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DollaTek 57677b3f-44b7-48d7-9ef9-f775c151f091

DollaTek 300W 20A DC-DC Step-Down Converter Module User Manual

Model: 57677b3f-44b7-48d7-9ef9-f775c151f091

1. INTRODUCTION

This manual provides detailed instructions for the DollaTek 300W 20A DC-DC Step-Down Converter Module. It is designed to efficiently convert a higher DC input voltage to a lower, regulated DC output voltage, with capabilities for both constant voltage (CV) and constant current (CC) operation. This module is suitable for various applications, including LED drivers, battery charging, and general power supply regulation.

2. SAFETY INSTRUCTIONS

- Always ensure correct polarity when connecting input and output power. Incorrect connections can damage the module and connected devices.
- Do not exceed the maximum input voltage of 40V DC or the maximum output current of 20A.
- Operate the module in a well-ventilated area to prevent overheating, especially during high-power applications.
- Avoid prolonged short circuits, even with self-recovery protection, as this can stress components.
- Ensure all connections are secure to prevent accidental disconnections or short circuits.
- If there is a significant difference between input and output voltage, reduce the power and current to prevent excessive heat generation.

3. PRODUCT FEATURES

- Wide input voltage range: 6V to 40V DC.
- Adjustable output voltage: 1.2V to 36V DC.
- Adjustable output current: up to 20A (15A recommended for continuous operation).
- High conversion efficiency: up to 96% (e.g., 24V to 12V at 20A).
- Equipped with 75V / 80A large current double MOS tube for robust performance.
- High frequency low impedance electrolytic capacitors for minimal output ripple and stable power.
- Convenient 30A screw terminals for easy and secure wiring.

- Integrated heat sinks for enhanced thermal management.
- Self-recovery short circuit protection.

4. SPECIFICATIONS

| Parameter | Value |
|--------------------------|--|
| Input Voltage | 6V to 40V DC (10V to 40V recommended) |
| Output Voltage | 1.2V to 36V DC |
| Output Current | 20A (max), 15A (recommended) |
| Efficiency | 95% (e.g., 24V to 12V, 20A) |
| Output Ripple | ≤50mV |
| Wiring Method | Terminal Block |
| Short Circuit Protection | Self-recovery (avoid prolonged short circuits) |
| Dimensions (L x W x H) | 60 x 53 x 27 mm / 2.36 x 2.08 x 1.06 inches |
| Wattage | 300 watts |
| Weight | 94 g / 0.09 Kilograms |
| Model Number | 57677b3f-44b7-48d7-9ef9-f775c151f091 |
| UPC | 725835042680 |

5. COMPONENT IDENTIFICATION

Refer to the image below for the identification of key components and connection points on the module.

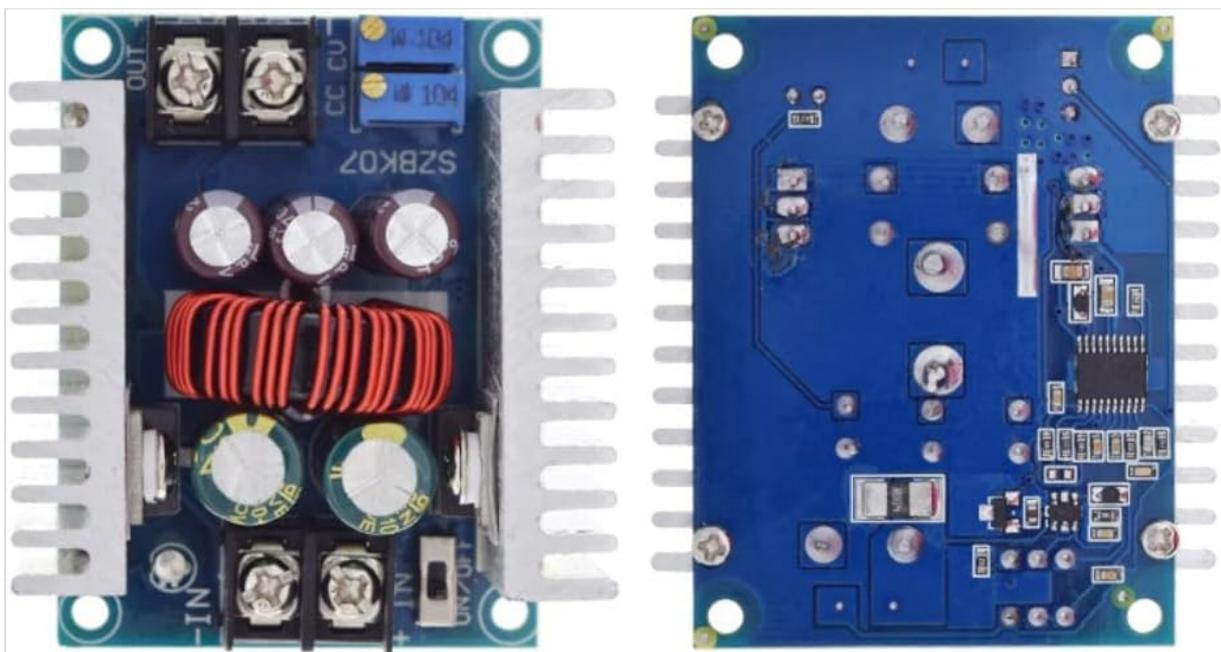


Figure 1: Top and bottom view of the DollaTek DC-DC Converter Module. This image highlights the input and output screw terminals, the voltage (CV) and current (CC) adjustment potentiometers, and the heat sinks. The bottom view shows the PCB layout.

- **+IN:** Positive Input Terminal (Connect to positive terminal of input power source).
- **-IN:** Negative Input Terminal (Connect to negative terminal of input power source).
- **VO+:** Positive Output Terminal (Connect to positive terminal of load).
- **VO-:** Negative Output Terminal (Connect to negative terminal of load).
- **CV (Voltage Adjustment):** Potentiometer for setting the output voltage. Turn clockwise to increase voltage, counter-clockwise to decrease.
- **CC (Current Adjustment):** Potentiometer for setting the output current limit. Turn clockwise to increase current, counter-clockwise to decrease.
- **EN (Enable):** Control pin. A low voltage level (e.g., ground) will shut down the output. Leaving it suspended or connecting to a high voltage level (e.g., input positive) enables the output.

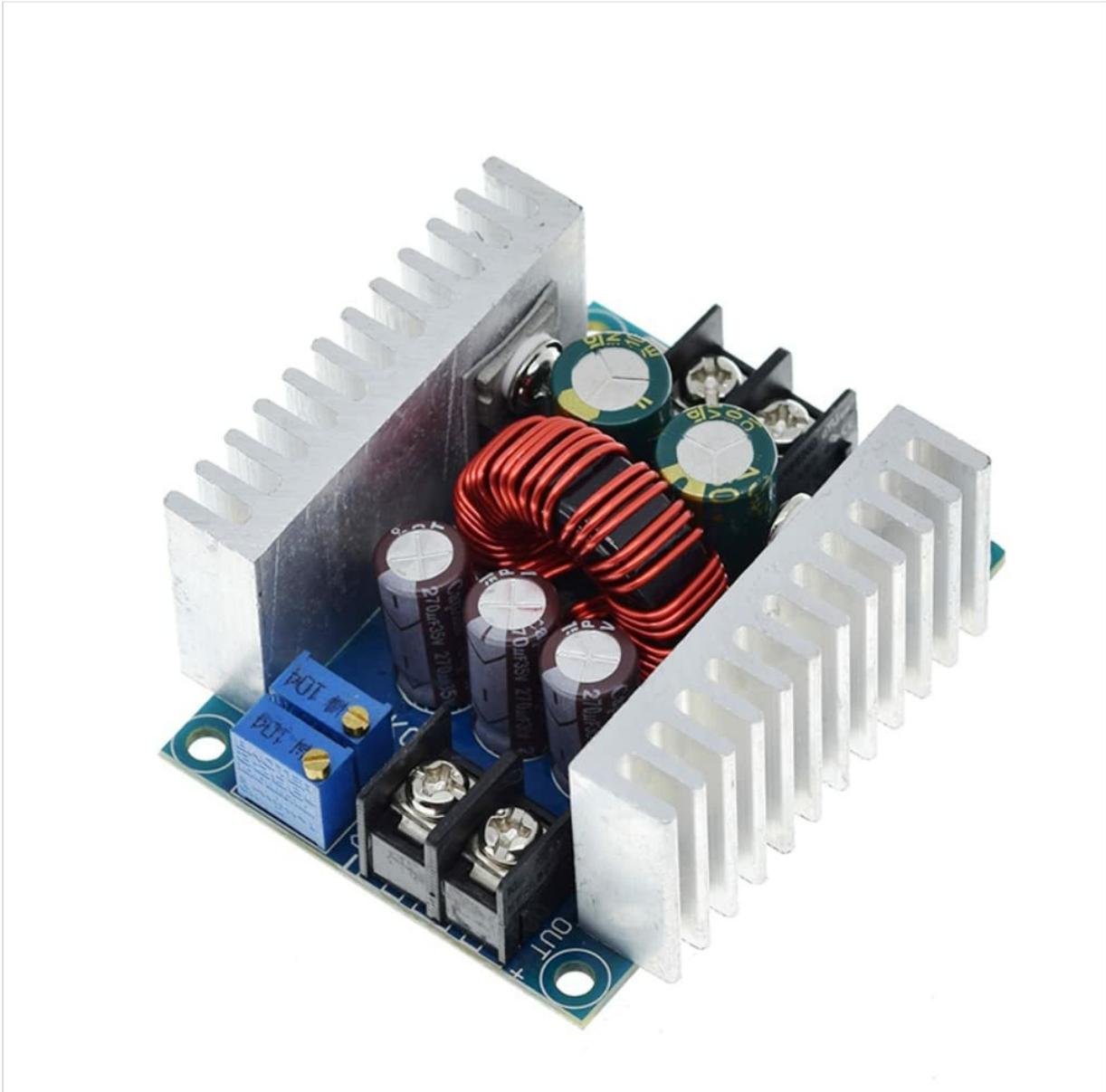


Figure 2: Angled view of the DollaTek DC-DC Converter Module. This image provides a clear perspective of the overall module, including the large heat sinks, inductor, and capacitors.

Weight: 87.0g

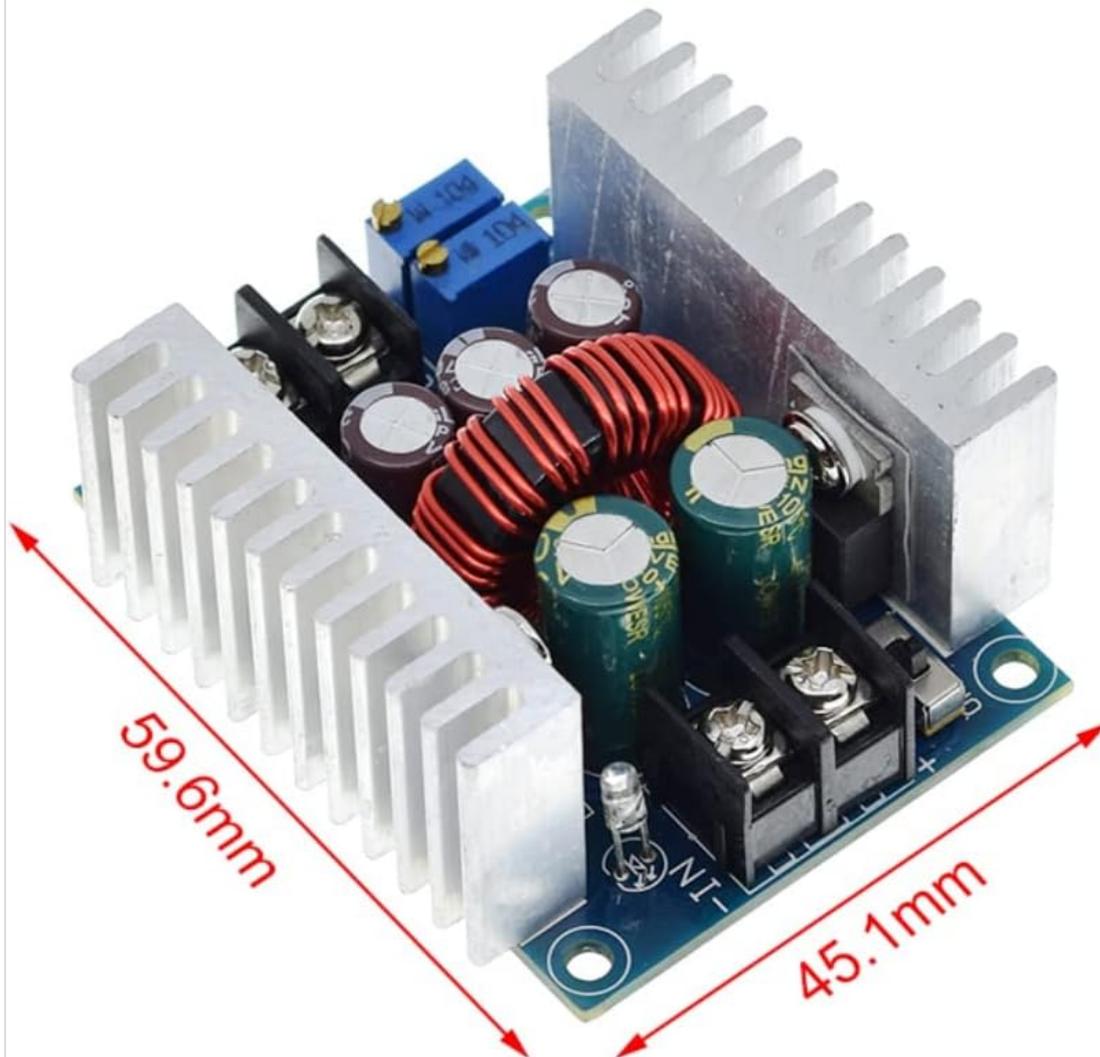


Figure 3: Dimensions of the DollaTek DC-DC Converter Module. This image shows the physical measurements of the module, indicating a length of approximately 59.6mm and a width of 45.1mm.

6. SETUP AND INSTALLATION

- 1. Prepare Connections:** Ensure your input power source and load are disconnected from power before making any connections.
- 2. Connect Input Power:**
 - Connect the positive terminal of your DC input power source to the **+IN** terminal on the module.
 - Connect the negative terminal of your DC input power source to the **-IN** terminal on the module.
 - *Recommended input voltage range is 10V to 40V DC. Minimum is 6V DC.*
- 3. Connect Load:**
 - Connect the positive terminal of your load to the **+VO** terminal on the module.
 - Connect the negative terminal of your load to the **-VO** terminal on the module.
- 4. Enable Pin (EN):** By default, the EN pin is typically left floating or connected to a high logic level to enable the output. If you need to control the output via a low voltage signal, connect the EN pin to your control circuit.

5. **Initial Adjustment (Important):** Before applying power to the load, it is highly recommended to adjust the output voltage and current.

- Turn the **CV** (voltage adjustment) potentiometer fully counter-clockwise.
- Turn the **CC** (current adjustment) potentiometer fully counter-clockwise.

7. OPERATING INSTRUCTIONS

1. **Power On:** Apply power to the input terminals (+IN, -IN).

2. **Adjust Output Voltage (CV Mode):**

- With no load connected, or with a voltmeter connected to the output terminals (VO+, VO-), slowly turn the **CV** potentiometer clockwise.
- Adjust until the desired output voltage is reached.

3. **Adjust Output Current (CC Mode):**

- To set the current limit, you will need to simulate a short circuit or connect a suitable load that draws more current than your desired limit.
- Connect an ammeter in series with the output, or connect a load that will draw current.
- Slowly turn the **CC** potentiometer clockwise until the desired current limit is reached.
- *Note: If the output voltage is set too low, the module may operate in CC mode even without a current limit set. Ensure your CV setting is appropriate for your load.*

4. **Connect Load:** Once voltage and current limits are set, connect your load. The module will regulate the output voltage or current according to your settings and the load's requirements.

8. MAINTENANCE

- Keep the module clean and free from dust and debris.
- Ensure adequate airflow around the heat sinks, especially during continuous high-power operation.
- Periodically check all wiring connections for tightness and integrity.
- Avoid exposing the module to moisture or extreme temperatures.

9. TROUBLESHOOTING

- **No Output Voltage:**

- Check input power supply: Ensure it is connected correctly and providing voltage within the specified range (6V-40V).
- Check output connections: Verify load is correctly connected and not short-circuited.
- Check EN pin: Ensure it is enabled (high logic level or floating).
- Adjust CV potentiometer: Slowly turn clockwise to increase output voltage.

- **Output Voltage Too Low/High:**

- Adjust the **CV** potentiometer carefully.
- Ensure the input voltage is sufficiently higher than the desired output voltage (this is a step-down converter).

- **Output Current Not Reaching Desired Level:**

- Adjust the **CC** potentiometer clockwise to increase the current limit.
 - Ensure the load is capable of drawing the desired current at the set output voltage.
 - Check for excessive heat: If the module is overheating, it may be entering thermal protection, limiting current. Reduce load or improve cooling.
- **Module Overheating:**
 - Ensure adequate ventilation around the module.
 - Reduce the load current or output power.
 - If the difference between input and output voltage is large, the module will dissipate more heat. Consider a pre-regulator or a module with higher efficiency for such scenarios.

10. WARRANTY AND SUPPORT

This DollaTek product is typically covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms, duration, and to obtain technical support or service, please refer to the documentation provided at the time of purchase or contact your retailer or DollaTek customer service directly.

Please retain your proof of purchase for warranty claims.
