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Model: NIXIE-HV250V

INTRODUCTION

This manual provides detailed instructions for the safe and effective use of the QINIZX NIXIE-HV250V DC-DC Boost Power Supply Module. This module is designed to convert a low DC input voltage (10-24V) into a high DC output voltage (90-250V), making it suitable for applications such as Nixie tube clocks, vacuum tube circuits, and Magic Eye 6E2 level indicators.

SAFETY INFORMATION

WARNING: This module generates high voltage. Improper handling can result in electric shock, injury, or damage to equipment. Always observe the following safety precautions:

- Ensure all connections are secure and correct before applying power.
- Do not touch the module or connected components while power is applied.
- Always disconnect power before making any adjustments or modifications.
- Use appropriate insulation and protective measures.
- If you have a pacemaker, exercise extreme caution or consult a professional.
- This module is intended for experienced users familiar with electronics and high voltage circuits.

PRODUCT FEATURES

- DC-DC boost power supply module utilizing a 3845 control scheme.
- Input voltage range: 10V-24V DC.
- Adjustable output voltage range: 90V-250V DC.
- Capable of driving multiple vacuum tubes (e.g., Nixie tubes, 6E2, 6E1, 6E5).
- Low heat generation, typically not requiring an additional heat sink under normal operating conditions.
- Includes a shutdown function via the SHDN pin for MCU control.
- Compact module size: 5.0 x 3.0 x 1.9 cm (1.96 x 1.18 x 0.74 inches).

PACKAGE CONTENTS

- 1x QINIZX NIXIE-HV250V DC-DC Boost Power Supply Module

SPECIFICATIONS

Parameter	Value
Input Voltage	10V - 24V DC
Output Voltage	90V - 250V DC (Adjustable)
Maximum Output Current (at 170V)	25mA
Control Scheme	3845
Module Dimensions (L x W x H)	5.0 x 3.0 x 1.9 cm (1.96 x 1.18 x 0.74 inches)
Item Weight	0.634 ounces

Note: The higher the output voltage, the lower the effective output power and efficiency.

SETUP AND CONNECTIONS

Refer to the connection diagram and module images for proper wiring. Ensure power is disconnected before making any connections.

Connection Diagram

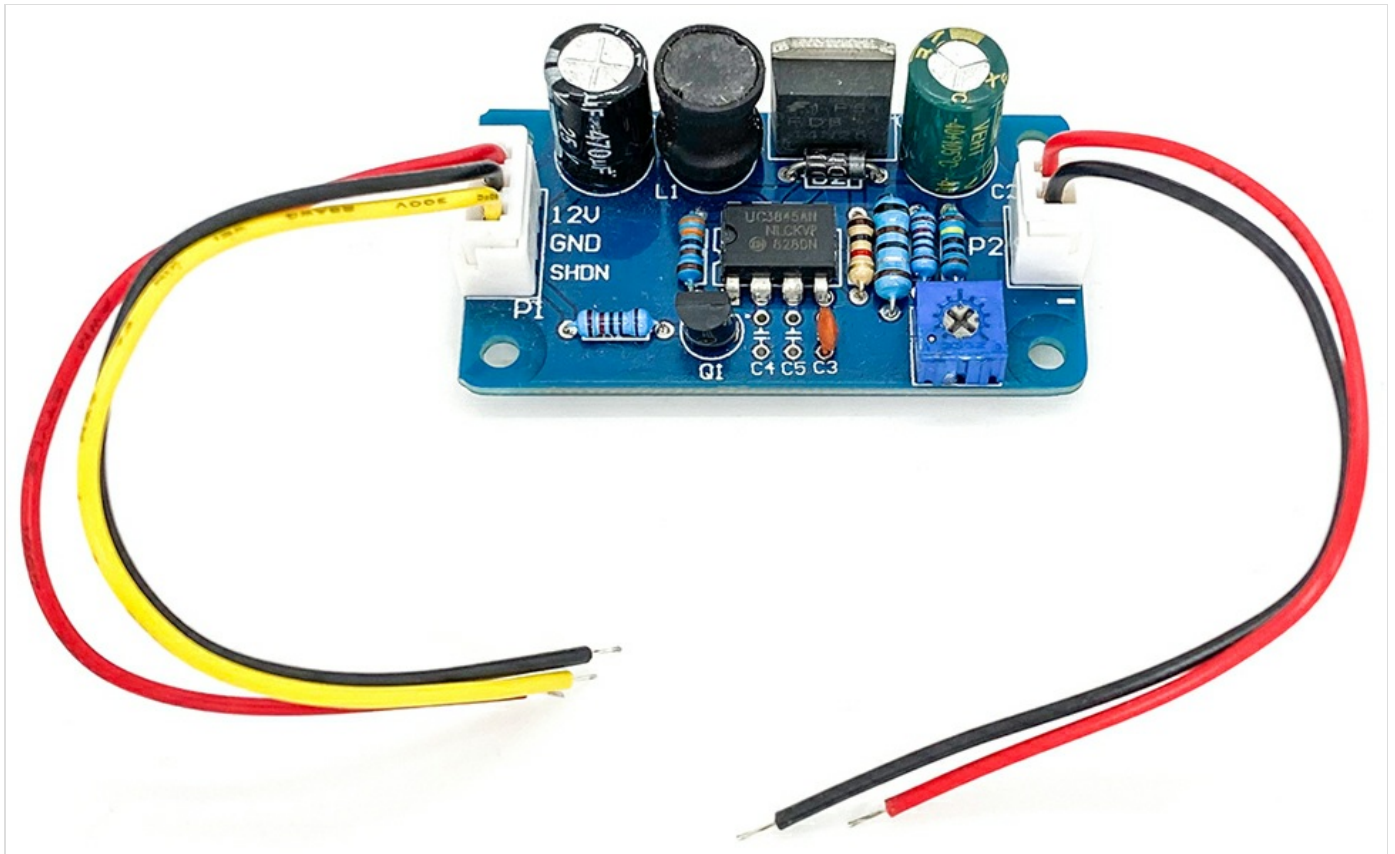


Figure 1: Connection diagram for the 3845 Boost Module. Shows input (VCC 10V-24V, SHDN, GND) and output (90V-250V, GND) terminals, and the output adjust potentiometer.

The diagram illustrates the input and output terminals. The input voltage (VCC) should be between 10V and 24V DC. The output

voltage is adjustable from 90V to 250V DC.

Input Connections (P1)

- **12V (VCC):** Connect your DC input power supply positive terminal (10V-24V).
- **GND:** Connect your DC input power supply negative (ground) terminal.
- **SHDN:** This is the shutdown control pin.
 - To disable the booster board, connect this pin to a high logic level (e.g., from a microcontroller).
 - If not using the shutdown function, leave this pin vacant or connect it to GND to keep the module operational.

Output Connections (P2)

- **+:** Connect the positive terminal of your high-voltage load (e.g., Nixie tube anode).
- **-:** Connect the negative terminal (ground) of your high-voltage load.

Output Voltage Adjustment

The output voltage is adjusted using the onboard potentiometer (blue square component with a screw slot). Use a small screwdriver to carefully turn the potentiometer clockwise to increase the output voltage, and counter-clockwise to decrease it. It is recommended to adjust the voltage while monitoring the output with a high-voltage multimeter.

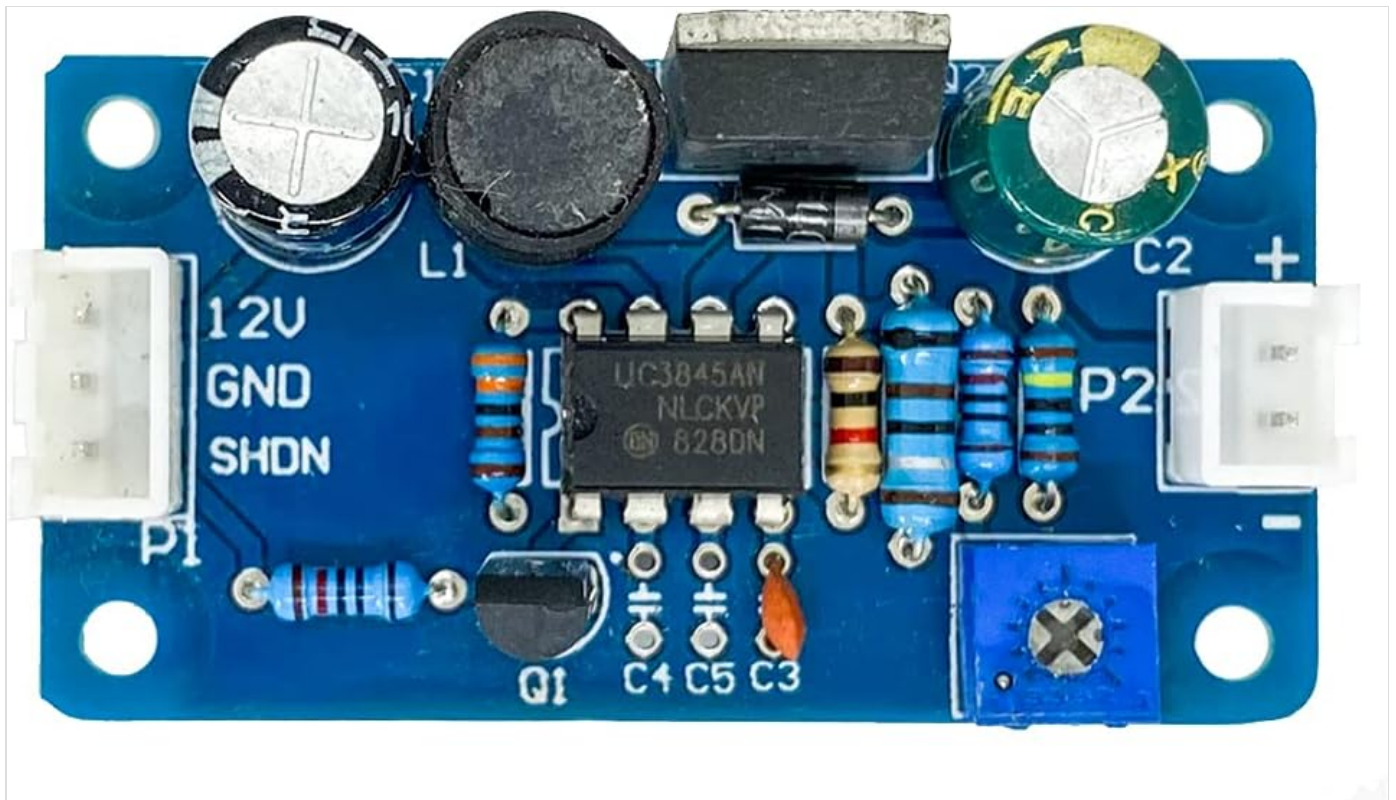


Figure 2: Top view of the module, highlighting the input/output terminals and the blue output adjust potentiometer.

OPERATING INSTRUCTIONS

1. **Initial Setup:** Before applying power, double-check all input and output connections according to the "Setup and Connections" section. Ensure the SHDN pin is configured as desired (vacant/GND for operation, high for shutdown).
2. **Apply Input Power:** Connect your 10V-24V DC power supply to the input terminals (12V and GND).
3. **Adjust Output Voltage:** With power applied and a high-voltage multimeter connected to the output, carefully adjust the potentiometer to achieve the desired output voltage (90V-250V). Start with a lower voltage and gradually increase it.
4. **Connect Load:** Once the desired output voltage is set, disconnect the input power, connect your high-voltage load (e.g., Nixie tubes), and then reapply input power.

5. **Monitoring:** Periodically monitor the module's temperature during operation. While designed for low heat, excessive load or poor ventilation can cause overheating.

MAINTENANCE

The QINIZX NIXIE-HV250V module is designed for reliable operation with minimal maintenance. Follow these guidelines:

- **Keep Clean:** Ensure the module is free from dust, dirt, and moisture. Use a soft, dry brush or compressed air for cleaning.
- **Ventilation:** Provide adequate ventilation around the module, especially if enclosed, to prevent heat buildup.
- **Inspect Connections:** Periodically check all wiring connections for tightness and integrity.
- **Avoid Overload:** Do not exceed the specified output current limits, as this can lead to reduced efficiency, overheating, and potential damage.

TROUBLESHOOTING

Problem	Possible Cause	Solution
No output voltage.	<ul style="list-style-type: none">◦ No input power.◦ Incorrect input polarity.◦ SHDN pin is high (module shut down).◦ Faulty connections.	<ul style="list-style-type: none">◦ Verify input power supply is on and providing 10V-24V DC.◦ Check input wiring for correct polarity.◦ Ensure SHDN pin is vacant or connected to GND if not actively controlled.◦ Inspect all wiring for loose or incorrect connections.
Output voltage is incorrect or unstable.	<ul style="list-style-type: none">◦ Potentiometer setting.◦ Input voltage fluctuations.◦ Overload condition.◦ Faulty component.	<ul style="list-style-type: none">◦ Adjust the output potentiometer carefully.◦ Ensure a stable input power supply.◦ Reduce the load to stay within the module's current limits.◦ If issues persist, the module may be faulty.
Module gets excessively hot.	<ul style="list-style-type: none">◦ Overload condition.◦ Insufficient ventilation.	<ul style="list-style-type: none">◦ Reduce the load.◦ Improve airflow around the module. Consider adding a small heatsink if operating at higher loads or in enclosed spaces.

WARRANTY AND SUPPORT

QINIZX products are designed for quality and reliability. For warranty information or technical support, please refer to the retailer's return policy or contact QINIZX customer service through the platform where the product was purchased. Please provide your product model number (NIXIE-HV250V) and purchase details when seeking support.