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› Heemol DC-DC Adjustable Step-Up Boost Converter Module User Manual

Heemol Heemol-LH-0100445

Heemol DC-DC Adjustable Step-Up Boost Converter Module User Manual

Model: Heemol-LH-0100445 | Brand: Heemol

1. INTRODUCTION

This manual provides detailed instructions for the safe and effective use of the Heemol DC-DC Adjustable Step-Up Boost Converter Module. This high-performance switching current (BOOST) module is designed to convert a lower DC input voltage to a higher DC output voltage, offering broad application in various electronic projects and power supply solutions.

Please read this manual thoroughly before operating the module to ensure proper functionality and to prevent potential damage or injury.

2. SAFETY INFORMATION

WARNING:

- The input voltage should **NOT** exceed 30V to prevent potential damage to the module.
- Ensure correct polarity when connecting input and output terminals. Incorrect connections can damage the module and connected devices.
- Do not short-circuit the input or output terminals.
- Operate the module within its specified voltage and current limits. Exceeding these limits may lead to overheating and failure.
- Keep the module away from moisture, dust, and extreme temperatures.
- Handle with care to avoid electrostatic discharge (ESD) damage.

3. PRODUCT OVERVIEW

The Heemol DC-DC Adjustable Step-Up Boost Converter Module utilizes second-generation high-frequency switching technology, offering superior performance compared to older designs. It features integrated 4A efficient MOSFET switches, enabling high efficiency.

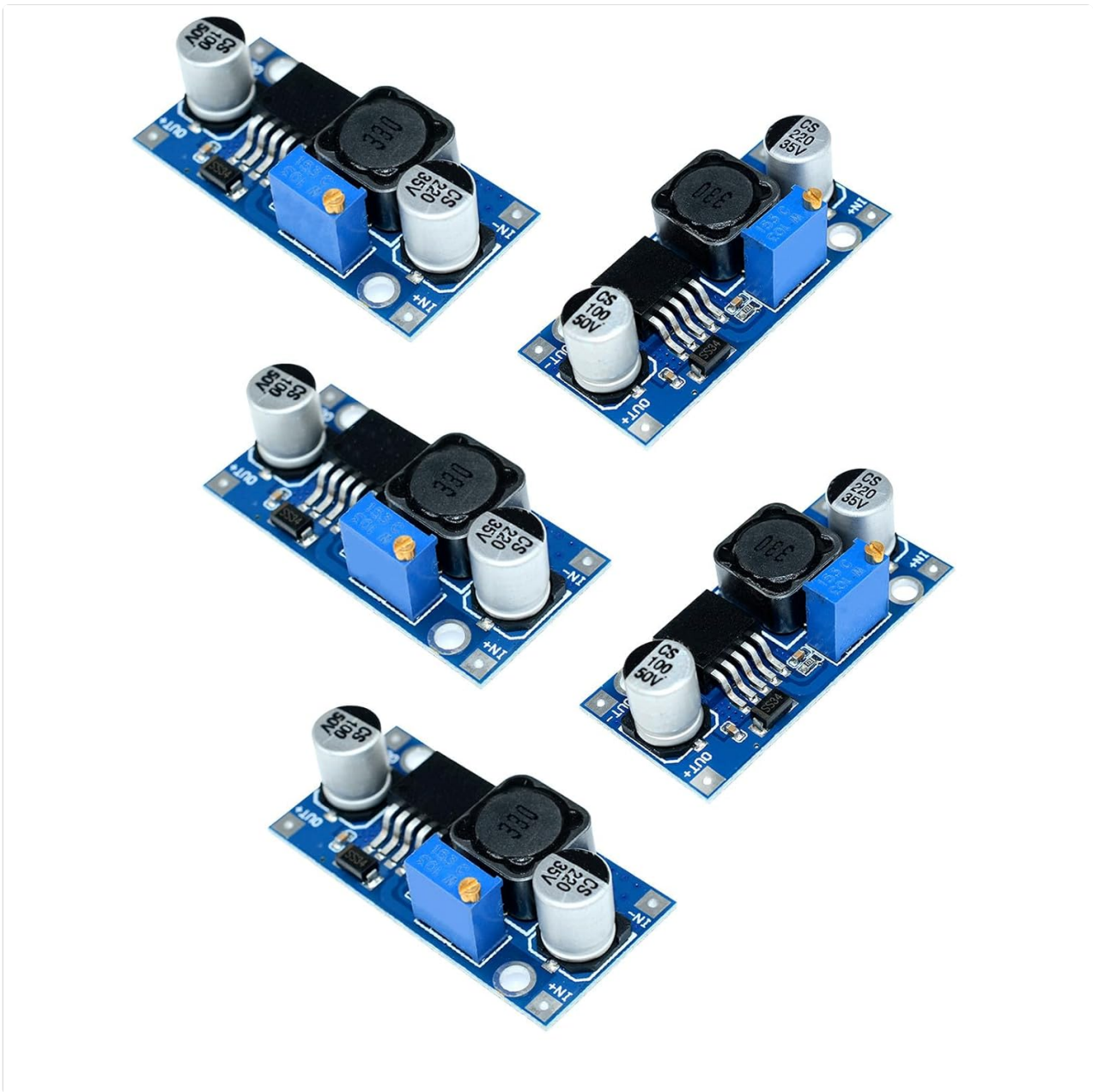


Figure 1: Heemol DC-DC Boost Converter Modules. This image shows several units of the Heemol DC-DC Adjustable Step-Up Boost Converter Module, highlighting their compact design.

3.1. Key Features

- Wide Input Voltage Range: 3V to 32V (optimal operating range: 5V to 32V).
- Wide Output Voltage Range: 5V to 35V.
- High Efficiency: Up to 94% due to integrated 4A MOSFET switches.
- High Switching Frequency: 400KHz, allowing for smaller filter capacitors and reduced ripple.
- Adjustable Output Voltage: Via an onboard potentiometer.

3.2. Component Identification

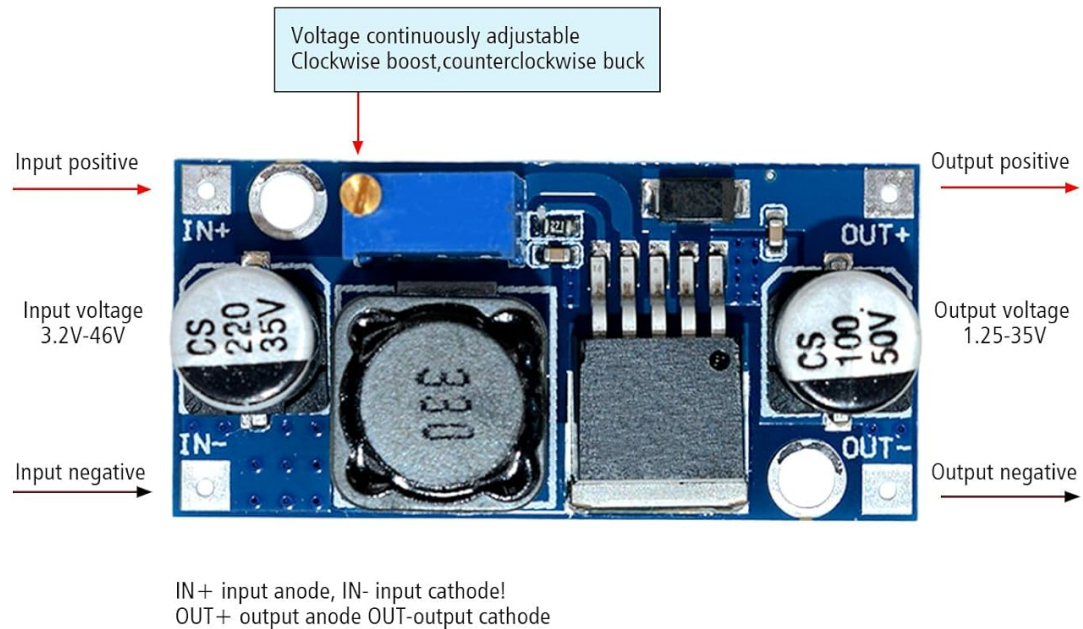


Figure 2: Module Layout and Connections. This image displays the top view of the Heemol DC-DC boost converter module. Key components are labeled, including the IN+ (input positive), IN- (input negative), OUT+ (output positive), and OUT- (output negative) terminals. The input voltage range is indicated as 3.2V-46V (though the safety warning specifies not over 30V), and the output voltage range is 1.25-35V. A warning about not exceeding 30V input voltage is also visible. The blue component is the potentiometer for voltage adjustment.

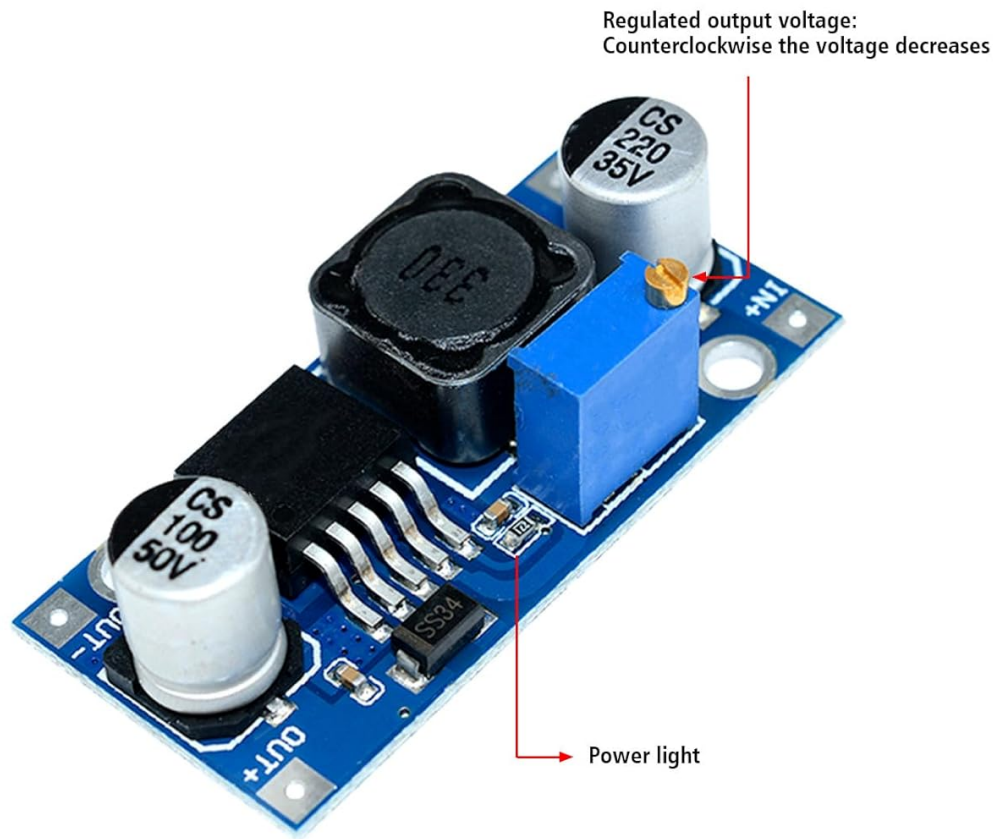


Figure 3: Voltage Adjustment and Power Indicator. This image highlights the blue potentiometer used for regulating the output voltage. Turning it counter-clockwise decreases the voltage. A small power light is also visible, indicating when the module is active.

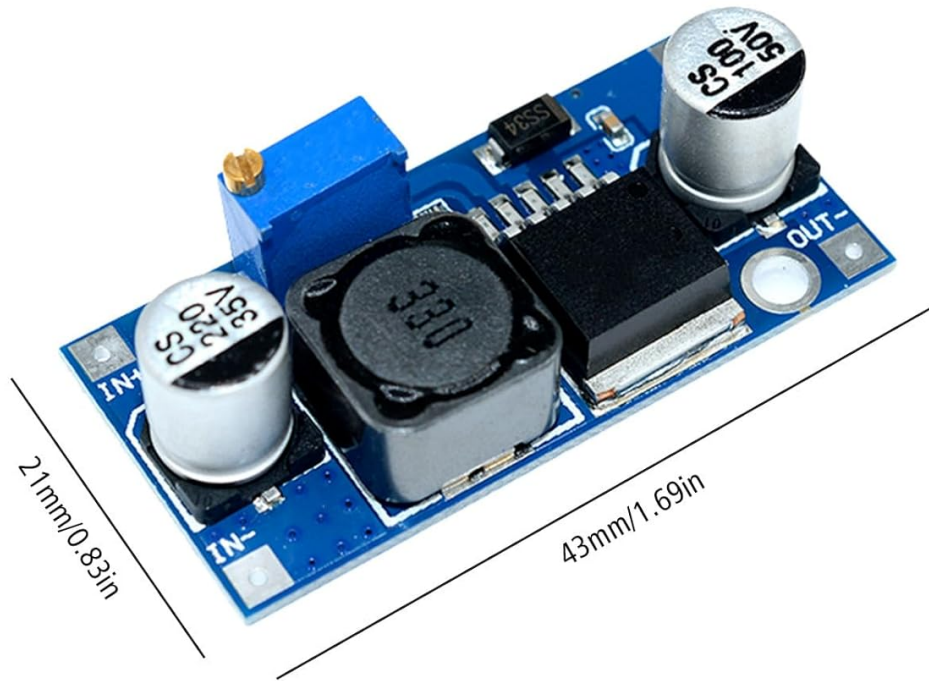


Figure 4: Module Dimensions. This image provides the physical dimensions of the module, showing a length of 43mm (1.69 inches) and a width of 21mm (0.83 inches).

4. SPECIFICATIONS

Parameter	Value
Model Number	Heemol-LH-0100445
Input Voltage (Vin)	3V - 32V (Optimal: 5V - 32V)
Output Voltage (Vout)	5V - 35V (Adjustable)
Maximum Output Current	4A
Maximum Output Power	30W
Efficiency	Up to 94%
Switching Frequency	400KHz
Dimensions (L x W)	43mm x 21mm (1.69in x 0.83in)

5. SETUP AND INSTALLATION

Follow these steps to correctly set up and install your DC-DC boost converter module:

- Identify Terminals:** Locate the input terminals (IN+, IN-) and output terminals (OUT+, OUT-) on the module. Refer to Figure 2 for visual identification.
- Connect Input Power:** Connect your DC power source to the input terminals. Ensure the positive terminal of your power source connects to IN+ and the negative terminal connects to IN-.
Important: Do not exceed 30V input voltage.
- Connect Load:** Connect your load (the device or circuit requiring power) to the output terminals. Ensure the positive terminal of your load connects to OUT+ and the negative terminal connects to OUT-.
- Initial Check:** Before applying power, double-check all connections for correct polarity and secure contact.

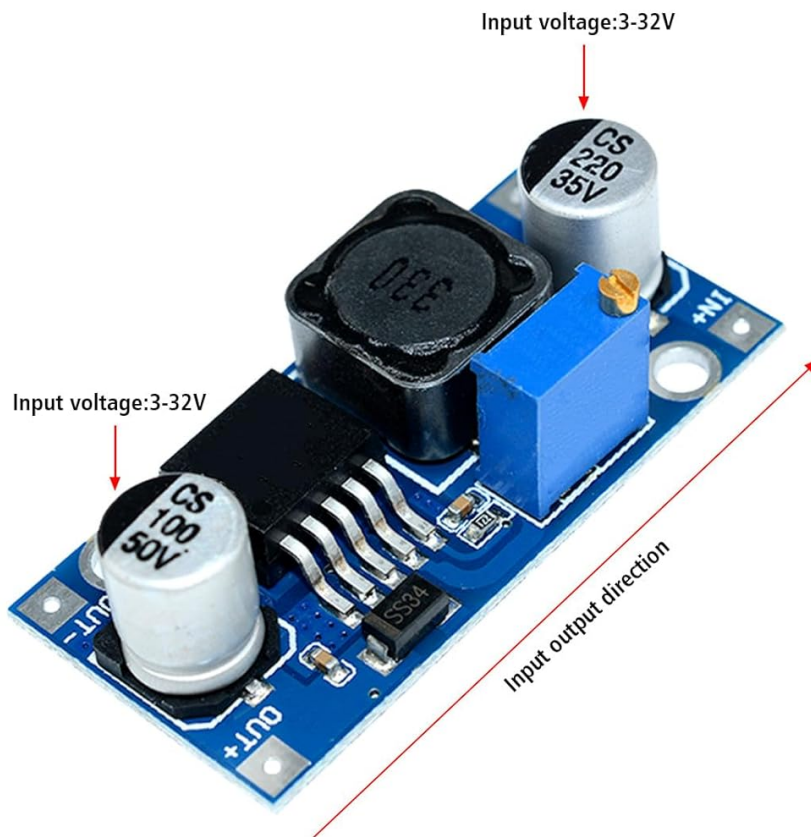


Figure 5: Input Voltage and Output Direction. This image illustrates the input voltage range of 3-32V and indicates the general direction of power flow from input to output.

6. OPERATING INSTRUCTIONS

Once the module is connected, you can adjust the output voltage:

1. **Apply Power:** Turn on your DC input power source. The power light on the module (refer to Figure 3) should illuminate.
2. **Measure Output Voltage:** Use a multimeter to measure the voltage across the OUT+ and OUT- terminals.
3. **Adjust Output Voltage:** Carefully turn the blue potentiometer (variable resistor) on the module using a small screwdriver.
 - Turning the potentiometer **clockwise** will generally **increase** the output voltage.
 - Turning the potentiometer **counter-clockwise** will generally **decrease** the output voltage.

Adjust until the desired output voltage is achieved.

4. **Monitor Load:** Ensure the connected load operates correctly within the adjusted voltage and current.

7. PERFORMANCE DATA (TEST REFERENCE)

The following table provides reference data from typical test scenarios. Actual performance may vary based on input voltage, output load, and environmental conditions.

Input Voltage (Vin)	Output Voltage (Vout)	Output Current (Iout)	Output Power (Pout)
3V	12V	0.4A	4.8W
5V	12V	0.8A	9.6W
7.4V	12V	1.5A	18W
12V	15V	2A	30W
12V	16V	2A	32W
12V	18V	1.6A	28.8W
12V	19V	1.5A	28.5W
12V	24V	1A	24W

The relationship between input and output power is approximately given by: $V_{in} * I_{in} * Efficiency = V_{out} * I_{out}$

- **Vin:** Input Voltage
- **Iin:** Input Current
- **Vout:** Output Voltage
- **Iout:** Output Current

8. TROUBLESHOOTING

- **No Output Voltage:**
 - Check input power source: Ensure it is providing voltage within the 3V-32V range.
 - Verify connections: Confirm IN+, IN-, OUT+, OUT- are correctly wired and secure.
 - Check potentiometer setting: The output voltage might be set too low. Adjust it clockwise.
 - Inspect for damage: Look for any visible signs of damage on the module.
- **Output Voltage Unstable/Incorrect:**
 - Input voltage fluctuations: Ensure your input power source is stable.
 - Overload: The load might be drawing too much current, exceeding the module's 4A limit. Reduce the load.
 - Loose connections: Re-check all wiring.
- **Module Overheating:**
 - Exceeding current/power limits: Ensure the output current does not exceed 4A and power does not exceed 30W.
 - Insufficient ventilation: Ensure the module has adequate airflow, especially under heavy loads.

9. MAINTENANCE

The Heemol DC-DC Adjustable Step-Up Boost Converter Module requires minimal maintenance:

- **Cleaning:** Keep the module clean and free from dust and debris. Use a soft, dry brush or compressed air for cleaning.
- **Storage:** Store the module in a dry, cool environment when not in use.
- **Inspection:** Periodically inspect connections for looseness or corrosion.

10. WARRANTY INFORMATION

Warranty information for this product is not provided in the available product details. Please refer to your purchase documentation or contact the seller for specific warranty terms.

11. CUSTOMER SUPPORT

Customer support contact details are not provided in the available product details. For assistance, please contact the retailer or seller from whom you purchased this product.