

ZK-502L

Bluetooth Audio Stereo Module BLE5.0 Digital Amplifier Module 50W+50W User Manual

Model: ZK-502L

1. PRODUCT OVERVIEW

The ZK-502L is a high-power stereo Bluetooth audio module designed for audio amplification. It features dual-channel audio signal output and includes a built-in amplifier, allowing direct connection to loudspeakers. This module is suitable for DIY wireless Bluetooth speakers and audio transponders.

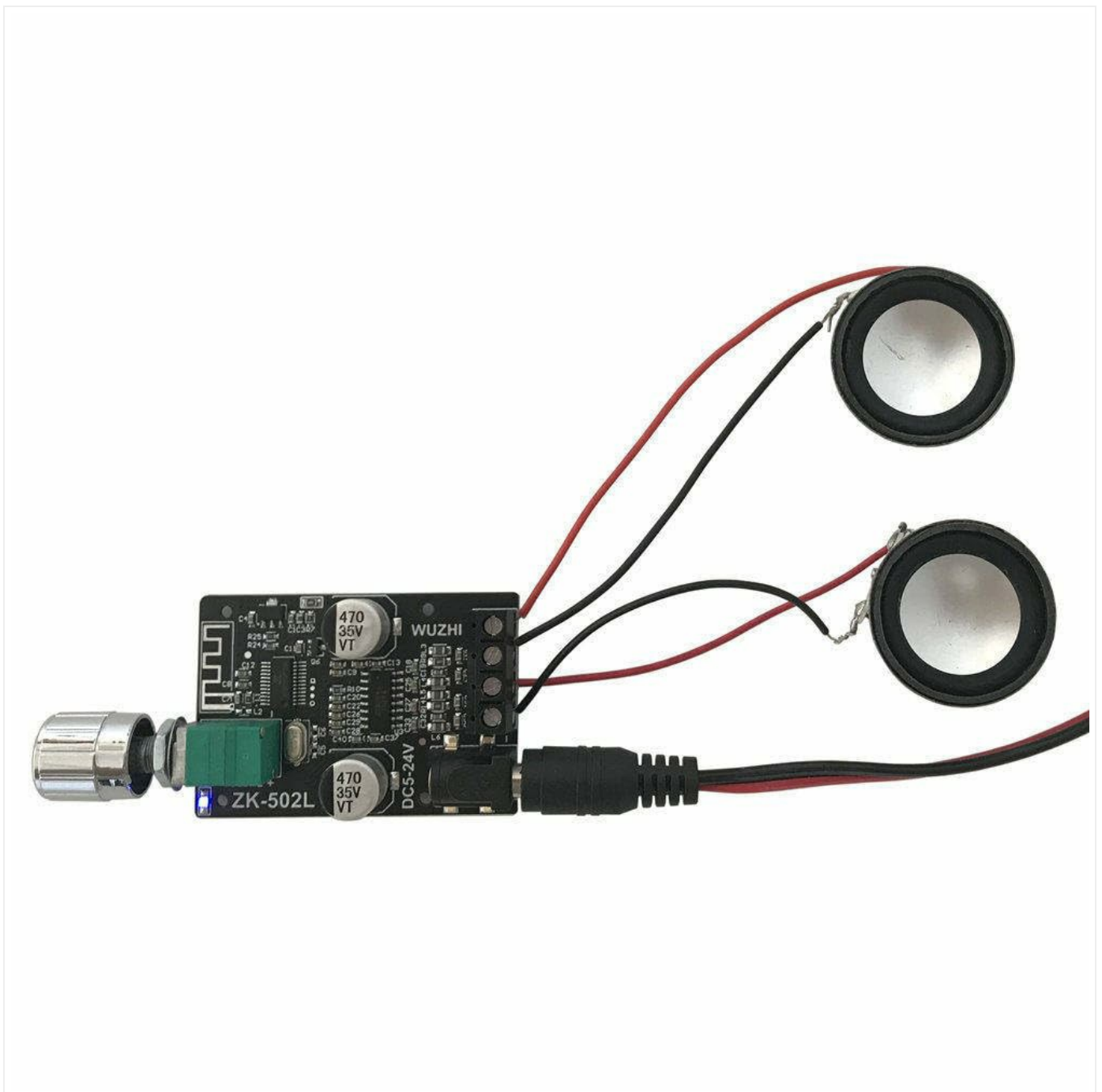


Figure 1.1: ZK-502L Bluetooth Amplifier Module connected to two small speakers, demonstrating a typical setup.

2. KEY FEATURES

- Wide operating voltage range (DC 5V-24V).
- Compatible with multiple speaker types (30W-200W, 4ohm~8ohm).
- Integrated knob for volume adjustment and power control.
- Built-in short circuit protection for enhanced safety.
- Over-temperature protection to prevent damage.
- Dual stereo output for immersive audio.
- Includes a built-in filter capacitor for stable performance.
- Bluetooth BLE 5.0 for stable and efficient wireless connection.

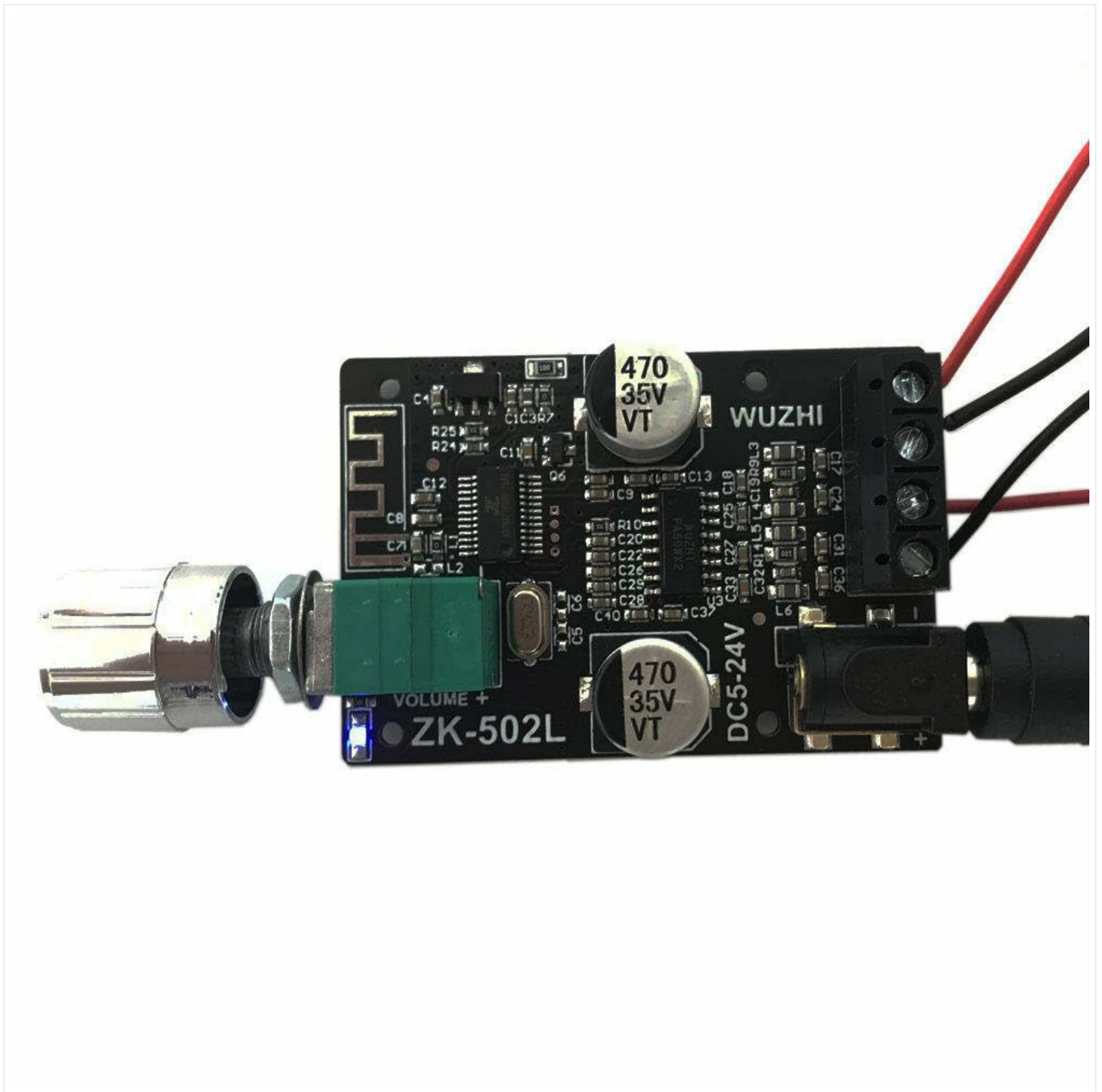


Figure 2.1: Close-up view of the ZK-502L module, highlighting its components and compact design.

3. TECHNICAL SPECIFICATIONS

Parameter	Value
Product Name	ZK-502L Stereo Bluetooth Power Amplifier Module
Model	ZK-502L
Work Voltage	DC 5V-24V
Communication Distance	15 meters (Max)
Channel	Dual channel stereo output
Output Impedance	4ohm~8ohm

Parameter	Value
Match Speaker	30W~200W
Bluetooth Version	BLE 5.0
Output Power (12V, 8ohm)	12W*2
Output Power (12V, 4ohm)	20W*2
Dimensions (L x W x H)	75mm x 55mm x 17mm (approx.)



Figure 3.1: Physical dimensions of the ZK-502L module.

4. SETUP AND INSTALLATION

Follow these steps to set up your ZK-502L Bluetooth amplifier module:

1. **Power Connection:** Connect a DC power supply (5V-24V) to the DC input jack or the screw terminals labeled "DC5-24V". Ensure correct polarity (+ and -).
2. **Speaker Connection:** Connect your 4ohm-8ohm speakers (30W-200W) to the speaker output terminals. The module supports dual stereo output, so connect one speaker to each channel.
3. **Volume Knob:** Attach the provided knob to the potentiometer shaft. This knob controls both power (on/off) and volume.

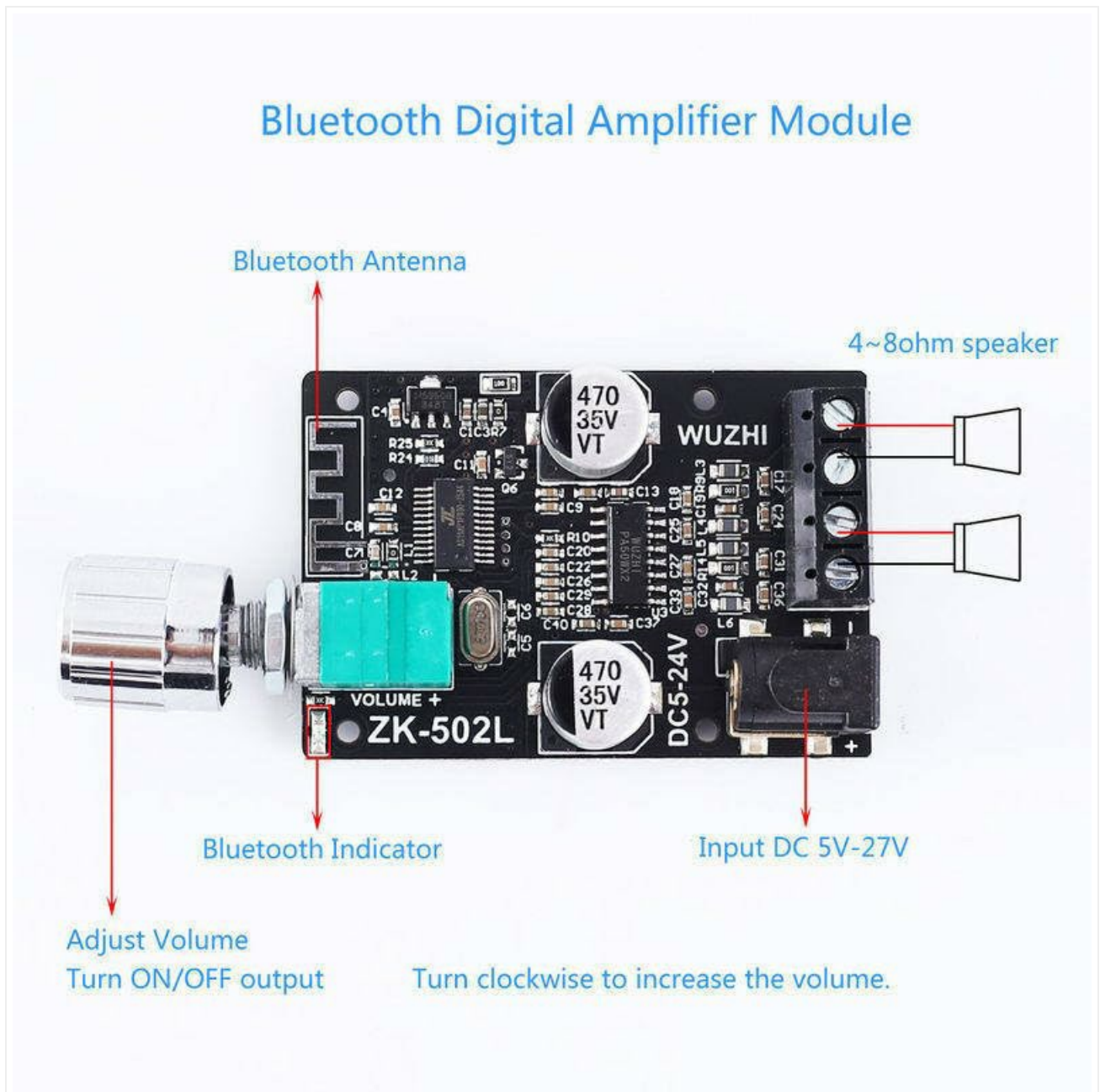


Figure 4.1: Connection diagram for the ZK-502L module.

Ensure all connections are secure before applying power. The module is designed for surface mounting, consider proper enclosure for protection and heat dissipation.

5. OPERATING INSTRUCTIONS

1. **Power On/Off:** Rotate the volume knob clockwise until you hear a click to power on the module. Rotate counter-clockwise until a click is heard to power off.
2. **Bluetooth Pairing:** Once powered on, the Bluetooth indicator light will flash, indicating it's in pairing mode. On your device (smartphone, tablet, etc.), search for Bluetooth devices and select "ZK-502L" (or similar name) to connect. The

indicator light will become solid once paired.

3. **Volume Adjustment:** Turn the knob clockwise to increase the volume and counter-clockwise to decrease it.
4. **Audio Playback:** Begin playing audio from your paired device. The sound will be amplified and output through the connected speakers.



Figure 5.1: ZK-502L module with a typical power connection.

6. MAINTENANCE

To ensure the longevity and optimal performance of your ZK-502L module, follow these maintenance guidelines:

- **Cleaning:** Gently wipe the module with a dry, soft cloth. Do not use liquid cleaners or solvents.
- **Environment:** Keep the module in a dry environment, away from moisture, dust, and extreme temperatures.
- **Handling:** Handle the module with care to avoid damaging the electronic components. Avoid dropping or subjecting it to strong impacts.
- **Ventilation:** Ensure adequate ventilation if the module is enclosed, especially during prolonged operation at high power, to prevent overheating.

7. TROUBLESHOOTING

If you encounter issues with your ZK-502L module, refer to the following common troubleshooting steps:

- **No Power:**
 - Check if the power supply is correctly connected and providing the correct voltage (DC 5V-24V).
 - Ensure the volume knob is turned clockwise past the "click" to power on.
- **No Sound:**
 - Verify that speakers are correctly connected to the output terminals.
 - Check speaker impedance and wattage compatibility.
 - Ensure the module is successfully paired with your Bluetooth device (solid indicator light).
 - Increase the volume on both the module and your source device.
- **Bluetooth Disconnection/Cannot Pair:**
 - Ensure the module is within the 15-meter communication range of your device.
 - Turn off and on the Bluetooth on your source device, then try pairing again.
 - Power cycle the ZK-502L module.
 - Clear previous Bluetooth connections on your device if necessary.
- **Distorted Sound:**
 - Reduce the volume on both the module and the source device.
 - Check speaker connections for loose wires or short circuits.
 - Ensure the power supply is stable and sufficient.

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact the seller directly. Keep your proof of purchase for any warranty claims.

