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Dayton Audio KAB-23

Dayton Audio KAB-23 aptX HD Bluetooth 5.0 Receiver Audio Amplifier Board User Manual

Model: KAB-23

1. Introduction

The Dayton Audio KAB-23 is a versatile Bluetooth 5.0 receiver board designed for audio projects. It features aptX HD support for high-quality audio streaming and includes a built-in 2 x 3W amplifier, making it suitable for small audio applications. Its wide 5 to 21 VDC input voltage range offers flexibility for various power sources.

2. Key Features

- High-quality audio performance with Bluetooth 5.0.
- Supports audio formats: aptX, aptX HD, aptX LL, SBC, and AAC.
- Wide operating voltage range: 5 to 21 VDC.
- Integrated 2 x 3W amplifier for small audio projects.
- Low power consumption: 50 mA working, 10 mA quiescent.
- Plug-N-Play JST type connectors for simplified installation.
- High receive sensitivity with RF power up to 9 dBm and -90 dBm.
- Stable wireless connectivity up to 15m (50ft).
- On-board antenna and external antenna jack for flexible mounting.
- PCM5121 DAC chip for digital to analog conversion.

3. Package Contents

The KAB-23 board typically includes the following components:

- Dayton Audio KAB-23 Amplifier Board
- Wire harness for external Bluetooth LED
- Wire harness for 3.5mm line out
- Wire harness for Bluetooth reset switch
- Wire harness for stereo speaker connection (if using built-in amp)
- 4-pin wire harness for Dayton Audio LBB battery boards

- Optional: External rubber antenna (sold separately)



Figure 3.1: Included wire harnesses for the KAB-23 board. These facilitate connections for LED indicators, line out, reset switch, speakers, and battery boards.

4. Board Layout and Connections

Familiarize yourself with the various connectors and components on the KAB-23 board before proceeding with installation.

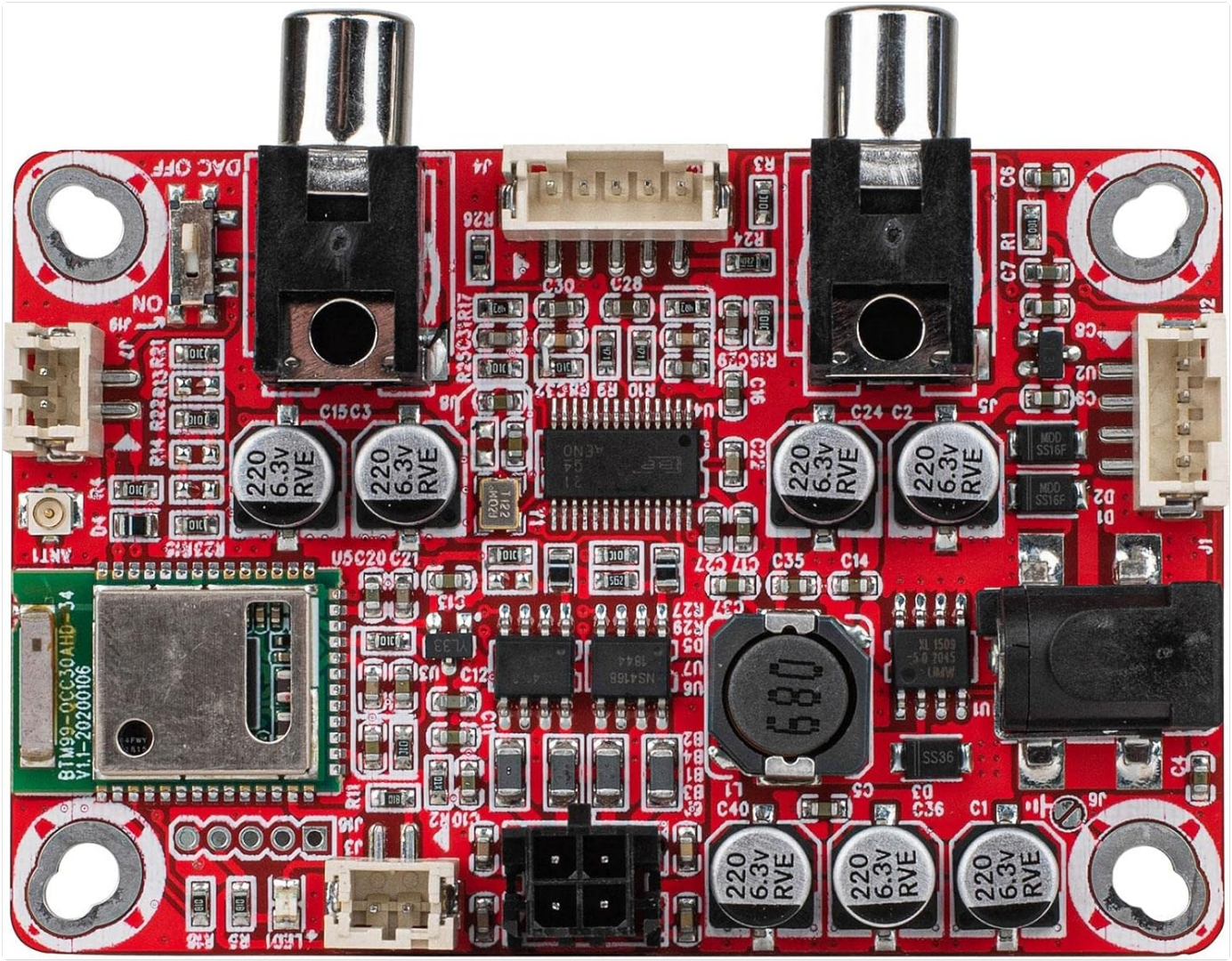


Figure 4.1: Top-down view of the KAB-23 board, showing the layout of components, connectors, and output jacks. Key components include the Bluetooth module, amplifier chips, DAC, and various JST connectors.

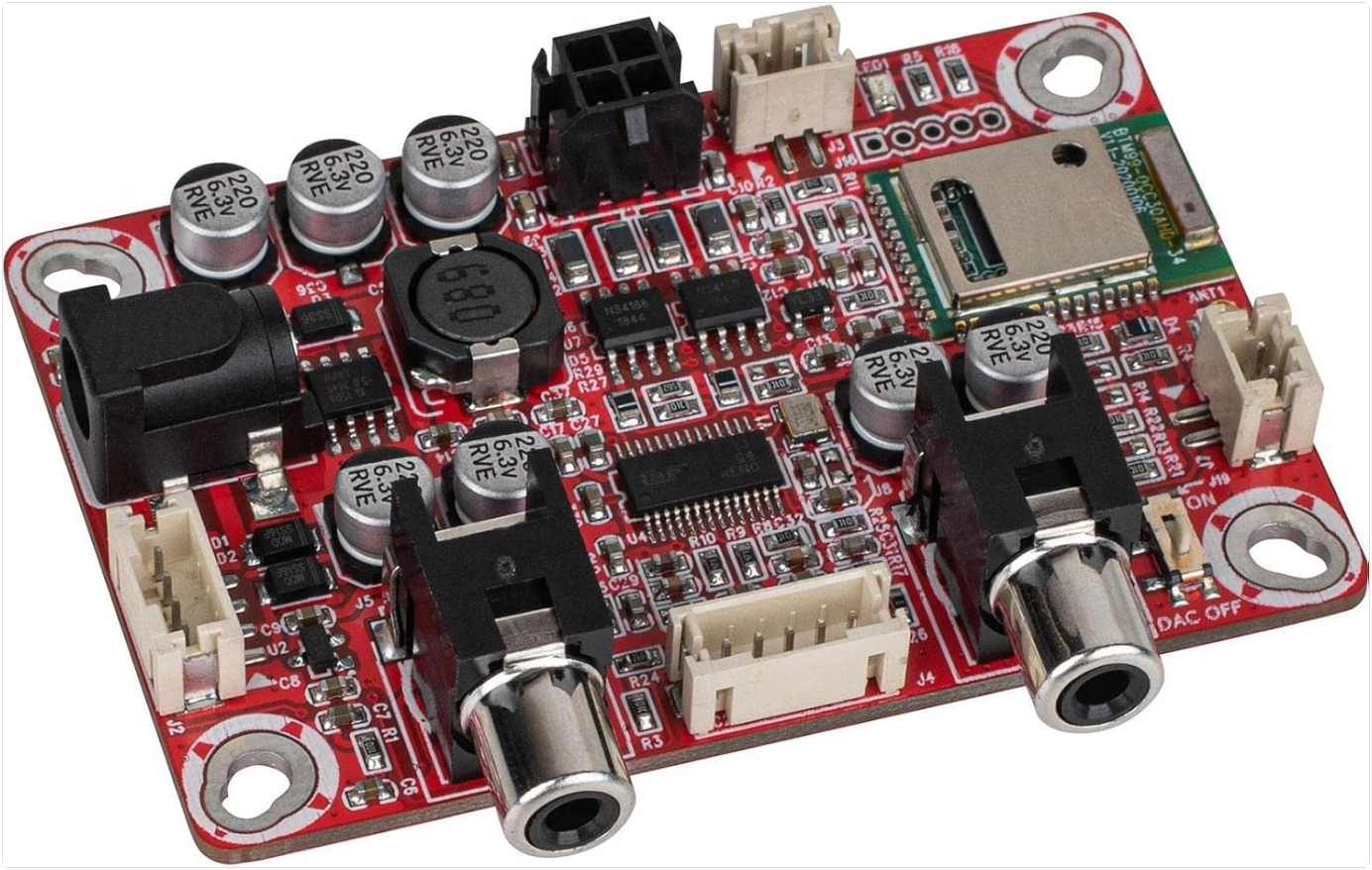


Figure 4.2: Angled view of the KAB-23 board, highlighting the RCA and 3.5mm output jacks, power input, and various JST connectors for external components.

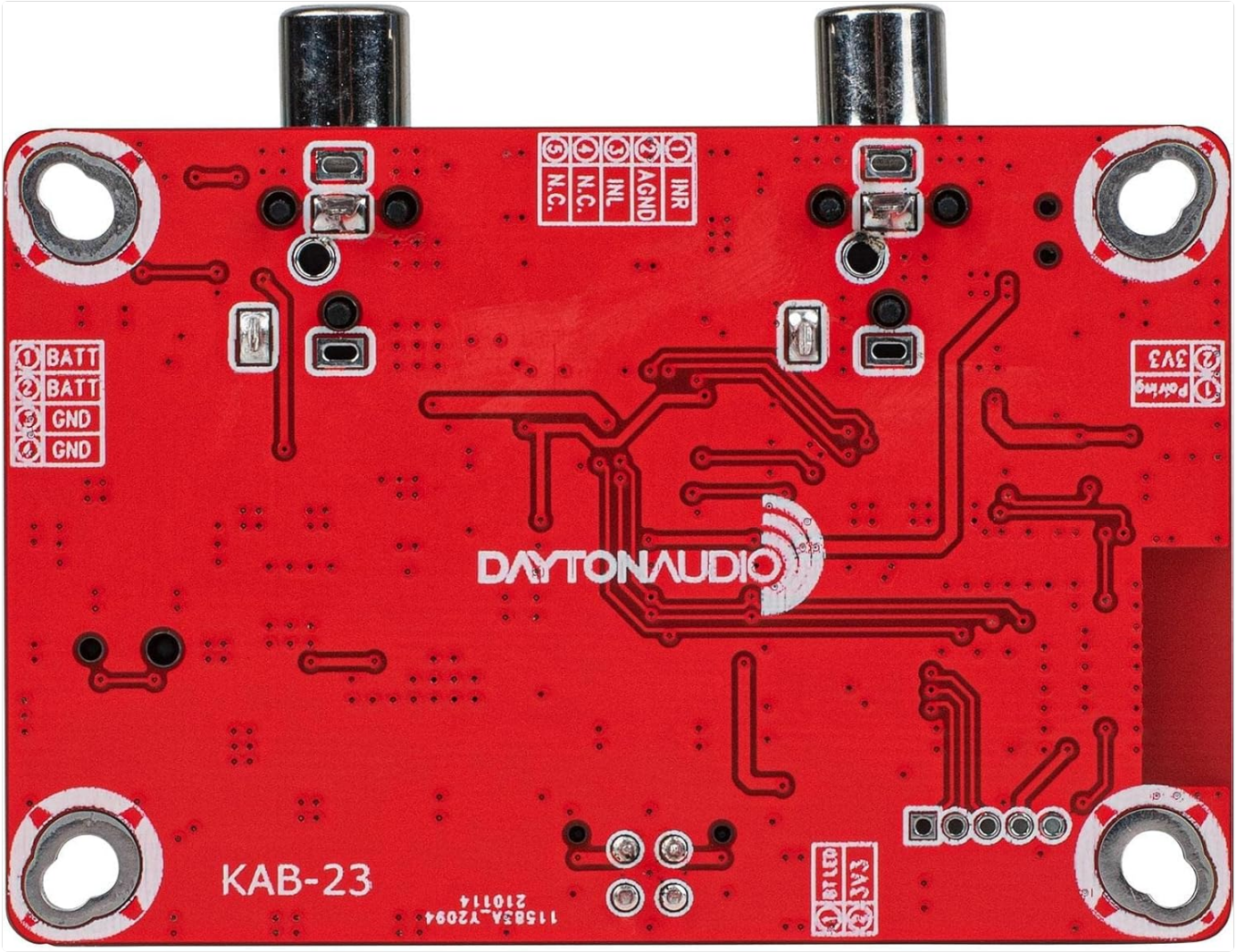


Figure 4.3: Bottom view of the KAB-23 board, showing the solder points and traces, including the "KAB-23" model designation and Dayton Audio logo.

5. Setup and Installation

Follow these steps for proper installation of your KAB-23 board. Ensure all connections are secure before applying power.

1. **Power Connection:** Connect a 5 to 21 VDC power supply to the designated power input connector. Use the appropriate wire harness. Ensure correct polarity.
2. **Speaker Connection (Optional):** If utilizing the built-in 2 x 3W amplifier, connect your stereo speakers (4-8 ohms impedance) to the speaker output JST connector using the provided wire harness.
3. **Line Out Connection:** For connecting to an external amplifier or receiver, use the 3.5mm line out or RCA jacks. The 3.5mm line out can be connected via its dedicated wire harness.
4. **Bluetooth LED and Reset Switch:** Connect the external Bluetooth LED and reset switch using their respective wire harnesses to the corresponding JST connectors on the board.
5. **Battery Board Connection (Optional):** For portable applications, connect a Dayton Audio LBB battery board using the 4-pin wire harness.
6. **External Antenna (Optional):** If mounting the KAB-23 in a metal enclosure, connect an external rubber antenna (sold separately) to the on-board external antenna jack for improved signal reception.
7. **DAC Switch:** The board features a DAC switch. If you are using only the speaker outputs and wish to conserve power, you can switch the DAC to the "off" position.

Caution:

- Always ensure power is disconnected before making or changing any connections.
- When unplugging JST connectors, exercise caution to avoid damaging the connectors or the board.

6. Operation

Once the KAB-23 board is properly installed and powered, follow these steps to operate it:

1. **Power On:** Apply power to the KAB-23 board. The Bluetooth LED (if connected) should illuminate, indicating it is ready for pairing.
2. **Bluetooth Pairing:**
    - On your Bluetooth-enabled device (e.g., smartphone, tablet), navigate to the Bluetooth settings.
    - Scan for available devices. The KAB-23 should appear as "Dayton Audio KAB-23" or similar.
    - Select the KAB-23 to initiate pairing. A confirmation tone or LED change may indicate successful pairing.
3. **Audio Playback:** Once paired, begin playing audio from your device. The sound will be transmitted wirelessly to the KAB-23 and output through the connected speakers or line out.
4. **Bluetooth Reset:** If you need to clear the current Bluetooth connection or initiate a new pairing, press the connected Bluetooth reset switch.

7. Maintenance

The Dayton Audio KAB-23 board requires minimal maintenance. Observe the following guidelines:

- Keep the board clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Avoid exposing the board to moisture, extreme temperatures, or direct sunlight.
- Ensure adequate ventilation if enclosed to prevent overheating.
- Do not attempt to modify the board, as this may void the warranty and cause damage.

8. Troubleshooting

If you encounter issues with your KAB-23 board, refer to the following common problems and solutions:

- **No Power:**
    - Verify the power supply is connected correctly and providing 5-21 VDC.
    - Check all power connections for secure contact and correct polarity.
- **Cannot Pair Bluetooth:**
    - Ensure the KAB-23 is powered on and within range (up to 15m/50ft) of your device.
    - Try resetting the Bluetooth connection by pressing the reset switch.
    - Clear the KAB-23 from your device's Bluetooth history and attempt to pair again.
    - Ensure no other device is currently paired with the KAB-23.
- **No Audio Output:**
    - Check speaker or line out connections for proper wiring and secure contact.
    - Verify the volume on your source device and any connected external amplifier is not muted or too low.
    - Ensure the KAB-23 is successfully paired and receiving audio from your device.
    - If using the built-in amplifier, confirm speakers are 4-8 ohms impedance.

- **Poor Audio Quality / Intermittent Connection:**
  - Reduce the distance between your device and the KAB-23.
  - Remove any obstacles (especially metal) between the device and the board.
  - Ensure the external antenna (if used) is properly connected and positioned.
  - Minimize interference from other wireless devices.

9. Specifications

Feature	Specification
Model Number	KAB-23
Bluetooth Version	5.0
Supported Audio Formats	aptX, aptX HD, aptX LL, SBC, AAC
Power Output (w/ 12 VDC)	2 x 3W @ 4 ohms
Amplifier SNR	88.9 dB
DAC SNR	98.6 dB
Max Line Output	0.9Vrms
Frequency Response	20 to 20,000 Hz (±0.8 dB)
Speaker Impedance	4-8 ohms
Working Voltage	5 to 21 VDC
Current Draw (Amplifier)	Up to 700mA
Current Draw (No Speaker Output)	50mA
Idle Current Draw (Bluetooth Connected)	10mA
Audio Output Distortion	Less than 0.5%
Dimensions (L x W x H)	3" x 2" x 0.75" (Board only)
Product Dimensions (Overall)	4 x 2.75 x 1.25 inches
Item Weight	3.2 ounces

10. Warranty and Support

Dayton Audio products are designed for reliability and performance. This product comes with a warranty as detailed below:

- **Warranty - Parts:** 5 Years
- **Warranty - Labor:** 5 Years

For technical support, troubleshooting assistance, or warranty claims, please contact Dayton Audio customer service or visit the official Dayton Audio website for further resources.
Note: Warranty terms may vary based on region and retailer. Please retain your proof of purchase.

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