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RUZIZAO SPS-W3010

RUZIZAO SPS-W3010 30V 10A DC Regulated Power Supply User Manual

Model: SPS-W3010

1. Introduction

This manual provides detailed instructions for the safe and efficient operation of your RUZIZAO SPS-W3010 DC Regulated Power Supply. This device is designed for laboratory use, electronic repair, DIY projects, communication equipment maintenance, and educational research. It functions as both a regulated voltage and regulated current power supply.



Figure 1.1: RUZIZAO SPS-W3010 DC Regulated Power Supply
This image shows the RUZIZAO SPS-W3010 DC Regulated Power Supply from a front-angle view, displaying its LED screen, control knobs for current and voltage, output terminals, and the 5V/2A USB port. The included power cord and output cables are also visible in the foreground.

Please read this manual thoroughly before using the product to ensure proper function and to prevent damage to the unit or connected devices.

2. Safety Instructions

WARNING: Failure to follow these safety instructions may result in electric shock, fire, or personal injury.

- Always connect the power supply to a grounded outlet.
- Do not operate the device in wet or damp conditions.
- Ensure proper ventilation. Do not block the ventilation openings.
- Do not open the casing of the power supply. There are no user-serviceable parts inside.

- Before connecting or disconnecting any load, ensure the output is turned off.
- Verify the voltage and current settings before applying power to your circuit.
- In case of smoke, unusual odors, or abnormal operation, immediately disconnect the power supply from the main power outlet.
- Keep children and unauthorized personnel away from the device during operation.

3. Product Overview

The RUZIZAO SPS-W3010 is a compact and portable DC power supply featuring a 4-digit LED display for precise voltage and current readings. It includes multiple protection mechanisms and a 5V/2A USB port.

3.1 Front and Rear Panel Components



Figure 3.1: Front and Rear Panel Layout

This image displays the RUZIZAO SPS-W3010 DC Power Supply, highlighting its key components on both the front and rear panels. Front panel features include the display screen, voltage and current displays, C.V/C.C indicators, power display, 5V/2A USB port, current and

voltage adjustment knobs, OCP, OVP, and Output buttons, output terminals (Negative, GND, Positive), and the Power On/Off button. The rear panel shows the metal body, cooling fan, and the AC power input socket with an integrated fuse box. Shock absorber rubber feet are also indicated.

- **Display Screen:** Shows voltage, current, and power readings with high resolution.
- **Voltage Adjustment Knob:** Used to set the output voltage.
- **Current Adjustment Knob:** Used to set the output current limit.
- **OCP (Overcurrent Protection) Button:** Activates/deactivates overcurrent protection.
- **OVP (Overvoltage Protection) Button:** Activates/deactivates overvoltage protection.
- **Output Button:** Enables or disables the DC power output.
- **Output Terminals:** Red (+) for positive, Black (-) for negative, Green (GND) for ground.
- **5V/2A USB Port:** Provides a fixed 5V, 2A output for charging or powering USB devices.
- **Power On/Off Button:** Main power switch for the unit.
- **Cooling Fan:** Automatically activates when the internal temperature reaches 50°C (122°F) to prevent overheating.
- **AC Power Input Socket:** Connects the power supply to the main AC power.
- **Fuse Box:** Contains the protective fuse for the unit.

4. Setup Instructions

1. **Unpacking:** Carefully remove the power supply and all accessories from the packaging. Verify that the package contents include: 1x RUZIZAO DC Power Supply, 1x AC Power Cord, 1x User Manual, 2x Output Power Cords.
2. **Placement:** Place the power supply on a stable, level surface with adequate ventilation. Ensure that the front and rear ventilation openings are not obstructed.
3. **Power Connection:**
    - Ensure the power supply's main power switch is in the OFF position.
    - Connect the provided AC power cord to the AC power input socket on the rear panel of the power supply.
    - Plug the other end of the AC power cord into a grounded electrical outlet.
4. **Initial Power On:**
    - Press the Power On/Off button on the front panel. The LED display should illuminate.
    - Before connecting any load, ensure the OUTPUT button is disengaged (output off).

5. Operating Instructions

5.1 Setting Voltage and Current



Figure 5.1: Encoder Knob Operation

This image illustrates the functionality of the high-precision encoder adjustment knobs. To switch between digits for adjustment, press the encoder knob. To change the value of the selected digit (from 0 to 9), rotate the encoder knob. This allows for fine-tuning of both voltage and current settings.

1. **Ensure Output is OFF:** Before adjusting settings, press the **OUTPUT** button to ensure the output is off. The indicator light for OUTPUT should be off.
2. **Adjust Voltage:**
   - Rotate the **VOLTAGE** adjustment knob to set the desired voltage.
   - For fine adjustment, press the **VOLTAGE** knob to select a specific digit on the display, then rotate to change its value.
3. **Adjust Current Limit:**
   - Rotate the **CURRENT** adjustment knob to set the desired current limit.
   - For fine adjustment, press the **CURRENT** knob to select a specific digit on the display, then rotate to change its value.

- The power supply will operate in Constant Voltage (C.V) mode until the load draws current exceeding this set limit, at which point it will switch to Constant Current (C.C) mode.

5.2 Connecting a Load and Enabling Output

1. With the output OFF, connect your load to the output terminals:
   - Connect the positive (+) terminal of your load to the red (+) output terminal of the power supply.
   - Connect the negative (-) terminal of your load to the black (-) output terminal of the power supply.
   - If grounding is required for your application, connect it to the green (GND) terminal.
2. Once the load is securely connected and voltage/current limits are set, press the**OUTPUT** button to enable the power output. The OUTPUT indicator light will illuminate.
3. Monitor the voltage and current displays to ensure proper operation.



Figure 5.2: Output Button Function

This image highlights the green OUTPUT button on the front panel. This button is crucial for safely enabling and disabling the DC power output. Using this button helps prevent unexpected damage to connected loads that might occur due to sudden voltage or current changes

during connection or disconnection.

5.3 Using Overcurrent Protection (OCP) and Overvoltage Protection (OVP)



Figure 5.3: OCP/OVP Activation
This image demonstrates the OCP (Overcurrent Protection) and OVP (Overvoltage Protection) alarm feature. When OCP or OVP is activated and the power supply detects a short circuit or an overcurrent condition, the output will automatically stop, and the OCP indicator on the screen will flash, alerting the user to the protective shutdown.

- **OCP (Overcurrent Protection):** Press the **OCP** button to activate or deactivate overcurrent protection. When active, if the output current exceeds the set limit (or a short circuit occurs), the output will automatically shut down, and the OCP indicator will flash.
- **OVP (Overvoltage Protection):** Press the **OVP** button to activate or deactivate overvoltage protection. When active, if the output voltage exceeds a safe threshold, the output will automatically shut down.
- These protections are designed to prevent damage to both the power supply and the connected load.

5.4 Using the 5V/2A USB Port



Figure 5.4: USB Port Usage

This image shows the 5V/2A USB port located on the front panel of the power supply. It illustrates how a smartphone can be connected to this port for charging, demonstrating its utility for powering or charging various USB-compatible devices independently of the main DC output.

The dedicated 5V/2A USB port provides a stable 5V output at up to 2A, suitable for charging mobile phones, tablets, or powering other USB-compatible devices. This port operates independently of the main DC output settings.

6. Maintenance

- **Cleaning:** Disconnect the power supply from the main power outlet before cleaning. Use a soft, dry cloth to wipe the exterior. Do not use abrasive cleaners or solvents.
- **Ventilation:** Regularly check that the ventilation openings are clear of dust and debris to ensure efficient cooling.
- **Fuse Replacement:** If the power supply fails to turn on, the fuse may need replacement.
  - Disconnect the power supply from the main power outlet.
  - Locate the fuse box on the rear panel (integrated with the AC power input socket).

    - Carefully open the fuse box and replace the fuse with one of the same type and rating. Refer to specifications for fuse type.
    - Close the fuse box securely.
- **Storage:** When not in use for extended periods, store the power supply in a cool, dry place, away from direct sunlight and extreme temperatures.

7. Troubleshooting

Problem	Possible Cause	Solution
Power supply does not turn on.	No power from outlet; power cord loose; blown fuse.	Check power outlet; ensure power cord is securely connected; replace fuse (see Maintenance section).
No output voltage/current when OUTPUT is ON.	OCP/OVP activated; output terminals not connected correctly; load issue.	Check OCP/OVP indicators and reset if necessary; verify load connections; test with a different load.
Cannot adjust current.	No electronic load connected or short circuit not established.	Connect an electronic load or temporarily short the output terminals (with output OFF) to set the current limit, then connect your load.
Fan runs constantly or is very loud.	High internal temperature; blocked ventilation.	Ensure adequate ventilation; clean dust from vents. Fan operation is normal when temperature exceeds 50°C.

If the problem persists after attempting these solutions, please contact customer support.

8. Specifications

- **Model:** SPS-W3010
- **Input Voltage:** AC 110V/220V (switchable, check unit for specific range)
- **Output Voltage:** 0-30V DC (Adjustable)
- **Output Current:** 0-10A DC (Adjustable)
- **Display:** 4-digit LED (Voltage, Current, Power)
- **Voltage Display Accuracy:** 0.01V
- **Current Display Accuracy:** 0.001A
- **USB Output:** 5V/2A
- **Protection:** Overvoltage Protection (OVP), Overcurrent Protection (OCP), Over-temperature Protection, Short Circuit Protection.
- **Cooling:** Smart fan control (activates at 50°C)
- **Product Dimensions:** Approximately 21.1 x 17 x 7.9 cm (8.3 x 6.7 x 3.1 inches)
- **Product Weight:** Approximately 1.7 kg (3.7 lbs)
- **Package Dimensions:** 33.1 x 21.9 x 12.7 cm (13.0 x 8.6 x 5.0 inches)
- **Certifications:** CE, FCC



Figure 8.1: Product Dimensions and Portability

This image provides a visual representation of the RUZIZAO SPS-W3010 DC Power Supply's dimensions, indicating its length (21.1 cm / 8.3 in), width (17 cm / 6.7 in), and height (7.9 cm / 3.1 in). It also highlights its portable and lightweight nature, with a weight of less than 2.8 lbs (approximately 1.27 kg). The image also shows the included power cord and output cables.

9. Warranty and Support

RUZIZAO provides a **12-month warranty** for this product from the date of purchase. This warranty covers manufacturing defects and malfunctions under normal use.

The warranty does not cover damage caused by misuse, unauthorized modifications, accidents, or improper installation.

For technical support, warranty claims, or any questions regarding your RUZIZAO SPS-W3010 DC Power Supply, please contact our customer service team. Contact information can typically be found on the seller's platform or included documentation.

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