WOOPKER ZK-1002T

WOOPKER ZK-1002T Bluetooth Amplifier Board User Manual

Model: ZK-1002T

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your WOOPKER ZK-1002T Bluetooth Amplifier Board. Please read this manual thoroughly before use to ensure proper functionality and safety.

2. Product Overview

The ZK-1002T is a 2.0 channel stereo amplifier board designed for DIY audio projects. It features Bluetooth 5.0 and AUX inputs, along with treble, bass, and master volume controls. The board is powered by dual TPA3116D2 Class-D amplifier chips, delivering 100W+100W output.

Key Features:

- **Output Power:** 100W + 100W (200W total)
- **Audio Inputs:** Bluetooth 5.0 and 3.5mm AUX
- **Controls:** Independent Treble, Bass, and Master Volume adjustment knobs
- **Protection:** Over-voltage, under-voltage, over-heat, short-circuit protection, and DC detection
- **Chipset:** Dual TPA3116D2 Class-D amplifier chips

Component Identification:

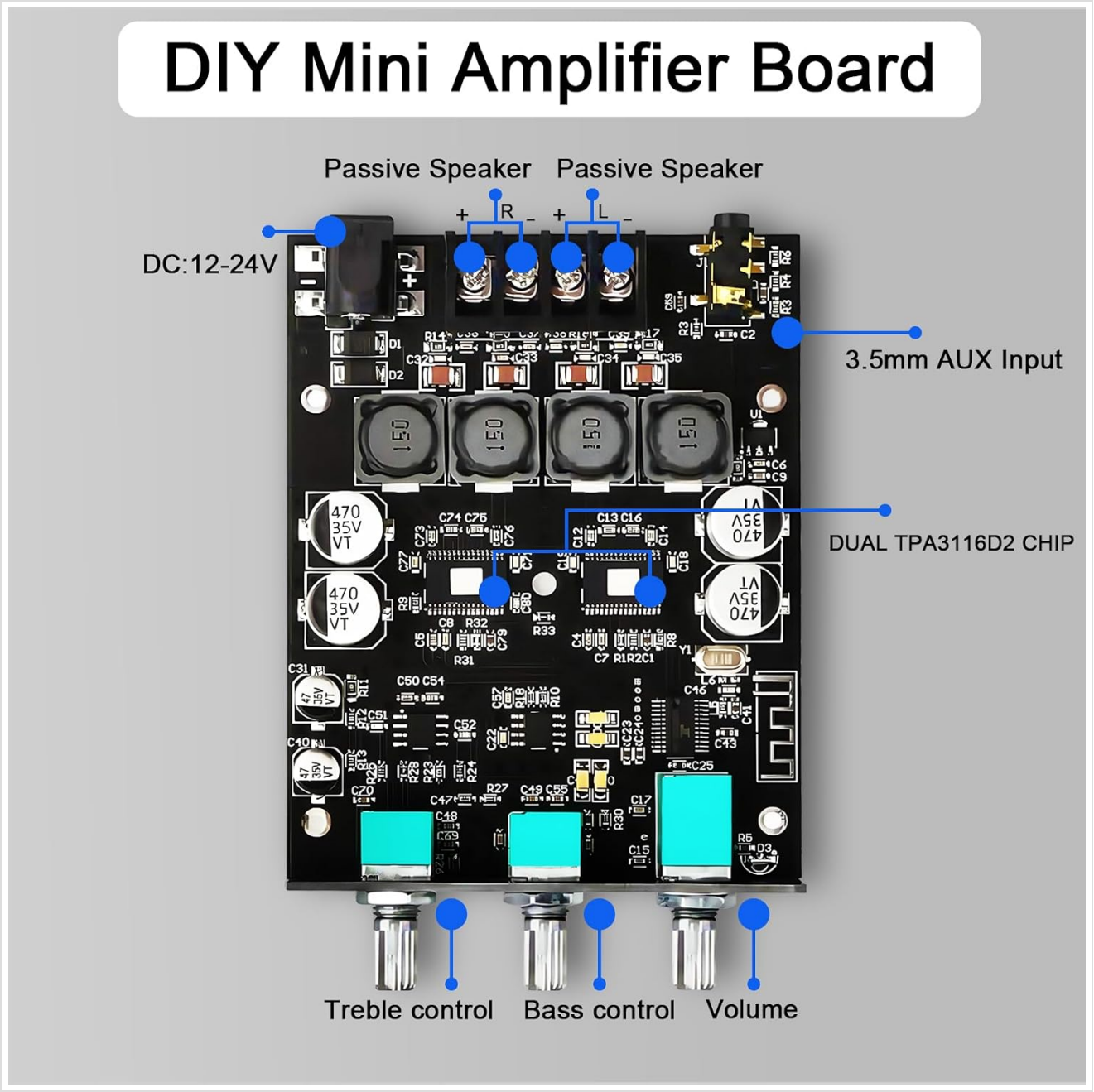

Image Description: This image displays the ZK-1002T amplifier board with key components labeled. It shows the DC 12-24V power input, connections for passive speakers (R+ R- L+ L-), the 3.5mm AUX input, the dual TPA3116D2 chips, and the Treble control, Bass control, and Volume knobs at the bottom.

Image Description: A close-up view of the two TPA3116 amplifier chips on the circuit board, highlighting the core audio processing components.

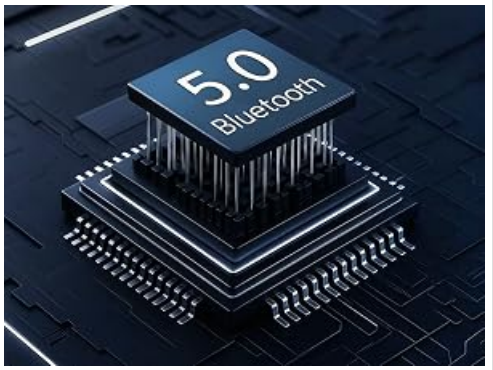

Image Description: An illustrative rendering of a Bluetooth 5.0 chip, representing the wireless connectivity feature of the amplifier board.

3. Setup Instructions

3.1 Assembly

The ZK-1002T amplifier board comes with a protective case that requires assembly. Follow the steps below to secure the board within its case.

1. Carefully align the amplifier board with the bottom plate of the case.
2. Insert the brass standoffs into the designated holes on the board and bottom plate.
3. Place the top plate over the standoffs and secure it with the provided screws.
4. Ensure all connections and controls are accessible and not obstructed by the case.

Image Description: An exploded view diagram showing the amplifier board, top and bottom case plates, brass standoffs, and screws, along with a screwdriver, illustrating the assembly process.

3.2 Wiring Connections

Before connecting power, ensure all audio and speaker connections are correctly made.

- **Speakers:** Connect your passive speakers to the 'Passive Speaker' terminals (R+ R- L+ L-) on the board. Ensure correct polarity.
- **Power Supply:** Connect a DC 12-24V power supply to the DC input jack. Ensure the power supply provides sufficient current for your speakers (minimum 5A recommended).

Image Description: This diagram illustrates how the ZK-1002T amplifier board connects to various audio sources (Bluetooth 5.0 devices like phones, tablets, laptops; and 3.5mm AUX input devices like MP3 players, phones, PCs) and outputs to passive speakers.

4. Operating Instructions

4.1 Power On/Off

Turn the master volume knob clockwise until it clicks to power on the device. Turn it counter-clockwise until it clicks to power off.

4.2 Bluetooth Input

1. Ensure the amplifier board is powered on.
2. On your Bluetooth-enabled device (e.g., smartphone, tablet), search for available Bluetooth devices.
3. Select "ZK-1002T" from the list to pair. No password is required.
4. Once paired, audio from your device will play through the connected speakers. The transmission distance can reach up to 49 feet in an open environment.

Image Description: A user's hands are shown holding a smartphone, which is wirelessly connected via Bluetooth to the ZK-1002T amplifier board, demonstrating Bluetooth audio input.

4.3 AUX Input

1. Connect your audio source (e.g., MP3 player, PC) to the 3.5mm AUX input jack on the amplifier board using an audio cable.
2. **Important:** When using AUX mode, ensure that any active Bluetooth connection to the amplifier module has been disconnected.

Image Description: A smartphone is shown connected to the ZK-1002T amplifier board via a 3.5mm AUX cable, demonstrating the wired audio input option.

4.4 Audio Controls

The amplifier board features three knobs for audio adjustment:

- **Treble Control:** Adjusts the high-frequency response of the audio. Turn clockwise for more treble, counter-clockwise for less.
- **Bass Control:** Adjusts the low-frequency response of the audio. Turn clockwise for more bass, counter-clockwise for less.
- **Volume Control:** Adjusts the overall output volume. Turn clockwise to increase volume, counter-clockwise to decrease. This knob also serves as the power switch.

Image Description: A close-up view of the three control knobs on the ZK-1002T amplifier board, clearly labeled for Treble, Bass, and Volume adjustments.

5. Specifications

Feature	Specification
Bluetooth Version	5.0 (Effective range 10 meters without shielding)
Signal-to-Noise Ratio (SNR)	> 90 dB
Audio Input	AUX + Bluetooth
Channels	2.0 (Stereo)
Amplifier Chip	TPA3116D2 (with AM interference suppression)
Power Supply Range	DC 12V-24V / ≥5A
Recommended Speakers	20W-200W, 4Ω-8Ω
Protection Features	Over-voltage, under-voltage, overheating, DC detection, short circuit protection
Product Dimensions (L x W x H)	4.4 x 2.75 x 0.78 inches (110mm × 70mm × 21mm)
Item Weight	5.9 ounces

Output Power vs. Input Voltage and Speaker Impedance:

Input Voltage and Output Power		
Input Voltage	**Speaker Impedance**	**Output Power**
	8Ω	2*10W
12V	4Ω	2*20W
	2Ω	2*40W
21V	8Ω	2*25W
	4Ω	2*50W
	2Ω	2*100W
24V	8Ω	2*30W
	4Ω	2*80W
Note: There must be enough voltage and current input to have enough power output. Higher the voltageand current input, higher the opower will be. Under the same conditions, the smaller the speaker impedance.the qreater the power obtained.		

Image Description: A table detailing the output power (in Watts) of the amplifier board at different input voltages (12V, 21V, 24V) and speaker impedances (8Ω, 4Ω, 2Ω).

Note: For optimal performance, ensure the audio input and power supply voltage/current are sufficient. Higher supply voltage generally leads to higher output power. Lower speaker impedance can also result in higher output power. Always ensure the power supply's capacity exceeds the amplifier's actual working power.

6. Troubleshooting

- **No Sound:**
  - Check if the power supply is connected and providing the correct voltage (DC 12-24V).
  - Ensure speakers are correctly wired with proper polarity.

- Verify the volume knob is turned up and not in the 'off' position.
- If using AUX input, confirm that Bluetooth is disconnected.
- If using Bluetooth, ensure the device is properly paired and connected.

- **Distorted Sound:**
  - Reduce the input volume from your audio source.
  - Check if the power supply is adequate (voltage and current). An insufficient power supply can cause distortion at higher volumes.
  - Ensure speaker impedance matches the recommended range (4Ω-8Ω).
- **Bluetooth Disconnection:**
  - Ensure your Bluetooth device is within the effective range (approx. 49 feet in open areas).
  - Avoid physical obstructions between the amplifier and the Bluetooth device.
  - Disconnect and re-pair the Bluetooth connection.
- **Static Noise:**
  - Ensure all connections are secure and free from loose wiring.
  - Check for interference from other electronic devices.
  - Verify the power supply is stable and free from ripple.

7. Safety Information

The ZK-1002T amplifier module incorporates several protective features to ensure safe operation:

- **Over-voltage Protection:** Prevents damage from excessive input voltage.
- **Under-voltage Protection:** Shuts down the device if input voltage is too low.
- **Over-heat Protection:** Protects components from damage due to excessive temperature.
- **Short-circuit Protection:** Safeguards against damage from short circuits in the speaker outputs.
- **DC Detection:** Helps prevent DC output to speakers.

Always operate the device within the specified voltage range (DC 12-24V) and ensure proper ventilation to prevent overheating.

8. Maintenance

- Keep the amplifier board clean and free from dust. Use a soft, dry cloth for cleaning.
- Avoid exposing the device to moisture or extreme temperatures.
- Ensure all connections remain secure over time.

9. Product Video

Your browser does not support the video tag.

Video Description: An official product video demonstrating the features and operation of the WOOPKER ZK-1002T Bluetooth Amplifier Board.

10. Warranty and Support

WOOPKER is committed to providing quality products and customer support.

- **Returns:** 30-day return policy for exchange or refund.
- **Technical Support:** Lifetime technical customer support is available.
- **Response Time:** Quick response within 24 hours for inquiries.



For support, please refer to the contact information provided with your purchase or visit the official WOOPKER website.