

Rakstore ZK-5KX

Rakstore ZK-5KX DC Buck Boost Converter User Manual

1. INTRODUCTION

This manual provides comprehensive instructions for the Rakstore ZK-5KX DC Buck Boost Converter. This versatile power module is designed to efficiently convert an input DC voltage to a stable output DC voltage, which can be either higher (boost) or lower (buck) than the input. It features constant voltage (CV) and constant current (CC) capabilities, along with various protection mechanisms to ensure safe and reliable operation.

2. SAFETY INFORMATION

Please read and understand all safety instructions before operating the ZK-5KX module. Failure to follow these guidelines may result in electric shock, fire, or damage to the device and connected equipment.

- Ensure proper ventilation around the module during operation to prevent overheating.
- Do not exceed the specified input voltage range of 6-36V or output current of 5A.
- Always connect input and output wiring correctly, observing polarity.
- Avoid short circuits on the output terminals.
- Keep the module away from moisture, dust, and flammable materials.
- Disconnect power before making any wiring changes or adjustments.

3. PRODUCT OVERVIEW

The ZK-5KX is a compact and efficient DC-DC converter module. It features an integrated display for real-time monitoring of voltage and current, along with intuitive controls for adjustment.



Figure 3.1: Front view of the ZK-5KX DC Buck Boost Converter, showing the display, control buttons (SW, U/I), and the adjustment potentiometer.



Figure 3.2: Angled view of the ZK-5KX module, highlighting the input (IN+) and output (OUT+) screw terminals for wiring connections.



Figure 3.3: Internal view of the ZK-5KX module, showing the circuit board, heat sink, and integrated cooling fan for thermal management.

4. SPECIFICATIONS

Parameter	Value
Input Voltage	6-36V
Output Voltage	0.6-36V
Output Current	5A (max)
Output Power	80W (max)
Voltage Display Resolution	0.01V
Current Display Resolution	0.001A
Conversion Efficiency	Approximately 88%
Working Frequency	120KHz
Dimensions (L x W x H)	79mm x 43mm x 48mm



Figure 4.1: Dimensions of the ZK-5KX module, indicating a length of 79mm and a width of 43mm.

5. SETUP

Follow these steps to set up your ZK-5KX DC Buck Boost Converter:

- Wiring Input:** Connect your DC power source to the 'IN+' (positive input) and 'IN-' (negative input) terminals. Ensure correct polarity. The input voltage must be within the 6-36V range.
- Wiring Output:** Connect your load to the 'OUT+' (positive output) and 'OUT-' (negative output) terminals. Ensure correct polarity.
- Initial Power-Up:** Apply power to the input terminals. The display should illuminate, showing the current output voltage or other parameters.

6. OPERATING INSTRUCTIONS

The ZK-5KX module features a digital display and two buttons ('SW' and 'U/I') for operation, along with a rotary encoder for adjustments.

6.1 Display Modes and Navigation

- **SW Button:** Press the 'SW' button to cycle through different display modes: Input Voltage, Output Voltage, Output Current, Output Power, Output Capacity, Output Time.
- **U/I Button:** Press the 'U/I' button to switch between displaying output voltage (U) and output current (I) when in the respective modes.

6.2 Adjusting Output Voltage and Current

- **Output Voltage (CV Mode):** To adjust the output voltage, rotate the large potentiometer knob. Turn clockwise to increase voltage, counter-clockwise to decrease. The display will show the adjusted voltage.
- **Output Current (CC Mode):** To set the constant current limit, press and hold the 'U/I' button until the 'CC' indicator on the display flashes. Then, rotate the potentiometer knob to set the desired current limit. Press 'U/I' again to confirm and exit CC setting mode.

6.3 Soft Start Function

The module incorporates a soft start feature. This helps to prevent large inrush currents when powering on, which can be beneficial for high-power loads. In some cases, with very high power loads, the module may require a moment to stabilize upon startup.

7. PROTECTION MECHANISMS

The ZK-5KX module includes several built-in protection features to safeguard itself and connected equipment:

- **Input Anti-Reverse Connection:** Protects the module from damage if the input power supply is connected with reverse polarity.
- **Output Backflow Prevention:** Prevents current from flowing back into the module from the output, which can occur with certain types of loads (e.g., batteries).
- **Input Undervoltage Protection (UVP):** Adjustable from 5.8-36V (default 5.8V). If the input voltage drops below this set threshold, the output will be disabled to protect the power source.
- **Output Overvoltage Protection (OVP):** Adjustable from 0.6-36V (default 36V). If the output voltage exceeds this threshold, the output will be disabled.
- **Output Overcurrent Protection (OCP):** Adjustable from 0-5A (default 5A). If the output current exceeds this limit, the output will be disabled.
- **Output Over Power Protection (OPP):** Adjustable from 0-80W (default 80W). If the output power exceeds this limit, the output will be disabled.
- **Over Temperature Protection (OTP):** Adjustable from 80-110°C (default 110°C). If the module's internal temperature exceeds this limit, the output will be disabled to prevent damage.
- **Timeout Protection (OHP):** Adjustable from 0-100 hours (default: closed). If enabled, the output will be disabled after the set operating time.
- **Over-Capacity Protection (OAP):** Adjustable from 0-60Ah (default: closed). If enabled, the output will be disabled after the set accumulated output capacity is reached.

8. MAINTENANCE

The ZK-5KX module is designed for reliable operation with minimal maintenance. However, following these guidelines can help prolong its lifespan:

- **Cleaning:** Periodically clean the module to remove dust and debris, especially from the cooling fan and heat sink, using a soft brush or compressed air. Ensure power is disconnected before cleaning.
- **Ventilation:** Always ensure adequate airflow around the module to prevent heat buildup. Do not obstruct the cooling fan.
- **Environmental Conditions:** Operate the module within its specified temperature and humidity ranges. Avoid extreme conditions.

9. TROUBLESHOOTING

If you encounter issues with your ZK-5KX module, refer to the following troubleshooting tips:

- **No Display/No Output:**
 - Check input power supply connections and ensure the input voltage is within the 6-36V range.
 - Verify input polarity.
 - Ensure the module is not in a protection state (e.g., undervoltage protection activated).
- **Output Voltage Incorrect/Unstable:**
 - Check load connections and ensure they are not short-circuited.
 - Adjust the potentiometer knob to set the desired output voltage.
 - Ensure the module is not in overvoltage protection (OVP) or overcurrent protection (OCP).
- **Module Overheating:**
 - Ensure adequate ventilation and that the cooling fan is operating correctly.
 - Reduce the load if it is close to the maximum output power (80W) or current (5A).
 - Check if over temperature protection (OTP) is activated.
- **Output Current Limited Unexpectedly:**
 - Verify the constant current (CC) limit setting.
 - Check if overcurrent protection (OCP) or over power protection (OPP) is activated.

10. WARRANTY AND SUPPORT

For warranty information or technical support regarding your Rakstore ZK-5KX DC Buck Boost Converter, please refer to the seller's return policy or contact Rakstore directly through their official website or the platform where the product was purchased. Please have your purchase details and product model number (ZK-5KX) available when seeking support.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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