

ACEIRMC 20097

ACEIRMC DC 12V 24V to 5V 5A Step Down Converter Instruction Manual

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the ACEIRMC DC 12V/24V to 5V 5A Step Down Converter. This device is designed to efficiently convert a higher DC input voltage (12V or 24V nominal) to a stable 5V DC output, suitable for various electronic applications. Please read these instructions carefully before installation and operation.

2. PRODUCT FEATURES

- **Input Voltage:** DC 12V/24V nominal (Voltage Range: 10-30V)
- **Output Voltage:** DC 5V
- **Output Current:** 5A
- **Output Power:** 15W
- **Maximum Efficiency:** ≥95%
- **Ripple Wave:** 50Mv
- **Starting Delay Time:** ≤2s
- **Protection Features:** Built-in over-load, over-current, over-temperature, and short-circuit protection.
- **Design:** Plastic shell with epoxy potting for anti-dust, anti-shock, and improved heat dissipation.
- **Operating Temperature:** Safe and reliable operation in -40°C to 80°C range.



Image: The converter is designed to be waterproof, dust-proof, and shockproof, ensuring durability in various environments. Note: The image may show a 25W model, but the features apply to this 15W 5A model.

3. SPECIFICATIONS

Specification	Value
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Specification	Value
Brand	ACEIRMC
Model Number	20097
Input Voltage (Nominal)	DC 12V/24V
Input Voltage Range	10V - 30V
Output Voltage	DC 5V
Output Current	5A
Output Power	15W
Conversion Efficiency	≥95%
Working Temperature	-40°C to 80°C
Dimensions (L x W x H)	46mm x 32mm x 18mm (1.81" x 1.26" x 0.71")
Protection	Over-voltage, Over-current, Overheat, Short-circuit



Image: A visual representation of key specifications including output voltage, power, efficiency, input voltage range, and working temperature. Note: The image may show a 25W model, but the text above reflects the specifications for this 15W 5A model.



Image: Dimensional drawing of the converter, showing its length, width, and height. Note: The image may show dimensions for a 25W model, but the text above reflects the dimensions for this 15W 5A model.

4. SETUP AND INSTALLATION

Follow these steps for proper installation of the DC-DC converter:

- Identify Terminals:** The converter has clearly marked input and output terminals. Ensure you correctly identify Input+ (positive), Input- (negative), Output+ (positive), and Output- (negative).
- Connect Input:** Connect your DC 12V or 24V power source (e.g., battery) to the Input+ and Input- terminals. Ensure correct polarity.
- Connect Output:** Connect your 5V device to the Output+ and Output- terminals. Ensure correct polarity.
- Secure Connections:** Tighten all screw terminals to ensure a secure and reliable electrical connection. Loose connections can lead to poor performance or damage.
- Mounting:** Mount the converter in a suitable location, considering its waterproof and dust-proof properties. Ensure adequate ventilation if operating at maximum load for extended periods, although the epoxy potting aids heat dissipation.



Image: A clear wiring diagram illustrating how to connect the input (from a 12V/24V battery) and output (to a 5V 5A device) to the converter's terminals.

5. OPERATING INSTRUCTIONS

Once properly installed, the converter operates automatically. Ensure that the input voltage remains within the specified range of 10V to 30V DC. The converter will provide a stable 5V DC output up to 5A. Avoid exceeding the maximum output current of 5A to prevent triggering the over-current protection or damaging connected devices.

6. MAINTENANCE

The ACEIRMC DC-DC converter is designed for low maintenance due to its robust construction with epoxy potting, making it waterproof, dust-proof, and shockproof. Regular maintenance is generally not required. However, it is recommended to:

- Periodically inspect wiring connections to ensure they remain secure.
- Keep the converter free from excessive dirt or debris, especially around the heat-dissipating surfaces, to ensure optimal performance.
- Avoid exposing the converter to extreme temperatures outside its specified operating range (-40°C to 80°C).

7. TROUBLESHOOTING

The converter includes several built-in protection mechanisms to ensure safe operation. If the converter stops functioning or behaves unexpectedly, consider the following:

- **Output Anti-Reverse Connection Protection:** If the output's positive and negative electrodes are wrongly connected, the power module is not damaged. Correct the connection to restore operation.
- **Short Circuit Protection:** If the output is short-circuited to ground, the converter will automatically protect itself without damage. Remove the short circuit, and the converter should resume normal operation.
- **Overvoltage Protection:** If the power supply is damaged and the output voltage exceeds safe limits, the output will automatically disconnect to prevent damage to connected appliances. Address the input power supply issue.
- **Overcurrent Protection:** If the output current exceeds 5A, the output voltage will gradually decrease until the converter turns off. Reduce the load to below 5A for the converter to resume operation.
- **Overtemperature Protection:** If the internal temperature exceeds 85°C, the converter will automatically protect itself. Allow the unit to cool down. Ensure proper ventilation and avoid operating in excessively hot environments.



Image: Visual explanation of the converter's protection mechanisms, including anti-reverse connection, short circuit, overvoltage, overcurrent, and overtemperature protection.

8. APPLICATIONS

This DC-DC converter is versatile and widely used in various low-power test systems and applications, including but not limited to:

- Automotive electronics
- Surveillance systems
- Railway signals
- Medical equipment
- Industrial automation control

- Scientific research equipment
- LED lighting and displays
- Vehicle-mounted equipment
- Power equipment
- Instrumentation
- Semiconductor refrigeration and heating air purifiers
- Electronic refrigerators
- Cable TV systems
- Digital products and instruments



Image: Examples of diverse applications where the DC-DC converter can be utilized, such as monitoring equipment, lighting, mechanical systems, and medical devices.

9. PRODUCT VIDEO

Watch this video for an overview of the ACEIRMC DC-DC Converter series. While this video specifically highlights a 3A model, the general features, design, and protection mechanisms are similar across the product line.

Your browser does not support the video tag.

Video: An official product video from Aceirmc US demonstrating the features and functionality of a DC 12V 24V to 5V 3A Converter, which shares many characteristics with the 5A model.

10. WARRANTY AND SUPPORT

ACEIRMC offers a **1-year replacement assurance** for this voltage converter. If you encounter any issues with the product within this period, please refer to your purchase documentation for contact information regarding replacement or support.

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