PAM8610

Generic PAM8610 Dual Channel 10W Class D Audio Amplifier Module

User Instruction Manual

1. INTRODUCTION

The PAM8610 module is a compact, 10W per channel, Class-D stereo audio amplifier designed for high-quality sound reproduction with low total harmonic distortion plus noise (THD+N). This module is suitable for various DIY audio projects, especially portable and mobile applications powered by batteries. It features a volume control potentiometer, power switch, and mute switch connectors, along with convenient speaker screw terminals.
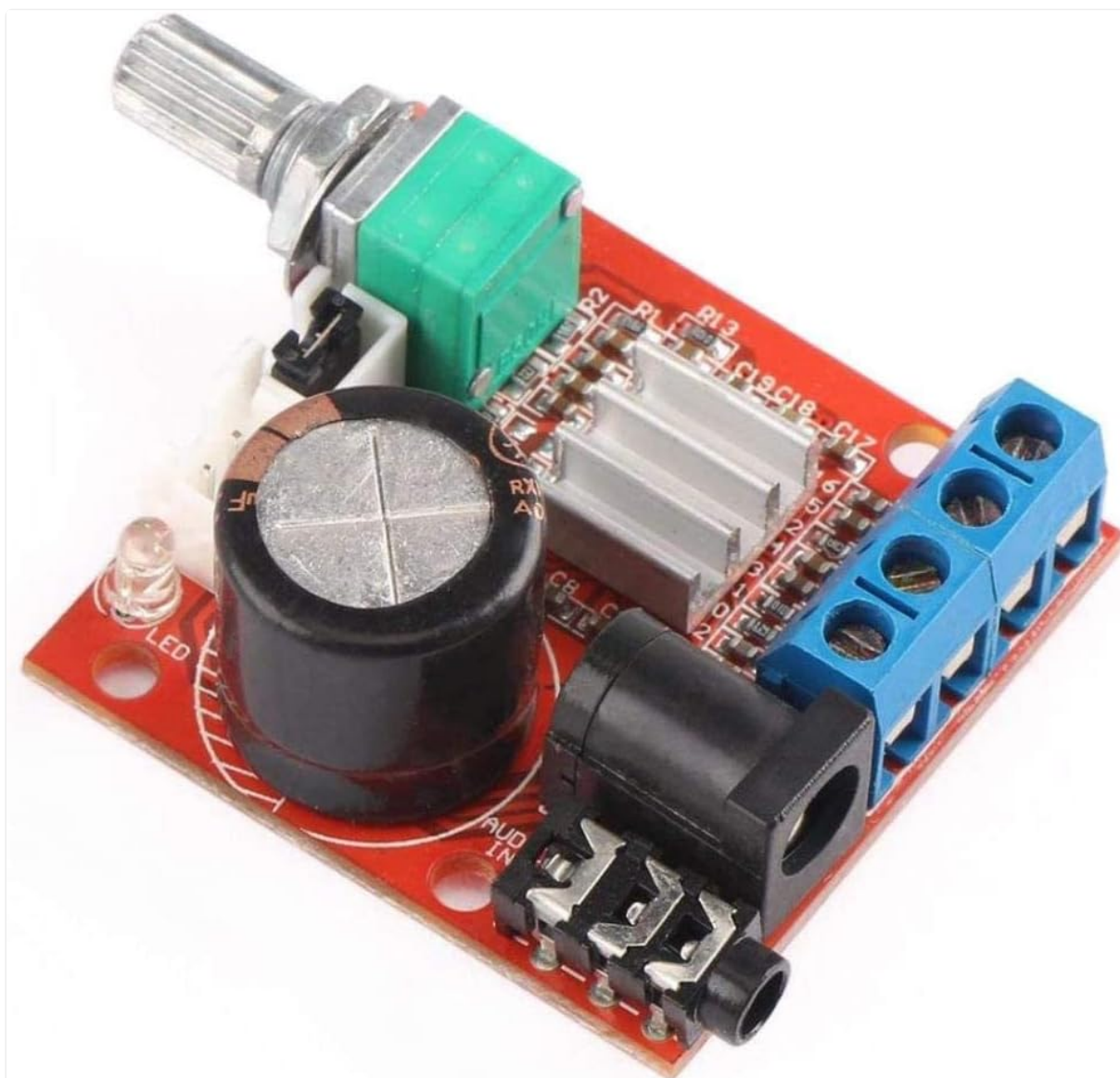
2. SETUP AND CONNECTIONS

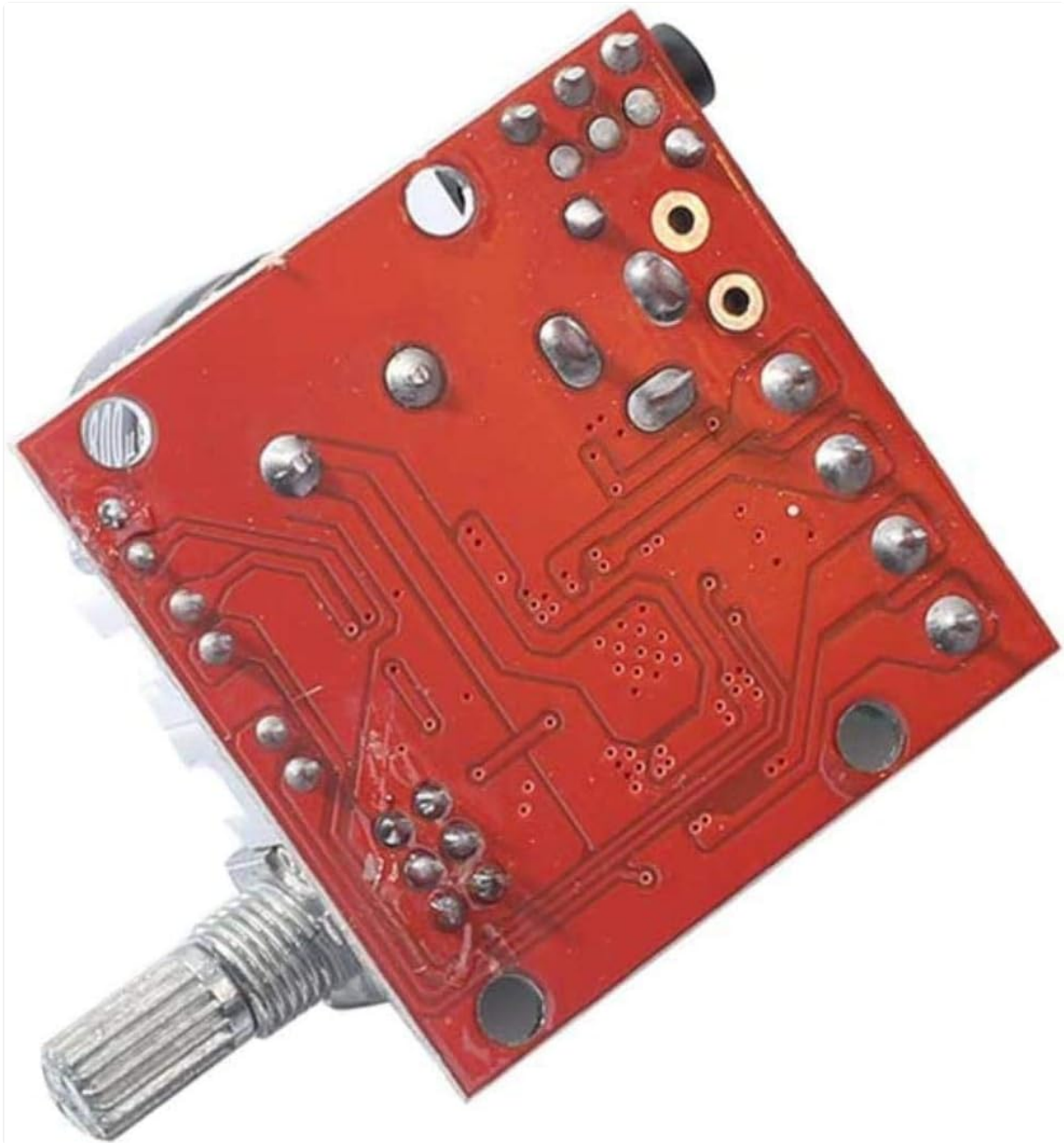Follow these steps to correctly set up your PAM8610 amplifier module:

Figure 2: Top view of the PAM8610 amplifier module with labeled connection points.

1. **Power Supply Connection:** Connect a DC power supply ranging from 7.5V to 15V to the DC 12V barrel jack. A 12V supply is recommended for optimal performance. Ensure the center pin of the connector is positive (+).

2. **Audio Input:** Connect your audio source (e.g., smartphone, MP3 player) to the 3.5mm stereo headphone jack labeled "Audio Input".

3. **Speaker Connection:** Connect your speakers to the screw terminals. The module supports 4-8 Ohm speakers, with 8 Ohm speakers recommended. Ensure speakers are connected before applying power to the module.

   - Connect the left channel speaker to the terminals labeled "- L +" and the right channel speaker to "- R +".
   - **Important: The negative connections for the left and right channels should not be connected together, as this may damage the module.**

4. **External Switches (Optional):**
   - **Power Switch:** Wire an external Single Pole Single Throw (SPST) switch to the "Power switch" connector (JST-style pins with 2.54mm pitch) to provide remote power on/off functionality. If no external switch is used, ensure the onboard jumper is present for continuous power.
   - **Mute Switch:** Wire an external SPST switch to the "Mute switch" connector for remote audio muting.
5. **Volume Control:** The onboard potentiometer allows for direct adjustment of the output volume.

3. OPERATING INSTRUCTIONS

Once all connections are securely made:

1. **Power On:** Apply power to the module. The Power LED will illuminate, indicating the module is active.
2. **Adjust Volume:** Rotate the onboard volume control potentiometer clockwise to increase volume and counter-clockwise to decrease it. Start with a low volume setting before playing audio.
3. **Mute Function:** If an external mute switch is connected, activate it to temporarily silence the audio output without turning off the module.
4. **Heat Management:** The Class D amplifier design offers high efficiency, typically generating minimal heat at low to moderate audio volumes. When driven hard or at higher output levels, the small heatsink may become warm. Ensure adequate ventilation around the module, especially in enclosed spaces.

4. MAINTENANCE

The PAM8610 amplifier module requires minimal maintenance. To ensure longevity and optimal performance:

- Keep the module in a dry environment, away from moisture and extreme temperatures.
- Avoid exposing the PCB to dust or debris. If cleaning is necessary, use a soft, dry brush or compressed air.
- Ensure all connections remain secure and free from corrosion.
- Do not attempt to modify the circuit board, as this may void any implied warranty and could damage the device.

5. TROUBLESHOOTING

If you encounter issues with your PAM8610 module, consider the following troubleshooting steps:

- **No Power / Module Dead:**
  - Verify the power supply voltage is within the 7.5V to 15V DC range and correctly connected (12V recommended).
  - Check the polarity of the power connection.
  - Ensure the power switch connector has a jumper installed or an external switch is correctly wired and in the 'on' position.
  - Inspect for any visible damage to the PCB or components.

- **No Sound Output:**
  - Confirm the audio input source is active and connected correctly to the 3.5mm jack.
  - Check all speaker connections for proper polarity and secure contact. Remember, left and right channel negatives must not be connected together.
  - Ensure the volume potentiometer is turned up.
  - If an external mute switch is used, ensure it is not in the 'mute' position.
  - Verify speaker impedance is between 4-8 Ohms.

- **Distorted Sound:**

- Reduce the input audio level from your source.
  - Lower the module's volume setting.
  - Ensure the power supply is stable and providing sufficient current.

- **Module Gets Hot:**
  - While some warmth is normal, excessive heat may indicate an issue.
  - Ensure the speaker load is within the recommended 4-8 Ohm range.
  - Verify the power supply voltage is not exceeding 15V.
  - Ensure adequate airflow around the module.

6. SPECIFICATIONS

Feature	Specification
Amplifier Class	Class D
Output Power	10W + 10W (into 8Ω)
Frequency Response	20Hz to 50KHz
Operating Voltage	7.5V - 15V DC
Recommended Supply Voltage	12V DC
Quiescent Current	20mA
Efficiency	90%
Speaker Load	4-8 Ohms (8 Ohms recommended)
Audio Input Connector	3.5mm stereo headphone jack
Dimensions (L x W x H)	40 x 40 x 22 mm (55 x 40 x 22 mm including volume control knob)
Net Weight	24g
Material	PCB

7. WARRANTY AND SUPPORT

No specific warranty information is provided by the manufacturer in the product details. For technical support, warranty claims, or further inquiries, please contact your retailer or the product manufacturer directly.