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NICE-POWER SPS305

NICE-POWER SPS305 Adjustable DC Power Supply User Manual

Model: SPS305 | Brand: NICE-POWER

1. INTRODUCTION

The NICE-POWER SPS305 Adjustable DC Power Supply is a professional-grade power regulator designed for high accuracy and reliability. It features a 4-digit LED display for precise readings of voltage, current, and power, ensuring clear visibility even in varying light conditions. This variable switching regulated power supply offers adjustable output from 0-30V and 0-5A, making it suitable for a wide range of applications including LiFePO4 battery charging, Arduino projects, laboratory work, electronic maintenance, electrolysis, electroplating, lamp testing, aging tests, and DIY electronics. Key features include automatic switching between Constant Voltage (C.V) and Constant Current (C.C) modes, multiple protection mechanisms (overvoltage, overcurrent, overheating, overpower, short circuit, and leakage protection), and a convenient 5V/2A USB port for charging external devices. Its stable vertical design, lightweight construction, and intelligent cooling fan contribute to its durability and ease of use.

2. PRODUCT OVERVIEW

2.1 Front Panel

PRODUCT INTRODUCTION

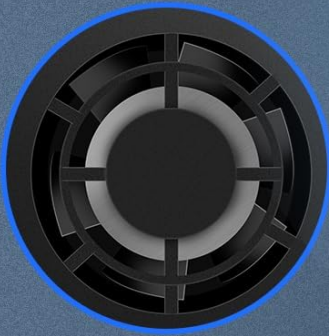


Image Description: The front panel of the NICE-POWER SPS305 DC Power Supply. It features a large 4-digit LED display at the top showing Voltage (V), Current (A), and Power (W). Below the display are indicators for Constant Voltage (C.V) and Constant Current (C.C). The lower section includes two coarse adjustment knobs for Current (A) and Voltage (V), two fine adjustment knobs for Current (A) and Voltage (V), a 5V/2A USB interface, and output terminals for Negative (-), Ground (GND), and Positive (+).

2.2 Rear Panel

PRODUCT INTRODUCTION

INTELLIGENT COOLING FAN



Cooling fan turns on automatically when the temperature exceeds 50° C



SPARE FUSE AVAILABLE



Image Description: The rear panel of the NICE-POWER SPS305 DC Power Supply. It shows an intelligent cooling fan, a power on/off switch, an AC input power socket, and a fuse holder. The model number SPS305 and input/output specifications are also visible.

3. SETUP

1. **Unpacking:** Carefully remove the DC power supply and all accessories from the packaging. Verify that all components listed in the packing list are present: DC Power Supply unit, Output Power Cord, Input Power Cord, and User Manual.
2. **Placement:** Place the unit on a stable, flat surface with adequate ventilation. Ensure the rear cooling fan is not obstructed. The unit features shock absorber rubber feet for stability.
3. **Power Connection:** Connect the provided Input Power Cord to the AC input socket on the rear panel of the power supply and then to a suitable AC power outlet (AC115V $\pm 10\%$).
4. **Initial Power On:** Before connecting any load, ensure all front panel knobs (Coarse and Fine for Voltage and Current) are set to their minimum positions. Flip the power switch on the rear panel to the 'ON' position. The LED display should illuminate.

4. OPERATING INSTRUCTIONS

4.1 Adjusting Voltage and Current

1. Pre-setting Voltage/Current (Without Load):

- Turn on the DC power supply.
- Adjust the voltage using the 'Coarse' and 'Fine' Voltage knobs to the desired output voltage.
- To set the current limit, first adjust the voltage below 3V to avoid sparks. Then, short the output terminals (connect the positive and negative output leads together).
- Adjust the 'Coarse' and 'Fine' Current knobs to set the desired current limit. The display will show the set current.
- Remove the short from the output leads. The power supply is now set to the desired voltage and current limit.

2. **Connecting a Load:** After setting the desired voltage and current limit, connect your load to the output terminals (Positive to positive, Negative to negative). The unit will automatically switch between Constant Voltage (C.V) and Constant Current (C.C) modes depending on the load.

3. **Monitoring Output:** The 4-digit LED display will show the real-time output voltage, current, and power (watts) being delivered to the load.

4.2 Constant Voltage (C.V) and Constant Current (C.C) Modes

The SPS305 automatically operates in either Constant Voltage (C.V) or Constant Current (C.C) mode. The corresponding indicator (C.V or C.C) on the front panel will illuminate to show the active mode:

- **Constant Voltage (C.V) Mode:** When the load resistance is high, the output voltage remains constant at the set value, and the output current varies according to the load. The C.V indicator will be lit.
- **Constant Current (C.C) Mode:** When the load resistance is low, the output current remains constant at the set limit, and the output voltage varies according to the load. The C.C indicator will be lit. This mode is particularly useful for applications like battery charging or driving LEDs.

4.3 Using the 5V/2A USB Port

The front panel includes a dedicated 5V/2A USB port. This port can be used to charge mobile phones, tablets, or other USB-powered devices independently of the main DC output. Simply connect your device's USB cable to this port.

4.4 Battery Charging

The NICE-POWER SPS305 is suitable for charging various battery types, including LiFePO4 batteries. To charge a battery:

1. Set the desired charging voltage (e.g., 13.8V for a 12V lead-acid battery) and current limit (e.g., 1/10th of the battery's Ah rating) using the voltage and current adjustment knobs.
2. Connect the power supply's output leads to the battery terminals (positive to positive, negative to negative).
3. Monitor the charging process on the display. The unit will typically operate in C.C mode initially, then switch to C.V mode as the battery charges. The wattage display helps monitor the power delivered to the battery.

4.5 Operational Demonstration Video

Your browser does not support the video tag.

Video Description: This video provides a comprehensive overview and demonstration of the NICE-POWER Adjustable DC Power Supply. It showcases the physical unit, its accessories, and key features such as the adjustable voltage and current outputs, the 5V/2A USB port, and the intelligent cooling fan. The video also demonstrates how to adjust voltage and current, including setting current limits without a load, and shows the unit in operation with a 12V/50W bulb and charging an 8Ah gel cell battery. Internal components and build quality are also briefly highlighted.

5. SAFETY INFORMATION AND WARNINGS

Warning:

1. Due to adjustment delay, always turn on the DC power supply first, set the desired voltage/current, and then connect the load.
2. When setting the current, first adjust the DC power supply voltage below 3V to avoid sparks. Then, connect the positive and negative output wires to set the desired current.
3. Turn off the DC power supply when not in use and remove the power cord.
4. When cleaning the DC power supply, ensure the power cord is removed.
5. Do not use solvents containing hydrocarbons, chlorides, or similar substances, and avoid detergents with abrasive ingredients.
6. The voltage will gradually decrease when you turn off the power, as it takes time for the capacitor to release the voltage.

The unit has passed CE & FCC Certification, indicating compliance with safety and electromagnetic compatibility standards.

6. MAINTENANCE

6.1 Intelligent Cooling Fan

The DC power supply is equipped with an intelligent cooling fan that activates automatically when the internal working temperature exceeds 122°F/50°C. This fan effectively dissipates heat, reduces operational noise, and prolongs the service life of the equipment. Ensure the fan vents on the rear panel are kept clear of obstructions.

6.2 Fuse Replacement

The unit includes a replaceable fuse for protection. If the unit fails to power on or experiences an electrical fault, check the fuse located in the fuse holder on the rear panel. To replace, carefully remove the fuse holder, replace the blown fuse with a new one of the correct rating (5x20mm 5A), and reinsert the holder.

7. TROUBLESHOOTING

- **No Power:** Check the power cord connection, the rear power switch, and the fuse. Replace the fuse if necessary.
- **No Output Voltage/Current:** Ensure the output leads are correctly connected and not shorted (unless intentionally setting current limit). Verify that the voltage and current knobs are adjusted above zero.
- **Incorrect Current Limit Setting:** Refer to section 4.1 for detailed instructions on how to properly set the current limit without a load.
- **Overheating:** Ensure the cooling fan vents are clear and the unit has sufficient airflow. The intelligent fan should activate to prevent overheating.
- **Sparks During Connection:** Always set the voltage below 3V before connecting or disconnecting leads when setting current limits to prevent sparking.

8. SPECIFICATIONS

Feature	Specification
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Model Name	SPS305
Output Voltage	0-30V
Output Current	0-5A
Output Wattage	150 Watts
Voltage Accuracy	0.01V
Current Accuracy	0.001A
Display	4-Digits LED
USB Port	5V/2A
Cooling Method	Intelligent Air Fan
Product Dimensions	9.4 x 3.3 x 5.9 inches
Item Weight	2.6 pounds (approx. 3.74 pounds shipping weight)
Certifications	CE & FCC Certified

9. WARRANTY AND SUPPORT

NICE-POWER provides a one-year warranty for this DC power supply. All units undergo a thorough quality check before shipment to ensure customer satisfaction.

For any questions or support inquiries regarding your NICE-POWER DC power supply, please contact us through the Amazon messaging system. Our customer service team is committed to responding within 24 hours to assist you.

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