation

2.2.3.1 Network Distribution

Connect Wi-Fi for the first time, please insert the WiFi board to the right position, then power on RD6012P, you will see the blue LED blinks once. Set the communication interface to WIFI, restart RD6012P, then place the RD6012P and the mobile phone close to the 2.4G router (the mobile phone must also be under the same 2.4G network, and the router must disable the AP isolation function and the WMM function).

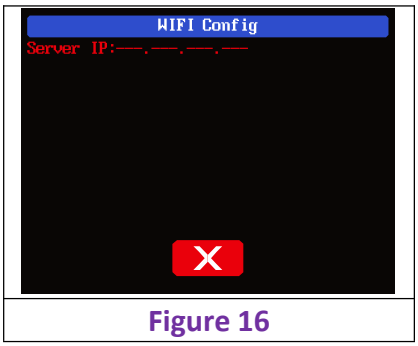


Figure 16

RD6012P will wait for the phone to connect as shown in **Figure 16**. Press **"BA"** (add device) and choose "RD power series", it will show like **Figure 17**, then enter the WiFi password and confirm you are using 2.4G network as shown in **Figure 18**. Press "INITIALIZATION" and wait 10 seconds

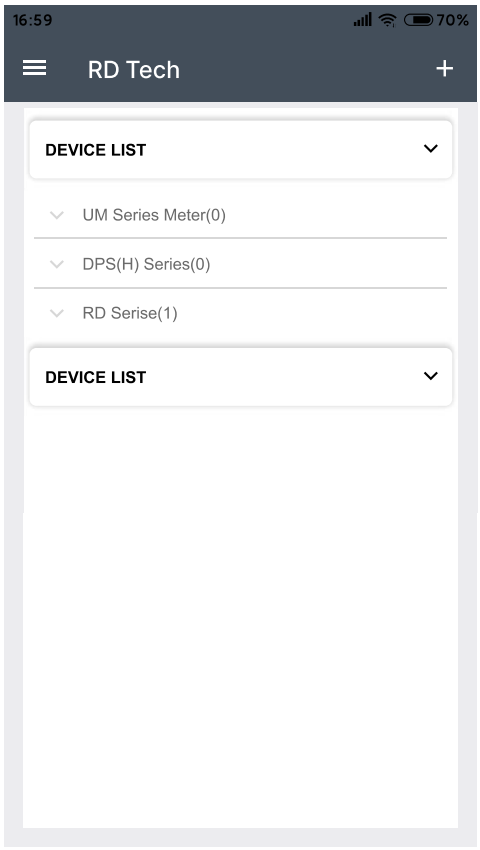


Figure 17

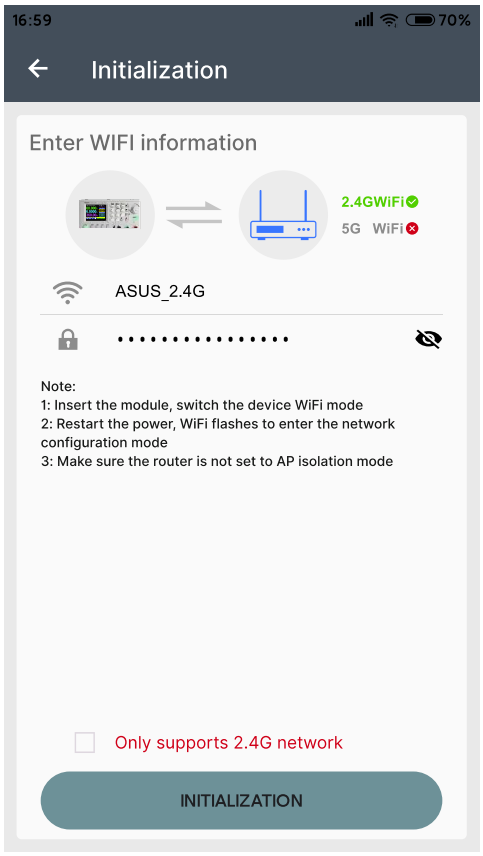


Figure 18

RD6012P will obtain the IP address of your phone(**Figure 19**), if it shows right, confirm that "device display sever IP", and click "Confirm", wait 20s (**Figure 20**)， APP show connection successful, RD6012P will start automatically, the network distribution success, return to the main page and click the connect in the "**BB**".

Figure 19

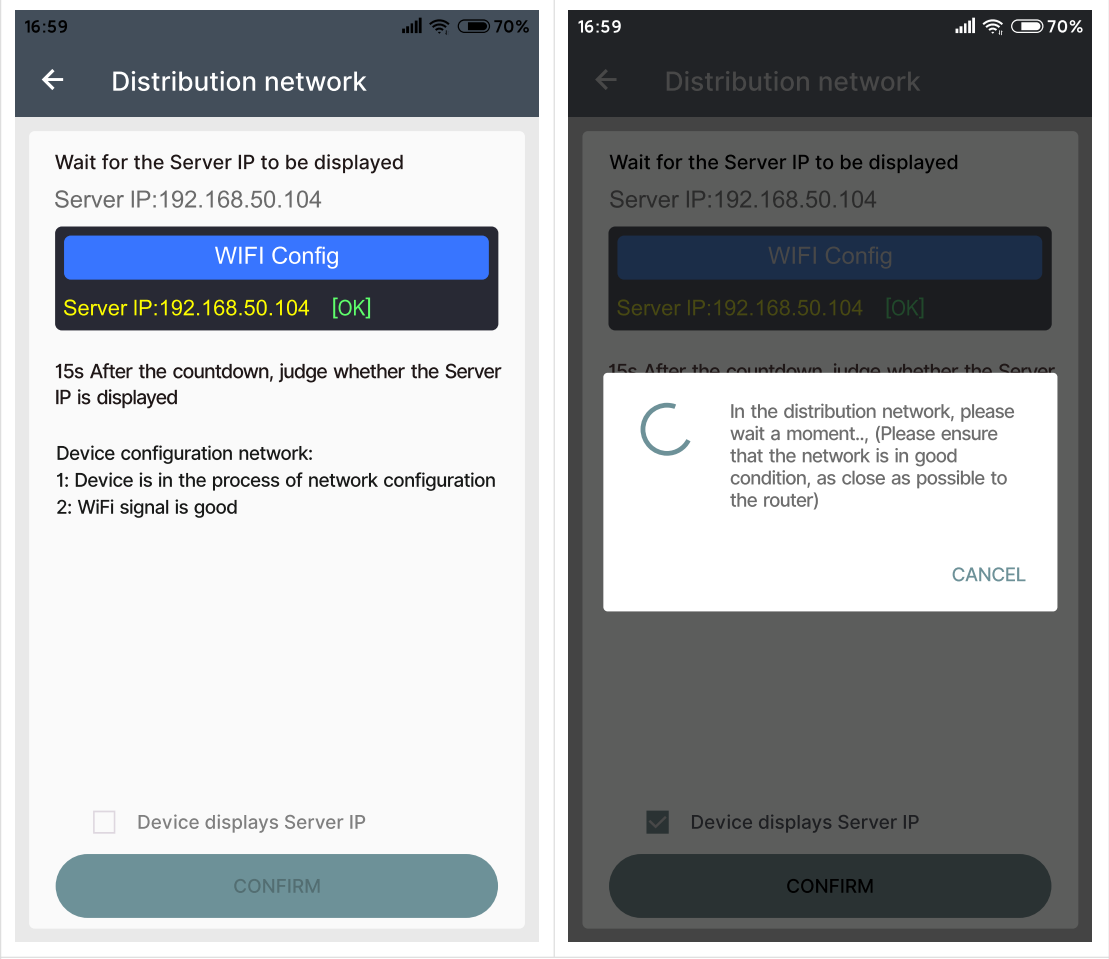


figure 20

If the distribution network fails, please power off the module and re-operate in the same way (multiple networking failures you can watch the video and try to use the hotspot of the mobile phone to test). If you use Huawei brand phone, please turn off the random MAC address function.

3.2.3.2 Proper Wi-Fi Connection

When power on RD6012P, it will connect Wi-Fi first, and then detect if it can be connected to APP, and it may not be connected successfully if the phone is under screen-lock status or the APP is running at the background. If the IP address of the phone has changed, you need to press the button and then press ENTER button to reset the net, repeat 3.2.3.1 operation. We suggest you to set a fixed

2.2.3.3 APP Operation

Android APP operation video:
https://drive.google.com/drive/folders/1vyIktoZ2ACqg1gW1uw4ZBWh7f_awHRtK?usp=sharing

Click **"BJ"** to set the output voltage, and use the wheel **"BP"** to adjust the value, the **"BQ"**, **"BR"** to change the position of cursor, click **"BS"** to set the parameter. Click **SHARE** in **"BD"** to exports the voltage-current curve to excel file, up to 24 hours document can be recorded.
NOTE:

1. There are many kinds of Android phone, so the user interfaces maybe different on some brand phones or different scales of the same brand.

2. Application permission requirements, allow the necessary permissions when the APP is installed (allow background running, using Bluetooth, operation on the folder, reading the application list, etc.) and also set the permissions of the APP after installation: Allow background running, never shut down when lock screen, allow self-starting (it is used to prevent the system from forcibly exiting the APP when recording data), etc.

IOS APP Instruction

3.1 Mobile Phone APP Installation

WiFi connection only supported for RD6012P-W. If you want to use the APP, you need to order a WiFi board.

3.1.1 APP Download

Apple APP only supports IOS10.0-14.3, iphone6 and above models, search for "RDPower" in the Apple store to download. If you must use the software function, please pre-install the test first. To use the WiFi function of the software, you need to apply for location service. Please agree and turn on location in Settings-Privacy. This manual corresponds to the software version 1.1.12, it is recommended to upgrade to the latest software for a better user experience.

3.2 Installation and Operation

When the software is started for the first time, the system may apply for positioning (as shown in **Figure 21**), select "Allow when using APP", and apply for data when the software is running (as shown in **Figure 22**), select "Wireless LAN and cellular mobile network".

Apple **APP**

Figure 21

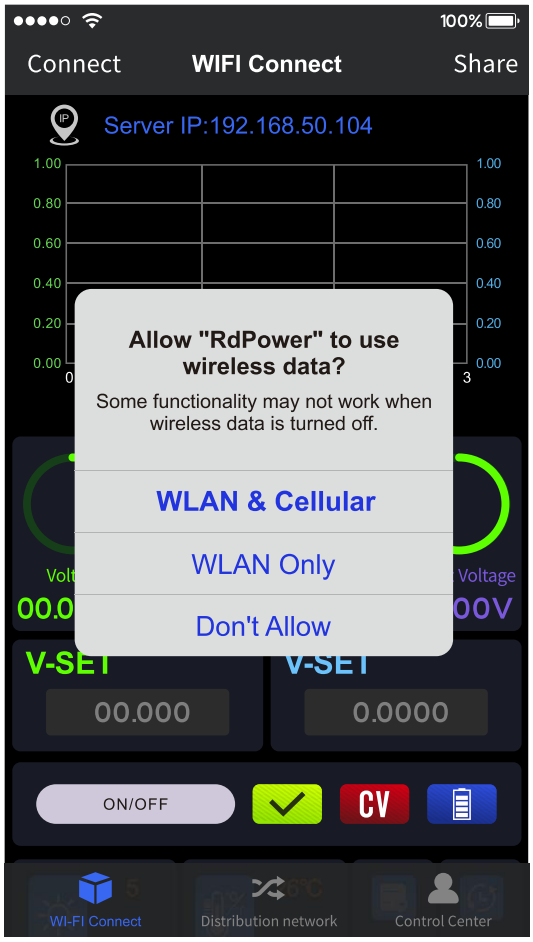


Figure 22

installation and connection process video:

https://drive.google.com/drive/folders/1h6Dbqum3b8uy0Ph7yRd4xhGcx8vHsdCZ?usp=sharing

After the installation is complete, the mobile APP icon is shown in the figure on the right:

3.2.1 APP Update

You can get the latest software from the Apple Store. When the software is updated, you will be prompted to update the version.

3.2.2 UI Instruction

You can see the user interface as shown in Picture below.

DA: connect/disconnect	DO: system temperature
DB: export data to mobile phone	DP: data group quick call out
DC: data curve	DQ: sync time
DD: actual output voltage	DR: battery voltage
DE: actual output current	DS: external sensor temperature detecting value
DF: actual output power	DT: accumulated output capacity
DG: input voltage measurement value	DU: accumulated output power
DH: preset voltage value	DV: model being connected
DI: preset current value	DW: product SN number
DJ: output ON/OFF button	DX: product firmware
DK: protection status indication	DY: switch current range
DL: battery status indication	DZ: main page
DM: constant voltage/ constant current status	EA: network distribution page
DN: screen brightness	EB: control center

3.2.3 APP Operation

3.2.3.1 Network Distribution

Connect Wi-Fi for the first time, please insert the WiFi board to the right place,

then power on RD6012P, you will see the blue LED blinks once. Set the communication interface to WIFI, restart RD6012P, then place the RD6012P and the mobile phone close to the 2.4G router (the mobile phone must also be under the same 2.4G network, and the router must disable the AP isolation function and the WMM function).

RD6012P will wait for the phone to connect as shown in **Figure 23**. Press **"EA"** to choose Network distribution, it will show like **Figure 24**, then enter the WiFi password and click INITIALIZATION. Wait about 20 seconds.

Figure 23

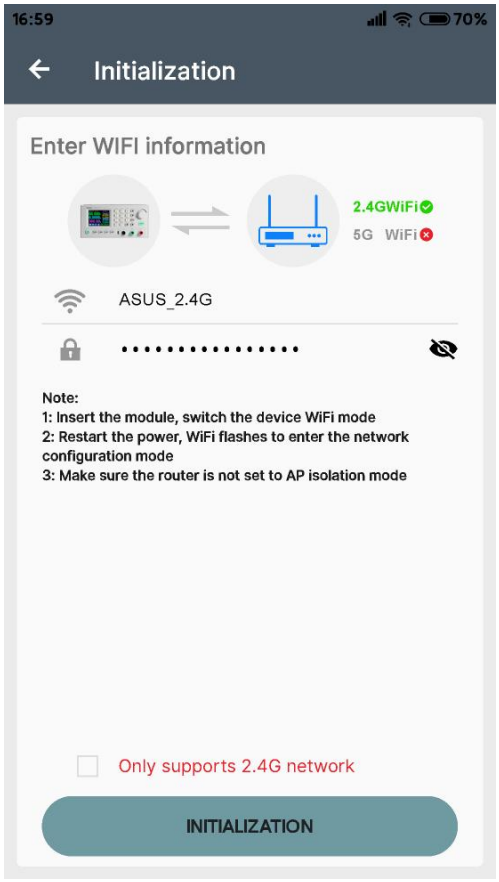


Figure 24

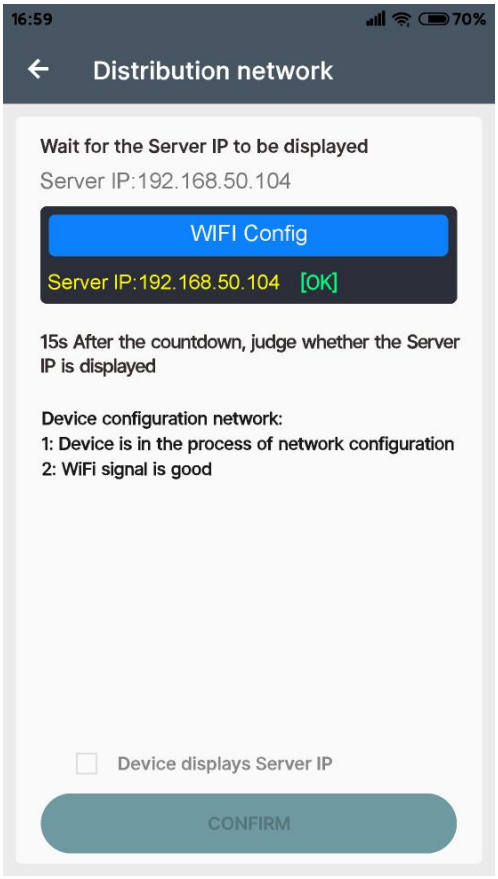


Figure 25

D6012P will obtain the IP address of your phone(**Figure 26**), if it shows right,
confirm that "**device displays sever IP**", and click "CONFIRM", wait 30s (**Figure 25**)，APP shows connection successful, RD6012P will start automatically, the network distribution success, return to the main page and click "**DA**" to connect.

Figure 26

If the distribution network fails, please power off the module and re-operate in the same way (multiple networking failures you can watch the video and try to use the hotspot of the mobile phone to test).

3.2.3.2 Proper Wi-Fi Connection

When power on RD6012P, it will connect Wi-Fi first, and then detect if it can be connected to APP, and it may not be connected successfully if the phone is under screen-lock status or the APP is running at the background. If the IP address of the phone has changed, you need to press the  button and then press 

button to reset the net, repeat 2.2.3.1 operation.

3.2.3.3 APP Operation

IOS APP operation video:
https://drive.google.com/drive/folders/1kwycXmbV_wkSYuT7KxuYsmXHV70KDyiq?usp=sharing

Click **"DH"** / "**DI**" text label and enter the value to set the output voltage/ output current, then click at the blank area to return, if you enter a value exceeds the limit, it cannot be applied. Click **"DB"** to exports the voltage-current curve to excel file, up to 24 hours document can be recorded.

Click the **"EB"** personal center to set the software language or get help to use the APP.

PC Software Installation and Operation Instruction

Requirement: Win 7-Win10 system and the computer has Internet connection.

This PC software is designed by Hangzhou Ruideng technology CO., LTD, it has no virus, if your anti-virus software prompts for a virus warning, please allow all its features, otherwise it will affect the normal operation of the software. PC software supports Win7-Win10 system, and there may be incompatibilities problems, if you really need it, please install and test the software before buying the product. This instruction is made for version 1.0.0.9, there will be little difference between different versions, the version below does not support RD6012P. and we do recommend you to download the latest software for better experience.

RD6012P digital power supply file download link:
https://drive.google.com/drive/folders/1nyd7W_JdeQhPLhKdgG_iCRQ3mHZenbIU?usp=sharing

4.1 Software Download

PC software download and basic operation video:
https://drive.google.com/drive/folders/10Op21Q61xOzlPROqGrt0tuMTkzp00aQZ?usp=sharing

4.1.1 Unzip Files

The first time you use this software, you need to install the driver program first, you need to click CH341SER to install the driver, the insert a Micro USB cable into RD6012P and wait for the computer to install the driver.

4.1.2 Unzip Files

Unzip the file to Disk(D) of the PC. You need to run Net framework4.7.2.exe to install the .Net environment, then click RidenPowerSupply.exe directly to use the software, please do not delete any files.

4.2 Software Operation

RidenPower Supply

4.2.1 Software Connection

Double click **RidenPowerSupply.exe** to run the PC software.

Only RD6012P-W supports WiFi function, you need to order the WiFi board separately to use the WiFi connection, and WiFi connection is a test function, due to poor compatibility with some computers, if you cannot connect PC software via WiFi, please ignore this function. For this function,

we do not provide any guarantee and technical support, and we will decide whether to keep this function based on customer feedback.

WiFi connection video link:

https://drive.google.com/drive/folders/1BZslMRSntMj9Se6hnsYANsv8XAVhIZZi?usp=sharing

Set the RD6012P-W communication interface to WiFi, and restart, RD6012P-W displays like figure 27, click "WiFi Network" on the PC software to pop up the WIFI configuration interface (figure 29), click "Initialize" and wait for about 5 -10 seconds, after the RD6012P-W displays the local IP address (as shown in figure 28), click "Next" and enter the WiFi name and password, then click "Network distribution", wait for about 20 seconds, the PC software prompts that the connection is successful, and then Click "Connect".

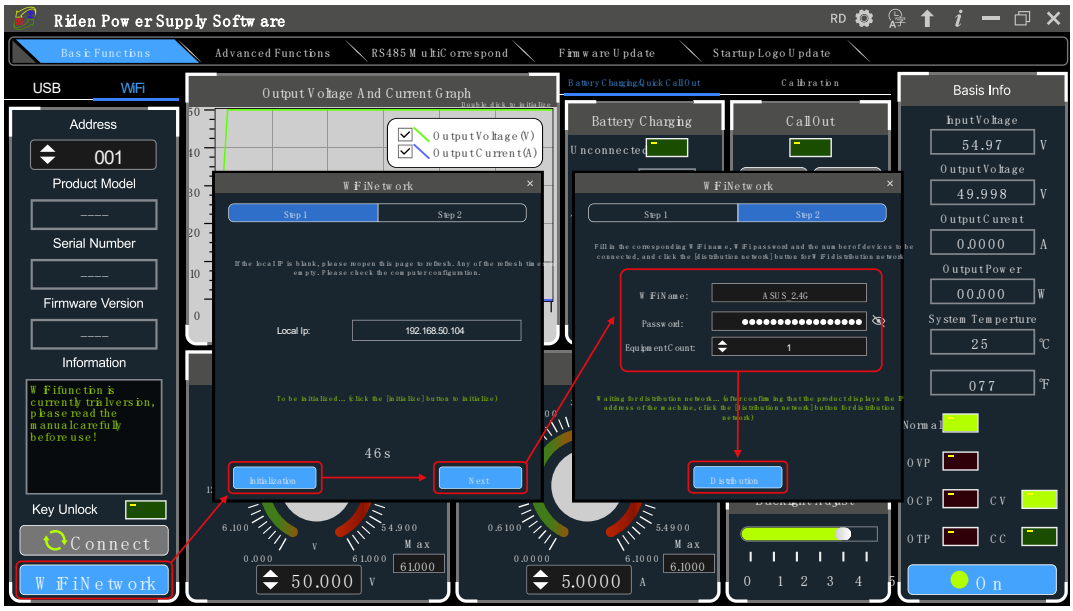


Figure 29

USB connection: Set RD6012P communication interface to USB and connect RD60012 and PC, the PC software prompts the serial port has been updated and licks "**Connect**".

Figure 27

Figure 28

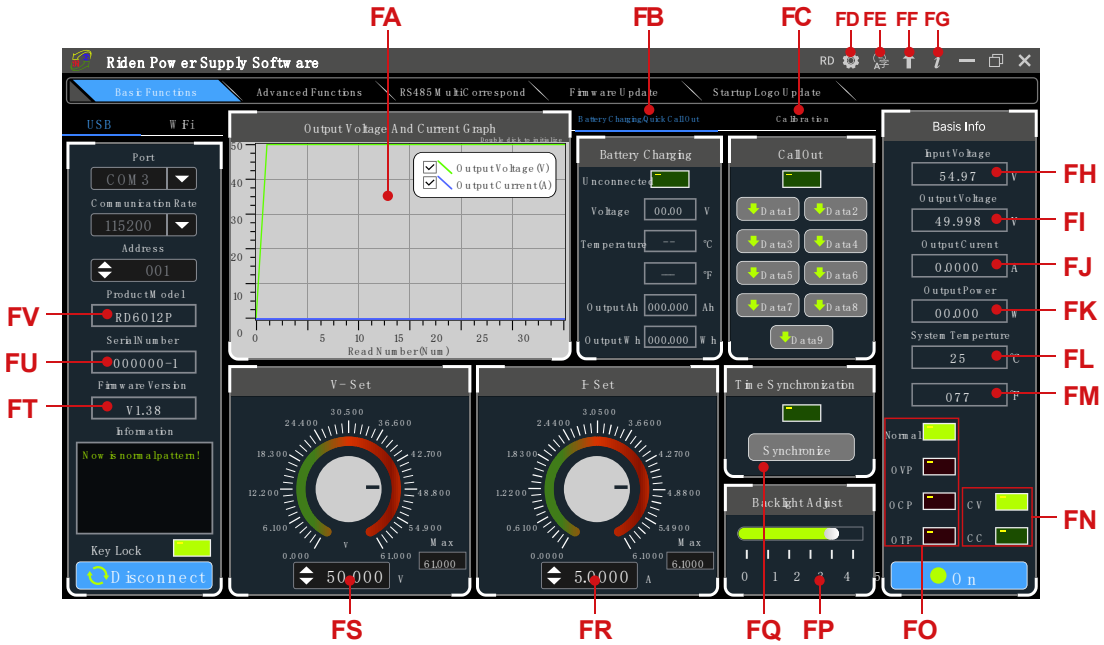
4.2.2 PC Software Operation Instruction

Choose the right communication port, baud rate, slave address (default 001), click **"CONNECT"** to start communication. If the communication succeeds, the power supply button will be locked

automatically, the buttons will automatically unlock after 3 seconds of accidental disconnection, and the **“CONNECT”** turns to **“DISCONNECT”**; Click **“ON”** to turn on the output of the power supply, and it will turn to **“OFF”**.

4.3 Functions Introduction

The PC software interface mainly has basic functions, firmware upgrade, Logo upgrade, version update detection and language setting...



FA: Voltage-Current Curve	FB: Battery information/ Data Group Quick Call Out
FC: Calibration	FD: RD/DPS series switch
FE: Language	FF: Software Update

FG: About	FH: Input voltage
FI: Actual Output Voltage	FJ: Actual Output Current
FK: Actual Output Power	FL: System Temperature(℃)
FM: System Temperature(℉)	FN: Constant Voltage/ Constant Current Status
FO: Protection Status Indication	FP: Screen Brightness Setting
FQ: Synchronize System Time	FR: Output Current Preset value
FS: Output Voltage Preset value	FT: Firmware Version
FU: Serial Number	FV: Product Model

4.3.1 Basic Functions

PC software operation video:
https://drive.google.com/drive/folders/1rl-CCOzbFlAONjRfrOpbNsK8rrCGVoKa?usp=sharing

The basic functions of PC software: voltage/current preset, data group quick call out, calibration fine tuning, brightness setting, voltage and current curve exporting. You can rotate the wheel or enter the value to set the voltage and current, the graph above the button shows the real-time voltage and current curve. You can zoom in and out the curve by using the mouse wheel, double click the curve to auto adjusts the axis, you can right click on the curve to clean the curve or export the curve data to picture or excel.

4.3.2 Calibration

The calibration fine-tuning function needs to be operated by a professional electronic person who has more than Six and a half digit multimeter. It will change the system setting, incorrect operation may exceeds the hardware limit and cause damage, and the resulting damage is not covered in the warranty! The limit error of the product is generally much smaller than the nominal error, when the error is close to or even higher than the nominal error, you need to check if the measuring instrument is accurate.

RD6012P calibration operation video:

https://drive.google.com/drive/folders/1WEusRYtpn94BFjyEQjrtsnzTo1K6hYcw?usp=sharing

Click **"Calibration"** and enter the password "168168", you can enter the Calibration Fine Tuning page or save the adjustment data(if you enter the password, by default you have accepted the above red letter agreement). It can read the calibration data after connection; click the arrow to fine tuning the data. According to the linear function y=kx+b, the constant b is equivalent to the zero value, the slope k is equivalent to the proportional value, adjust this two values so that the data will be close to the real test value.

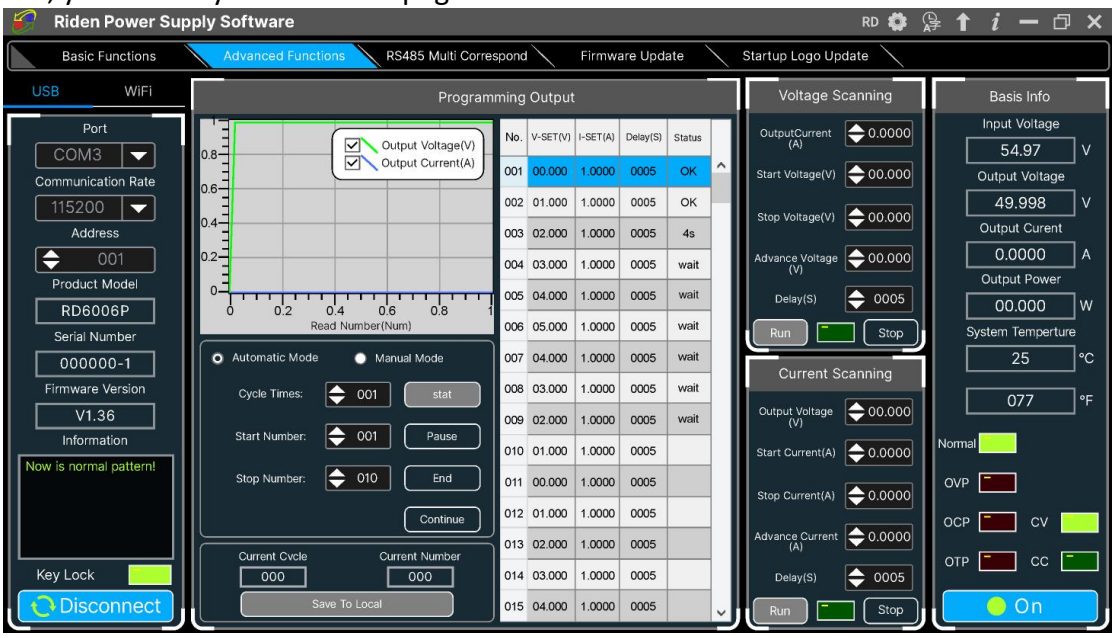
Set the output voltage at 1V, adjust the output voltage zero point to make the multimeter display close to 1V, and then set the output voltage at 30V, adjust the output voltage proportional value to make the multimeter display close to 30V. In the same way you can set 0.1A and 3A output current to calibrate the zero point and proportional value of the output current.

Set the output voltage at 1V and calibrate the actual output voltage zero point to make the actual output voltage displayed on RD6012P close to the value on multimeter. You can set 30V and calibrate the proportional value of actual output voltage. In the same way you can set 0.1A and 3A to calibrate the zero point and proportional value of the actual output current. (This section does not provide technical support. If you do not understand, please check the related information).

4.3.3 Advanced Function

You can set the output voltage and current by chart in the advanced function page, you can set

every step between 1 and 9999 seconds, you can set 200 steps max, it can output automatically or manually. You cannot choose other operation page when it performs programming output or other operations, you can only switch other page when it ends.



4.3.4 RS485 Multiple Devices Communication

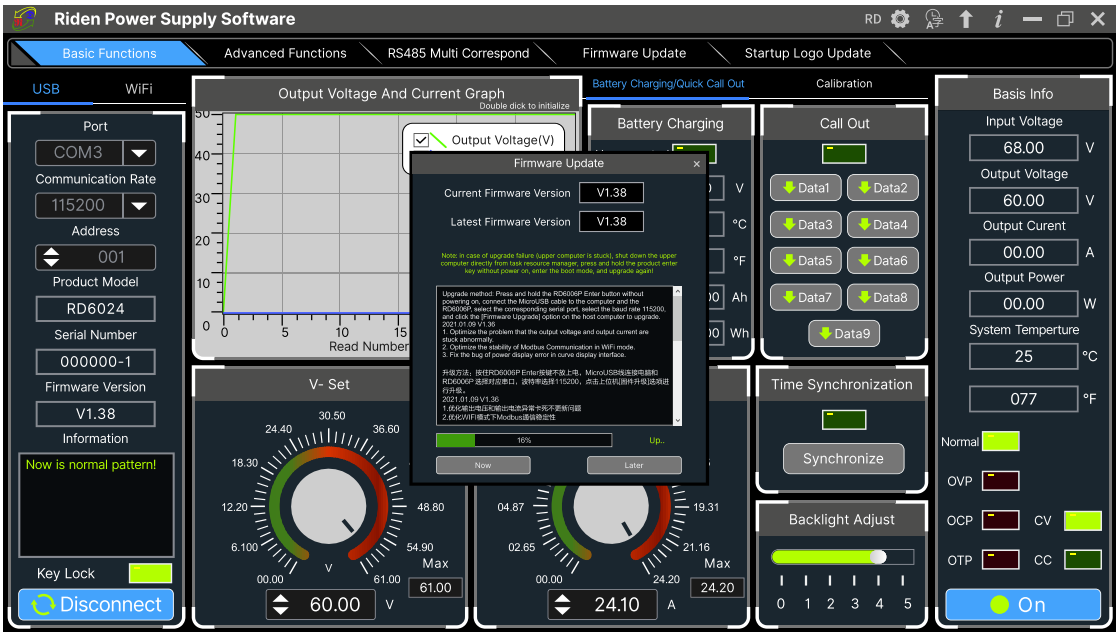
Use USB to 485 module to connect the AB of the 485 module, if you have multiple device, connect their AB together. Each RD6012P needs a different device address, up to 32 units can be connected, and different models cannot be connected at the same time. The host computer enters the RS485 multi-computer communication, first click search, and click connect after the search is completed.

The output voltage and current of a product can be changed arbitrarily in the table, and the voltage and current can be set in batches in the custom setting. You can set several groups of shortcut voltage and current in the shortcut setting for easy recall. Due to the communication frame interval, it takes a certain time to complete each operation, and the longest is no longer than 11 seconds.

4.3.5 Firmware Update

Firmware update operation video:
https://drive.google.com/drive/folders/19A8Rha_sWYuJ6nMGB7S9S7LuoNepe4by?usp=sharing

Press and hold ENTER and power on RD6012P, enter the boot mode, then connect it to computer, there will be “boot mode” in the mode information text box, then click **“Firmware Update”**, a firmware update prompt will pop up on the interface, and click “**Now**” to upgrade. (You can update the firmware under the normal mode, if it cannot be started up normally, you should press and hold the **“ENTER”** button and power on, update it under boot mode. It doesn’t support firmware update under WiFi connection mode).



During the firmware upgrade process, the interface is displayed as follows:

4.3.6 Boot Logo Update

Boot logo setting video:
https://drive.google.com/drive/folders/1J0iOyxZ8DSJaDQD2xgrlukBwJBELQBzf?usp=sharing

Click **“Start Logo Update”**, a Logo upgrade prompt will pop up on the page, please select a picture. Some logo samples can be used in the installation package.

Click “Picture Import” and RD6024 will reboot automatically.

4.3.7 Version Update Detection

Click **“FF”(“Software Update”),** the software will automatically detect if there is a new version, if so, an update prompt will pop up on the interface.

4.3.8 Language Setting

Click **“FE”(“Language”)**, a language setting prompt will pop up on the interface, you can choose Simplified Chinese, English, France and German.

4.3.9 About

Click **“FG”(“About”)**, you can check the version number, publish time and copyright Information.

Appendix

Appendix 1: Common Battery Voltage Comparison Table

Battery Type	Nominal Voltage (V)	Final Charge Voltage (V)	Final Discharge Voltage (V)	Application	Characteristics
LiCoMn NiO2	3.7	4.2	3	Digital Device	High capacity
LiFePO4	3.2	3.65	2.5	Electric bike/ electric tool	Large discharge current, inexpensive
Lead Storage Battery	12	14.4	10.5	Car/ electric bike	Inexpensive Lead pollution
Dry Battery	1.5	Cannot charge	0.9	Clock/Remote control	Inexpensive widely used not rechargeable
NICD Battery	1.25	1.5	1.1	Toy	Inexpensive Memory effect
Ni-MH Battery	1.2	1.4	0.9	Toy/Shaver	No memory effect

Appendix 2: Common Electric Car/Bike Battery Voltage Comparison Chart

Nominal Voltage	Battery Type	Number of batteries connected in series	Final Discharge Voltage(V)	Final Charge Voltage(V)
48V	LiCoMnNiO2	14	42	58. 8
	LiCoMnNiO2	13	39	54. 6
	LiFePO4	16	40	58. 4
	Lead Storage Battery	4	42	57. 6
36V	LiCoMnNiO2	10	30	42
	LiFePO4	12	30	43.8
	Lead Storage Battery	3	31.5	43.2
24V	LiCoMnNiO2	7	21	29.4
	LiFePO4	8	20	29.2
	Lead Storage Battery	2	21	28.8

Note: if the final discharge voltage of the battery is higher than 60V, you cannot use RD6012P to charge, it will damage the device.