DROK 200143

DROK 24V 10A DC-DC Buck Converter Module User Manual

Model: 200143

1. Introduction

This manual provides detailed instructions for the safe and effective use of the DROK 24V 10A DC-DC Buck Converter Module. This module is designed to step down a higher DC input voltage to a lower, adjustable DC output voltage, featuring a high-accuracy voltmeter for precise monitoring.

2. Product Features

- **Wide Input Voltage Range:** Accepts DC 3.5V to 30V.
- **Adjustable Output Voltage:** Provides DC 0.8V to 29V.
- **High Output Current:** Supports a maximum output current of 10A.
- **Efficient Conversion:** Achieves up to 92% conversion efficiency.
- **Integrated Voltmeter:** Features a high-accuracy red LED display for input or output voltage monitoring.
- **Durable Design:** Encased in a metal housing that also functions as a heat sink.
- **Compact Size:** Dimensions of 85mm x 58mm x 33mm (L*W*H).

3. Specifications

Parameter	Value
Input Voltage	DC 3.5V - 30V
Output Voltage	DC 0.8V - 29V (Adjustable)

Parameter	Value
Output Current	10A (Maximum)
Conversion Efficiency	Up to 92% (e.g., 24V to 12V, 2A)
Voltmeter Display	Red LED Digital Tube
Quiescent Current	2-8mA (depends on digital tube status)
Dimensions (L*W*H)	85mm x 58mm x 33mm (3.35" x 2.28" x 1.3")
Weight	105g (3.7 oz)

4. Safety Information

- **Input Voltage Limit:** Do not exceed 30V DC input. Exceeding this limit can damage the module.
- **Buck Module Operation:** Ensure the input voltage is always at least 1V higher than the desired output voltage for proper operation. This is a step-down (buck) converter, it cannot boost voltage.
- **No Reverse Polarity Protection:** This module does not have reverse connection protection. Carefully observe input and output polarity (+/-) during wiring to prevent damage. Incorrect wiring will damage the module.
- **Heat Dissipation:** While the metal case acts as a heat sink, ensure adequate ventilation, especially when operating at higher currents or in enclosed spaces.
- **Electrical Safety:** Always disconnect power before making or changing any connections. Handle with care to avoid static discharge.

5. Product Overview

The following image illustrates the key components and connection points of the DROK DC-DC Buck Converter Module.

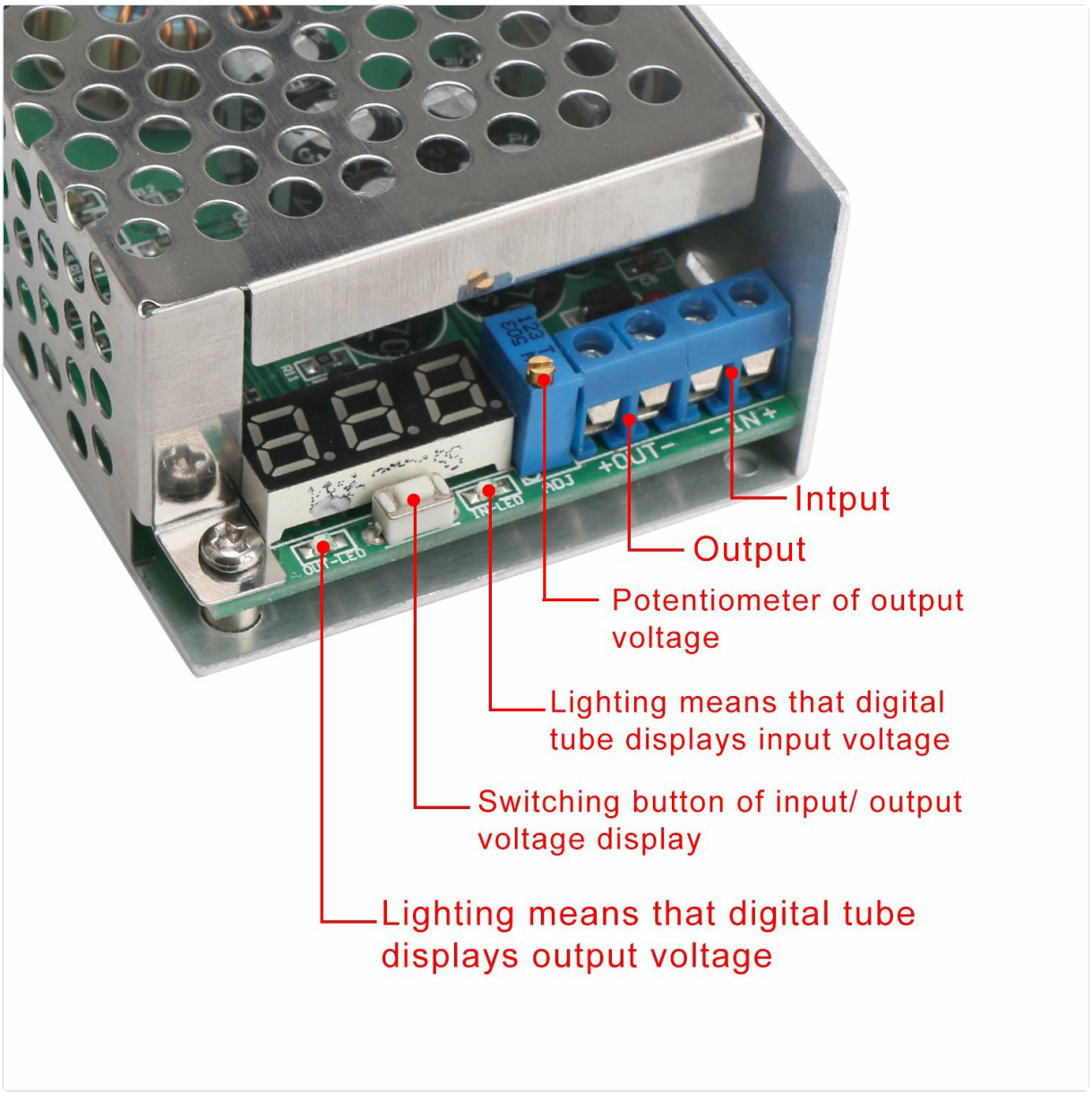

Image 1: Labeled diagram of the DROK DC-DC Buck Converter Module. This view highlights the input terminals, output terminals, the potentiometer for adjusting output voltage, the voltmeter display, and the button for switching between input and output voltage display.

Image 2: Top-down view of the module, showcasing the main components including the large inductor, electrolytic capacitors, and the PCB with integrated circuits. The metal casing is partially visible.

6. Setup and Wiring

Follow these steps for proper setup and wiring of the module:

1. **Prepare Connections:** Ensure all power sources are disconnected before wiring. Use appropriate gauge wires for your current requirements.
2. **Input Connection:** Connect your DC input power source to the terminals labeled**IN+** (positive) and **IN-** (negative). Double-check polarity.
3. **Output Connection:** Connect your load or device to the terminals labeled**OUT+** (positive) and **OUT-** (negative). Double-check polarity.
4. **Initial Check:** Before applying power, visually inspect all connections to ensure they are secure and correctly polarized.

Note: The module does not include reverse polarity protection. Incorrect wiring will cause damage.

7. Operating Instructions

Once wired, follow these steps to operate the buck converter:

1. **Apply Input Power:** Connect your DC input power source. The red LED voltmeter display will illuminate.
2. **Monitor Voltage:** The voltmeter will initially display either the input or output voltage. A short press of the button located below the digital tube will switch between displaying the input voltage (indicated by the 'IN' LED) and the output voltage (indicated by the 'OUT' LED).
3. **Adjust Output Voltage:** Use a small screwdriver to carefully turn the potentiometer (labeled 'ADJ' or similar, typically a blue square component with a screw) to adjust the output voltage. Turn clockwise to increase voltage, counter-clockwise to decrease. Monitor the output voltage on the LED display while adjusting.
4. **Verify Output:** Once the desired output voltage is set, you can connect your load.

The voltage display is factory calibrated and does not require additional calibration.

8. Maintenance

The DROK DC-DC Buck Converter Module is designed for reliable operation with minimal maintenance. Follow these guidelines:

- **Keep Clean:** Ensure the module is free from dust, dirt, and moisture. Use a soft, dry cloth for cleaning.
- **Ventilation:** Maintain good airflow around the module, especially during continuous high-current operation, to prevent overheating.
- **Inspect Connections:** Periodically check all wiring connections for tightness and signs of wear or corrosion.
- **Avoid Physical Shock:** Protect the module from drops or impacts that could damage internal components.

9. Troubleshooting

Problem	Possible Cause	Solution
No display/No output	No input power; Incorrect input polarity; Damaged module.	Check input power source; Verify input wiring polarity; Inspect module for visible damage.
Output voltage cannot be adjusted	Potentiometer fault; Input voltage too low (not > output + 1V).	Ensure input voltage is sufficient; Check potentiometer for damage.
Output voltage is unstable	Input power fluctuations; Overload; Loose connections.	Use a stable input power supply; Reduce load; Secure all connections.
Module overheating	Excessive load current; Insufficient ventilation.	Reduce load current; Ensure adequate airflow around the module.

10. Package Contents

- 1 x DROK DC-DC Buck Converter Module (Model: 200143)

11. Warranty and Support

DROK products are designed for quality and reliability. For technical support or warranty inquiries, please refer to the contact information provided with your purchase or visit the official DROK website. Please retain your proof of purchase for warranty claims.