

Phoncoo 200W 10A Max CC CV Step Down Power Supply Buck Converter

Phoncoo 200W 10A Max CC CV Step Down Power Supply Buck Converter User Manual

Model: 200W 10A Max CC CV Step Down Power Supply Buck Converter

1. INTRODUCTION

This manual provides detailed instructions for the safe and efficient use of the Phoncoo 200W 10A Max CC CV Step Down Power Supply Buck Converter. This module is designed to convert a higher DC input voltage to a lower, adjustable DC output voltage, with capabilities for both constant voltage (CV) and constant current (CC) operation. It is suitable for various applications, including battery charging, LED driver power, and general power supply regulation.

2. SAFETY INSTRUCTIONS

- **Electrical Safety:** Always ensure proper insulation and avoid short circuits. Incorrect wiring can damage the module or connected devices.
- **Input Voltage:** Do not exceed the maximum input voltage of 32V DC. Exceeding this limit will damage the module.
- **Output Current:** Do not exceed the maximum output current of 10A. Prolonged operation at maximum current may require additional cooling.
- **Polarity:** Observe correct input and output polarity. Reverse polarity can cause irreversible damage.
- **Ventilation:** Ensure adequate ventilation, especially when operating at high power levels, to prevent overheating. The heatsinks are crucial for heat dissipation.
- **Professional Installation:** If you are unfamiliar with electronics, seek professional assistance for installation and setup.
- **Handling:** Handle the module with care to avoid damaging sensitive electronic components.

3. PRODUCT OVERVIEW

3.1 Key Features

- High-efficiency step-down (buck) conversion.
- Adjustable output voltage (Constant Voltage - CV).
- Adjustable output current (Constant Current - CC).
- Integrated heatsinks for improved thermal performance.
- Input reverse polarity protection.
- Output short circuit protection.

3.2 Component Identification

Familiarize yourself with the main components of the buck converter module:

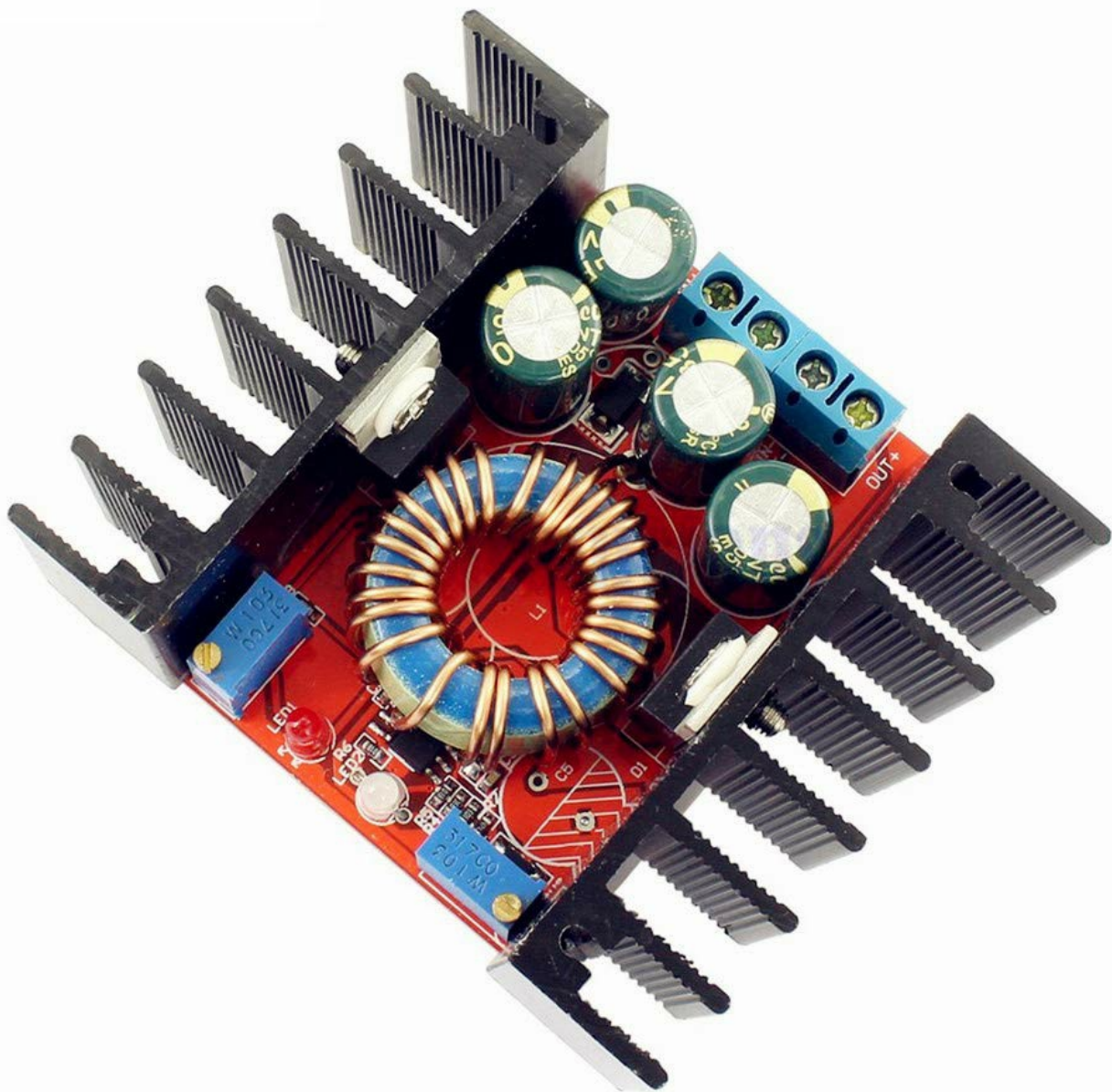


Figure 1: Top view of the buck converter module. This image shows the large heatsinks, input/output terminal blocks, electrolytic capacitors, and the main inductor coil. The two blue potentiometers for voltage and current adjustment are also visible.

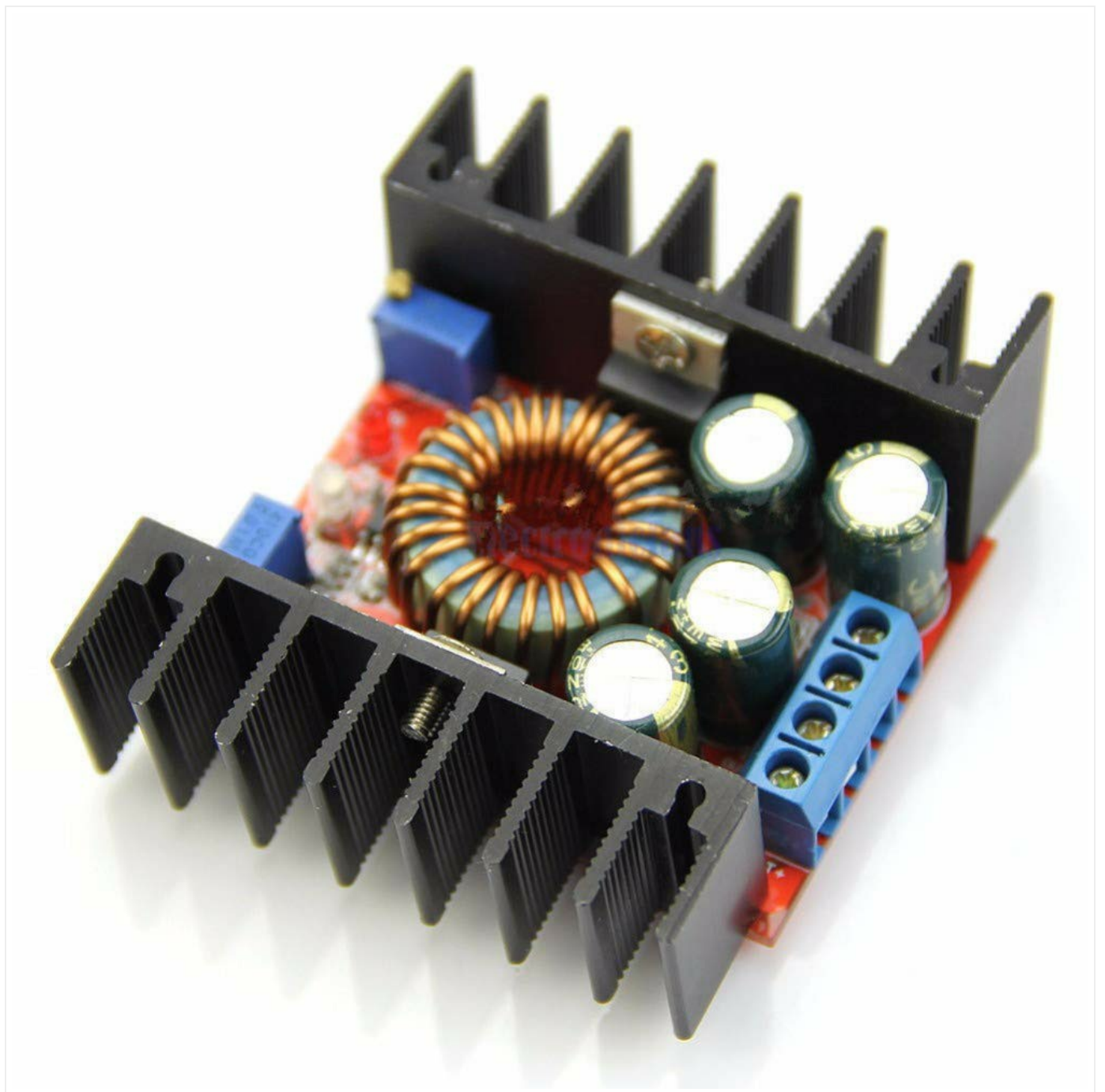


Figure 2: Angled view of the buck converter, highlighting the input and output screw terminals. The input terminals are typically marked 'IN+' and 'IN-', while the output terminals are marked 'OUT+' and 'OUT-'.

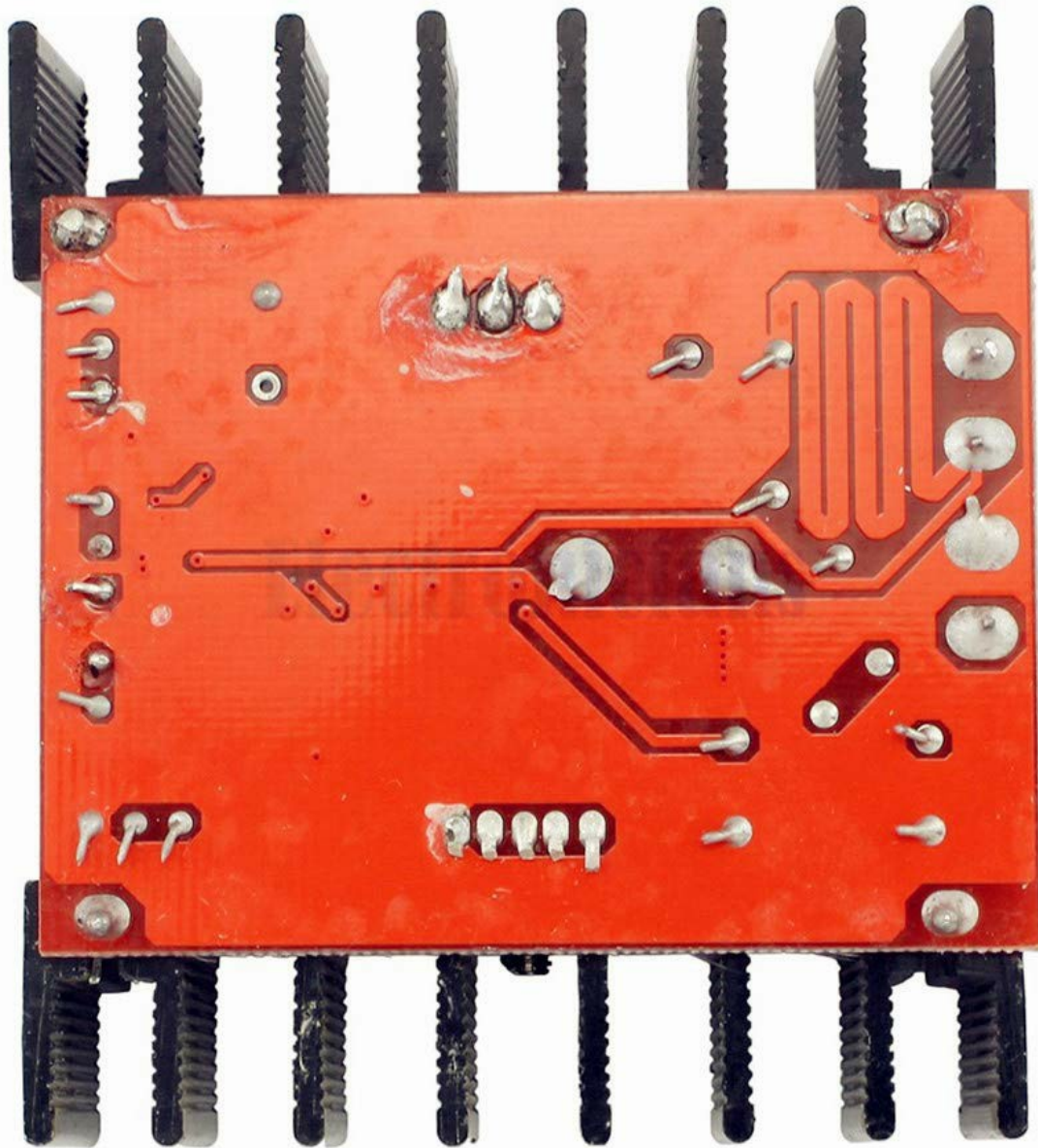


Figure 3: Bottom view of the buck converter's printed circuit board (PCB). This view shows the solder points and traces, indicating the robust design for power handling.

4. SETUP AND WIRING

4.1 Input/Output Connections

Connect your power source and load to the screw terminals as follows:

1. **Input:** Connect your DC power source (7-32V) to the 'IN+' (positive) and 'IN-' (negative) terminals. Ensure the input voltage is within the specified range.
2. **Output:** Connect your load (e.g., battery, LED array, device) to the 'OUT+' (positive) and 'OUT-' (negative) terminals.
3. **Tighten Connections:** Ensure all screw terminals are securely tightened to prevent loose connections and potential arcing.

4.2 Voltage and Current Adjustment

The module features two multi-turn potentiometers for precise adjustment:

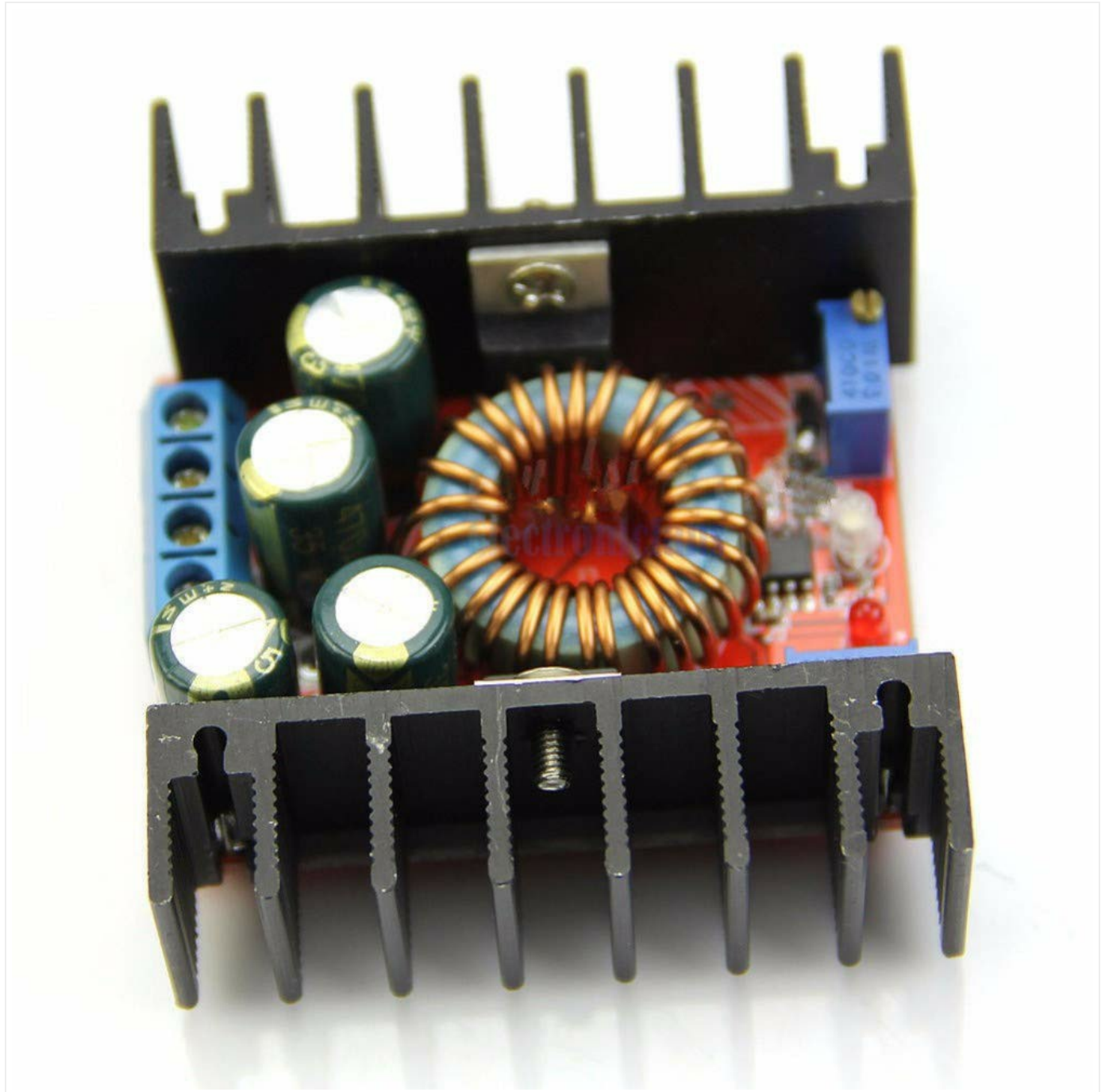


Figure 4: Close-up view of the two blue potentiometers. One potentiometer adjusts the output voltage (CV), and the other adjusts the constant current limit (CC).

- **Output Voltage Adjustment (CV):** Use a small screwdriver to turn the potentiometer labeled 'CV' or 'V-ADJ'. Turn clockwise to increase voltage, counter-clockwise to decrease. Monitor the output voltage with a multimeter.
- **Constant Current Adjustment (CC):** Use a small screwdriver to turn the potentiometer labeled 'CC' or 'I-ADJ'. This sets the maximum output current. To set the current limit, short the output terminals (briefly, with an ammeter in series) or connect a load that draws more than the desired current, then adjust the potentiometer. Turn clockwise to increase current, counter-clockwise to decrease.

5. OPERATING INSTRUCTIONS

5.1 Constant Voltage (CV) Mode

In CV mode, the module maintains a stable output voltage as long as the load current does not exceed the set constant current limit. This is ideal for powering devices that require a specific voltage.

1. Connect the input power source.
2. Without a load connected, or with a very light load, adjust the 'CV' potentiometer to set the desired output voltage.
3. Connect your load. The module will maintain the set voltage.

5.2 Constant Current (CC) Mode

In CC mode, the module limits the output current to a set maximum value, while the voltage adjusts to meet the load's requirements. This is crucial for applications like charging batteries or driving LEDs.

1. Connect the input power source.
2. First, set the desired output voltage using the 'CV' potentiometer (e.g., the float voltage for a battery).
3. To set the current limit:
 - a. **Method A (Recommended for safety):** Connect a multimeter in ammeter mode in series with a suitable load (or a short circuit briefly, if your multimeter can handle the current). Adjust the 'CC' potentiometer until the desired current limit is displayed on the multimeter.
 - b. **Method B (Less precise):** Connect the actual load (e.g., a discharged battery). The module will initially operate in CC mode. Adjust the 'CC' potentiometer until the charging current is at the desired level.
4. Once the current limit is set, the module will supply current up to this limit, and the voltage will adjust. When the load draws less than the set current, the module will switch back to CV mode.

5.3 Charging Applications

When charging batteries, it is essential to set both the constant voltage and constant current limits correctly to prevent overcharging or damage to the battery.

- Set the CV potentiometer to the battery's recommended float or charge voltage.
- Set the CC potentiometer to the battery's recommended maximum charging current.
- Connect the discharged battery to the output. The module will charge in CC mode until the battery voltage reaches the set CV, then switch to CV mode to maintain the voltage.

6. MAINTENANCE

The Phoncoo buck converter is designed for reliable operation with minimal maintenance. However, periodic checks can ensure longevity and optimal performance:

- **Cleaning:** Keep the module free from dust and debris. Use a soft, dry brush or compressed air to clean the heatsinks and PCB. Do not use liquids.
- **Connections:** Periodically check all input and output wiring connections to ensure they remain tight and secure.
- **Ventilation:** Ensure that the module's heatsinks are not obstructed and that there is adequate airflow around the unit, especially in enclosed spaces.
- **Visual Inspection:** Inspect the PCB for any signs of damage, such as burnt components, bulging capacitors, or loose solder joints.

7. TROUBLESHOOTING

If you encounter issues with your buck converter, refer to the following table for common problems and solutions:

Problem	Possible Cause	Solution
No output voltage/current	No input power; Input polarity reversed; Output short circuit; Module damaged.	Check input power supply; Verify input polarity; Remove short circuit; Inspect module for damage.
Output voltage too high/low	CV potentiometer incorrectly set; Input voltage out of range.	Adjust CV potentiometer; Ensure input voltage is within 7-32V.
Output current too high/low	CC potentiometer incorrectly set; Load resistance too high/low.	Adjust CC potentiometer; Verify load requirements.
Module overheating	Insufficient ventilation; Exceeding maximum power/current; Ambient temperature too high.	Improve ventilation; Reduce load; Operate in a cooler environment.
Output unstable	Loose connections; Faulty input power; Damaged components.	Check all wiring; Test input power supply; Inspect module for damage.

8. TECHNICAL SPECIFICATIONS

Parameter	Value
Input Voltage	DC 7-32V
Output Voltage	DC 0.8-28V (Adjustable)
Output Current	0.2-10A (Adjustable, Max 10A)
Output Power	200W (Max)
Conversion Efficiency	Up to 95%
Operating Frequency	300KHz
Operating Temperature	-40°C to +85°C
Short Circuit Protection	Yes
Input Reverse Polarity Protection	Yes
Dimensions (L x W x H)	Approx. 65 x 47 x 23.5 mm
Weight	Approx. 0.08 kg (80g)

9. WARRANTY AND SUPPORT

This Phoncoo product is covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms and conditions, please refer to your purchase documentation or contact your retailer. For technical support, troubleshooting assistance, or inquiries regarding this product, please contact the vendor or manufacturer through the platform where the purchase was made. Please have your order number and product model information ready when contacting 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.

Submit question