HYELEC HY3005B

HYELEC HY3005B 30V 5A DC Bench Power Supply User Manual

Model: HY3005B

1. Introduction

This manual provides instructions for the safe and effective operation of the HYELEC HY3005B DC Bench Power Supply. This device is a high-precision, adjustable switching regulated power supply designed for various applications requiring stable and controllable DC voltage and current. Please read this manual thoroughly before use and retain it for future reference.

1.1 Safety Precautions

- Always connect the power supply to a grounded outlet.
- Do not operate the device in wet or damp conditions.
- Ensure proper ventilation to prevent overheating.
- Do not open the casing; refer servicing to qualified personnel.
- Verify voltage and current settings before connecting a load to prevent damage.
- Disconnect power before making or changing connections.

2. Product Overview

The HYELEC HY3005B is a compact and efficient DC power supply featuring a 4-digit LED display for precise voltage and current readings, along with coarse and fine adjustment capabilities. It supports both Constant Voltage (CV) and Constant Current (CC) modes.

Figure 2.1: Diagram showing the front and rear panel components of the HYELEC HY3005B, including output voltage/current display, status indicators, adjustment knobs, output terminals, power switch, cooling fan, power socket, and fuse box.

2.1 Front Panel Features

- **LED Display:** 4-digit display for real-time voltage (V) and current (A) output.
- **CV/CC Indicators:** LEDs to show Constant Voltage (CV) or Constant Current (CC) operating mode.
- **Voltage Regulation Knob:** Adjusts the output voltage. Features coarse and fine adjustment by pressing the knob.
- **Current Regulation Knob:** Adjusts the output current limit. Features coarse and fine adjustment by pressing the knob.
- **Output Switch:** Enables or disables the power output to the terminals.
- **Output Terminals:** Red (+) for positive, Green (GND) for ground, Black (-) for negative connections. These are binding posts.

Figure 2.2: Detailed view of the 4-digit LED display on the HYELEC HY3005B, showing voltage and current readings with high precision and stability.

2.2 Rear Panel Features

- **Power Switch:** Main power ON/OFF switch.
- **Cooling Fan:** Thermostatically controlled fan for heat dissipation.
- **Power Socket:** AC input for the power cord.
- **Fuse Box:** Contains the protective fuse.

Figure 2.3: Rear view of the HYELEC HY3005B DC Power Supply, highlighting the power switch, cooling fan, power socket, and fuse box.

3. Setup

1. **Unpacking:** Carefully remove the power supply from its packaging. Inspect for any signs of damage.
2. **Placement:** Place the unit on a stable, level surface with adequate ventilation. Ensure there is sufficient space around the unit for airflow, especially around the cooling fan at the rear.
3. **Power Connection:** Connect the provided input power cable to the power socket on the rear panel and then to a standard 110V AC grounded electrical outlet.
4. **Initial Check:** Ensure the output switch on the front panel is in the OFF position (output disabled). Turn on the main power switch on the rear panel. The LED display should illuminate.

4. Operating Instructions

4.1 Powering On/Off

- To power on, flip the main power switch on the rear panel to the 'ON' position.
- To power off, flip the main power switch on the rear panel to the 'OFF' position.

4.2 Voltage and Current Adjustment

The HY3005B uses encoder adjustment knobs for precise control:

1. **Coarse Adjustment:** Rotate the VOLTAGE or CURRENT knob to adjust the respective value. The display will show the whole number changing.
2. **Fine Adjustment:** Press the VOLTAGE or CURRENT knob briefly. The decimal portion of the display will flash, indicating fine adjustment mode. Rotate the knob to adjust the decimal value. Press the knob again to exit fine adjustment mode.

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

- **Constant Voltage (CV) Mode:** When the output voltage is stable and below the set current limit, the power supply operates in CV mode. The 'CV' indicator LED will be lit.
- **Constant Current (CC) Mode:** If the load current reaches the preset current limit, the power supply automatically switches to CC mode. The 'CC' indicator LED will be lit, and the output current will be limited to the set value.

4.4 Output Switch Control

The output switch allows you to set voltage and current limits before applying power to your circuit, preventing accidental damage.

Figure 4.1: Close-up of the output switch on the HYELEC HY3005B, designed to prevent damage by allowing voltage and current settings before connecting the load.

1. Ensure the output switch is OFF.
2. Adjust the desired voltage and current limit using their respective knobs.
3. Connect your load to the output terminals.
4. Flip the output switch to the 'ON' position to apply power to the load.

4.5 Data Hold Function

To hold a set of voltage and current values, press both the VOLTAGE and CURRENT adjustment knobs simultaneously for 3 seconds. The display will indicate that the values are held. To release the hold, press both knobs simultaneously again for 3 seconds.

5. Safety Features

The HYELEC HY3005B incorporates several safety features to protect both the device and the connected load:

- **Surge Protection:** Protects against sudden voltage spikes.
- **Overload Protection:** Limits current to prevent damage to the power supply and load.

- **Short-Circuit Protection:** Automatically cuts off output in case of a short circuit.
- **Temperature Control Fan:** An intelligent cooling fan activates when the internal temperature reaches approximately 45°C, ensuring stable operation and preventing overheating.

Figure 5.1: Internal view of the HYELEC HY3005B DC Power Supply, showing the intelligent cooling fan and aluminum alloy heat sink for efficient heat dissipation.

6. Specifications

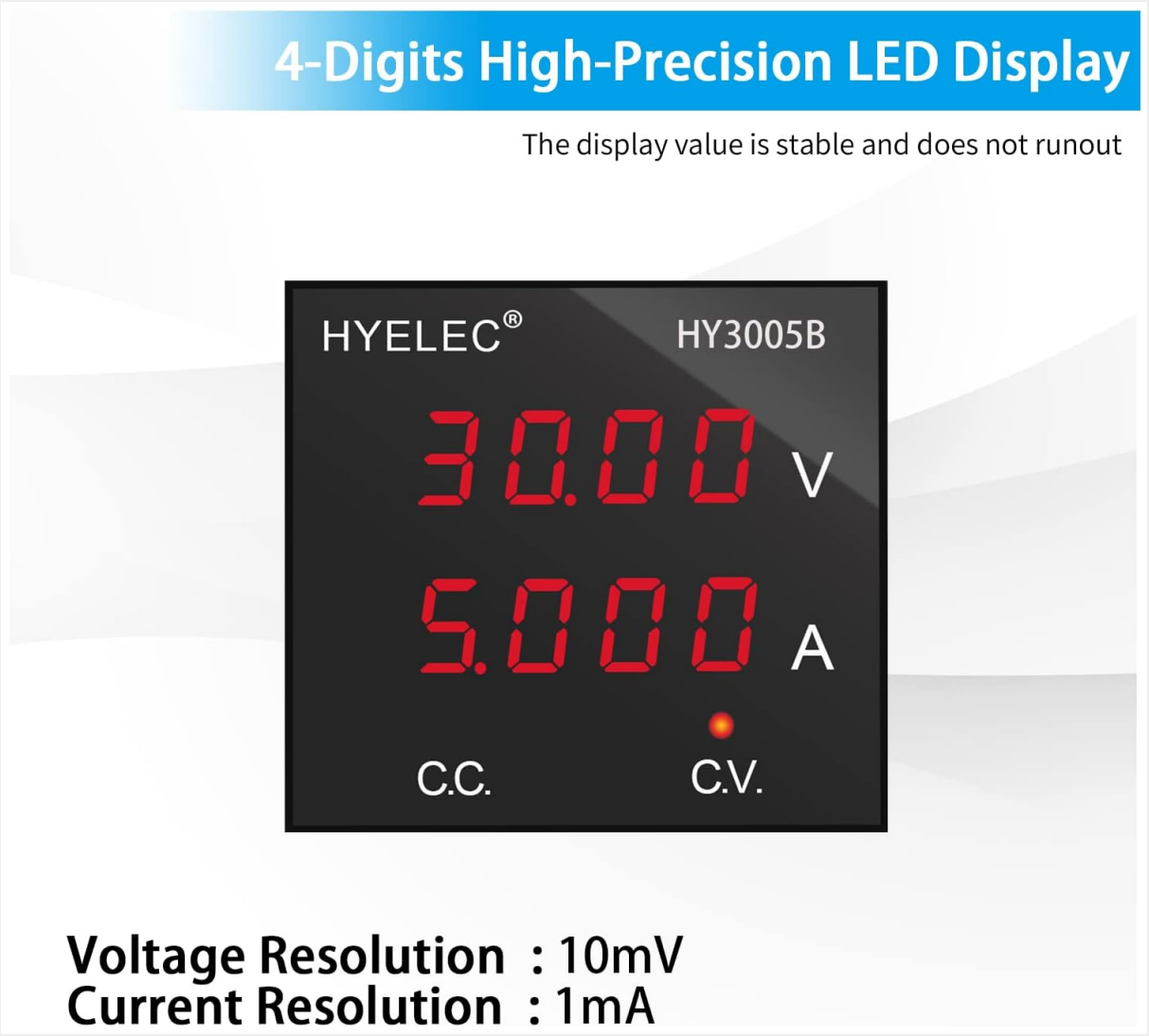

Figure 6.1: Front panel of the HYELEC HY3005B DC Power Supply, illustrating its compact design.

Parameter	Value
Model Number	HY3005B
Output Voltage	0-30V
Output Current	0-5A
Display	4-digit LED display
Voltage Resolution	10mV
Current Resolution	1mA
Ripple and Noise (CV)	≤5mVr.m.s
Ripple and Noise (CC)	≤20mAr.m.s
Input Voltage	104~127VAC (60Hz)
Line Regulation (CV)	<0.1%+3mV
Line Regulation (CC)	<0.2%+3mA
Load Regulation (CV, I≤3A)	<0.05%+3mV

Parameter	Value
Load Regulation (CC, I≤3A)	<0.5%+10mA
Load Regulation (CV, I>3A)	<0.01%+5mV
Load Regulation (CC, I>3A)	<0.2%+5mA
Protection	Current limiting, short circuit protection, surge protection
Operating Temperature	0~+40°C
Relative Humidity	≤90%
Item Weight	1.56 Kilograms
Output Wattage	150 Watts

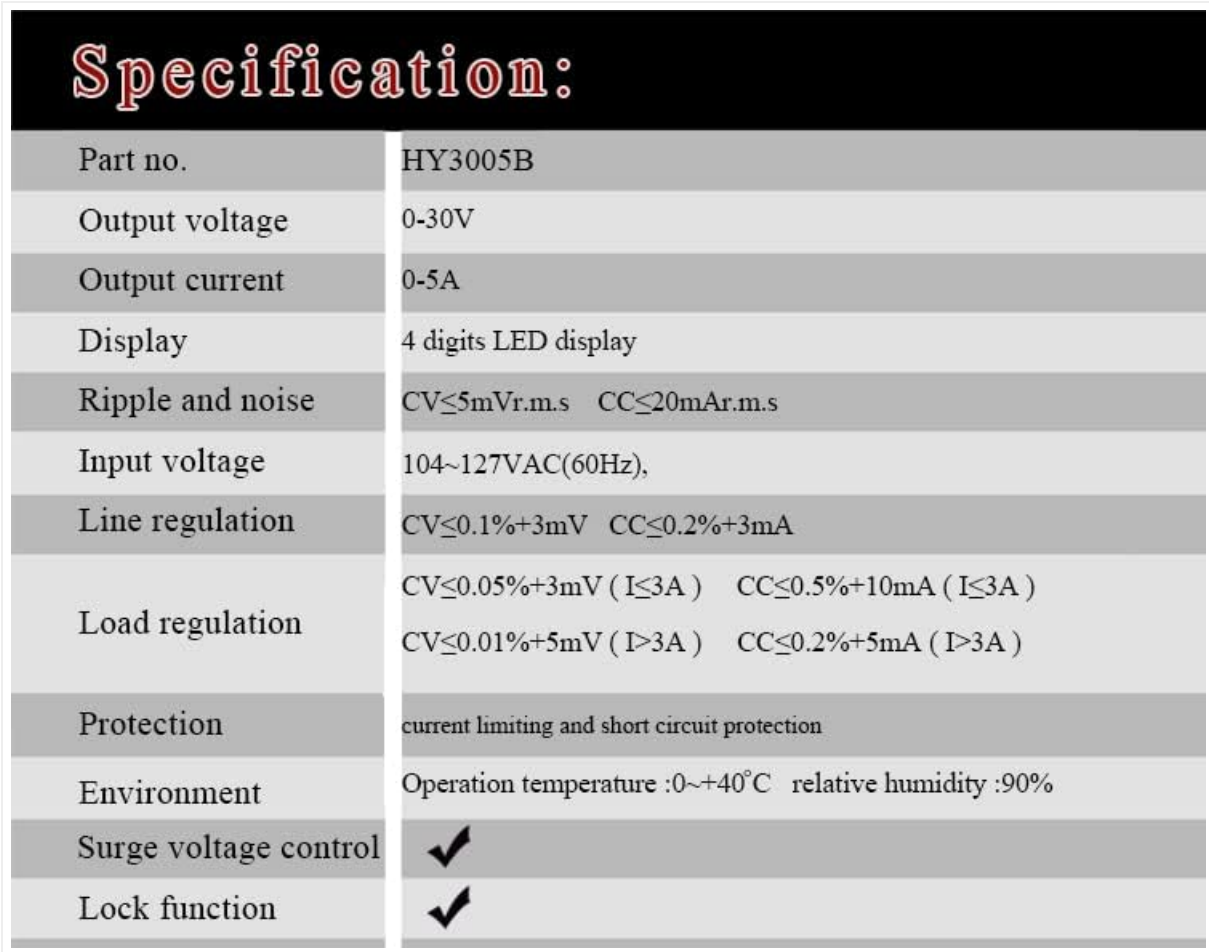

Figure 6.2: Image illustrating the compact dimensions of the HYELEC HY3005B DC Power Supply, measuring approximately 7.87 inches deep, 3.1 inches wide, and 5.9 inches high.

7. Maintenance

- **Cleaning:** Disconnect power before cleaning. Use a soft, dry cloth to wipe the exterior. Do not use abrasive cleaners or solvents.
- **Ventilation:** Ensure the cooling fan and ventilation openings are free from dust and obstructions. Periodically clean with compressed air if necessary.
- **Fuse Replacement:** If the unit does not power on, check the fuse located in the fuse box on the rear panel. Replace with a fuse of the same type and rating (e.g., F2AL250V 5x20mm).

- **Storage:** Store the power supply in a cool, dry place when not in use.

8. Troubleshooting

Problem	Possible Cause	Solution
No power/display	Power cord disconnected, power switch off, blown fuse.	Check power cord connection, ensure power switch is ON, replace fuse if blown.
No output voltage/current	Output switch is OFF, incorrect settings, faulty connection.	Turn output switch ON, verify voltage/current settings, check output cable connections.
Output current limited (CC LED on)	Load resistance is too low, or current limit is set too low.	Increase current limit setting, or check load for short circuit/low resistance.
Unit overheats	Poor ventilation, blocked fan.	Ensure adequate airflow around the unit, clean fan and vents.
Display values unstable	Loose connections, electromagnetic interference.	Check all connections, move unit away from strong electromagnetic fields.

9. Warranty and Support

HYELEC provides professional technical support for this product. Should you encounter any problems or have questions regarding your HYELEC HY3005B DC Bench Power Supply, please contact HYELEC Customer Service via Amazon or email. Refer to your purchase documentation for specific warranty terms and contact information.