

ZDAVSFR ZK-10022

ZK-10022 CNC Step-Down Adjustable Stabilized Voltage Power Supply User Manual

Model: **ZK-10022** | Brand: **ZDAVSFR**

1. INTRODUCTION

This manual provides comprehensive instructions for the ZK-10022 CNC Step-Down Adjustable Stabilized Voltage Power Supply. This module is designed for precise voltage and current regulation, offering stable power output for various applications. Please read this manual thoroughly before operation to ensure safe and efficient use of the device.

2. PRODUCT FEATURES

- **Display Board with Gold Sinking Process:** Prevents oxidation and poor contact, ensuring complete display even after long-term use.
- **Independent Silicone Keys:** Facilitates easy voltage or current adjustment with a simple one-key entry and exit system.
- **Versatile Display Options:** Supports header, color screen header, or custom serial screen for flexible functionality.
- **Separate Motherboard Design:** Allows for flexible use and supports stepless current and voltage adjustments.
- **Soft Silicone Button Material:** Provides comfortable touch and durability, ensuring long-lasting performance.
- **Data Group Storage:** Features 11 groups for saving and recalling settings.
- **Integrated Buzzer:** Provides audible feedback for operations and alerts.
- **Smart Cooling Fan Control:** Activates when temperature exceeds 45°C, current exceeds 2A, or power exceeds 30W.
- **Supports Serial Communication:** Compatible with standard MODBUS protocol for advanced control.

- **High Power Output:** Capable of delivering up to 1500W with a maximum output current of 22A and voltage up to 125V.

Third generation upgrade

Buck

ZK-10022

CNC DC stabilized power supply LCD style

125V 22A high voltage and high power upgrade



The image shows the internal PCB of the power supply at the top, featuring various capacitors, a transformer, and a MOSFET. Below it is the external black plastic enclosure with a 1.8-inch LCD display showing 'OUT 04.99 CV', '03.00 A', and '0150 W'. The enclosure has four silicone rubber keypads labeled 'M/I', 'V-SET', 'I-SET', and 'OK/I', a rotary knob, and a green emergency stop button.

- Silicon Rubber Keypads
- 1.8-inch large screen display
- Supports serial communication standard MODBUS protocol

12-140V

Input voltage

0-125V

Output voltage

0-22A

Output current

1500W

Output power

11 groups

Storage space

Figure 2.1: ZK-10022 CNC Power Supply highlighting key features like silicone keypads, 1.8-inch display, and MODBUS support.

Third generation upgrade

Constant voltage and constant current CNC DC stabilized power supply

Supports serial communication

Standard MODBUS protocol

Extended serial port screen



Output current: 0.0–22.00A

Upgrade point: Maximum 22A, individual motherboard can adjust current through analog potentiometer

Output voltage: 0–125.0V

Upgrade point: Maximum 125V, voltage can be continuously adjusted through analog potentiometers

Figure 2.2: ZK-10022 demonstrating its constant voltage and constant current capabilities, with upgrade points for maximum output.

3. PRODUCT SPECIFICATIONS (PARAMETERS)

Parameter	Value
Product Name	CNC Power Supply
Input Voltage	12-140V
Output Voltage	0-125V
Output Voltage Accuracy	± 0.3%+3 words (Calibratable)
Output Current Accuracy	± 0.5%+3 words (Calibratable)
Current Resolution	0.01A
Output Current	0-22A

Parameter	Value
Output Power	0-1500W
Voltage Resolution	0.1V
Data Group Storage	11 groups
Screen Size	Upgraded 1.8-inch large screen, 36 x 29mm visible range
Buzzer	Yes
Cooling Fan Activation	Temperature > 45°C or Current > 2A or Power > 30W
Product Shell Dimensions	83x48x29.4mm (Height does not include rotary encoder)
Product Motherboard Dimensions	130x84x42mm
Net Weight (Motherboard)	227g
Net Weight (Entire Set)	280g

CNC DC Buck Power Supply

ZK-10022

Storage space
11 group

Input voltage
12-140V

Output voltage
0-125V

Output current
0-22A

Output power
1500W

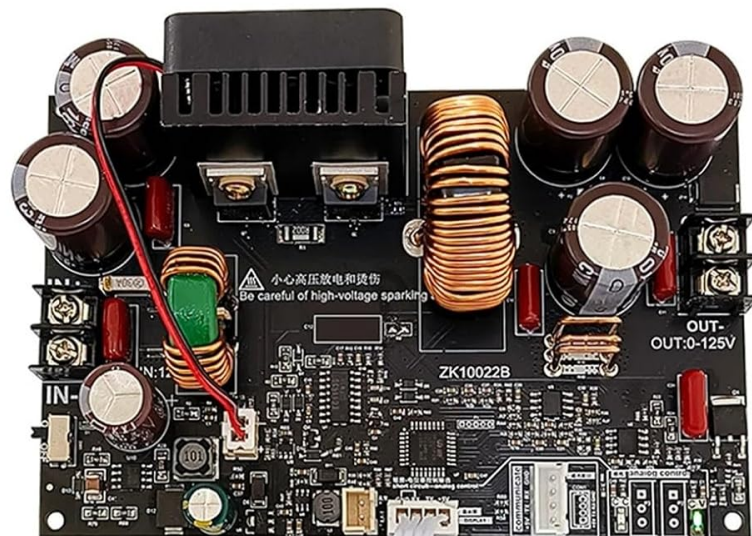


Figure 3.1: Overview of the ZK-10022 module highlighting key specifications like input/output voltage, current, and power.

4. PROTECTION MECHANISMS

The ZK-10022 power supply incorporates several protection features to ensure safe operation:

- **Input Undervoltage Protection (LUP):** Adjustable from 11-125V, with a default value of 11V.
- **Output Overvoltage Protection (OUP):** Adjustable from 1-130V, with a default value of 130V.
- **Output Overcurrent Protection (OCP):** Adjustable from 0.01-23A, with a default value of 23A.
- **Output Overpower Protection (OPP):** Adjustable from 1-1500W, with a default value of 1500W.

5. SETUP

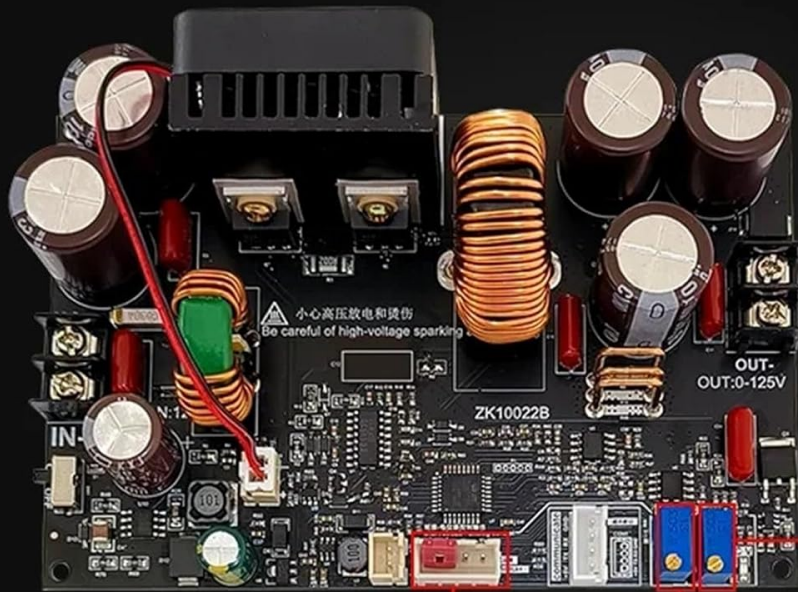
Follow these steps to set up your ZK-10022 power supply module:

1. **Unpacking:** Carefully remove all components from the packaging. Verify that you have the main motherboard and the LCD display module.
2. **Connecting Display Module:** Connect the ribbon cable from the LCD display module to the corresponding port on the main motherboard. Ensure the connection is secure and correctly oriented.
3. **Input Power Connection:** Connect your DC input power source (12-140V) to the "IN" terminals on the main motherboard. Observe correct polarity (+ and -).
4. **Output Load Connection:** Connect your load to the "OUT" terminals (0-125V) on the main motherboard. Again, ensure correct polarity.
5. **Optional Potentiometer Connection:** If using external analog potentiometers for voltage and current control, connect them to the designated ports on the motherboard. Refer to Figure 5.1 for connection points. Ensure the jumper cap is removed if using serial communication for control.

Independent use of motherboard

Output current 0-22A adjustable, output voltage 0-125V adjustable

Tip: When selling the ZK10022B motherboard separately, it is necessary to solder the voltage and current adjustment potentiometers and plug in the jumper cap. If it is a serial screen or APP/Upper computer control, the jumper cap must be unplugged and powered on again.



Voltage regulation potentiometer

Current regulation potentiometer

Short circuit RX GND is required for analog potentiometer control, otherwise digital communication control is required



Figure 5.1: ZK-10022 Motherboard showing connection points for voltage and current regulation potentiometers. Note the warning regarding high-voltage sparking.



Figure 5.2: Assembled ZK-10022 CNC Step-Down Power Supply with the main board and LCD display module connected.

6. OPERATING INSTRUCTIONS

The ZK-10022 features an intuitive interface for setting voltage and current. The LCD screen provides real-time feedback on output parameters.

6.1 Basic Operation

1. **Power On:** After connecting input power and load, the LCD screen will illuminate.

2. **Voltage Adjustment:** Press the "V-SET" button to enter voltage setting mode. Use the rotary encoder to adjust the desired output voltage. Press "OK/1" to confirm and exit.
3. **Current Adjustment:** Press the "I-SET" button to enter current limit setting mode. Use the rotary encoder to adjust the desired output current limit. Press "OK/1" to confirm and exit.
4. **Output Enable/Disable:** Use the dedicated ON/OFF button (often labeled with a power symbol) to enable or disable the output.

6.2 Advanced Features

- **Data Group Storage:** The module supports 11 groups of data storage. Refer to the specific button (e.g., "M/T" or similar) and screen prompts to save and recall your frequently used voltage and current settings.
- **Buzzer Control:** The integrated buzzer provides audible feedback. Consult the on-screen menu or specific button combinations to enable or disable the buzzer as desired.
- **Serial Communication:** For advanced control and integration, the module supports serial communication via the MODBUS protocol. Ensure the baud rate of your serial device matches the power board's default (115200, adjustable).

Extended serial port screen

Main board+serial port screen/LCD meter head/color screen meter head



Dual communication ports





ZK-LCDK type display meter head



ZK-CSDK type display meter head

- ⦿ The serial screen can be plugged into any port.
- ⦿ LCD meter head ZK-LCDK, color screen meter head ZK-CSDK, and serial port screen can be replaced at will.
- ⦿ Note that the baud rate of the serial port screen needs to be consistent with the power board. The default baud rate of the power board at the factory is 115200 (adjustable), and the RX TX cable sequence needs to be connected correctly.

Figure 6.1: ZK-10022 showing options for extended serial port screens (LCD and color screen types) and dual communication ports.

Third generation upgraded **BUCK**

ZK-10022C

Color screen

CNC DC stabilized power supply

125V 22A high voltage and high power

- Silicon Rubber Keypads
- 1.8-inch large screen display
- Supports serial communication standard MODBUS protocol

Input voltage 12-140V

Output voltage 0-125V

Output current 0-22A

Output power 1500W

Storage space 11 groups

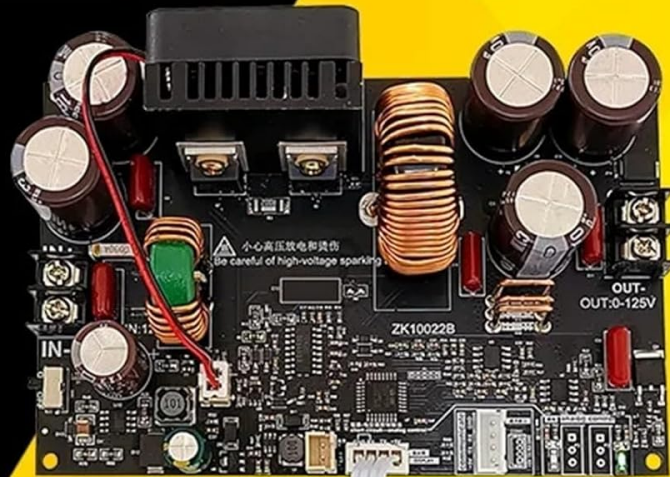


Figure 6.2: ZK-10022 with the upgraded color screen display, providing clear readouts of voltage, current, and power.

7. MAINTENANCE

Proper maintenance ensures the longevity and reliable operation of your ZK-10022 power supply:

- **Cleaning:** Regularly clean the module with a soft, dry cloth. Avoid using liquids or abrasive cleaners. Ensure the device is powered off and disconnected from all sources before cleaning.
- **Ventilation:** Ensure adequate airflow around the module, especially around the cooling fan. Do not obstruct the fan or ventilation openings. The cooling fan activates automatically when temperature exceeds 45°C, current exceeds 2A, or power exceeds 30W to prevent overheating.
- **Storage:** When not in use for extended periods, store the module in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Connection Integrity:** Periodically check all input, output, and display connections to ensure they are secure and free from corrosion.

8. TROUBLESHOOTING

If you encounter issues with your ZK-10022 power supply, refer to the following common troubleshooting steps:

- **No Display/No Power:**

- Check input power source: Ensure it is within the 12-140V range and correctly connected.
- Verify display module connection: Ensure the ribbon cable is securely connected to both the main board and the display.

- **No Output Voltage/Current:**

- Check output enable: Ensure the output is enabled via the ON/OFF button.
- Verify load connection: Ensure the load is correctly connected and not short-circuited.
- Check protection settings: Review OVP, OCP, and OPP settings. If the output is tripping, these protections might be active. Adjust limits if necessary.

- **Incorrect Voltage/Current Reading:**

- Perform calibration: The module supports calibration for output voltage and current accuracy. Refer to the on-screen menu for calibration procedures.
- Check connections: Loose or poor connections can affect readings.

- **Overheating:**

- Ensure proper ventilation: Clear any obstructions around the module and fan.
- Check fan operation: Verify the cooling fan is spinning when conditions (temperature > 45°C, current > 2A, or power > 30W) are met.
- Reduce load: Operating at the upper limits of power/current for extended periods can cause heat buildup.

9. WARRANTY AND SUPPORT

Specific warranty information for the ZK-10022 CNC Step-Down Adjustable Stabilized Voltage Power Supply is not provided in this manual. Please refer to the product packaging or contact your point of purchase for details regarding warranty coverage and technical support.

For further assistance or inquiries, please contact ZDAVSFR customer support through their official channels.