LeTkingok MS-305D

MS-305D Variable Linear Adjustable Lab DC Bench Power Supply

User Manual

1. Introduction

Thank you for purchasing the LeTkingok MS-305D Variable Linear Adjustable Lab DC Bench Power Supply. This manual provides detailed instructions for the safe and efficient operation of your new power supply. Please read this manual thoroughly before use and keep it for future reference.

The MS-305D is a high-precision DC power supply designed for laboratory, educational, and industrial applications. It features continuously adjustable voltage (0-30V) and current (0-5A) outputs, along with robust protection functions to ensure reliable performance.

2. Safety Instructions

To prevent electric shock or damage to the unit, please observe the following safety precautions:

- Always connect the power supply to a grounded AC outlet.
- Do not operate the unit in wet or damp conditions.
- Ensure proper ventilation. Do not block the ventilation openings.
- Do not open the casing. There are no user-serviceable parts inside. Refer all servicing to qualified personnel.
- Before connecting or disconnecting any load, ensure the power supply is turned off or the output is set to zero.
- Avoid short-circuiting the output terminals for extended periods, even though the unit has short-circuit protection.
- Use only the specified input voltage (110V ± 10% 60Hz).

3. Product Overview

3.1 Front Panel

Figure 3.1: Front Panel of the MS-305D Power Supply (Note: Image may show a similar model MS-3010D, but controls are representative).

The front panel provides all necessary controls and displays for operating the power supply:

- **Digital Displays:** Separate displays for Current (A) and Voltage (V) provide precise readings.
- **Current Adjustment Knobs:** "Fine" and "Coarse" knobs for precise setting of the output current limit.
- **Voltage Adjustment Knobs:** "Fine" and "Coarse" knobs for precise setting of the output voltage.
- **Output Terminals:** Red (+) for positive, Black (-) for negative, and Green (GND) for ground connection.
- **Power Switch:** Turns the unit on or off.

3.2 Rear Panel

Figure 3.2: Rear Panel of the MS-305D Power Supply.

The rear panel includes essential connections and components:

- **Smart Fan:** An intelligent temperature-controlled fan that adjusts speed based on load to reduce noise and extend fan life.
- **Voltage Switch:** Allows selection of input voltage (e.g., 110V/220V, though this model specifies 110V input). Ensure this is set correctly for your region.
- **Power Interface:** Standard AC power input socket.
- **Fuse Holder:** Contains the main protective fuse for the unit.

3.3 Side View

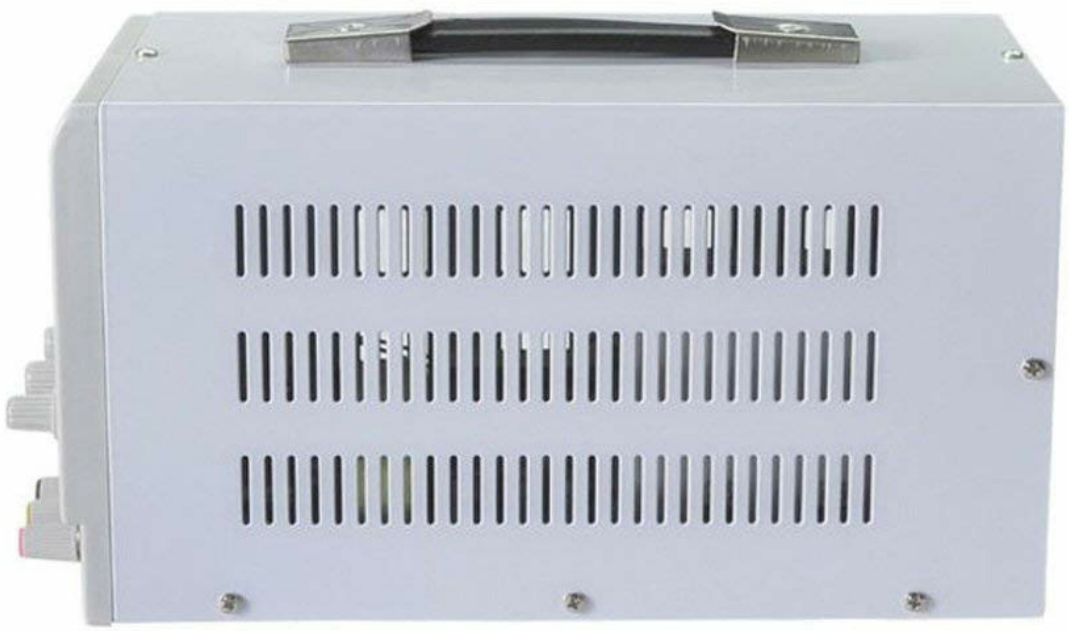

Figure 3.3: Side View of the MS-305D Power Supply.

The side panels feature ventilation grilles to ensure adequate airflow for cooling the internal components. Do not obstruct these grilles during operation.

4. Setup

1. **Unpacking:** Carefully remove the power supply and all accessories from the packaging. Verify that all items listed in the package contents (1 x DC Power Supply, 2 x Test Leads, 1 x Manual) are present.
2. **Placement:** Place the power supply on a stable, level surface with adequate space around it for ventilation. Ensure the front and rear panels, especially the fan and ventilation grilles, are not obstructed.
3. **Input Voltage Selection:** Check the voltage switch on the rear panel. Ensure it is set to 110V for regions using 110-120V AC power. Incorrect voltage selection can damage the unit.
4. **Power Connection:** Connect the provided AC power cord to the power interface on the rear panel and then to a grounded 110V AC outlet.
5. **Initial Check:** Before connecting any load, ensure the power supply is off. Turn the voltage and current adjustment knobs fully counter-clockwise to their minimum settings.

5. Operating Instructions

5.1 Powering On and Off

- To turn on the unit, press the power switch on the front panel. The digital displays will illuminate.
- To turn off the unit, press the power switch again.

5.2 Setting Voltage and Current

The MS-305D operates in either Constant Voltage (CV) or Constant Current (CC) mode, automatically switching between them depending on the load and set limits.

1. **Pre-setting Voltage and Current (Recommended):**
    - Ensure no load is connected to the output terminals.
    - Turn on the power supply.
    - Adjust the **Voltage Coarse** and **Fine** knobs to set the desired output voltage. Observe the voltage display.
    - To set the current limit, temporarily short-circuit the output terminals using a test lead (connect positive to negative). The current display will show the current limit.
    - Adjust the **Current Coarse** and **Fine** knobs to set the desired maximum current.
    - Remove the short circuit. The voltage display will return to the set voltage, and the current display will show zero (or a very small value).
2. **Connecting Load:**
    - Connect your load to the output terminals using the provided test leads. Connect the positive (+) terminal of the load to the red (+) terminal of the power supply, and the negative (-) terminal of the load to the black (-) terminal of the power supply. The green (GND) terminal can be used for grounding the chassis or for specific circuit grounding requirements.
    - Once the load is connected, the power supply will operate in either CV or CC mode:
        - **Constant Voltage (CV) Mode:** If the load resistance is high enough that the current drawn is less than the set current limit, the power supply will maintain the set voltage. The CV indicator will be lit.
        - **Constant Current (CC) Mode:** If the load resistance is low enough that the current drawn would exceed the set current limit, the power supply will automatically reduce the output voltage to maintain the set current. The CC indicator will be lit.

5.3 Protection Functions

The MS-305D incorporates several protection features:

- **Overvoltage Protection (OVP):** Protects the load from excessive voltage.
- **Short Circuit Protection (OCP):** Protects the power supply from damage due to short circuits at the output.
- **Over Temperature Protection (OTP):** Shuts down the unit if internal temperature exceeds safe limits.

In case of a protection trigger, disconnect the load and identify the cause before resuming operation.

6. Specifications

Parameter	Value
Input	110V ± 10% 60Hz

Parameter	Value
Output Voltage	DC 0 - 30V continuously adjustable
Output Current	DC 0 - 5A continuously adjustable
Display Resolution (Voltage)	0.1V
Display Resolution (Current)	0.1A
Display Accuracy	± 1% ± 1 word
Voltage Stability	≤0.05% + 1mV
Current Stability	≤ 0.1% + 10mA
Load Stability (CV)	≤ 0.1% + 1mV
Load Stability (CC)	≤ 0.1% + 10mA
Ripple and Noise (CV)	≤ 10mV (RMS)
Ripple and Noise (CC)	≤ 20mA (RMS)
Cooling Method	Intelligent temperature control fan forced air cooling
Working Environment	-10 - 40 °C Relative humidity <80%
Storage Environment	-20 - 80 °C Relative Humidity <80%
Dimensions (L x W x H)	260 x 125 x 155mm (10.24 x 4.92 x 6.1 inches)
Output Wattage	150 Watts
Current Rating	5 Amps

7. 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:** Periodically check that the ventilation openings and fan are free from dust and debris. Use compressed air to gently clear any blockages.
- **Fuse Replacement:** If the unit does not power on, the fuse may need replacement. Disconnect the power cord. Locate the fuse holder on the rear panel, twist or pry it open, and replace the fuse with one of the same type and rating (refer to the fuse holder for specifications).
- **Storage:** When not in use for extended periods, store the power supply in a cool, dry place, away from direct sunlight and extreme temperatures.

8. Troubleshooting

Problem	Possible Cause	Solution
Unit does not power on.	No AC power; Blown fuse; Power switch off.	Check AC power cord and outlet; Replace fuse (see Maintenance); Ensure power switch is pressed.

Problem	Possible Cause	Solution
No output voltage/current.	Output knobs set to zero; Overload/Short circuit protection active; Loose connections.	Adjust voltage/current knobs; Check load for short circuit or excessive current draw; Ensure test leads are securely connected.
Voltage/Current display is unstable.	Poor load connection; Unstable input power.	Check and secure all connections; Ensure stable AC input power.
Unit overheats.	Blocked ventilation; Excessive load.	Ensure ventilation grilles are clear; Reduce load or operate within specified limits.

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

9. Warranty and Support

Warranty information for the LeTkingok MS-305D power supply is typically provided with the product packaging or can be found on the manufacturer's official website. Please retain your purchase receipt for warranty claims.

For technical support, troubleshooting assistance beyond what is covered in this manual, or warranty inquiries, please contact the seller or manufacturer directly. Contact information can usually be found on the product packaging, the seller's online store page, or the manufacturer's website.