**RUZIZAO R-SPS6020**

# RUZIZAO R-SPS6020 Bench Power Supply User Manual

Model: R-SPS6020

## 1. Introduction

The RUZIZAO R-SPS series high-power regulated laboratory power supply is designed for use in laboratories, educational institutions, and production lines. This device allows for continuous adjustment of voltage and output current between 0 and its rated values. It features excellent stability and a low ripple coefficient. Equipped with multiple protection functions, including short circuit, over-voltage, over-current, and over-temperature, the R-SPS6020 can operate continuously for extended periods. It functions as both a regulated voltage power supply and a regulated current power supply.

## 2. Safety Precautions

To ensure safe operation and prevent damage to the device or injury, please observe the following safety guidelines:

- 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 cooling fan or vents.
- Do not open the casing of the power supply. Refer all servicing to qualified personnel.
- Verify correct voltage and current settings before connecting any load. Incorrect settings can damage connected devices.
- Disconnect power before making or changing connections to the output terminals.
- Avoid short-circuiting the output terminals for extended periods, even with protection features enabled.

## 3. Product Overview

### 3.1 Front Panel Layout

The front panel features the display, control knobs, and output terminals. Understanding these components is essential for operation.




**Figure 3.1:** Front Panel Components. This image illustrates the layout of the front panel, highlighting the digital displays for voltage, current, and power, along with the control knobs for current and voltage adjustment, the output enable/disable button, the main power switch, and the output terminals (positive, ground, and negative).

- **Voltage Display (V):** Shows the output voltage in Volts.
- **Current Display (A):** Shows the output current in Amperes.
- **Power Display (W):** Shows the output power in Watts.
- **Current Knob:** Used to adjust the output current limit.
- **Voltage Knob:** Used to adjust the output voltage.
- **Output Button:** Enables or disables the power output.
- **Power Switch:** Turns the unit on or off.
- **Output Terminals (+, GND, -):** Connect your load here.

## 3.2 High Precision Display

The R-SPS6020 features a large, high-definition 4-digit LED display for precise readings of voltage, current, and power. This display offers high resolution with 0.01V voltage and 0.001A current precision.




**Figure 3.2:** High Precision 4-Digit LED Display. This image shows a detailed view of the power supply's digital display, indicating its capability to show voltage, current, and power with high precision.




**Figure 3.3:** High Resolution Output. This image illustrates the power supply in a laboratory setting, connected to a multimeter and an oscilloscope, emphasizing its high-resolution output capabilities for precise measurements.

## 4. Setup and Connections

### 4.1 Unpacking and Inspection

Upon receiving your RUZIZAO R-SPS6020, carefully unpack all components and inspect for any signs of damage. The package should contain:

- 1 x RUZIZAO R-SPS6020 Bench Power Supply
- 1 x Power Cable
- 1 x Low Power Output Cable (Red/Black)
- 1 x High Power Output Cable (Red/Black)
- 1 x User Manual
- 1 x Product Certificate




**Figure 4.1:** Package Contents. This image displays all items included in the product package, ensuring users can verify they have received all necessary components.

## 4.2 Power Connection

1. Ensure the power switch on the front panel is in the OFF position.
2. Connect the provided power cable to the AC input socket on the rear of the power supply.
3. Plug the other end of the power cable into a grounded AC power outlet.

## 4.3 Load Connection

1. Ensure the power supply is OFF and the OUTPUT is disabled (if already powered on).
2. Connect the positive (+) terminal of your load to the red output terminal (+) on the power supply.
3. Connect the negative (-) terminal of your load to the black output terminal (-) on the power supply.
4. For grounding, connect the GND terminal to the ground of your circuit if required.

# 5. Operating Instructions

## 5.1 Powering On and Initial Check

1. After connecting the power cable and load, turn on the power supply using the main power switch.
2. The LED display will illuminate, showing the current voltage, current, and power settings.

3. Ensure the OUTPUT button is OFF (light is off) before adjusting settings.

## 5.2 Adjusting Voltage and Current (Encoder Knob)

The R-SPS6020 uses an encoder switch for precise adjustment of voltage and current. This allows for "setting" values rather than continuously "adjusting" them with a potentiometer.




**Figure 5.1:** Encoder Adjustment Knob Operation. This image demonstrates the two-step process for setting values: pressing the knob to select a digit and rotating it to change the numerical value.

1. **Select Parameter:** Turn the respective knob (Voltage or Current) to select the parameter you wish to adjust.
2. **Select Digit:** Press the knob to switch the active digit (indicated by a flashing segment on the display). Each press moves the selection to the next digit.
3. **Adjust Value:** Rotate the knob to change the value of the selected digit (0-9).
4. Repeat steps 2 and 3 until the desired voltage or current value is set.
5. The power supply will automatically switch between Constant Voltage (CV) and Constant Current (CC) modes as needed.

## 5.3 Output Enable/Disable Function

The OUTPUT button provides a safety feature, allowing you to preset voltage and current values before applying power to your load.




**Figure 5.2:** Output Enable/Disable Button. This image highlights the dedicated button for controlling the power output, emphasizing its role in protecting connected loads.

- **Disable Output:** When the power supply is on, press the OUTPUT button to disable the output. The indicator light above the button will turn off. In this state, you can safely adjust voltage and current settings without affecting the connected load.
- **Enable Output:** Once your desired voltage and current limits are set, press the OUTPUT button again to enable the output. The indicator light will turn on, and power will be supplied to the load.

## 5.4 Battery Charging Function

The R-SPS6020 can be used for charging various battery types, including Lithium, Lead-Acid, and Ni-MH batteries. **Important: Always set the current and voltage correctly before connecting a battery for charging.**




**Figure 5.3:** Battery Charging Application. This image demonstrates the power supply connected to a battery for charging, along with visual cues for compatible battery chemistries.

1. Determine the correct charging voltage and current for your specific battery type. Refer to your battery's specifications.
2. With the power supply OFF or OUTPUT disabled, connect the battery to the output terminals, ensuring correct polarity (+ to +, - to -).
3. Set the desired charging voltage and current limit using the encoder knobs.
4. Enable the OUTPUT. Monitor the charging process.

**Warning: Incorrect voltage or current settings can damage the battery or cause a fire. Always exercise caution when charging batteries.**

## 6. Maintenance

- **Cleaning:** Disconnect the power supply from the AC outlet before cleaning. Use a soft, dry cloth to wipe the exterior. Do not use abrasive cleaners or solvents.

- **Ventilation:** Ensure the cooling vents are free from dust and obstructions. The intelligent cooling fan activates when the internal temperature exceeds 50°C to dissipate heat.
- **Storage:** Store the power supply in a cool, dry environment away from direct sunlight and extreme temperatures.
- **No User Serviceable Parts:** Do not attempt to open the unit. There are no user-serviceable parts inside. Opening the casing will void the warranty.

## 7. Troubleshooting

| Problem | Possible Cause | Solution |
|---|---|---|
| No power when turned on. | Power cable not connected or faulty; AC outlet not supplying power. | Check power cable connection. Test AC outlet with another device. |
| No output voltage/current, but unit is on. | OUTPUT button is disabled; output terminals are short-circuited; over-current/over-voltage protection activated. | Press the OUTPUT button to enable output. Check load for short circuits. Reduce load or adjust settings within limits. |
| Output voltage/current is unstable. | Poor load connection; power supply overloaded; internal fault. | Ensure secure connections. Reduce load. If problem persists, contact support. |
| Unit overheats. | Blocked ventilation; continuous operation at maximum capacity in high ambient temperature. | Ensure vents are clear. Operate in a well-ventilated area. Reduce load if possible. |

## 8. Specifications

| Parameter | Value |
|---|---|
| Model Number | R-SPS6020 |
| Brand | RUZIZAO |
| Max Output Voltage | 60 V |
| Max Output Current | 20 A |
| Product Dimensions | 10.43 x 7.28 x 3.15 inches (38 x 24 x 13 cm) |
| Item Weight | 6.6 pounds (3 kg) |
| Display | 4-Digit LED |
| Voltage Precision | 0.01 V |
| Current Precision | 0.001 A |
| Protection Features | Over-current, Over-voltage, Over-temperature, Short Circuit |
| Certifications | CE, FCC |

## 9. Warranty and Support

The RUZIZAO R-SPS6020 Bench Power Supply comes with a**12-month warranty** from the date of purchase. RUZIZAO also provides **lifetime technical support** for this product.
If you encounter any issues or have questions regarding the operation, maintenance, or troubleshooting of your power supply, please contact RUZIZAO customer support. Our team is committed to responding to inquiries within 24 hours.
Please retain your proof of purchase for warranty claims.

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