

RIDEN KCX-BT003-V1.1

RIDEN KCX BT003 Bluetooth 4.2 Audio Receiver Module User Manual

Model: KCX-BT003-V1.1 | Brand: RIDEN

1. INTRODUCTION

The RIDEN KCX BT003 Bluetooth 4.2 Audio Receiver Module is a compact and versatile circuit board designed to add wireless audio reception capabilities to various electronic projects. Utilizing Bluetooth 4.2 protocol, it offers stable and efficient audio streaming, making it suitable for upgrading existing audio systems, integrating into DIY speakers, or enhancing car audio setups. This manual provides detailed instructions for its installation, operation, and maintenance.

2. FEATURES

- Excellent durability and coexistence for reliable performance.
- Ensures stability of Bluetooth transmission through various techniques.
- Intuitive LED indicator for status feedback.
- Voice prompts for convenient operation.
- Wireless transmission distance of 10 meters or more.
- Utilizes the latest Bluetooth 4.2 protocol, backward compatible with earlier versions.
- Compact and lightweight design for easy integration.
- Compatible with smartphones and various audio devices for wireless audio streaming.

3. SPECIFICATIONS

Parameter	Value
Power Supply	3.3-5.0V

Parameter	Value
Working Current	35mA
Channel	Stereo
Bluetooth Version	4.2
Working Frequency	2400-2485MHz
Receiving Sensitivity	-85dBm
Module Dimensions	Approximately 2.3cm x 1.5cm (0.91" x 0.59")
Compatible Devices	Smartphone, various audio devices
Special Features	Built-In Bluetooth
Audio Output Type	Speakers (Stereo)
Connector Type	Bluetooth, USB (for power/data, depending on implementation)
Media Format	MP3 Audio
Country of Origin	China

4. PRODUCT OVERVIEW

The following images illustrate the RIDEN KCX BT003 Bluetooth Audio Receiver Module from various angles, highlighting its components and pinout.

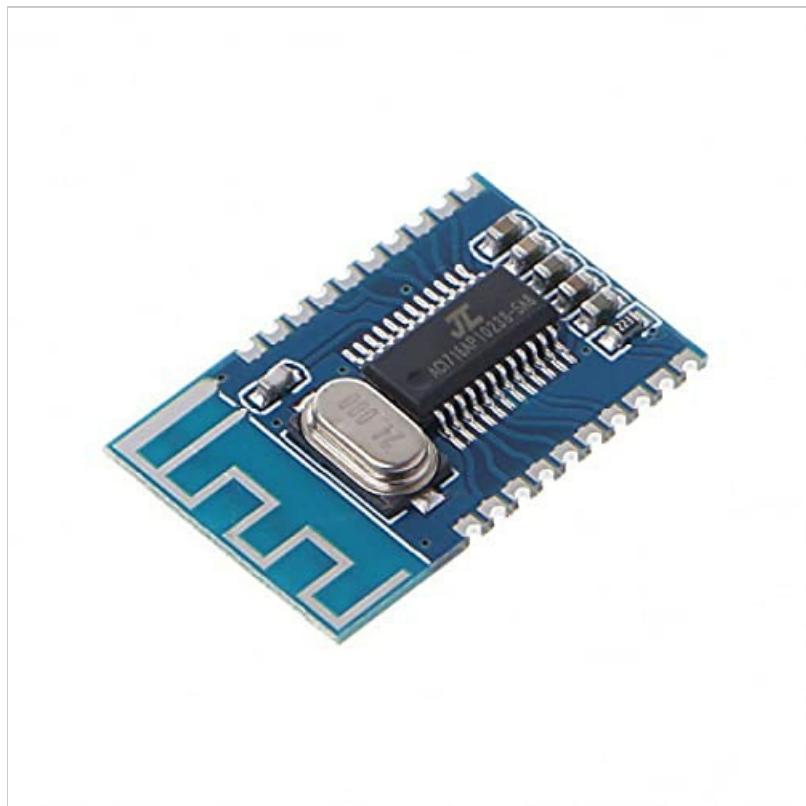


Figure 4.1: Top view of the KCX BT003 module. This image displays the primary integrated circuit and the 24.000 MHz crystal oscillator, which are central to the module's Bluetooth functionality.



Figure 4.2: Frontal view of the KCX BT003 module. This perspective highlights the integrated PCB antenna trace on the left side and the arrangement of surface-mount components.

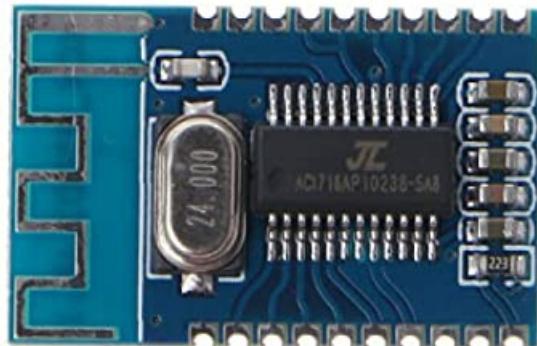


Figure 4.3: Angled top view of the KCX BT003 module. This view offers a slightly different angle, making the markings on the main integrated circuit (AC716AP10238-5A8) more visible.

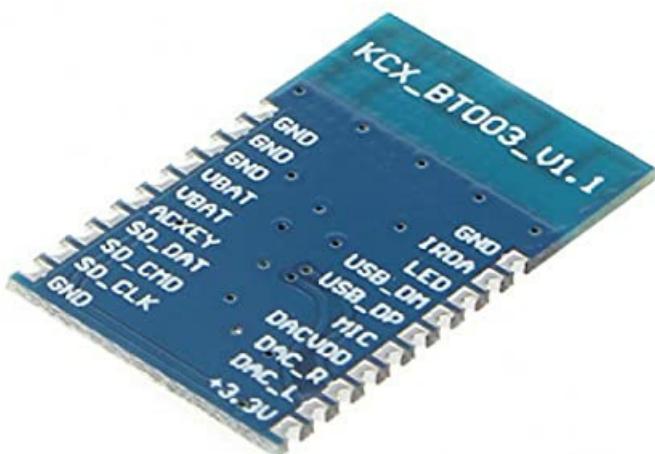


Figure 4.4: Bottom view of the KCX BT003 module. This critical image displays the pinout labels (GND, VBAT, SD_DAT, SD_CMD, SD_CLK, ACKEY, USB_DP, USB_DM, LED, IRDA, MIC, DAC_R, DAC_L, DACVDD, +3.3V) and the module's model number (KCX_BT003_V1.1).

5. SETUP AND WIRING

Proper wiring is essential for the correct operation of the KCX BT003 module. Refer to Figure 4.4 for the pinout diagram. Always ensure power is disconnected before making any connections.

5.1. Power Supply Connection

- Connect the positive power supply (3.3V to 5.0V DC) to the **VBAT** pin.
- Connect the negative power supply (Ground) to any **GND** pin.
- Ensure the power supply is stable and within the specified voltage range to prevent damage to the module.

5.2. Audio Output Connection

The module provides stereo audio output. These pins should be connected to an audio amplifier or directly to speakers if they have an integrated amplifier.

- Connect the left audio channel output to the **DAC_L** pin.
- Connect the right audio channel output to the **DAC_R** pin.
- Connect the audio ground to a **GND** pin.

5.3. Optional Connections

- **LED:** Connect an LED (with a current-limiting resistor) to this pin to indicate Bluetooth status (e.g., pairing, connected).
- **MIC:** If microphone input is desired, connect a suitable microphone to this pin and a GND pin.
- **USB_DP / USB_DM:** These pins are typically used for USB data communication or power, depending on the specific application and firmware. Consult advanced documentation if USB functionality is required.
- **SD_DAT / SD_CMD / SD_CLK / ACKEY:** These pins are for SD card interface, allowing the module to play audio directly from an SD card. Specific wiring and control logic are required for this functionality.

6. OPERATING INSTRUCTIONS

Once the module is correctly wired and powered, follow these steps to operate it:

6.1. Powering On

Apply power to the **VBAT** and **GND** pins. The module will typically emit a voice prompt indicating it is powered on and ready for pairing. If an LED is connected, it will likely flash to indicate pairing mode.

6.2. Bluetooth Pairing

1. Ensure the module is powered on and in pairing mode (indicated by flashing LED and/or voice prompt).
2. On your smartphone or other Bluetooth-enabled device, navigate to the Bluetooth settings.
3. Scan for available devices. The module should appear as "BT003" or a similar identifier.
4. Select the module to initiate pairing. A voice prompt will confirm successful pairing, and the LED will typically change to a solid state or a slower flash.

6.3. Audio Playback

After successful pairing, you can play audio from your connected device. The audio will be transmitted wirelessly to the KCX BT003 module and output through the DAC_L and DAC_R pins to your connected amplifier/speakers.

6.4. Voice Prompts and LED Indicators

The module provides voice prompts for key actions (e.g., power on, pairing, connected). The LED indicator provides visual feedback on the module's status:

- **Rapid Flashing:** Pairing mode, waiting for connection.
- **Slow Flashing / Solid:** Connected to a Bluetooth device.

7. MAINTENANCE

To ensure the longevity and optimal performance of your RIDEN KCX BT003 module, follow these maintenance guidelines:

- **Keep Dry:** Avoid exposing the module to moisture or liquids, as this can cause short circuits and damage.
- **Clean Gently:** If cleaning is necessary, use a soft, dry cloth. Do not use harsh chemicals or abrasive materials.
- **Handle with Care:** This is a sensitive electronic component. Avoid dropping it or subjecting it to strong impacts.
- **Static Electricity:** Take precautions against electrostatic discharge (ESD) when handling the module, as static can damage sensitive components.
- **Ventilation:** Ensure adequate ventilation if the module is enclosed in a case, especially if other heat-generating components are present.

8. TROUBLESHOOTING

If you encounter issues with your KCX BT003 module, refer to the following troubleshooting steps:

8.1. No Power / Module Not Responding

- **Check Power Connections:** Verify that VBAT and GND are correctly connected and that the power supply is providing 3.3V-5.0V DC.
- **Check Power Supply:** Ensure the power supply itself is functional and providing sufficient current.

8.2. Cannot Pair with Bluetooth Device

- **Module in Pairing Mode:** Confirm the module is powered on and its LED is flashing rapidly, indicating it's in pairing mode.
- **Device Bluetooth On:** Ensure Bluetooth is enabled on your smartphone or audio source device.
- **Distance:** Keep the module and your device within close proximity (e.g., 1 meter) during pairing.
- **Interference:** Move away from other 2.4GHz wireless devices that might cause interference.
- **Forget Device:** If previously paired, try forgetting the module from your device's Bluetooth list and re-pairing.

8.3. No Audio Output / Poor Audio Quality

- Check Audio Connections:** Verify that DAC_L, DAC_R, and audio GND are correctly connected to your amplifier/speakers.
- Amplifier/Speaker Functionality:** Ensure your amplifier and speakers are working correctly.
- Volume Levels:** Check the volume settings on both your source device and your amplifier.
- Distance and Obstacles:** Ensure the Bluetooth connection is stable and within range (up to 10m). Walls or other obstacles can degrade signal quality.
- Source Audio:** Test with different audio sources or files to rule out issues with the source material.

9. WARRANTY AND SUPPORT

Specific warranty information for the RIDEN KCX BT003 module is not provided in this manual. For details regarding warranty coverage, technical support, or service, please contact your retailer or the manufacturer directly. Keep your purchase receipt as proof of purchase.

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Related Documents

	<p>Constant Voltage and Constant Current DC Power Supply Instruction Manual</p> <p>Comprehensive instruction manual for the Constant Voltage and Constant Current DC Power Supply, covering features, operation, and specifications for models RD6006, RD6012, RD6018, RD6024, RD6030, RD6006P, RD6012P, and RD6018P.</p>
	<p>Constant Voltage and Constant Current DC Power Supply Instruction</p> <p>Instruction manual for the Constant Voltage and Constant Current DC Power Supply, covering models RD6006, RD6012, RD6018, RD6024, RD6030, RD6006P, RD6012P, and RD6018P. Includes setup, operation, and software usage.</p>