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NJBVRS KPS-3010DF Variable DC Power Supply User Manual

Model: KPS-3010DF

1. INTRODUCTION

The NJBVRS KPS-3010DF is a single-output, high-precision, dual-display switching DC power supply. Designed for laboratory and repair applications, this unit offers stable and reliable power with features such as low ripple, high stability, and comprehensive operation protection. Its compact size and lightweight design make it suitable for various professional and educational environments.

2. SAFETY INFORMATION

Please read and understand all safety instructions before operating this device. Failure to follow these instructions may result in electric shock, fire, or damage to the product.

- Ensure the input voltage selector switch on the rear panel is set correctly for your local power supply (110V or 220V) before connecting to mains power.
- Do not operate the power supply in wet or damp conditions.
- Do not open the casing of the power supply. There are no user-serviceable parts inside. Refer all servicing to qualified personnel.
- Ensure proper ventilation around the unit to prevent overheating. Do not block ventilation openings.
- Always connect the ground terminal of the power supply to a protective earth ground.
- Disconnect the power supply from the mains before making any connections or disconnections to the output terminals.

3. PACKAGE CONTENTS

Verify that all items are present in the package upon unboxing:

- NJBVRS KPS-3010DF DC Power Supply Unit
- Power Cord
- Output Test Leads (Banana plug to Alligator clip)
- Additional accessory cables (e.g., DC jack adapters, alligator clip leads)



Image 3.1: The NJBVRS KPS-3010DF DC Power Supply shown with its standard accessories, including power cables and various test leads.

4. PRODUCT OVERVIEW

4.1 Front Panel



Image 4.1: Close-up view of the front panel, displaying the digital readouts, adjustment knobs, power switch, and output terminals.

1. **Digital Display:** Shows output voltage (V) and current (A) with high precision. Indicators for Constant Voltage (CV) and Constant Current (CC) modes are also present.
2. **Voltage Adjustment Knobs:** Separate coarse and fine adjustment knobs for precise control of the output voltage.
3. **Current Adjustment Knobs:** Separate coarse and fine adjustment knobs for precise control of the output current limit.
4. **Power Switch:** Toggles the main power to the unit.
5. **Output Terminals:** Red (+) and Black (-) terminals for connecting test leads to the load.

4.2 Rear Panel



Image 4.2: Rear panel view, highlighting the AC input socket and the 110V/220V voltage selector switch.

1. **AC Input Socket:** For connecting the provided power cord to the mains supply.
2. **Voltage Selector Switch:** Allows selection between 110V and 220V AC input voltage. Ensure this is set correctly for your region.
3. **Cooling Fan:** Automatically activates based on internal temperature to maintain optimal operating conditions.

5. SETUP

1. **Unpack the Unit:** Carefully remove the power supply and all accessories from the packaging.
2. **Check Voltage Selector:** Locate the red voltage selector switch on the rear panel. Use a small tool (e.g., a screwdriver) to set it to either **110V** or **220V**, matching your local mains power supply. **Incorrect setting can cause severe damage to the unit.**
3. **Connect Power Cord:** Insert the provided power cord into the AC input socket on the rear panel. Do not connect to mains power yet.
4. **Positioning:** Place the power supply on a stable, level surface, ensuring adequate space for ventilation around the unit.
5. **Initial Power On (No Load):** With the power switch on the front panel in the OFF position, connect the power cord to a suitable mains outlet. Turn the front panel power switch to ON. The display should illuminate, showing voltage and current

readings.

6. OPERATING INSTRUCTIONS

6.1 Adjusting Voltage and Current

- Set Voltage:** With no load connected, turn the **COARSE V** knob to set the approximate desired voltage. Use the **FINE V** knob for precise adjustment. The display will show the set voltage.
- Set Current Limit:** To set the current limit, you can either short-circuit the output terminals (briefly and carefully, ensuring the current limit is set low initially) or use a multimeter in ammeter mode. Turn the **COARSE A** knob to set the approximate desired current limit, then use the **FINE A** knob for precise adjustment. The display will show the set current limit. Alternatively, some users prefer to set the voltage to 0V, connect a load, then slowly increase the current limit until the desired current is reached, then increase the voltage.
- Connect Load:** Turn off the power supply. Connect your device or circuit to the output terminals using appropriate test leads. Ensure correct polarity (Red to positive, Black to negative).
- Apply Power:** Turn the power supply ON. The unit will deliver power up to the set voltage and current limits. The CV (Constant Voltage) or CC (Constant Current) indicator will illuminate depending on the operating mode.

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

- Constant Voltage (CV) Mode:** When the load resistance is high, the output current is less than the preset current limit. The power supply operates in CV mode, maintaining the preset output voltage. The CV indicator will be lit.
- Constant Current (CC) Mode:** When the load resistance is low, or the load draws more current than the preset limit, the power supply automatically switches to CC mode. It maintains the preset output current, and the output voltage will drop. The CC indicator will be lit. This protects both the power supply and the connected load.

7. TECHNICAL SPECIFICATIONS

Parameter	Specification
Input Voltage	AC 110V/220V $\pm 10\%$ (Switchable), 50/60 Hz
Output Voltage	0 - 30V DC
Output Current	0 - 10A
Voltage Resolution	0.01 V
Current Resolution	0.001 A
Power Effect (CV)	$\leq 1\% + 10\text{mV}$
Load Effect (CV)	$\leq 1\% + 10\text{mV}$
Ripple and Noise (Vp-p)	$\leq 1\%$
Voltage Display Accuracy	$\pm 1\% + 1$ digit
Current Display Accuracy	$\pm 1\% + 2$ digits
Operating Environment	Temperature: 0°C to 40°C, Humidity: <90% RH
Dimensions (WxHxL)	81mm x 165mm x 220mm
Net Weight	Approx. 2.0 kg

8. MAINTENANCE

To ensure the longevity and proper functioning of your power supply, follow these maintenance guidelines:

- **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:** Regularly check that the ventilation openings on the unit are clear of dust and debris. The cooling fan operates based on temperature; ensure it is not obstructed.
- **Storage:** When not in use for extended periods, store the power supply in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Cable Inspection:** Periodically inspect the power cord and test leads for any signs of damage (fraying, cuts). Replace damaged cables immediately.

9. TROUBLESHOOTING

If you encounter issues with your NJBVRS KPS-3010DF power supply, refer to the following common problems and solutions:

- **No Power/Display:**
 - Check if the power cord is securely connected to both the unit and the mains outlet.
 - Verify that the mains outlet is functional.
 - Ensure the rear panel voltage selector switch is correctly set (110V/220V).
 - Check the power switch on the front panel is in the ON position.
- **No Output Voltage/Current:**
 - Ensure the output terminals are correctly connected to the load.
 - Check if the voltage and current adjustment knobs are set to non-zero values.
 - If the CC indicator is lit, the power supply is in constant current mode, meaning the load is drawing the maximum set current, and the voltage may be lower than expected.
 - Verify that the load itself is not faulty or short-circuited.
- **Cooling Fan Not Running:**
 - The cooling fan is temperature-controlled and will only activate when the internal temperature reaches a certain threshold. This is normal operation.
 - Ensure ventilation openings are not blocked.

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

10. WARRANTY AND SUPPORT

This product is covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms and conditions, please refer to the documentation provided at the time of purchase or contact your retailer. For technical support, service, or inquiries regarding your NJBVRS KPS-3010DF DC Power Supply, please contact the manufacturer or your authorized dealer. Please have your model number (KPS-3010DF) and purchase information ready when seeking assistance.

