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- › [Daakro](#) /
- › [Daakro ZK-502L Bluetooth Amplifier Board User Manual](#)

Daakro ZK-502L

Daakro ZK-502L Bluetooth Amplifier Board User Manual

Model: ZK-502L

1. INTRODUCTION

The Daakro ZK-502L is a high-fidelity 2.0 channel Bluetooth amplifier board designed for DIY audio projects. It delivers 50W + 50W output power, features dual audio input modes (Bluetooth 5.0 and AUX), and operates within a wide DC 9-24V voltage range. This manual provides detailed instructions for the proper setup, operation, and maintenance of your amplifier board.

2. PRODUCT FEATURES

- **Dual HiFi Chip:** Utilizes two HiFi amplifier chips with PurePath technology for ultra-high resolution, low distortion, and high-fidelity sound.
- **2.0 Channel Output:** Supports left and right channel configuration, providing 50W output power per channel for an immersive sound experience.
- **Dual Audio Input Modes:** Seamlessly switch between Bluetooth 5.0 for wireless connectivity and traditional AUX input for wired audio sources.
- **Wide Voltage Range:** Compatible with DC 9-24V power supplies, allowing flexibility with 9V, 12V, 19V, or 24V sources.
- **Speaker Compatibility:** Suitable for 20-200W, 4-8Ω speakers, ensuring broad compatibility with various speaker sizes.
- **Comprehensive Protection:** Built-in mechanisms include over-voltage, under-voltage, over-temperature, short-circuit, and reverse connection protection for device safety.
- **Volume Control:** Integrated volume knob for easy adjustment of audio output.

3. PACKAGE CONTENTS

Verify that all items listed below are present in your package:

- ZK-502L Amplifier Board
- Top and Bottom Acrylic Plates
- Mounting Hardware (Screws, Spacers, Nuts)
- Volume Knob Cap

- DC Power Cable
- Small Screwdriver

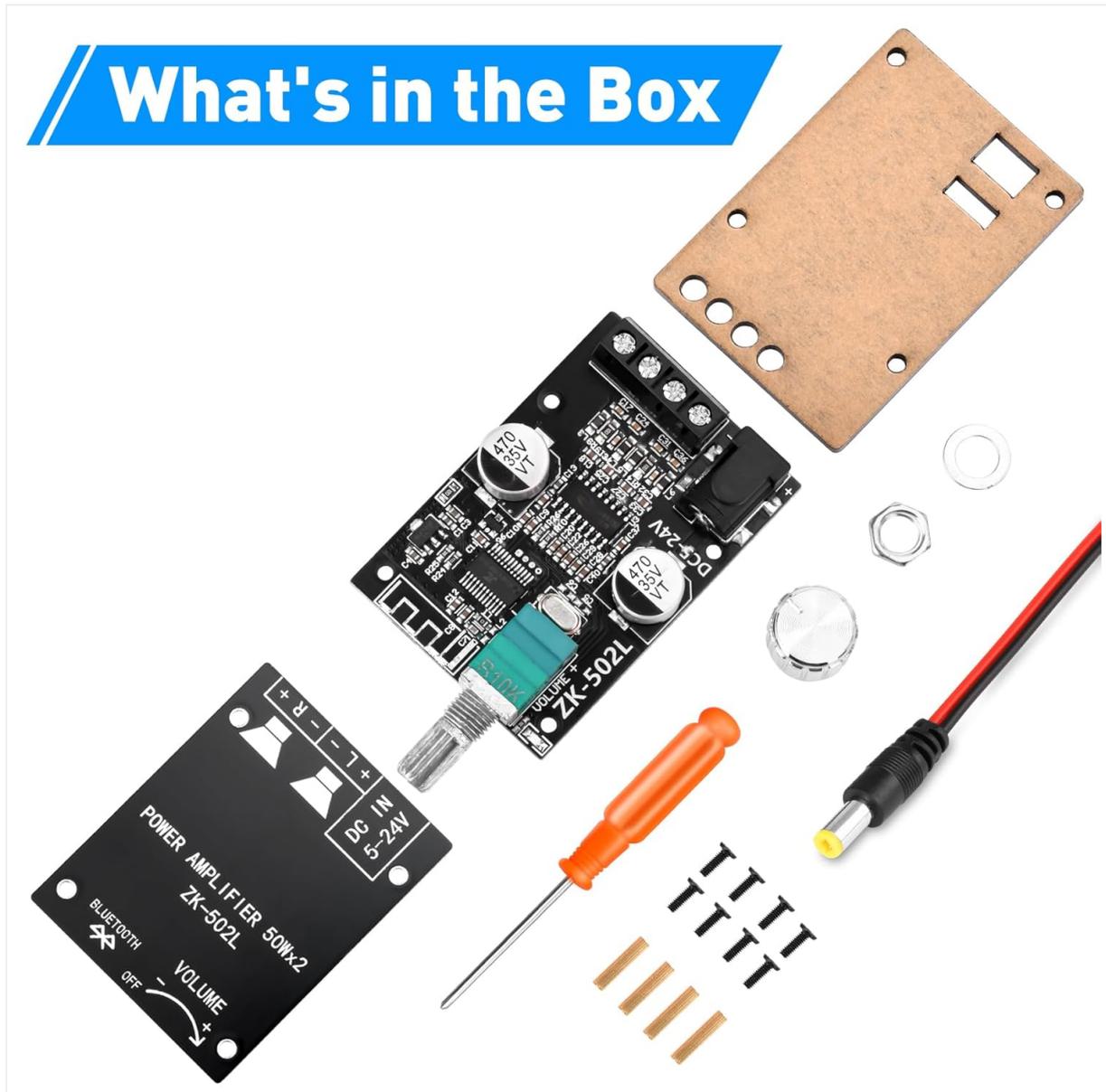


Figure 3.1: Package contents of the ZK-502L amplifier board.

4. COMPONENT IDENTIFICATION

Familiarize yourself with the various components and connection points on the amplifier board:

Domestic HiFi Amplifier Board

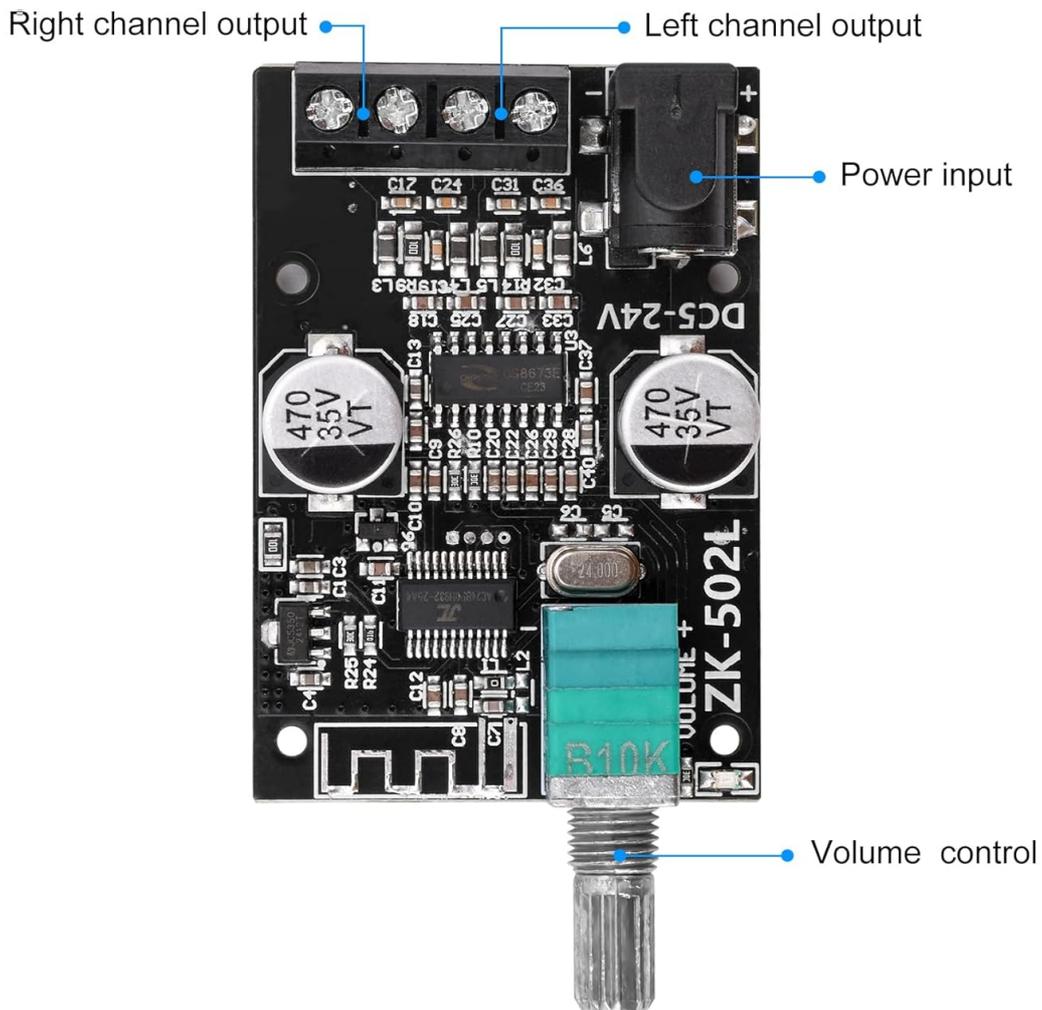


Figure 4.1: Labeled diagram of the ZK-502L amplifier board components.

- **Power Input (DC 9-24V):** Connect your DC power supply here.
- **Left Channel Output (-L +):** Connect the left speaker here.
- **Right Channel Output (-R +):** Connect the right speaker here.
- **Volume Control:** Rotary knob to adjust the audio output level.
- **Bluetooth Indicator:** LED light indicating Bluetooth status.
- **AUX Input:** 3.5mm jack for wired audio connection.

5. TECHNICAL SPECIFICATIONS

Specification	Value
Model Number	ZK-502L
Channels	2.0 (Stereo)
Output Power	50W + 50W
Input Voltage	DC 9-24V

Specification	Value
Audio Inputs	Bluetooth 5.0, AUX (3.5mm)
Speaker Impedance	4-8Ω
Dimensions (L x W x H)	4.33 x 2.76 x 1.97 inches (approx.)
Weight	2.39 ounces (approx.)

6. POWER OUTPUT GUIDELINES

The actual output power varies depending on the input voltage and speaker impedance. Refer to the table below for typical power output values:

Input Voltage	Speaker Impedance	Output Power (@1KHz)
12V	4Ω	20W+20W
12V	8Ω	12W+12W
15V	4Ω	30W+30W
15V	8Ω	18W+18W
19V	4Ω	40W+40W
19V	8Ω	30W+30W
24V	4Ω	50W+50W
24V	8Ω	40W+40W

Please Note: Optimal audio output requires sufficient audio input combined with appropriate power supply voltage and current. A higher voltage and current generally result in higher power output. For the same conditions, a smaller speaker impedance will yield greater power.

Power Output Comparison Table

Input Voltage	R&L Channel Output(@1KHZ)	
	Speaker Impedance	Output Power
12V	4Ω	20W+20W
	8Ω	12W+12W
15V	4Ω	30W+30W
	8Ω	18W+18W
19V	4Ω	40W+30W
	8Ω	30W+30W
24V	4Ω	50W+50W
	8Ω	40W+40W

ⓘ Please Note: There must be enough voltage and current input to have enough power output. Higher the voltage and current input, higher the power will be. Under the same conditions, the smaller the speaker impedance, the greater the power obtained.

Figure 6.1: Power output comparison table for the ZK-502L.

7. SETUP INSTRUCTIONS

Follow these steps to set up your Daakro ZK-502L amplifier board:

1. **Assemble the Casing (Optional):** If your board came with acrylic plates, use the provided screws and spacers to assemble the protective casing around the amplifier board.
2. **Connect Speakers:** Connect your passive speakers to the Left Channel Output (-L +) and Right Channel Output (-R +) terminals. Ensure correct polarity (+ to + and - to -).
3. **Connect Power Supply:** Connect a DC 9-24V power adapter (not included) to the Power Input jack. Ensure the power supply meets the voltage and current requirements for your desired output.
4. **Initial Volume Setting:** Turn the volume control knob counter-clockwise to its minimum position before powering on.



Figure 7.1: Power and speaker connection terminals.

8. OPERATING INSTRUCTIONS

The ZK-502L amplifier board supports two audio input modes:

8.1. Bluetooth Mode

1. **Power On:** Ensure the amplifier board is powered on. The Bluetooth indicator LED will blink, indicating it is in pairing mode.
2. **Pairing:** On your audio source device (e.g., smartphone, tablet, PC), enable Bluetooth and search for available devices. Select "ZK-502L" from the list.
3. **Connection Confirmation:** Once successfully paired, the Bluetooth indicator LED will stop blinking and remain solid.
4. **Play Audio:** Start playing audio on your connected device. Adjust the volume using the amplifier board's volume knob and your source device's volume controls.



Figure 8.1: Bluetooth connection range and device compatibility.

8.2. AUX Input Mode

1. **Connect AUX Cable:** Insert a 3.5mm audio cable (not included) into the AUX Input jack on the amplifier board. Connect the other end to your audio source device's headphone or audio output jack.
2. **Automatic Switching:** The amplifier board will automatically switch to AUX input mode when a cable is detected.
3. **Play Audio:** Start playing audio on your connected device. Adjust the volume using the amplifier board's volume knob and your source device's volume controls.

2.0 Channel Bluetooth Amplifier Board



Bluetooth



Speaker



Moible Phone



MP3



PC



Speaker

Figure 8.2: The ZK-502L amplifier board supporting multiple audio sources.

9. SAFETY PRECAUTIONS

- Ensure the power supply voltage is within the DC 9-24V range. Using an incorrect voltage can damage the device.
- Do not short-circuit the speaker outputs or power input.
- Avoid exposing the board to moisture, extreme temperatures, or direct sunlight.
- Handle the board with care to prevent damage to components.
- Disconnect power before making any connections or disconnections.
- Do not attempt to modify the circuit board, as this will void the warranty and may cause damage.

10. TROUBLESHOOTING

- **No Sound:**
 - Check if the power supply is connected correctly and providing the correct voltage.
 - Verify speaker connections for correct polarity and secure contact.
 - Ensure the volume knob is turned up on both the amplifier board and the audio source device.

- If using Bluetooth, ensure the device is paired and connected. If using AUX, ensure the cable is fully inserted.
- **Distorted Sound:**
 - Reduce the volume on both the amplifier and the source device.
 - Ensure the power supply can provide sufficient current for the desired output power.
 - Check speaker impedance compatibility (4-8Ω).
- **Bluetooth Disconnection:**
 - Ensure the audio source device is within the 16.4 feet (5 meters) Bluetooth range.
 - Avoid obstacles that may interfere with the Bluetooth signal.
 - Try unpairing and re-pairing the device.
- **Power Indicator Not On:**
 - Check the power supply connection and ensure it is functioning.
 - Verify that the power input terminals are correctly wired.

11. WARRANTY AND SUPPORT

Daakro provides the following support for your ZK-502L amplifier board:

- **30 Days Warranty:** Your product is covered by a 30-day warranty from the date of purchase.
- **24 Hours Online Customer Service:** For any inquiries or technical assistance, please contact Daakro customer support.
- **100% Customer Satisfaction:** Daakro is committed to ensuring your satisfaction with their products.

For further assistance, please visit the official Daakro store or contact their customer service team.