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**NEOHIPO ZK-502L**

# NEOHIPO ZK-502L Bluetooth 5.0 Amplifier Board User Manual

Model: ZK-502L

## 1. Introduction

The NEOHIPO ZK-502L is a compact Bluetooth 5.0 amplifier board designed to provide wireless stereo audio amplification for home passive speakers. It features two channels, delivering 50 watts per channel, and operates within a DC 5-24V voltage range. This module is suitable for driving 4-8 Ohm passive speakers with a power rating of 50-200 watts.

## 2. Product Overview

Familiarize yourself with the components and layout of the ZK-502L amplifier board.

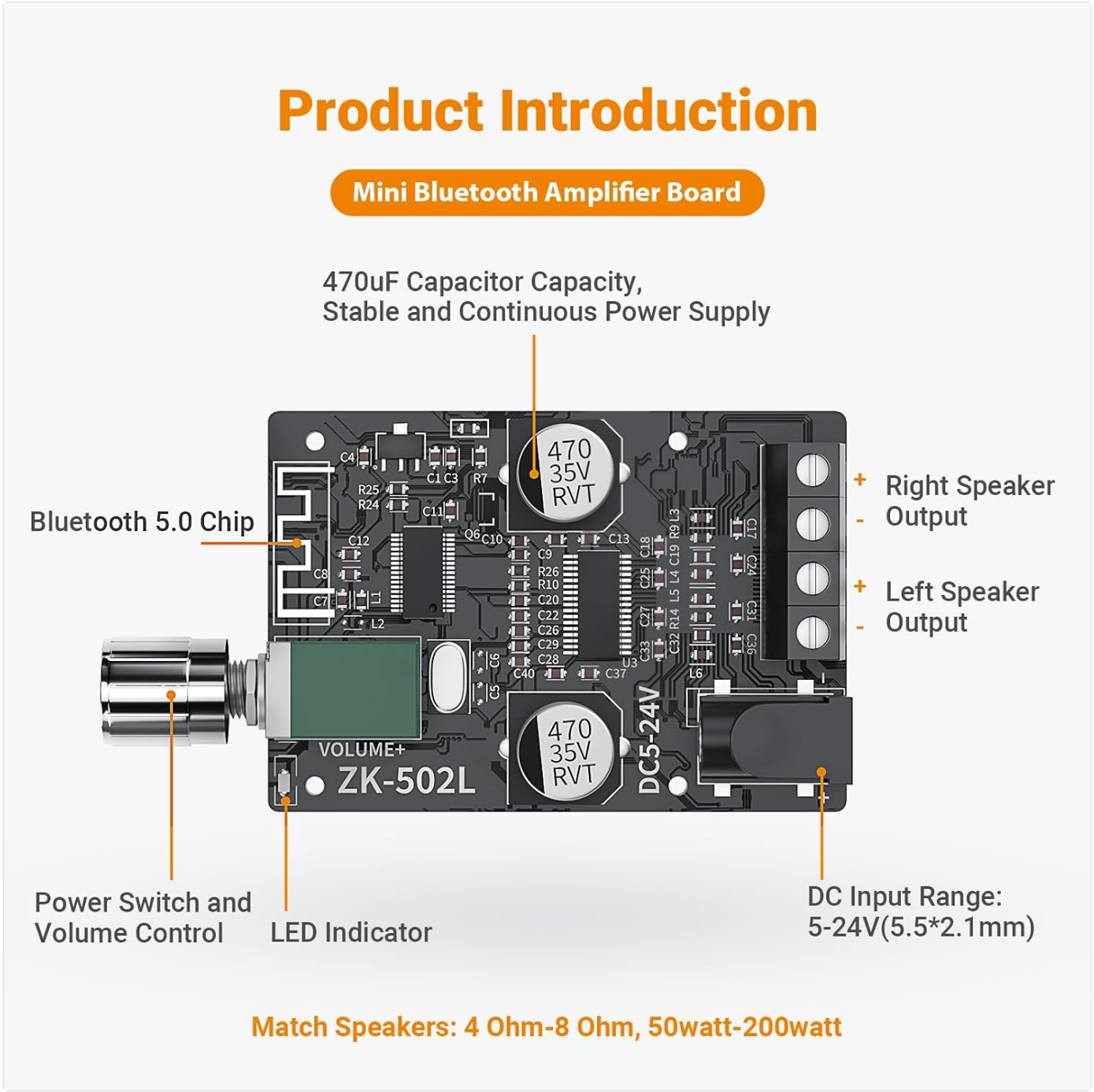



Image 2.1: Detailed view of the ZK-502L amplifier board showing the Bluetooth 5.0 chip, 470uF capacitors, power switch/volume control, LED indicator, DC input, and speaker outputs.

The board includes a Bluetooth 5.0 chip for stable wireless connectivity, 470uF capacitors for a stable power supply, a combined power switch and volume control knob, an LED indicator, and clearly marked DC input and speaker output terminals.

## 2.1. Dimensions

The compact design of the ZK-502L allows for easy integration into various audio setups.




Image 2.2: Diagram illustrating the dimensions of the ZK-502L amplifier board: 2.17 inches (55mm) length, 1.5 inches (38mm) width, and 0.67 inches (17mm) height. Weight is 0.11lb (52g).

## 3. What's in the Box

Verify that all components are present before proceeding with installation.

# What's in the Box?

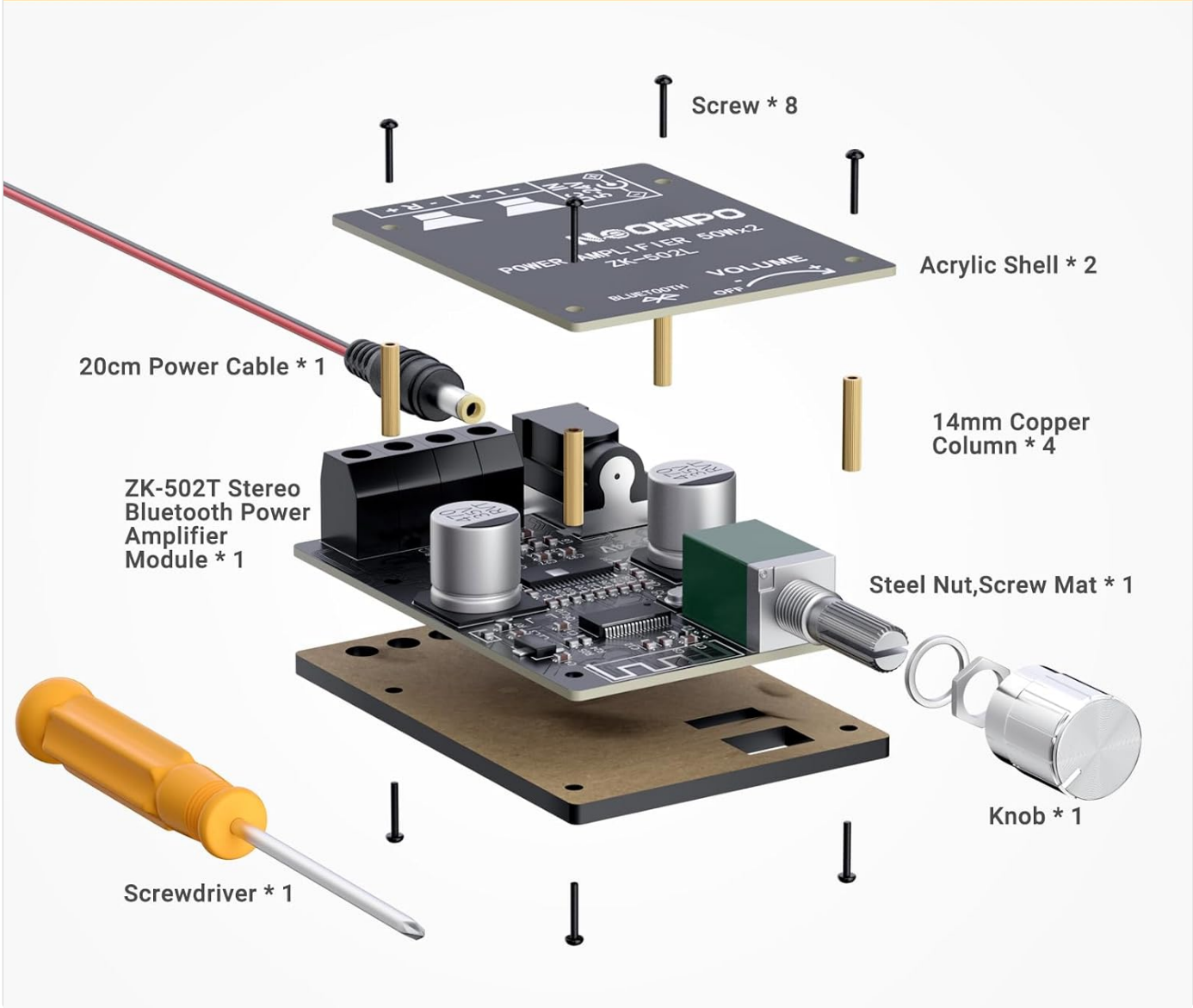



Image 3.1: Exploded view of the ZK-502L package contents, including the amplifier module, two acrylic shells, eight screws, four 14mm copper columns, a steel nut, screw mat, knob, 20cm power cable, and a screwdriver.

- ZK-502L Stereo Bluetooth Power Amplifier Module x 1
- Acrylic Shell x 2
- 20cm Power Cable x 1
- 14mm Copper Column x 4
- Steel Nut, Screw Mat x 1
- Knob x 1
- Screwdriver x 1
- Screws x 8

## 4. Setup Instructions

### 4.1. Assembly

Assemble the acrylic protective casing around the amplifier board using the provided screws and copper columns. Ensure the board is securely housed.

## 4.2. Power Supply Connection

The ZK-502L requires a DC 5-24V power adapter. It is recommended to use a DC 15V-24V power adapter with a current above 2A for optimal performance. Insufficient power can lead to sound distortion.

- Connect the provided 20cm power cable to a compatible DC power adapter (not included).
- Plug the DC connector into the 'DC IN 5-24V' port on the amplifier board.

## 4.3. Speaker Connection

Connect your passive speakers to the amplifier board. The ZK-502L supports 4-8 Ohm passive speakers with a power rating of 50-200 watts.




Image 4.1: Close-up view of a screwdriver securing speaker wires into the terminal blocks on the ZK-502L amplifier board.

- Identify the Left (L) and Right (R) speaker output terminals on the board.
- Connect the positive (+) wire from your left speaker to the 'L+' terminal and the negative (-) wire to the 'L-' terminal.
- Connect the positive (+) wire from your right speaker to the 'R+' terminal and the negative (-) wire to the 'R-' terminal.
- Ensure correct polarity for optimal sound quality. Refer to the markings on the amplifier board itself, not the acrylic cover, for accurate polarity.

## 4.4. Bluetooth Pairing

The amplifier board is designed for easy pairing with compatible devices.




Image 4.2: The ZK-502L amplifier board connected to a speaker, with a smartphone wirelessly streaming music via Bluetooth 5.0.

- Power on the amplifier board using the volume knob. The LED indicator will illuminate.
- On your Bluetooth-enabled device (e.g., smartphone, tablet, PC), search for available Bluetooth devices.
- Select 'ZK-502L' from the list to pair.
- Once paired, the LED indicator may change state (e.g., solid blue) to confirm connection.

## 5. Operating Instructions

### 5.1. Power On/Off and Volume Control

The rotary knob on the amplifier board serves as both the power switch and volume control.

- To power on, rotate the knob clockwise until you hear a click and the LED indicator lights up.
- Continue rotating clockwise to increase the volume.
- Rotate counter-clockwise to decrease the volume.
- To power off, rotate the knob counter-clockwise until you hear a click and the LED indicator turns off.

### 5.2. Audio Playback

After successful Bluetooth pairing, you can play audio from your connected device. The sound will be amplified and output through the connected passive speakers.

## 6. Maintenance

- Keep the amplifier board clean and free from dust. Use a soft, dry cloth for cleaning.
- Avoid exposing the device to moisture, extreme temperatures, or direct sunlight.
- Ensure proper ventilation to prevent overheating, especially during extended use at high volumes.

- Do not attempt to disassemble or repair the unit yourself. Refer to qualified personnel for service.

## 7. Troubleshooting

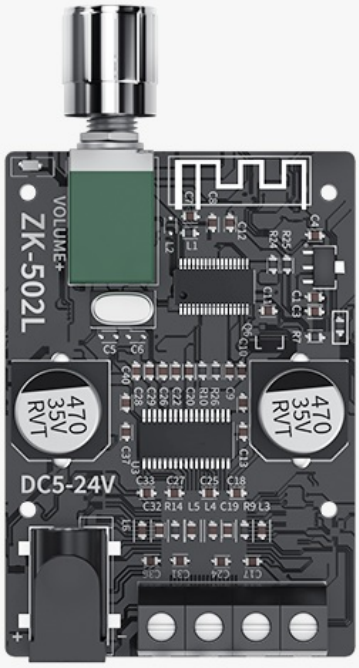
- **No Power:**
  Ensure the power adapter is correctly connected and providing the specified DC 5-24V. Check the power outlet.
- **No Sound:**
  Verify that the speakers are correctly wired to the amplifier board with correct polarity. Check the volume level on both the amplifier and the connected Bluetooth device. Ensure the Bluetooth device is successfully paired and playing audio.
- **Distorted Sound:**
  Ensure the power adapter provides sufficient current (above 2A for 15-24V). Reduce the volume on both the amplifier and the source device. Check speaker impedance compatibility (4-8 Ohm).
- **Bluetooth Disconnection/Unable to Pair:**
  Ensure the amplifier board is powered on and within range of the Bluetooth device. Turn off and on the Bluetooth function on your device, then try pairing again. Disconnect from other Bluetooth devices if necessary.
- **Overheating:**
  Ensure the amplifier has adequate ventilation. Reduce volume if operating at high levels for extended periods. The advanced circuitry includes over-heat protection.

## 8. Specifications

| Feature | Specification |
|---|---|
| Model | ZK-502L |
| Channels | 2 (Stereo) |
| Output Power | 50W x 2 |
| Working Voltage Range | DC 5-24V |
| Recommended Power Supply | DC 15V-24V, current > 2A |
| Speaker Impedance | 4-8 Ohm |
| Speaker Power Rating | 50W-200W |
| Bluetooth Version | 5.0 |
| Dimensions (L x W x H) | 2.17 x 1.5 x 0.67 inches (55 x 38 x 17 mm) |
| Weight | 0.11 lb (52g) |
| Protection Features | Reverse connection, Over-voltage, Under-voltage, Over-heat, Short-circuit |

### 8.1. Output Power vs. Voltage/Impedance

The actual output power varies depending on the input voltage and speaker impedance.




## Different Voltage and Output(@1KHZ)

| Input voltage | Speaker impedance | Output power |
|---|---|---|
| 12V | 4Ω | 20W+20W |
| 15V | 4Ω | 30W+30W |
| 19V | 4Ω | 45W+45W |
| 24V | 4Ω | 55W+55W |
| 12V | 8Ω | 12W+12W |
| 15V | 8Ω | 18W+18W |
| 19V | 8Ω | 32W+32W |
| 24V | 8Ω | 38W+38W |

Image 8.1: Table detailing the output power (at 1KHz) for the ZK-502L amplifier board based on various input voltages (12V, 15V, 19V, 24V) and speaker impedances (4Ω, 8Ω).

## 9. Warranty and Support

NEOHIPO provides a 24-month warranty and lifetime technical support for the ZK-502L amplifier board. If you encounter any issues or have questions, please contact NEOHIPO customer service for assistance.


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Example: How do I reset this device or fix this error?

**Details**

Model number, symptoms, what you tried, or the section of the manual you are using.

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