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RUZIZAO SPS-3010

RUZIZAO SPS-3010 DC Power Supply User Manual

Model: SPS-3010 | Brand: RUZIZAO

Introduction · Safety Instructions · Product Overview · Setup · Operation · Maintenance · Troubleshooting · Specifications · Warranty & Support

1. Introduction

The RUZIZAO SPS-3010 DC Power Supply is a professional, high-precision regulated power source designed for various applications including laboratory work, electronic repair, DIY projects, communication equipment maintenance, and scientific research. This compact and portable unit offers stable voltage and current output with multiple protection features to ensure safe and reliable operation.

2. Safety Instructions

Please read and understand all safety instructions before operating the device. Failure to follow these instructions may result in electric shock, fire, or damage to the product.

- Ensure the power supply is connected to a grounded outlet.
- Do not operate the device in wet or damp conditions.
- Avoid blocking ventilation openings to prevent overheating.
- Do not open the casing; there are no user-serviceable parts inside. Refer servicing to qualified personnel.
- Always disconnect the power cord before cleaning or moving the unit.
- Verify correct voltage and current settings before connecting to a load.
- This device is equipped with overvoltage, overcurrent, overheat, and short-circuit protection.

3. Product Overview

The RUZIZAO SPS-3010 features a clear 4-digit LED display and intuitive controls for precise voltage and current adjustments. It also includes a convenient 5V/2A USB port for charging or powering external devices.



Figure 3.1: Front Panel Layout

This image displays the front panel of the RUZIZAO SPS-3010 DC Power Supply, highlighting its key components. From top to bottom, it shows the Voltage Display, Current Display, and Power Display. To the right are the control knobs: V-COARSE (Voltage Coarse), V-FINE (Voltage Fine), A-COARSE (Current Coarse), and A-FINE (Current Fine). Below the displays are indicators for C.V (Constant Voltage) and C.C (Constant Current) modes. At the bottom, there are buttons for POWER, 5V/2A USB interface, ON/OFF for output, and output terminals: Output negative (-), GND (Ground), and Output positive (+).

3.1. Front Panel Components

- **Voltage Display:** Shows the output voltage in Volts (V).
- **Current Display:** Shows the output current in Amperes (A).
- **Power Display:** Shows the output power in Watts (W).
- **V-COARSE** / **V-FINE:** Knobs for coarse and fine adjustment of the output voltage.
- **A-COARSE** / **A-FINE:** Knobs for coarse and fine adjustment of the output current limit.
- **C.V Indicator:** Lights up when the power supply is operating in Constant Voltage mode.
- **C.C Indicator:** Lights up when the power supply is operating in Constant Current mode.

- **POWER Button:** Turns the main unit power ON/OFF.
- **5V/2A USB Interface:** Provides a stable 5V, 2A output for charging or powering USB devices.
- **Output ON/OFF Button:** Enables or disables the main DC output.
- **Output Terminals:** Red for positive (+), Black for negative (-), Green for Ground (GND).

3.2. Rear Panel Components



Figure 3.2: Rear Panel Layout

This image illustrates the rear panel of the RUZIZAO SPS-3010 DC Power Supply. It prominently features a smart cooling fan for heat dissipation and a fuse box for voltage overload protection. The power input socket is also visible.

- **Power Input Socket:** Connects the power supply to the mains electricity using the provided power cord.
- **Cooling Fan:** Automatically activates when the internal temperature exceeds 50°C (122°F) to maintain optimal operating temperature and extend product lifespan.
- **Fuse Box:** Contains a replaceable fuse for protection against voltage overload.

4. Setup

1. **Unpacking:** Carefully remove the power supply and all accessories from the packaging. Verify that all components listed in the "What's Included" section are present.
2. **Placement:** Place the power supply on a stable, level surface with adequate ventilation. Ensure that the cooling fan on the rear panel is not obstructed.
3. **Power Connection:** Connect the provided input power cord to the power input socket on the rear panel of the device, then plug the other end into a grounded AC power outlet.
4. **Initial Power On:** Press the main POWER button on the front panel. The LED display should illuminate.



Figure 4.1: Package Contents

This image shows the items included with the RUZIZAO SPS-3010 DC Power Supply: the main power supply unit, an input power cord, two output power cords (red and black), and the user manual.

5. Operating Instructions

5.1. Setting Voltage and Current

1. **Power On:** Ensure the main POWER button is pressed.
2. **Disable Output:** Press the Output ON/OFF button to ensure the output is disabled before connecting a load. The output indicator should be off.
3. **Set Voltage:** Use the V-COARSE and V-FINE knobs to adjust the desired output voltage. The 4-digit LED display will show the set voltage.
4. **Set Current Limit:** Use the A-COARSE and A-FINE knobs to set the maximum current limit. It is recommended to set the current limit with a short circuit or a known load to accurately observe the C.C indicator.
    - *To set current limit without a load:* Short-circuit the positive and negative output terminals using a test lead (briefly). While short-circuited, adjust the A-COARSE and A-FINE knobs to the desired current limit. The C.C indicator will light up. Remove the short circuit after setting.
5. **Connect Load:** Connect your electronic load to the output terminals using the provided output cables. Ensure correct polarity (red to positive, black to negative).
6. **Enable Output:** Press the Output ON/OFF button to enable the DC output. The output indicator will light up.
7. **Monitoring:** Observe the Voltage, Current, and Power displays. The C.V indicator will light up if the power supply is operating in Constant Voltage mode, and the C.C indicator will light up if it's operating in Constant Current mode (meaning the current limit has been reached).

5.2. Using the USB 5V/2A Port

The dedicated 5V/2A USB port can be used independently to power or charge compatible USB devices. Simply plug your USB device into the port. This port is active when the main power supply is on, regardless of the main DC output status.



Figure 5.1: Large Screen Display and USB Port

This image highlights the large 100 x 60mm 4-digit LED display for clear readings of voltage, current, and power. It also points out the integrated 5V/2A USB port, providing convenient power for external devices.

6. Applications

The RUZIZAO SPS-3010 DC Power Supply is versatile and suitable for a wide range of applications:



Figure 6.1: Typical Applications

This image illustrates common uses for the power supply, including electronic product maintenance, DIY electronic projects, galvanic experiments, and aging tests for components.

- **Electronic Product Maintenance:** Ideal for diagnosing and repairing electronic circuits and devices.
- **DIY Creation:** Powers various components and circuits for hobbyists and makers.
- **Galvanic Experiments:** Provides a stable power source for electroplating and other electrochemical processes.
- **Aging Tests:** Used to test the durability and performance of electronic components over time.
- **Educational and Research:** Suitable for use in schools, universities, and research institutions for experiments and development.

7. Maintenance

7.1. Cleaning

To clean the exterior of the unit, disconnect the power cord and use a soft, damp cloth. Do not use abrasive cleaners or

solvents. Ensure no liquid enters the device.

7.2. Cooling Fan Operation

The power supply is equipped with a smart cooling fan that automatically activates when the internal temperature reaches 50°C (122°F). This intelligent operation reduces noise during lighter loads and prolongs the lifespan of the device. Ensure the rear ventilation grille is kept clear of obstructions.



Figure 7.1: Smart Cooling Fan

This diagram illustrates the smart cooling fan system located on the rear of the power supply. It highlights that the fan automatically activates when the internal temperature exceeds 50°C (122°F) to ensure efficient heat dissipation and stable operation.

7.3. Fuse Replacement

In case of a power surge or internal fault, the fuse located in the fuse box on the rear panel may blow. To replace it:

1. Disconnect the power supply from the mains outlet.
2. Locate the fuse box on the rear panel (refer to Figure 3.2).

3. Carefully open the fuse box and remove the blown fuse.
4. Replace it with a fuse of the same type and rating. Using an incorrect fuse can damage the unit or pose a fire hazard.
5. Close the fuse box securely.

8. Troubleshooting

Problem	Possible Cause	Solution
No power / Display off	Power cord not connected; Power outlet faulty; Blown fuse.	Check power cord connection; Test power outlet; Replace fuse (refer to Section 7.3).
Cannot adjust current limit accurately	No load connected or load resistance too high.	Connect an electronic load or briefly short-circuit the output terminals to set the current limit (refer to Section 5.1).
Output voltage/current unstable	Loose connections; Faulty load; Internal fault.	Check all cable connections; Test with a different load; Contact customer support if problem persists.
Overheat protection activated (unit shuts down or fan runs continuously at high speed)	Blocked ventilation; Excessive ambient temperature; Overload.	Ensure clear airflow around the unit; Operate in a cooler environment; Reduce load.

9. Specifications

Feature	Detail
Model	SPS-3010
Output Voltage	0-30V DC (Adjustable)
Output Current	0-10A (Adjustable)
Display	4-digit LED (Voltage, Current, Power)
Voltage Resolution	0.01V
Current Resolution	0.001A
USB Output	5V/2A
Cooling System	Smart Cooling Fan (activates > 50°C/122°F)
Protections	Overvoltage, Overcurrent, Overheat, Short-circuit
Certifications	CE, FCC
Material	Metal Body
Dimensions (approx.)	21.5 x 13.9 x 8.5 cm (8.4 x 5.5 x 3.3 inches)
Weight (approx.)	1.2 kg (2.6 lbs)

Note: Specifications are subject to change without prior notice.

10. Warranty and Support

RUZIZAO products are manufactured to high-quality standards. For any questions, technical assistance, or warranty claims, please contact RUZIZAO customer support. Please have your model number (SPS-3010) and purchase information ready when contacting support.
We inspect all DC power supplies and accessories before shipment to ensure the quality of products received by each customer is good. If you have any questions about our Laboratory Power Supply, please do not hesitate to contact us, we will reply within 24 hours.

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