DEVMO AMS1117-5.0

DEVMO AMS1117-5.0 5V Step-Down Linear Voltage Regulator Module

User Manual

1. Product Overview

The DEVMO AMS1117-5.0 is a compact step-down linear voltage regulator module designed to convert a higher DC input voltage (6V to 12V) into a stable 5.0V DC output. This module is suitable for various electronic projects, including those compatible with Arduino platforms, where a regulated 5V power supply is required from a higher voltage source.

Key features include:

- **Input Voltage Range:** 6V to 12V DC.
- **Output Voltage:** Stable 5.0V DC.
- **Maximum Output Current:** Up to 800mA with a 6V input, decreasing to 200mA with a 12V input, limited by internal power dissipation.
- **Connection:** Solderable pins for easy input and output connections.
- **Indicator:** A PCB-mounted LED illuminates when voltage is applied to the module, indicating power status.

2. Specifications

2.1. Electrical Specifications

Parameter	Value
Input Voltage	6V to 12V DC
Output Voltage	5.0V DC
Maximum Output Current (6V Input)	800mA

Parameter	Value
Maximum Output Current (12V Input)	200mA

Note: The maximum output current is limited by the regulator's internal power dissipation and decreases as the input voltage increases. The module cannot provide 800mA output at all input voltages.

2.2. Physical Specifications

Parameter	Value
Dimensions (L x W x H)	25mm x 10mm x 3mm (1" x 0.44" x 0.13")
Item Weight	0.387 ounces (approx. 11 grams)

3. Setup and Installation

This module is designed for easy integration into electronic circuits. Proper connection of input and output terminals is crucial for safe and correct operation.

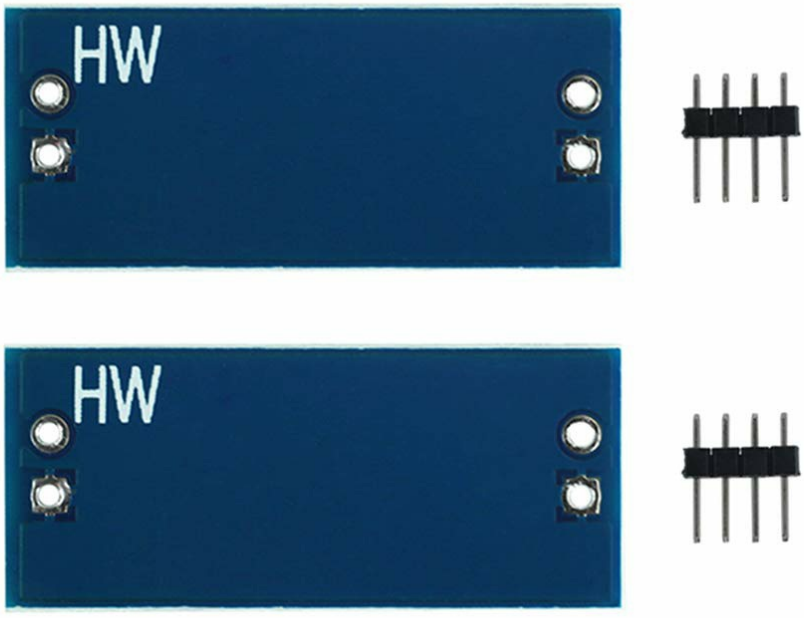

Figure 1: Two DEVMO AMS1117-5.0 modules with included pin headers. The modules feature solder pads for input and output connections.

3.1. Connection Instructions

1. **Identify Terminals:** The module has clearly marked solder pads for input and output. Typically, these are labeled '+' and '-' for input, and 'OUT' or '5V' for output. Refer to the module's silkscreen for exact markings.
2. **Input Connection:** Connect your DC power source (6V to 12V) to the input terminals. Ensure correct polarity: positive (+) of the power source to the '+' terminal of the module, and negative (-) to the '-' terminal.
3. **Output Connection:** Connect your load (e.g., Arduino board, 5V sensor) to the output terminals. Ensure correct polarity: the 5V output from the module to the positive input of your load, and the ground of the module to the ground of your load.
4. **Soldering:** Use appropriate soldering techniques to securely attach wires or pin headers to the module's pads. Ensure strong, clean solder joints to prevent intermittent connections.
5. **Power Indicator:** Once power is applied to the input, the onboard LED should illuminate, indicating that the module is receiving power and attempting to regulate the voltage.

3.2. Safety Precautions

- Always verify input and output polarities before applying power to prevent damage to the module or connected devices.
- Do not exceed the maximum input voltage of 12V DC.
- Ensure the total current drawn by your load does not exceed the module's maximum output current capacity for the given input voltage. Exceeding this limit can lead to overheating and damage.
- Avoid short circuits on the output terminals.
- Handle the module by its edges to avoid touching components, especially after operation, as it may be warm.

4. Operation

The AMS1117-5.0 module operates as a linear voltage regulator. It dissipates excess input voltage as heat to maintain a stable 5.0V output. This means that the higher the input voltage and the higher the output current, the more heat the module will generate.

- **Power On:** Apply DC voltage within the 6V to 12V range to the input terminals. The onboard LED will light up.
- **Voltage Output:** The module will provide a regulated 5.0V DC at its output terminals.
- **Current Limitation:** Be mindful of the current limitations. For example, with a 12V input, the maximum stable output current is approximately 200mA. If your load requires more current, consider using a lower input voltage (closer to 6V) or an alternative power regulation method.
- **Heat Management:** For continuous operation at higher input voltages and currents, ensure adequate ventilation around the module to dissipate heat.

5. Maintenance

The DEVMO AMS1117-5.0 module is a solid-state electronic component and generally requires minimal maintenance. However, following these guidelines can help ensure its longevity and reliable performance:

- **Cleanliness:** Keep the module free from dust, dirt, and moisture. Use a soft, dry brush or compressed air to clean if necessary. Avoid using liquid cleaners.

- **Environmental Conditions:** Operate the module within its specified temperature range. Avoid extreme heat, cold, or humidity.
- **Physical Inspection:** Periodically inspect solder joints and connections for any signs of corrosion or damage.
- **Storage:** When not in use, store the module in an anti-static bag in a dry, cool environment.

6. Troubleshooting

If you encounter issues with your DEVMO AMS1117-5.0 module, consider the following troubleshooting steps:

- **No Output Voltage / LED Off:**
  - Check if the input voltage is within the 6V to 12V range.
  - Verify input polarity. Incorrect polarity will prevent operation and may damage the module.
  - Inspect all connections for loose wires or poor solder joints.
  - Ensure the power source is functioning correctly.
- **Output Voltage is Lower Than 5V:**
  - Check if the load current exceeds the module's maximum capacity for the given input voltage. Reduce the load or use a lower input voltage.
  - Ensure the input voltage is stable and not dropping under load.
  - The module might be overheating. Allow it to cool down and ensure proper ventilation.
- **Module Overheating:**
  - This is common for linear regulators when the voltage difference between input and output is large, and the current draw is high.
  - Reduce the input voltage if possible, or reduce the load current.
  - Ensure adequate airflow around the module.
- **Intermittent Operation:**
  - Check for cold solder joints or loose connections.
  - Ensure the power source is stable and not fluctuating.

7. Warranty and Support

For warranty information, technical support, or further assistance with your DEVMO AMS1117-5.0 module, please refer to the seller's return policy or contact the DEVMO customer support directly through the platform where the product was purchased. Keep your purchase receipt or order details handy for faster service.

DEVMO is committed to providing quality electronic components. If you have any questions regarding the operation or integration of this module, do not hesitate to seek assistance.