NICE-POWER R-SPS6020

NICE-POWER DC Power Supply Variable

Model: R-SPS6020 (0-60V, 0-20A, 1200W)

User Instruction Manual

1. Introduction

This manual provides detailed instructions for the safe and efficient operation of your NICE-POWER R-SPS6020 DC Power Supply. This high-power bench power supply offers adjustable voltage and current outputs, making it suitable for a wide range of applications including laboratory work, electronics repair, testing, and DIY projects. It features an encoder knob for precise adjustments, an output on/off switch for enhanced safety, and a clear 4-digit LED display.



Figure 1.1: NICE-POWER R-SPS6020 DC Power Supply

This image shows the front view of the NICE-POWER R-SPS6020 DC Power Supply, highlighting its digital display, control knobs for current and voltage, and output terminals. Included are the power cord and output cables.

2. Safety Instructions

Please read and understand all safety instructions before operating the device. Failure to comply may result in electric shock, fire, or damage to the power supply or connected equipment.

- **Power Connection:** Ensure the power supply is connected to a grounded outlet with the correct voltage.
- **Current Limits:** The front panel output terminals are designed for currents up to 5A MAX. For output currents exceeding 5A, always use the high current connector on the back of the unit to prevent damage to the power supply or the load.
- **Ventilation:** Do not block the ventilation openings. Ensure adequate airflow around the unit to prevent overheating. The intelligent cooling fan will activate when the internal temperature exceeds 122°F (50°C).
- **Protection Features:** The power supply has built-in overvoltage protection (OVP), overcurrent protection (OCP),

overheating protection (OTP), and termination protection. These features are designed to protect the unit and your connected devices.

- **Liquid Exposure:** Keep the device away from water or other liquids. Do not operate in damp or wet conditions.
- **Maintenance:** Refer all servicing to qualified personnel. Do not attempt to open or repair the unit yourself.
- **Battery Charging:** When charging lithium batteries, connect the positive and negative poles of the DC power supply to the corresponding poles of the battery. Disconnect the battery when the charging current is ≤ 50mA to avoid overcharging. Recommended charging voltage = 1.2 * battery rated voltage. Recommended charging current = 1/3 battery rated current.

3. Product Overview and Components

3.1 Front Panel Layout



Figure 3.1: Front Panel Overview

This diagram labels the key components on the front panel, including the Voltage Display, Current Display, Power Display, Current

Adjustment Knob, Voltage Adjustment Knob, Output Enable/Disable Button, Power Switch, Output Positive (+), GND (Ground), and Output Negative (-) terminals (with a 5A MAX label).

- **4-Digit LED Display:** Shows Voltage (V), Current (A), and Power (W) values with high resolution (0.01V, 0.001A).
- **Current Adjustment Knob:** Used to set the output current limit.
- **Voltage Adjustment Knob:** Used to set the output voltage.
- **Output On/Off Button:** Toggles the output power. This allows you to preset voltage and current before applying power to your load, enhancing safety.
- **Power Switch:** Turns the entire unit on or off.
- **Output Terminals:** Red (+) and Black (-) terminals for connecting loads. Note the "MAX 5A" label for these front terminals.
- **GND Terminal:** Green terminal for ground connection.

3.2 Rear Panel

The rear panel includes the AC power input, the main cooling fan, and high-current output terminals for applications requiring more than 5A.



Figure 3.2: Rear Panel Cooling Fan

This image highlights the cooling fan located on the rear panel of the power supply, essential for heat dissipation during operation.

- **AC Power Input:** Connect the provided power cord here.
- **High Current Output Terminals:** These terminals are designed to handle the full rated current of the power supply (up to 20A for this model). Always use these for loads exceeding 5A.
- **Cooling Fan:** Automatically activates to maintain optimal operating temperature.

3.3 Included Accessories

- DC Power Supply Unit (R-SPS6020) x1

- Power Cord x1
- English User Manual x1
- Low-power Output Cable x1 (for front terminals)
- High-power Output Cable x1 (for rear terminals)

4. Setup

1. **Unpacking:** Carefully remove the power supply and all accessories from the packaging. Inspect for any signs of damage.
2. **Placement:** Place the unit on a stable, level surface with adequate ventilation space around it. Avoid placing it near heat sources or in direct sunlight.
3. **Power Connection:** Connect the provided power cord to the AC power input on the rear panel of the power supply and then to a suitable grounded wall outlet.
4. **Load Connection:**
    - For loads requiring **5A or less**, use the low-power output cable and connect to the red (+) and black (-) terminals on the front panel.
    - For loads requiring **more than 5A** (up to 20A for this model), use the high-power output cable and connect to the dedicated high-current terminals on the rear panel. Ensure correct polarity (+ to + and - to -).

5. Operating Instructions

5.1 Powering On/Off

Press the **POWER** switch on the front panel to turn the unit on or off. The LED display will illuminate upon power-on.

5.2 Setting Voltage and Current

The R-SPS6020 features an upgraded high-precision encoder knob for setting voltage and current.



Figure 5.1: Encoder Knob Operation

This image illustrates how to use the encoder knob: press to switch between digits and rotate to adjust the numerical value for precise voltage and current settings.

1. **Select Parameter:** Turn the **VOLTAGE** or **CURRENT** knob to select the parameter you wish to adjust.
2. **Switch Digits:** Press the knob to switch the active digit on the display. The active digit will typically blink or be highlighted.
3. **Adjust Value:** Rotate the knob to set the desired value for the selected digit (0-9).
4. Repeat steps 2 and 3 until the desired voltage and current values are set.

5.3 Output On/Off Switch

The **OUTPUT** button allows you to enable or disable the power output without turning off the entire unit. This is a crucial safety feature.



Figure 5.2: Output Enable/Disable Button

This image shows the green OUTPUT button. Pressing it enables or disables the power output, allowing for safe pre-setting of voltage and current values before connecting to a load.

- Press the **OUTPUT** button to toggle the power output.
- When the output is disabled, you can safely adjust voltage and current settings without affecting the connected load.
- Once settings are confirmed, press the **OUTPUT** button again to enable power to the load.

5.4 Constant Voltage (CV) and Constant Current (CC) Modes

The power supply automatically switches between Constant Voltage (CV) and Constant Current (CC) modes depending on the load.

- **Constant Voltage (CV):** When the load current is below the set current limit, the power supply maintains the set output voltage. The "C.V" indicator on the display will be lit.
- **Constant Current (CC):** When the load current attempts to exceed the set current limit, the power supply automatically reduces the output voltage to maintain the set current. The "C.C" indicator on the display will be lit.

5.5 Battery Charging Function

The R-SPS6020 can be used for charging various battery types, including LiFePO4, Lead-Acid, and Ni-MH batteries.



Figure 5.3: Battery Charging Connection

This image demonstrates connecting the power supply to a LiFePO4 battery for charging, showing the positive and negative connections.

1. **Determine Charging Parameters:** Refer to your battery's specifications for recommended charging voltage and current. As a general guideline:
    - Charging voltage = 1.2 * battery rated voltage
    - Charging current = 1/3 battery rated current
2. **Set Voltage and Current:** Using the encoder knobs, set the desired charging voltage and current limit on the power supply (with output disabled).
3. **Connect Battery:** Connect the positive (+) terminal of the power supply to the positive (+) terminal of the battery, and the negative (-) terminal of the power supply to the negative (-) terminal of the battery.
4. **Enable Output:** Press the **OUTPUT** button to begin charging.

5. **Monitor:** Monitor the charging process. When the charging current drops to ≤ 50mA, disconnect the battery to prevent overcharging.

6. Maintenance

- **Cleaning:** Disconnect the power supply from the AC outlet and all loads before cleaning. Use a soft, dry cloth to wipe the exterior. Do not use abrasive cleaners or solvents.
- **Cooling Fan:** The intelligent cooling fan operates automatically. Ensure the rear ventilation area is clear of obstructions to allow proper heat dissipation. Regular inspection for dust buildup is recommended.
- **Storage:** When not in use for extended periods, store the power supply in a cool, dry place, away from direct sunlight and excessive dust.

7. Troubleshooting

Problem	Possible Cause	Solution
No display/Unit does not power on.	No AC power, power cord loose, power switch off.	Check AC power connection, ensure power cord is securely plugged in, turn on the power switch.
No output voltage/current.	Output switch is off, incorrect settings, overload protection activated.	Press the **OUTPUT** button to enable output. Verify voltage and current settings. Check for short circuits or excessive load; reduce load if necessary.
Unit resets continuously or output drops under high load.	Attempting to draw high current from front panel terminals, overcurrent protection activated.	For currents above 5A, ensure you are using the high-current terminals on the rear panel. Reduce the load or check for short circuits.
Fan is running loudly or constantly.	High internal temperature, blocked ventilation.	This is normal operation if the unit is under heavy load. Ensure ventilation openings are not blocked. If persistent and not under load, contact support.
Encoder knob feels stiff or imprecise.	Manufacturing tolerance, minor debris.	While generally precise, minor variations can occur. Ensure no debris is obstructing the knob. If functionality is severely impacted, contact support.

If the problem persists after attempting the above solutions, please contact NICE-POWER customer support.

8. Specifications

Parameter	Value
Model Name	R-SPS6020
Output Voltage Range	0-60V DC
Output Current Range	0-20A DC

Parameter	Value
Output Wattage	1200 Watts
Input Voltage	100 Volts (AC) Minimum (typical range 100-240V AC)
Display	4-Digit LED (Voltage, Current, Power)
Resolution	0.01V, 0.001A
Cooling Method	Air (Intelligent Cooling Fan)
Dimensions (L x W x H)	14.96 x 9.53 x 5.12 inches (approx. 38 x 24 x 13 cm)
Weight	7.41 Pounds (approx. 3 kg)
Certifications	CE & FCC Certified

9. Warranty and Support

The NICE-POWER R-SPS6020 DC Power Supply comes with a**12-month repair policy** from the date of purchase. This warranty covers defects in materials and workmanship under normal use.
For technical support, warranty claims, or any questions regarding your NICE-POWER product, please contact our customer service team. We aim to reply within 24 hours.
Please have your model number (R-SPS6020) and purchase information ready when contacting support.

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