

DAJUNGUO ZK-TB21

DAJUNGUO ZK-TB21 Bluetooth 5.1 2.1 Channel Power Amplifier Board User Manual

Model: ZK-TB21

1. INTRODUCTION

This manual provides detailed instructions for the setup, operation, maintenance, and troubleshooting of your DAJUNGUO ZK-TB21 Bluetooth 5.1 2.1 Channel Power Amplifier Board. Please read this manual thoroughly before use to ensure proper functionality and safety.

2. PRODUCT FEATURES

- **TPA3116D2 Chip:** Utilizes TPA3116D2 chips with anti-interference capabilities, ensuring excellent sound quality and low Total Harmonic Distortion (THD) even during prolonged high-power operation.
- **Dual Input Modes:** Supports both Bluetooth 5.1 and 3.5mm AUX audio inputs, offering broad compatibility with various devices such as smartphones, televisions, and laptops.
- **External Bluetooth Antenna Support:** Features a first-generation IPEX interface for connecting an external U.FL/IPEX 2.4G antenna, enhancing Bluetooth connection stability.
- **Comprehensive Protection:** Equipped with multiple safety mechanisms including short-circuit protection, over-current protection, over-heat protection, and anti-reverse protection for reliable operation.
- **Adjustable Audio Controls:** Independent adjustment for subwoofer volume and frequency, as well as R&L channel treble and bass.

3. PACKAGE CONTENTS

The package includes:

- 1 x DAJUNGUO ZK-TB21 Power Amplifier Board
- (Additional accessories such as screwdriver, knobs, and power adapter may be included depending on the specific product variant or bundle.)

4. SETUP INSTRUCTIONS

Follow these steps to set up your amplifier board:

4.1 Component Identification

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

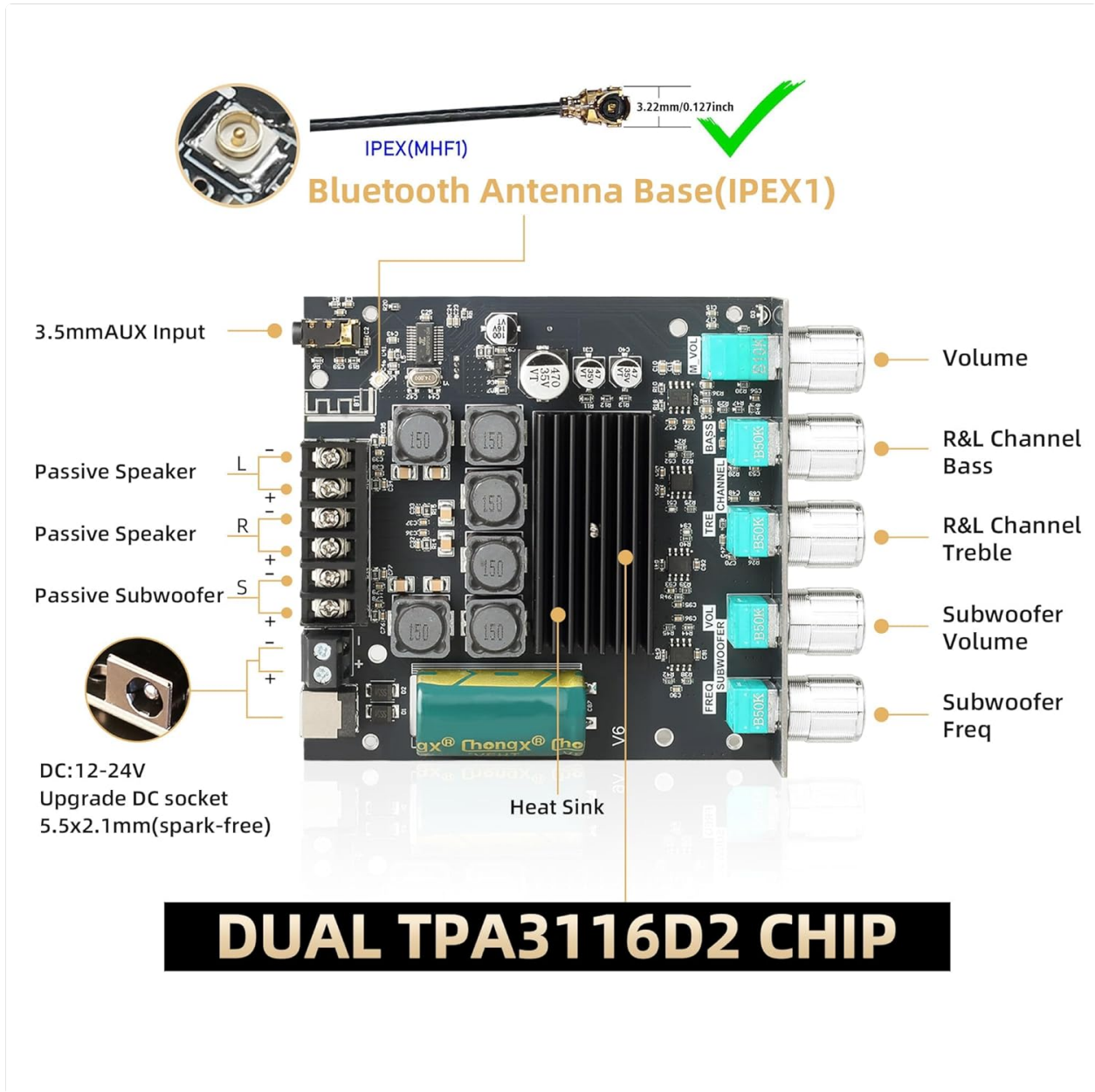


Image 1: Overview of the ZK-TB21 amplifier board, highlighting the 3.5mm AUX input, passive speaker and subwoofer terminals, DC power input, heat sink, volume, treble, bass, subwoofer volume, and subwoofer frequency controls, and the Bluetooth antenna base.

4.2 Power Supply Connection

Connect a DC 12-24V power supply to the DC input socket (5.5x2.1mm, spark-free). Ensure the power supply meets the voltage and current requirements (5A or above) for optimal performance. It is recommended to connect the power supply to the amplifier board first, then plug it into the AC outlet to avoid minor sparks.

Model : ZK-TB21		Power Supply : DC12-24V/5A OR Above	
POWER OUTPUT	DC Voltage	Channel	Output Power (Max)
	12V	R & L	10W+10W @ 8Ω
			20W+20W @ 4Ω
		Subwoofer	10W @ 8Ω
			20W @4Ω
	21V	R & L	25W+25W @ 8Ω
			50W+50W @ 4Ω
		Subwoofer	25W @ 8Ω
			50W @4Ω
	24V	R & L	100W @ 2Ω
			30W+30W @ 8Ω
Subwoofer		30W @ 8Ω	
		70W @4Ω	

When the input voltage is 24V, the impedance of the speakers must be greater than 4 ohms. If the speaker impedance is equal to 4 ohms, it is recommended to use a 19V DC power supply.

Image 2: Detailed view showing the upgraded DC socket (5.5x2.1mm, compatible with 5.5x2.5mm) for power input, the TPA3116D2 chip, and the large heat sink.

4.3 Speaker Connections

Connect your passive speakers and passive subwoofer to the designated terminals. Ensure correct polarity (+ and -) for each connection. The amplifier supports 2.1 channels (stereo left/right and a subwoofer channel).

- **Passive Speakers (R & L Channel):** Connect your main stereo speakers.
- **Passive Subwoofer (S Channel):** Connect your passive subwoofer.

For speaker impedance, refer to the specifications section. If using 4-ohm speakers with a 24V input, it is recommended to use a 19V DC power supply to prevent potential issues.

4.4 Bluetooth Antenna (Optional)

For enhanced Bluetooth stability, an external U.FL/IPEX 2.4G antenna can be connected to the IPEX(MHF1) interface. This antenna needs to be purchased separately.

Available antenna specifications (need to be purchased separately)



Image 3: Illustration of the correct IPEX(MHF1) antenna specification (3.22mm/0.127inch) for the Bluetooth antenna base, and an incorrect MHF4 antenna type.



Image 4: The amplifier board with a visual indicator for Bluetooth 5.1 and the IPEX interface for connecting an external 2.4G antenna.

5. OPERATING INSTRUCTIONS

5.1 Power On/Off

Once all connections are secure, turn on the power supply. The amplifier board will power on automatically. Use the main volume knob to turn the unit on or off (usually by rotating it fully counter-clockwise until a click is heard for off, and clockwise for on).

5.2 Input Selection

The ZK-TB21 supports two input modes: Bluetooth and AUX. The amplifier automatically detects the active input. If both are connected, Bluetooth usually takes priority.

5.2.1 Bluetooth Connection

1. Ensure the amplifier board is powered on.
2. On your device (e.g., smartphone, tablet), enable Bluetooth and search for available devices.
3. Select "ZK-TB21" from the list to pair. A confirmation sound may indicate a successful connection.
4. Start playing audio on your device.



Image 5: The ZK-TB21 amplifier board receiving audio wirelessly via Bluetooth 5.1 from a smartphone, connected to speakers.

5.2.2 AUX Input Connection

1. Connect your audio source (e.g., CD player, computer) to the 3.5mm AUX input jack on the amplifier board using a 3.5mm audio cable.
2. Start playing audio on your device.



Image 6: The ZK-TB21 amplifier board connected to an audio device via its 3.5mm AUX input, providing a wired audio connection.

5.3 Audio Adjustments

Use the control knobs on the front panel to fine-tune your audio output:

- **Main Volume:** Adjusts the overall output volume.
- **R&L Channel Treble:** Adjusts the high-frequency response of the main stereo channels.
- **R&L Channel Bass:** Adjusts the low-frequency response of the main stereo channels.
- **Subwoofer Volume:** Adjusts the output level of the subwoofer channel.
- **Subwoofer Freq (Frequency):** Adjusts the crossover frequency for the subwoofer, determining which low frequencies are sent to the subwoofer.

6. MAINTENANCE

- **Cleaning:** Use a soft, dry cloth to clean the amplifier board. Avoid using liquid cleaners or solvents.
- **Ventilation:** Ensure the amplifier board is placed in a well-ventilated area to prevent overheating. Do not obstruct the heat sink. Adequate airflow is crucial for long-term performance.

- **Storage:** When not in use for extended periods, store the amplifier in a cool, dry place away from direct sunlight and extreme temperatures.

7. TROUBLESHOOTING

If you encounter issues with your ZK-TB21 amplifier board, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No sound output	Power supply not connected or faulty. Speakers not connected correctly or faulty. Input source not selected or playing. Volume too low.	Check power connections and ensure the power supply is functional. Verify speaker wiring and polarity. Test speakers with another device if possible. Ensure Bluetooth is paired or AUX cable is securely connected and audio is playing. Increase the main volume knob.
Poor sound quality / Distortion	Incompatible power supply (voltage/current). Speaker impedance mismatch. Input signal too high or low. Overheating.	Use a power supply within the recommended 12-24V range and at least 5A. Ensure speakers meet impedance requirements (e.g., >4 ohms for 24V input). Consider a 19V power supply for 4-ohm speakers. Adjust the volume on your input device. Ensure adequate ventilation around the amplifier board. Reduce volume if distortion occurs at high levels.
Bluetooth connection unstable or drops	Distance from source device. Interference from other devices. No external antenna connected.	Move the source device closer to the amplifier. Minimize other wireless devices nearby. Consider installing an external IPEX 2.4G antenna for improved range and stability.

8. SPECIFICATIONS

Key technical specifications for the DAJUNGUO ZK-TB21 Power Amplifier Board:

Feature	Specification
Model	ZK-TB21
Audio Input	Bluetooth 5.1 + AUX (3.5mm)
Input Voltage	DC 12-24V
Chip	2 x TPA3116D2
Channel Configuration	2.1 Channel (Stereo L/R + Subwoofer)

Feature	Specification
Output Power (Max)	50W (L) + 50W (R) + 100W (Subwoofer)
Speaker Parameters	20-100W (4-8Ω)
Product Dimensions (L x W x H)	3.93 x 3.89 x 0.86 inches (9.9 x 9.9 x 2.2 cm)
Weight	7.41 ounces

8.1 Power Output Table

The following table details the approximate power output based on input voltage and speaker impedance:



Image 7: Detailed power output table for the ZK-TB21, illustrating the wattage for R&L channels and subwoofer at 12V, 21V, and 24V, across various speaker impedances.

Note: When the input voltage is 24V, the impedance of the speakers must be greater than 4 ohms. If the speaker impedance is equal to 4 ohms, it is recommended to use a 19V DC power supply.

9. WARRANTY AND SUPPORT

DAJUNGUO is committed to customer satisfaction. If you have any questions about the product or encounter quality issues, please contact our customer service team. We offer 7x24 hours after-sales service to provide you with a satisfactory resolution.

For support, please refer to the contact information provided with your purchase or visit the official DAJUNGUO store on Amazon.

Manufacturer: DAJUNGUO