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› DollaTek TPA3255 Digital Amplifier Board User Manual

DollaTek CP028912

DollaTek TPA3255 Digital Amplifier Board User Manual

High Power Stereo 300Wx2 / Bridge Mono 600W DC18-50V

1. INTRODUCTION

Thank you for choosing the DollaTek TPA3255 Digital Amplifier Board. This high-performance amplifier is designed for audiophiles and DIY enthusiasts seeking powerful and clear audio output for stereo or mono subwoofer applications. This manual provides essential information for proper setup, operation, and maintenance of your amplifier board.



An overhead view of the DollaTek TPA3255 digital amplifier board, showcasing the central cooling fan, large capacitors, and various components.

2. SAFETY INFORMATION

WARNING: Failure to follow these safety instructions may result in fire, electric shock, or other injury or damage.

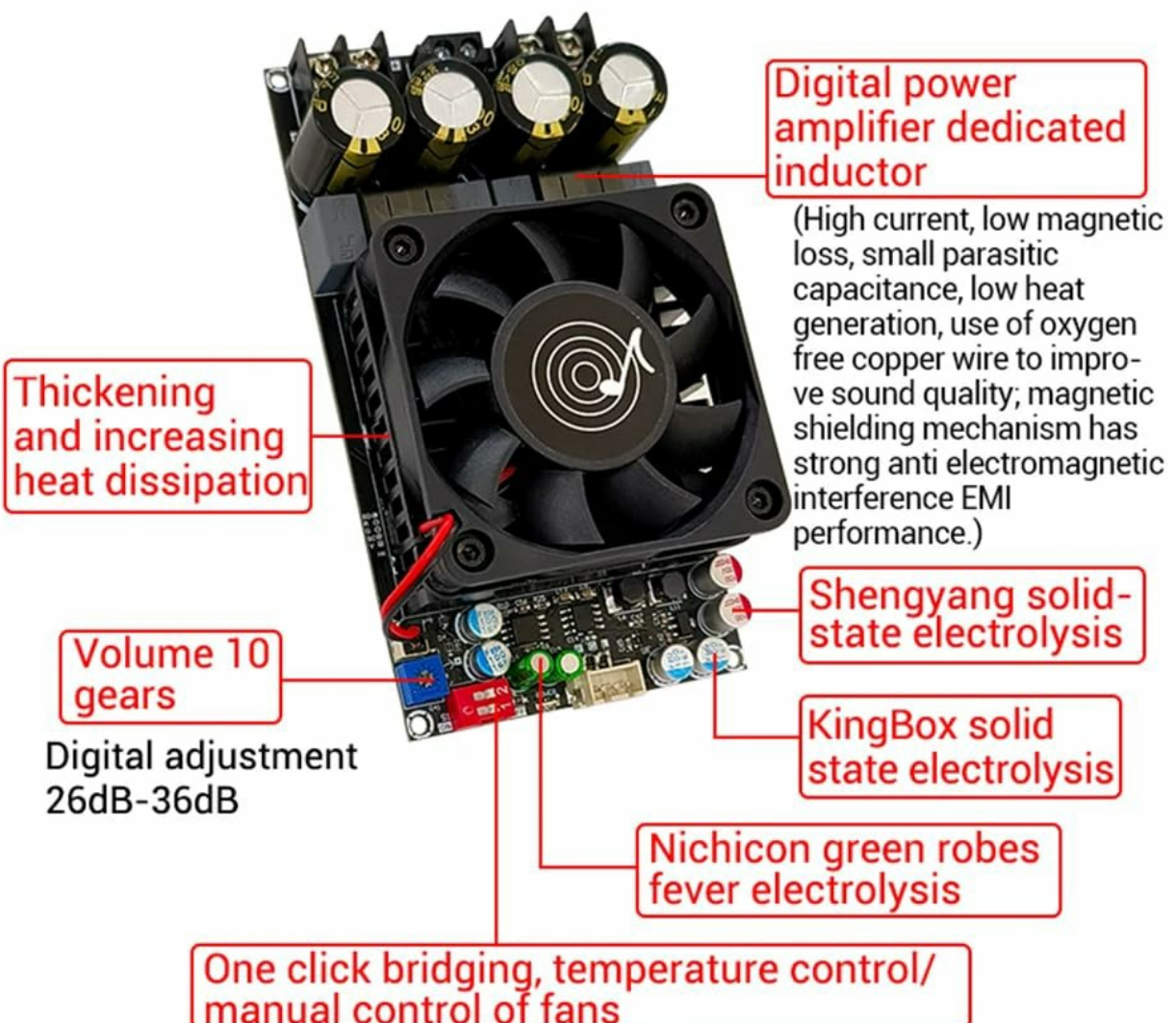
- **Power Supply:** Use only a DC power supply within the specified voltage range of 18-50V. The limit is 53V. Using an incorrect power supply can damage the device.
- **Polarity:** This board does not have input reverse polarity protection. Ensure positive and negative poles are connected correctly. Incorrect connection will cause damage.
- **Ventilation:** Ensure adequate ventilation around the amplifier board. Do not cover the fan or obstruct airflow.
- **Handling:** Disconnect power before making any connections or adjustments to prevent electric shock.
- **Environment:** Avoid exposing the board to moisture, extreme temperatures, or direct sunlight.

Protection Mechanism: The board includes built-in protection against undervoltage, overheating, overcurrent, and input short-circuit conditions.

3. PRODUCT FEATURES

- **High Power Output:** Delivers 2x300W in BTL (stereo) mode or 600W in PBTL (mono bridge) mode.
- **Wide Voltage Range:** Operates with a DC power supply from 18V to 50V.
- **Adjustable Gain:** Front-end amplification adjustable from 26dB to 36dB via a 10-position potentiometer.
- **Efficient Cooling:** Features an automatic temperature-controlled air cooling fan, with an option for manual continuous operation.
- **Premium Components:** Constructed with oxygen-free copper wire for enhanced sound quality, magnetic shielding for strong EMI resistance, and low parasitic capacitance.
- **Anti-POP Sound:** Integrated MCU intelligent anti-POP sound circuit for clean audio transitions.
- **Robust Protection:** Includes undervoltage, overheating, overcurrent, and input short-circuit protection.

Product advantages



This image points out the digital power amplifier dedicated inductor (high current, low magnetic loss, small parasitic capacitance, oxygen-free copper wire, magnetic shielding), thickened heat dissipation, 10-gear volume adjustment, and one-click bridging/temperature control fan options.

4. PACKAGE CONTENTS

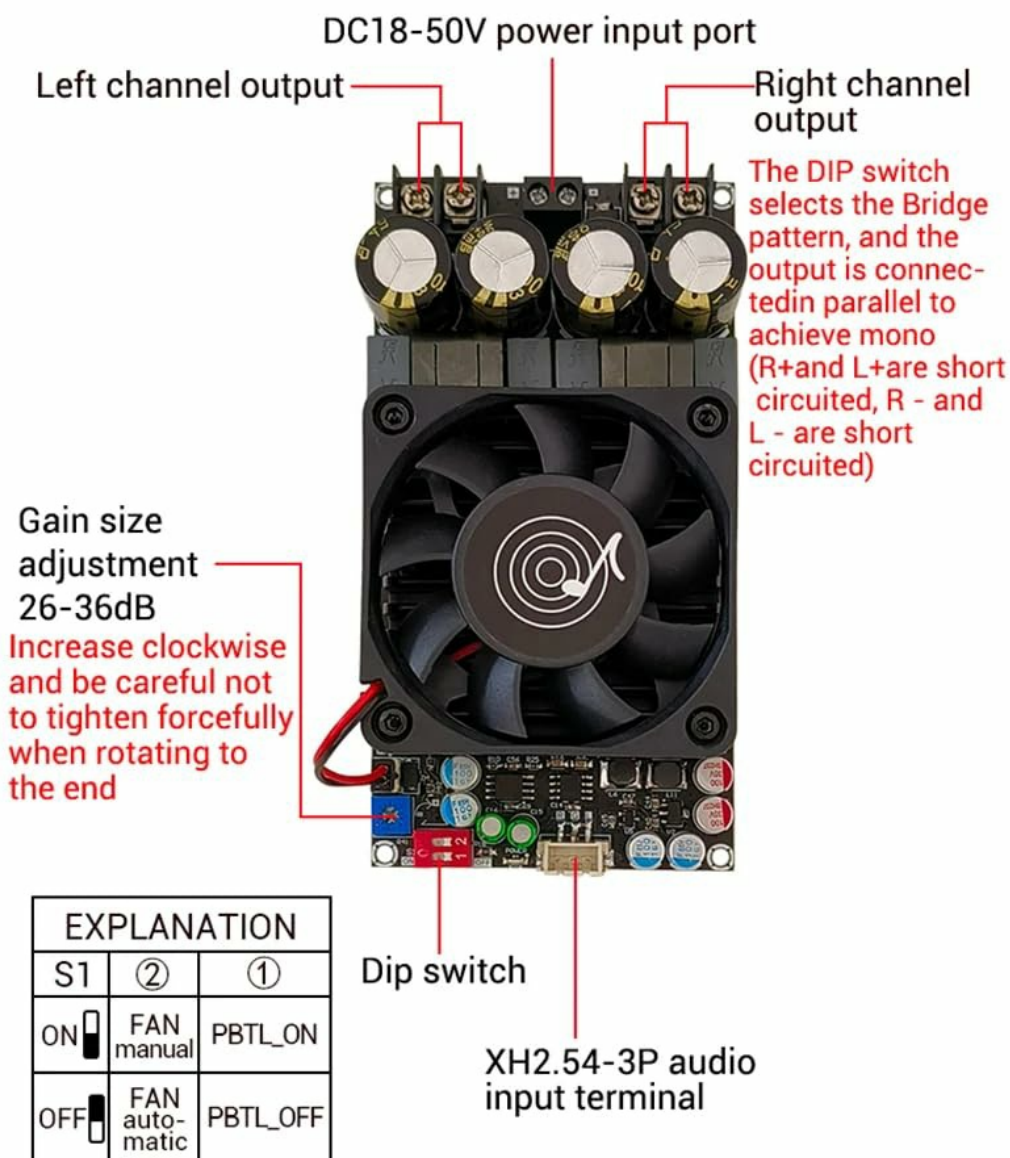
The package includes:

- 1 x DollaTek TPA3255 Digital Amplifier Board

5. SETUP AND CONNECTIONS

Before making any connections, ensure the power supply is disconnected.

Product function



An annotated diagram illustrating the power input port (DC18-50V), left and right channel outputs, DIP switch for bridge mode selection, gain adjustment potentiometer (26-36dB), and the XH2.54-3P audio input terminal.

5.1. Power Supply Connection

1. Connect a DC power supply (18-50V, limit 53V) to the **DC18-50V power input port**
2. It is recommended to use a DC power supply with a voltage of 36-48V and a current of 10A or more for optimal performance. Higher voltage generally results in higher power output.
3. **Important:** Observe correct polarity. The board does not have reverse polarity protection.

5.2. Audio Input Connection

1. Connect your audio source (e.g., smartphone, DAC, pre-amplifier) to the **XH2.54-3P audio input terminal**.

5.3. Speaker Output Connection

The amplifier supports two modes: BTL (stereo) and PBTL (mono bridge).

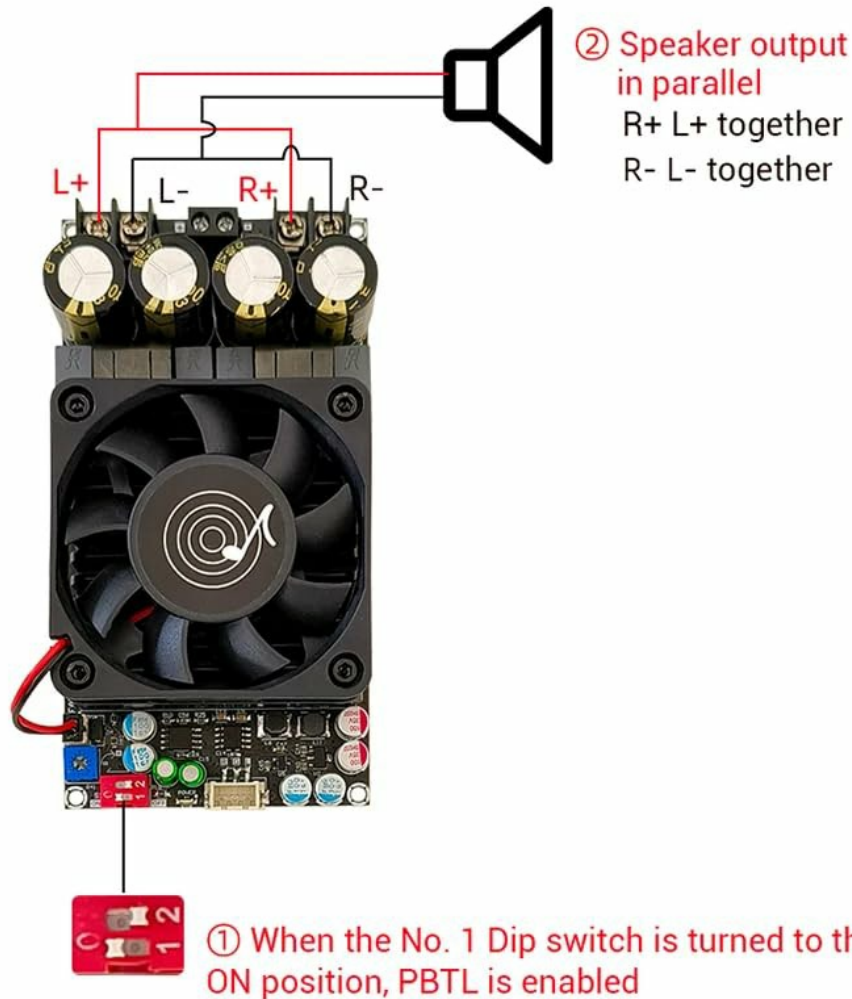
5.3.1. BTL (Stereo) Mode

1. Ensure the DIP switch (S1) is set to the OFF position for PBTL (meaning it's in BTL stereo mode).
2. Connect your left speaker to the **Left channel output** terminals (L+ and L-).
3. Connect your right speaker to the **Right channel output** terminals (R+ and R-).
4. Recommended speaker impedance: 3-8 Ohm.

5.3.2. PBTL (Mono Bridge) Mode

This mode combines the power of both channels into a single output for a higher power mono signal, typically used for subwoofers.

Bridging function



Power off before performing the bridging operation.

In PBTL mode, the default left channel audio input can also be connected to both left and right channels simultaneously. You can adjust the Potentiometer to change the module gain.

A clear diagram showing how to connect speakers in parallel for PBTL mono mode. It explains that when DIP switch No. 1 is turned ON, PBTL is enabled, and the left channel audio input can be connected to both left and right channels simultaneously. Gain can be adjusted via the potentiometer.

1. **Before proceeding, ensure the power supply is disconnected.**
2. Locate the DIP switch (S1) on the board. Turn the No. 1 selector switch to the **ON** position. This enables PBTL mode.
3. Short-circuit the R+ and L+ outputs together.
4. Short-circuit the R- and L- outputs together.
5. Connect your mono speaker (e.g., subwoofer) to the combined R+/L+ and R-/L- terminals.
6. In PBTL mode, the default left channel audio input can be connected to both left and right channels simultaneously.
7. Recommended speaker impedance: 2-8 Ohm.

6. OPERATING INSTRUCTIONS

6.1. Gain Adjustment

The amplifier features a front-end amplification stage with adjustable gain from 26dB to 36dB. This is controlled by a 10-position potentiometer.

1. Locate the gain adjustment potentiometer on the board.
2. Rotate the potentiometer clockwise to increase the gain (26dB to 36dB).
3. Rotate counter-clockwise to decrease the gain.
4. **Caution:** Do not forcefully tighten the potentiometer when rotating to its end stops.

6.2. Cooling Fan Operation

The cooling fan operates in two modes:

- **Automatic Temperature Control:** By default, the fan will activate automatically when the board reaches a certain temperature to prevent overheating.
- **Manual Continuous Operation:** You can manually select the fan to run continuously if desired. Refer to the board's markings or DIP switch settings for this option (usually indicated by 'FAN ON' or 'FAN manual').

7. SPECIFICATIONS

Feature	Specification
Model Number	CP028912
Brand	DollaTek
Power Chip	TPA3255
Working Voltage	DC 18-50V (Limit 53V)
Recommended Power Supply	DC 36-48V, 10A or more
Output Channels	2.0 Stereo (BTL) / 1.0 Mono (PBTL)
Max Power (BTL)	2x300W @ 50V 4Ω, 2x160W @ 50V 8Ω
Max Power (PBTL)	600W @ 50V 2Ω, 300W @ 50V 4Ω, 160W @ 50V 8Ω
Speaker Impedance (BTL)	3-8 Ohm
Speaker Impedance (PBTL)	2-8 Ohm
Gain Adjustment	26-36dB (10-position potentiometer)
Cooling	Automatic temperature-controlled fan / Manual continuous fan
Protection Features	Undervoltage, Overheating, Overcurrent, Input Short-circuit

Feature	Specification
Material	Copper
Item Weight	300 g
Dimensions (L x W x H)	125 x 65 x 38 mm (approx.)



An image showing the physical dimensions of the amplifier board: 125mm length, 65mm width, and 38mm height (including the fan).

8. TROUBLESHOOTING

If you encounter issues with your DollaTek TPA3255 amplifier board, please refer to the following common problems and solutions:

- **No Sound Output:**

- Check all power connections to ensure they are secure and correctly polarized.
- Verify the power supply voltage is within the 18-50V DC range.
- Ensure audio input cables are properly connected to the source and the amplifier board.
- Confirm speaker connections are secure and correct for the selected mode (BTL/PBTL).
- Adjust the gain potentiometer to an audible level.
- **Distorted Sound:**
 - Reduce the input audio volume from your source.
 - Check speaker impedance to ensure it matches the recommended range for the operating mode.
 - Ensure the power supply can provide sufficient current (recommended 10A or more).
- **Amplifier Overheating:**
 - Ensure the cooling fan is operating. If in automatic mode, check if it activates under load. If not, consider switching to manual continuous fan operation.
 - Verify there is adequate airflow around the board and the fan is not obstructed.
 - Reduce the output power or ensure speaker impedance is not too low.
- **No Power/LEDs Off:**
 - Double-check the power supply connection and ensure the power source is active.
 - Confirm correct polarity of the DC input. Incorrect polarity will prevent operation and may damage the board.

9. MAINTENANCE

- **Cleaning:** Keep the amplifier board clean and free from dust. Use a soft, dry cloth or a brush to gently remove dust. Do not use liquid cleaners.
- **Ventilation:** Regularly check that the cooling fan is free from obstructions and operating correctly. Ensure the area around the board allows for proper airflow.
- **Connections:** Periodically inspect all connections (power, audio input, speaker output) to ensure they remain secure.
- **Storage:** When not in use for extended periods, store the board in a dry, dust-free environment.

10. WARRANTY AND SUPPORT

For warranty information or technical support, please refer to the retailer or manufacturer's official website where you purchased the DollaTek TPA3255 Digital Amplifier Board. Please have your model number (CP028912) and purchase details ready when contacting support.