PULME R-SPS3010D

PULME R-SPS3010D Series DC Power Supply Instruction Manual

Brand: PULME | **Model:** R-SPS3010D, R-SPS605D, R-SPS1203D Series

1. Introduction

This manual provides essential information for the safe and efficient operation of your PULME R-SPS-D Series DC Power Supply. This series includes models R-SPS3010D, R-SPS605D, and R-SPS1203D, offering various voltage and current outputs. Please read this manual thoroughly before use and retain it for future reference.

The PULME R-SPS-D Series DC Power Supply is a highly efficient, low-ripple, and compact laboratory power supply designed for precision applications. It features an LCD screen for clear display of voltage, current, and power, along with comprehensive operating protection functions.

2. Safety Instructions

To ensure safe operation and prevent damage to the unit or injury, observe the following safety precautions:

- Always connect the power supply to a grounded outlet.
- Ensure the input voltage matches the specified voltage for your unit (115V or 230V). Connecting to an incorrect voltage can damage the power supply.
- Do not operate the unit in wet or damp conditions.
- Do not block ventilation openings. Adequate airflow is essential for heat dissipation.
- In case of a short circuit, the power supply is designed to stop output and emit an alarm. Address the short circuit before resuming operation.
- The unit includes safety protections against overvoltage, overcurrent, overheating, and overload. Do not attempt to bypass these safety features.
- Do not open the casing of the power supply. There are no user-serviceable parts inside. Refer all servicing to qualified personnel.

- Disconnect power before making or changing connections to the output terminals.

3. Product Features

- **LCD Screen:** Clear display of voltage, current, and power output.
- **Comprehensive Protection:** Includes short circuit, overvoltage, overcurrent, overheating, and overload protection.
- **High Efficiency & Low Ripple:** Designed for stable and clean power delivery.
- **Precise Adjustment:** Double potentiometers allow for more accurate setting of output voltage and current.
- **Continuous Adjustment:** Output voltage and current are continuously adjustable from 0 to their rated maximums.
- **Temperature Control Fan:** Ensures efficient heat dissipation and low noise operation.
- **USB Output:** Integrated 5V 2A USB interface for charging or powering compatible devices.

4. Package Contents

Verify that all items are present and in good condition upon unpacking:

- PULME R-SPS-D Series DC Power Supply Unit
- Power Cord (appropriate for your region)
- Test Leads (Red and Black, with alligator clips)
- User Manual (this document)

Image 4.1: Front view of the PULME R-SPS3010D DC Power Supply, showing the LCD display, control knobs, USB port, output terminals, and included test leads.

5. Product Overview and Controls

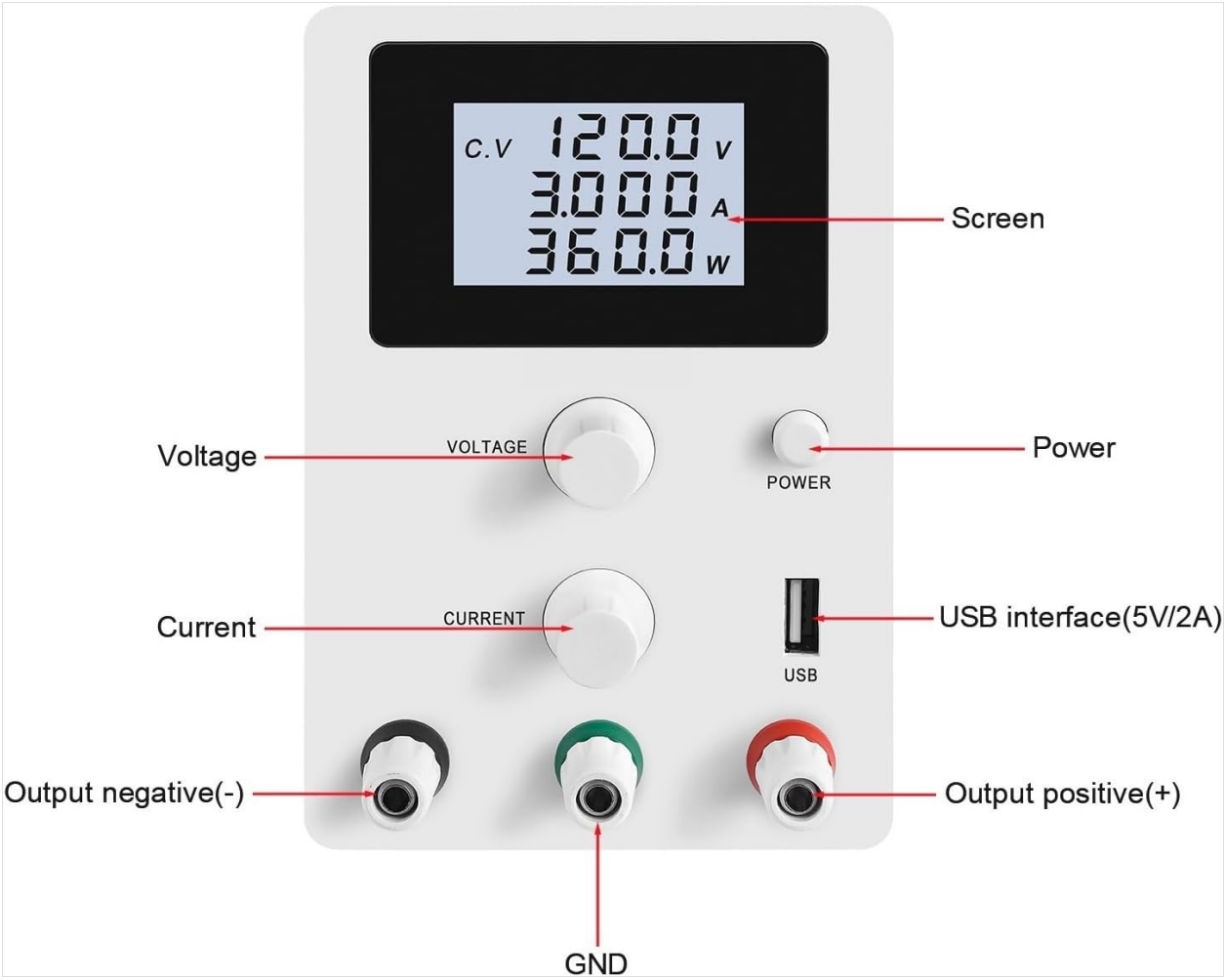

Image 5.1: Detailed view of the front panel with labels for the screen, voltage knob, current knob, power button, USB interface, output negative (-), GND, and output positive (+).

- **Screen:** Displays real-time output voltage, current, and power.
- **Voltage Knob:** Adjusts the output voltage. Use the coarse and fine adjustment for precision.
- **Current Knob:** Adjusts the output current limit. Use the coarse and fine adjustment for precision.
- **Power Button:** Turns the unit ON/OFF.
- **USB Interface (5V/2A):** Provides a regulated 5V, 2A output for charging or powering USB devices.
- **Output Terminals:**
  - **Output negative (-):** Black terminal.
  - **GND:** Green terminal, chassis ground.
  - **Output positive (+):** Red terminal.

Image 5.2: Rear view of the power supply, highlighting the cooling fan and the AC power input socket with fuse holder. The model label indicates input voltage and output specifications.

6. Setup Instructions

1. **Placement:** Place the power supply on a stable, level surface with adequate ventilation. Ensure that the

front and rear vents are not obstructed.

2. **Power Connection:** Connect the provided power cord to the AC input socket on the rear of the unit. Plug the other end into a suitable grounded electrical outlet. Verify that the input voltage of your unit matches your local mains supply (115V or 230V).
3. **Initial Power On:** Press the Power button on the front panel. The LCD screen should illuminate, displaying the current voltage, current, and power settings.
4. **Output Connections:**
    - Connect the red test lead to the red output positive (+) terminal.
    - Connect the black test lead to the black output negative (-) terminal.
    - The green GND terminal can be connected to the chassis ground of your circuit if required.

7. Operating Instructions

1. **Setting Voltage:**
    - Turn the **Voltage** knob to adjust the desired output voltage.
    - The LCD screen will display the set voltage. Use the coarse adjustment for large changes and the fine adjustment for precise tuning.
2. **Setting Current Limit:**
    - Turn the **Current** knob to set the maximum output current. This acts as a current limit to protect your circuit.
    - The LCD screen will display the set current limit. Use the coarse adjustment for large changes and the fine adjustment for precise tuning.
3. **Connecting Load:**
    - Ensure the power supply is OFF or the output is disabled (if applicable, this model does not have an explicit output enable/disable button, so set voltage/current to zero before connecting).
    - Connect your load to the test leads, ensuring correct polarity (positive to positive, negative to negative).
    - Once the load is connected, you can turn on the power supply and adjust voltage/current as needed.
4. **Using the USB Output:**
    - The USB interface provides a fixed 5V, 2A output.
    - Simply plug your USB device into the USB port on the front panel.

Image 7.1: The power supply unit connected to a smartphone via its front USB port, demonstrating its charging capability.

5. **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.
    - In CV mode, the output voltage remains constant at the set value, and the current varies according to the load, up to the set current limit.
    - In CC mode, the output current remains constant at the set limit, and the voltage varies according to the load. This typically occurs when the load resistance is too low for the set voltage, causing the current to reach its limit.
    - The LCD screen will indicate the active mode (e.g., "C.V" for Constant Voltage).

8. Maintenance

- **Cleaning:** Disconnect the power supply from the mains before cleaning. Use a soft, dry cloth to wipe the exterior. Do not use abrasive cleaners or solvents.
- **Ventilation:** Ensure that the ventilation openings on the unit are kept clear of dust and debris to maintain proper airflow for the cooling fan.
- **Storage:** When not in use for extended periods, store the power supply in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Fuse Replacement:** If the unit fails to power on, check the fuse located in the AC input socket on the rear panel. Replace it only with a fuse of the same type and rating (e.g., 5x20mm 3A for R-SPS1203D model). Disconnect the power cord before attempting fuse replacement.

9. Troubleshooting

Problem	Possible Cause	Solution
Unit does not power on.	No power from outlet; power cord loose; blown fuse.	Check power outlet with another device. Ensure power cord is securely connected. Check and replace fuse if necessary (refer to Maintenance section).
No output voltage/current.	Output terminals not connected; voltage/current knobs set to zero; internal protection activated.	Verify connections to load. Adjust voltage and current knobs to desired settings. Check for short circuits in the load; the unit will alarm and stop output if a short circuit is detected.
Output voltage/current is unstable.	Poor connections; faulty load; unit overheating.	Ensure all connections are secure. Test with a different load. Check for proper ventilation; allow unit to cool if overheating.
Unit emits an alarm.	Short circuit detected; overcurrent/overvoltage protection activated.	Immediately disconnect the load. Identify and rectify the cause of the short circuit or overload. The unit will resume normal operation once the fault is cleared.

10. Specifications

The PULME R-SPS-D series offers various models with different output capabilities. The following table details the specifications for the R-SPS3010D, R-SPS605D, and R-SPS1203D models.

Parameter	R-SPS3010D	R-SPS605D	R-SPS1203D
Output Voltage	0-30V	0-60V	0-120V
Output Current	0-10A	0-5A	0-3A
Output Power	300W	300W	360W
Input Voltage	230V±10% 50Hz or 115V±10% 50Hz (Region Dependent)		
Working Temperature	<80%RH		
Storage Temperature	<70%RH		
Constant Voltage State (Voltage stability)	0.1%±3mV		
Constant Voltage State (Low Voltage)	0.2-0.3%+3mV		
Constant Voltage State (Load stability)	0.5%±3mV		
Constant Voltage State (Ripple noise)	30mVrms (0 to rated voltage continuously adjustable)		
Constant Current State (Current stability)	0.2%+3mA		
Constant Current State (Load stability)	0.2%±3mA		
Constant Current State (Ripple noise)	20mArms (Valid Value)		
Recovery Time	500S		
Temperature Coefficient	(Information not fully provided in source data)		

Image 10.1: Dimensions of the power supply unit, approximately 200mm (length) x 95mm (width) x 140mm (height).

11. Warranty and Support

For warranty information and technical support, please refer to the documentation provided at the time of purchase or contact your retailer. PULME products are designed for reliability, and support is available to assist with any operational questions or issues.