RD RD6024

RD6024 DC Power Supply User Manual

Model: RD6024 | Brand: RD

1. Product Overview

The RD6024 is a highly versatile 60V 24A USB DC-DC adjustable buck voltage converter. It is a programmable step-down power supply designed for various applications requiring precise voltage and current control. This device features an integrated panel, allowing for easy integration into custom power supply setups when combined with a suitable shell and AC-DC power source.

Figure 1.1: Front view of the RD6024 DC Power Supply, showing the display, keypad, control knob, and output terminals.

This manual provides detailed instructions for the setup, operation, maintenance, and troubleshooting of your RD6024 power supply. Please read this manual thoroughly before using the device to ensure safe and optimal performance.

2. Key Features

- **High Power Output:** Capable of delivering up to 60V and 24A, with a maximum output power of 1440W.
- **Programmable Control:** Adjustable voltage and current settings for precise power delivery.
- **Multiple Display Modes:** Choose between Classic, Detailed, and Curve display styles, with support for Nixie Tube display and custom color options.
- **Comprehensive Protection:** Includes Over-Voltage Protection (OVP), Over-Current Protection (OCP), and Over-Temperature Protection (OTP) to safeguard the device and connected loads.
- **Data Storage:** Ability to store and recall frequently used voltage and current settings.
- **PC Software Connectivity:** Supports connection to PC software via micro USB for advanced control and monitoring.
- **Firmware Upgradeable:** Allows for future updates to enhance functionality.
- **Double Fuse Design:** Features easily replaceable fuses for enhanced safety and convenience.

Digital DC Power Supply **RD6024**

24A HIGH CURRENT

60V Output Voltage | **24A** Output Current | **1440W** Output Power

(This Device Is Buck Mode Power Supply)

RD6012P supports firmware upgrade, so that new functions can be added, and the product will be more powerful. The product you received may be different from description in terms of page and function. Any discrepancy in future, please adhere to the actual product instead.

24A High Current

Experience kilowatt high power

Meet customer needs for high-current power supplies

Current Increases +33%
Compared with the last generation

RD6024	24A
RD6018	18A
RD6012	12A
RD6006	6A

Power Increases +33%
Compared with the last generation

RD6024	1440W
RD6018	1080W
RD6012	720W
RD6006	360W

To deal with 24A high current, specially customized pure copper terminals

Full output needs to use big current banana plug or U-shaped plug, it is recommended to use our output cable or 2.5mm² above cables

Figure 2.1: Illustration of the RD6024's high current capabilities, highlighting its 24A output and specialized copper terminals for high current applications.

3. Setup and Installation

3.1 Unpacking and Inspection

Carefully remove the RD6024 from its packaging. Inspect the device for any signs of damage during transit. Ensure all components are present as listed in the packing contents. The main unit and an instruction card are typically included. Note that a CR1220 battery is required for the time display function and is not included.

Figure 3.1: The RD6024 main unit and instruction card as typically found within the product packaging.

3.2 Power Supply Integration

The RD6024 is designed as an integrated panel. To form a complete, adjustable power supply, you will need to provide an external AC-DC power source and a suitable enclosure (shell). Ensure the external power source meets the input voltage requirements (7-70.00V) and can supply sufficient current for your intended applications.

Output Power Limit (Better Adaptation | Wider Compatibility)

Easy to adapt to the input power supply

When setting the output voltage and current, the device will automatically adjust to ensure that the power does not exceed the set output power

(Output power setting range 10-1480W)

950W = (1000W-65V)  × **95%**

Output power setting value | Rated output power | Full load efficiency

※For voltage full-scale output, please use the recommended powe

All-in-one Design (Make Everything Easy)

Only need the matching case + input PSU, you can have a complete adjustable power supply

RD6012P doesn't contain case, power source and cables, you need to purchase accessories toassemble a complete power supply.

Figure 3.2: The RD6024's integrated design, illustrating how it combines with an external AC-DC power supply and a case to form a complete unit.

Connect the input terminals of the RD6024 to your AC-DC power source. Observe correct polarity: positive to positive, negative to negative. For high current applications, ensure all wiring is properly sized and connections are tight to prevent overheating.

3.3 Initial Power-Up

Once the input power source is connected, turn on the RD6024 using the ON/OFF button. The display should illuminate, showing the default interface. If the device does not power on, check all connections and the input power source.

4. Operating Instructions

4.1 Basic Operation: Setting Voltage and Current

To set the output voltage and current, use the keypad and rotary encoder. Press the **V-SET** button to enter voltage setting mode, and **I-SET** for current setting mode. Use the numeric keypad to input the desired value, then press **ENTER** to confirm. The rotary encoder can be used for fine adjustments.

The device will automatically adjust the output power to ensure it does not exceed the set output power limit (default range 10-1480W).

4.2 Display Interface and Customization

The RD6024 offers multiple display styles and customization options:

- **Display Styles:** Switch between Classic, Detailed, and Curve styles by rotating the encoder potentiometer on the setting interface.
- **Nixie Tube Display:** Enable this unique display mode from the setting interface.
- **Custom Colors:** Personalize the display colors to match your preferences.

Display Style Switch As You Like

Classic Style | Detailed Style | Curve Style

The system defaults to display the classic style, click ◀ ▶ to display the classic style/detailed style/curve style in turn.

Add Nixie Tube Display

Enter the setting interface ②, select Digits Style, rotate the encoder potentiometer to 【7-Seg V1】【7-Seg V2】,you can turn on nixie tube display

Display Color Match As You Want

Match your exclusive display colors

Enter the system setting interface, press ▲ ▼ to turn pages

Custom Color Display

The following languages are currently supported, and more languages are being updated continuously...

Chinese | English | French | German | Russian

The display color supports the above 15 colors to be freely matched and set, and the color customization switch must be turned on to take effect

Figure 4.1: Various display styles and customization options available on the RD6024, including Classic, Detailed, Curve, and custom color settings.

4.3 Special Functions: Data Storage and Recall

The device allows you to store and recall up to 10 sets of voltage and current parameters (M0-M9). To store a setting, adjust the voltage and current, then press **MEM** and select a memory location (e.g., M1). To recall a stored setting, press **MEM** and select the desired memory location.

4.4 Protection Features

The RD6024 incorporates several protection mechanisms to ensure safe operation:

- **Over-Voltage Protection (OVP):** If the output voltage exceeds a preset limit, the power supply will automatically shut down.
- **Over-Current Protection (OCP):** If the output current exceeds a preset limit, the power supply will automatically shut down.
- **Over-Temperature Protection (OTP):** The device monitors its internal temperature and will shut down if it exceeds a safe operating limit.

Multiple Protection (Protect Your Device)

The output over-voltage (OVP)/over-current (OCP) value can be set. When the output voltage/current exceeds the protection value,the power supply will automatically stop the output to prevent damage to the device

Over Voltage Protection | Over Current Protection | Over Temperature Protection

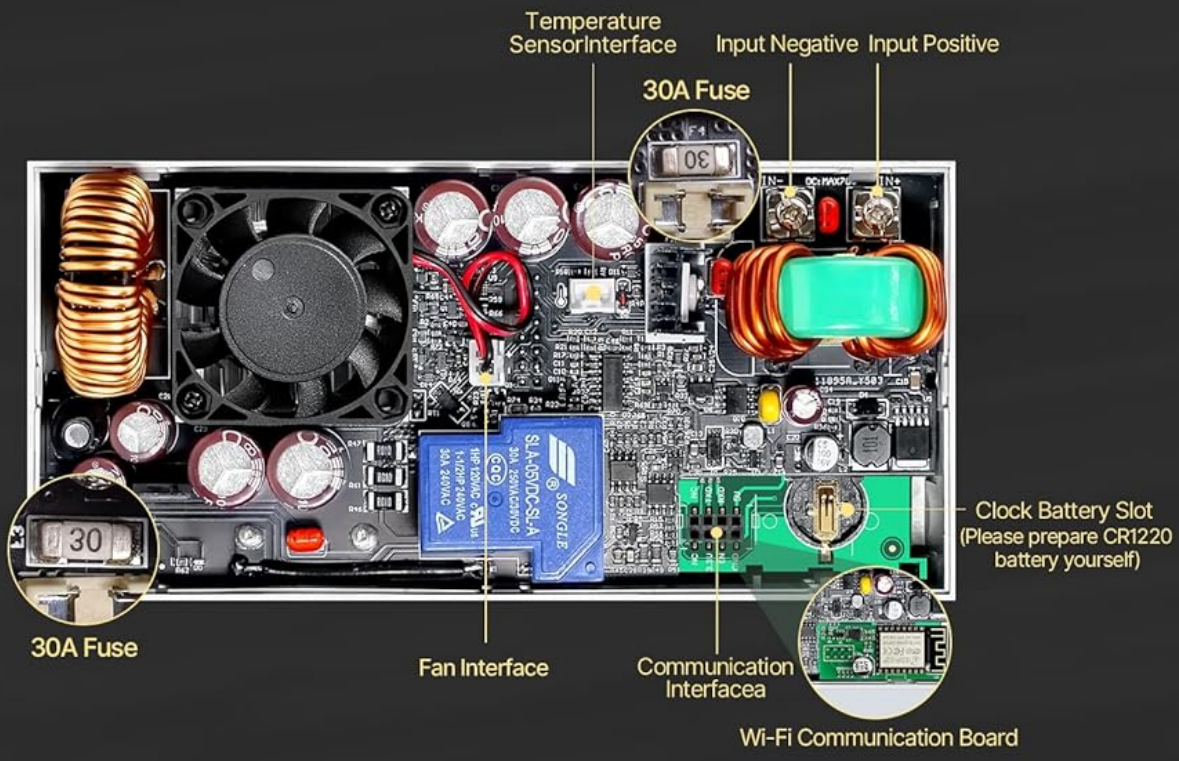
When the OCP value is lower than I-SET value, when you short the output, it will shut down the output for protection, when OCP value is higher than I-SET value, when short the output, it will enter constant current mode, it is suitable for constant current device such as high power LED lamp

Abnormal Status Indication

- Normal Status Indication
- OCP Over Current Status Indication
- OVP Over Voltage Status Indication
- OTP Over Temperature Status Indication
  when the temperature exceeds the protection value, the output will be shut down automatically

Double Fuse Setting (Detachable Design, Easy To Replace)

Detachable snap-on fuse for easy replacement



- You cannot connect non-original accessories to the temperature sensor/fan/communication interface on the board, to avoid device burnt.
- We always optimize our products for better performance, so the product you receive may have little difference with the picture, please adhere to the actual product instead.

Figure 4.2: Visual representation of the RD6024's multiple protection features, including Over Voltage, Over Current, and Over Temperature Protection indicators.

4.5 Battery Charging Function

The RD6024 can be used for battery charging. It features dedicated green charging terminals suitable for various battery types. Ensure you understand the charging requirements of your battery and set the voltage and current limits accordingly to prevent damage.

Figure 4.3: The RD6024 connected to a battery for charging, highlighting the green terminals specifically designed for this purpose.

5. Software and Connectivity

The RD6024 supports connection to PC software for enhanced control, monitoring, and data logging. Please note that this specific model (RD6024) only supports micro USB connection to PC software and does not support mobile APP connectivity, unlike the RD6024-W model.

5.1 PC Software Connection

Connect the RD6024 to your computer using a micro USB cable. Install the official RD Power Supply Software (compatible with Windows 7 and above). The software allows you to remotely control voltage and current, monitor real-time output, view graphs, and manage data storage settings.

5.2 Firmware Upgrade

The RD6024's firmware can be upgraded via the PC software. This allows for improvements in functionality and bug fixes. Follow the instructions provided within the PC software for the firmware upgrade process. The upgrade typically takes approximately 100 seconds.

Figure 5.1: The RD6024 connected to a PC, illustrating the firmware update process through the dedicated software interface.

6. Specifications

The following table details the technical specifications of the RD6024 DC Power Supply:

Parameter	Value
Model	RD6024
Input Voltage Range	7-70.00V
Output Voltage Range	0-60.00V
Output Current Range	0-24.00A
Output Power Range	0-1440W
Output Voltage Accuracy	±(0.3%+3 digits)
Output Current Accuracy	±(0.5%+5 digits)
Output Ripple Typical	100mV@12A, 150mV@24A VPP
Working Temperature Range	-10℃~40℃
Constant Voltage Mode Response Time	2ms (0.1A-5A load)
Capacity and Energy Statistical Error	±2%
Buck Working Mode	Output voltage less than (input voltage÷1.1)-1
Screen	2.4 inch Color HD display
Product Dimensions	167 x 81 x 69 mm (6.57 x 3.19 x 2.72 inches)
Item Weight (with package)	Approx. 0.72kg (1.59 pounds)

INFORMATION

Model :	RD6024/RD6024-W
Input voltage range :	6-70.00V
Output voltage range :	0-60.00V
Output current range :	0-24.00A
Output power range :	0-1440W
Input voltage measurement resolution :	0.01V
Output voltage measurement resolution :	0.01V
Output current measurement resolution :	0.01A
Battery voltage measurement resolution :	0.01V
Input voltage measurement accuracy :	±(1%+5 digits)
Output voltage accuracy between setting and measurement :	±(0.3%+3 digits)
Output current accuracy between setting andmeasurement :	±(0.5%+5 digits)
Battery voltage measurement accuracy :	±(0.5%+3 digits)
Automatic cut off current value when charging :	>100mA **Adjustable**
Output ripple typical :	100mV@12A 150mV@24A ①
Working temperature range :	-10°C~40°C
External sensor Temperature detection range :	-10°C~100°C/0°F~200°F
External sensor Temperature detection accuracy :	±3°C/±6°F
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
Constant voltage mode response time :	±2%
Buck working mode :	Voltage drop >1V and >10%
Cooling fan start condition :	Output current>8A or System temperature>45°C
Cooling fan shut down condition when working :	Output current<7.9A and System temperature<45°C
Over temperature protection :	System temperature >80°C
Screen brightness setting :	0-5(6 level in total)
Screen :	2.4 inch color HD display
Weight(with package) :	About 0.72Kg
Product dimension :	167*81*69mm

① Ripple measurement method: noise and ripple are measured at X1 range, AC coupling,20MHz of bandwidth on your oscilloscope with a 0.1uF parallel capacitor at the output terminals.

Figure 6.1: Detailed technical parameters of the RD6024 power supply.

7. Maintenance

7.1 Fuse Replacement

The RD6024 features a double fuse setting for protection. If a fuse blows, a backup fuse is provided in the box. You can temporarily use the backup fuse in the socket next to the burned one for short-term use within the 10A range. For full range operation, the damaged fuse should be replaced with a new one of the correct rating (30A).

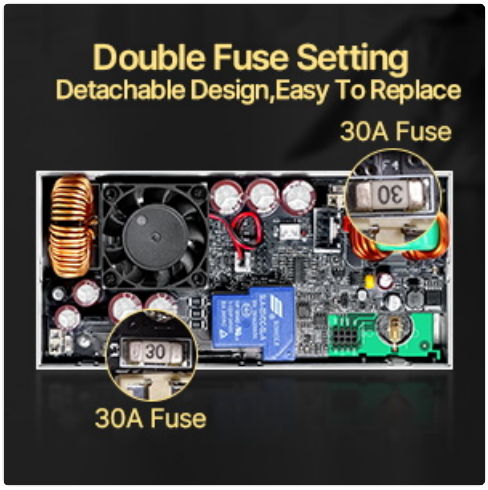


Figure 7.1: Internal view of the RD6024 showing the location of the double fuse setting for easy replacement.

7.2 General Care

Keep the device clean and free from dust. Avoid exposing it to excessive moisture or extreme temperatures. Ensure proper ventilation when operating, especially during high power output, to prevent overheating.

8. Troubleshooting

- **Device not powering on:** Check input power connections, ensure the input voltage is within the specified range (7-70V), and verify the fuses are intact.
- **No output voltage/current:** Ensure the output is enabled (ON/OFF button), check for OVP/OCP/OTP triggers, and verify the load is properly connected.
- **PC software connection issues:** Ensure the micro USB cable is securely connected, install the correct drivers, and verify the PC software version is compatible with your operating system (Windows 7 or above).
- **Time display not working:** Ensure a CR1220 battery is installed in the clock battery slot.

For more detailed troubleshooting steps, please refer to the official user manual PDF linked in the support section.

9. Official Product Video

Your browser does not support the video tag.

Video 9.1: An introductory video showcasing the features and display of the RD6024 DC Power Supply. This video provides a visual overview of the product's capabilities and user interface.

10. Warranty and Support

For detailed warranty information and technical support, please refer to the official user manual or contact the manufacturer directly. The official user manual in PDF format can be downloaded from the following link: