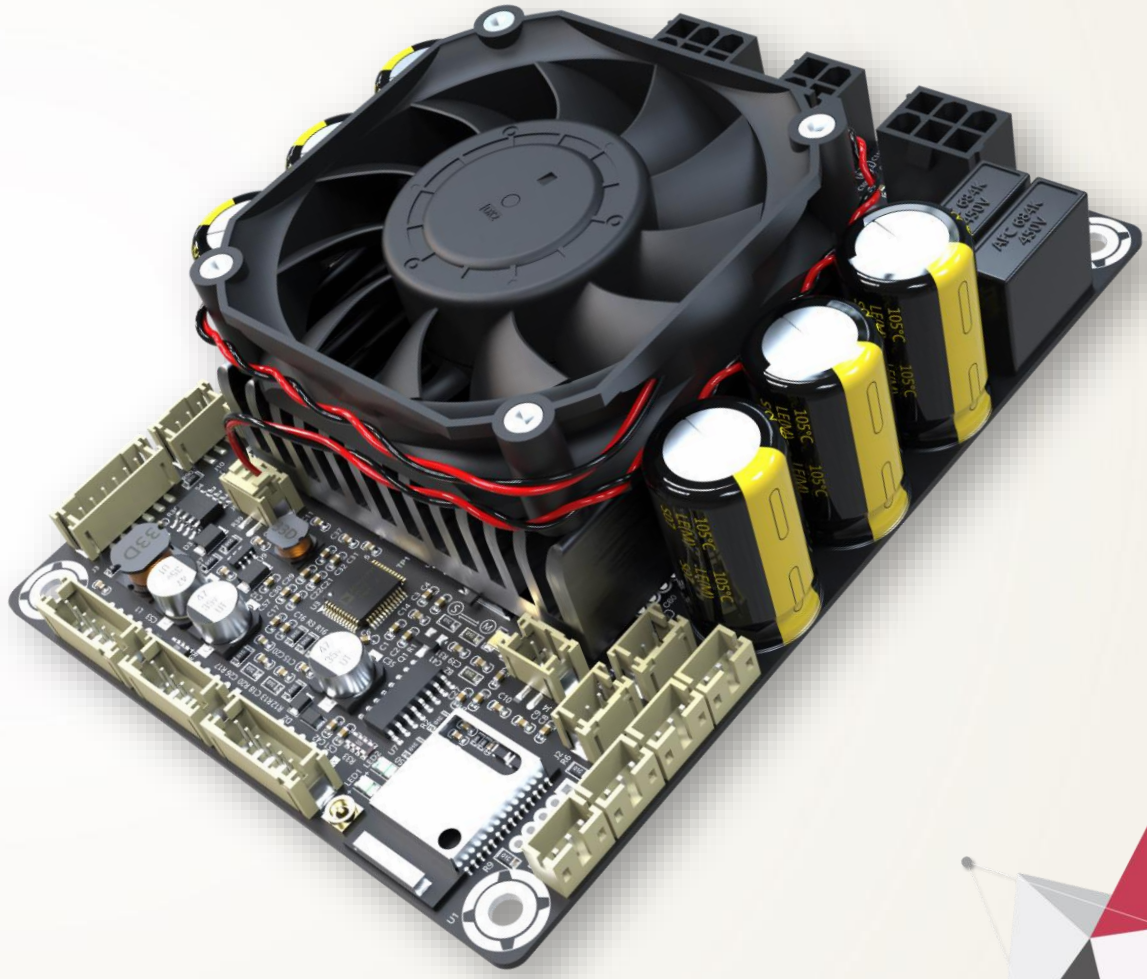
JAB5
Connection Guide

BY SURE ELECTRONICS CO., LTD.



What is JAB5?

JAB5 is a four-channel audio amplifier board integrated with high performance Bluetooth 5.0 (Supporting APT-X HD) and ADAU1701 DSP, which delivers 100W per channel into a 6Ohm load. With employed signal level sensor system and power management system, JAB5 features low power consumption and high efficiency, suitable **for home audio, DIY audio, Bluetooth speakers and digital crossover applications**.

JAB5 supports Bluetooth input, line input and I2S input. Signal would be mixed and delivered to speaker output.

Portable
Bluetooth Speaker

Home
Audio

Car
Audio

DIY
Applications

Digital
Crossover

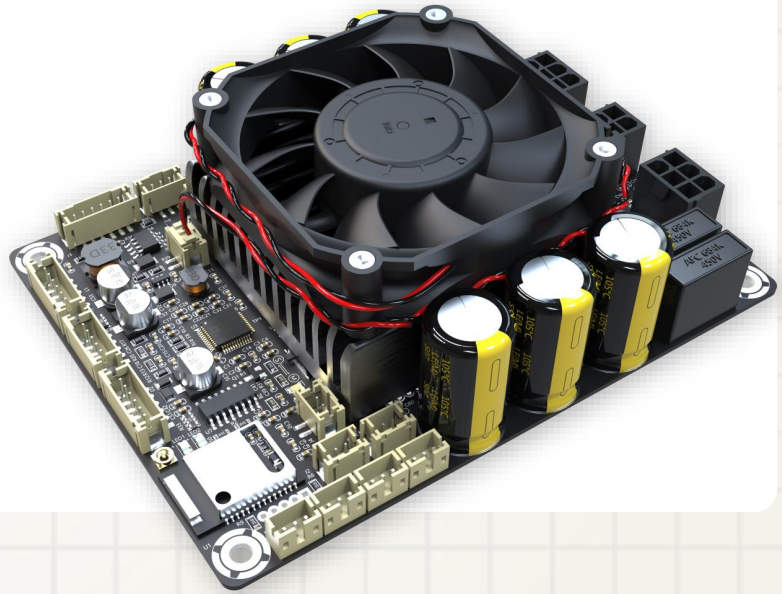
What is JAB5?

JAB5 supports 4.0 mode (4 x 100W), 2.1 mode (2 x 100W + 1 x 200W) and 2.0 mode (2 x 200W). The switching between the three modes are achieved by automatic cables identification, without any need of other operations. Furthermore, JAB5 supports cascading with another JAB5 to get 8 x 100W or other audio systems through the I2S output port.

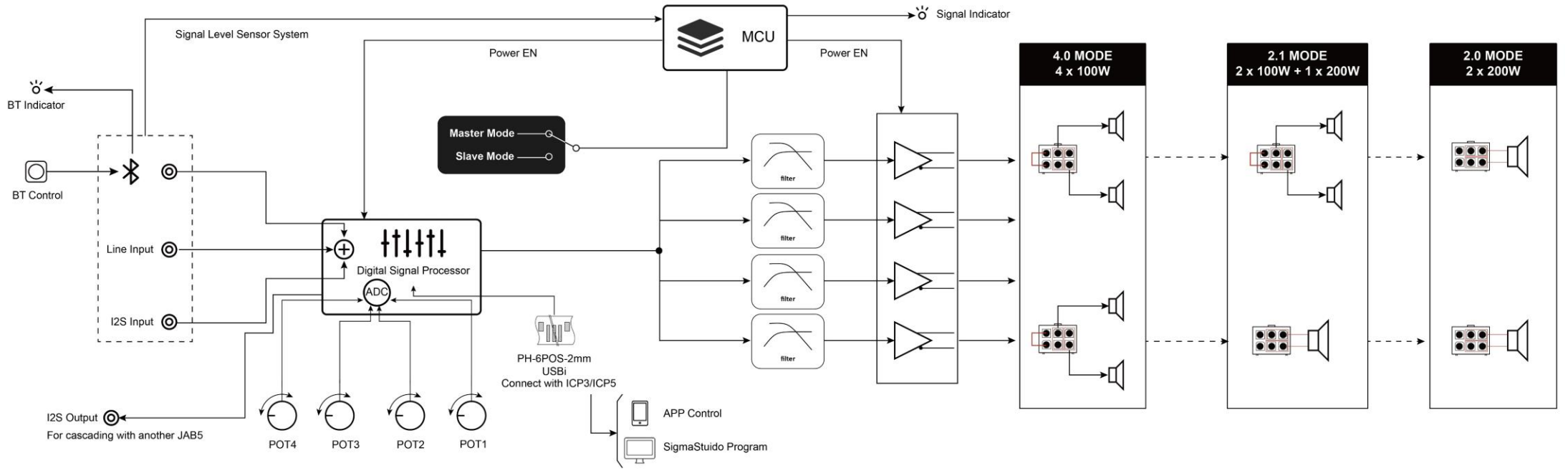
Four ports are provided for external potentiometers to control the volume, gain and frequency. With the connection of ICP5 or higher version(s), customers can achieve programming DSP through SigmaStudio or remote control with APP or PC UI.

Key Features:

- **Integrated with Qualcomm/CSR QCC 3034, Bluetooth V5.0 w aptX HD & ADAU1701 DSP**
- **Supporting I2S input, line input, I2S output**
- **Supporting programming with SigmaStudio or remote control via APP or PC UI**
- **Cascadable with another JAB5 to build an 8.0 Audio System**



Block Diagram



The switching between 4.0 mode, 2.1 mode and 2.0 mode is achieved by automatic cable identification. JAB5 can be cascading with another JAB5 to get an 8 x 100W system.

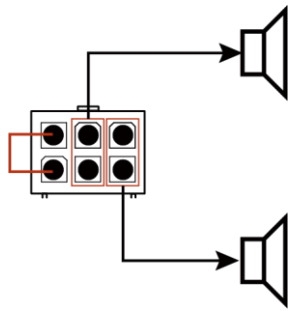
Note: The detail definition and connection will be explained in the following pages.

Connection Diagram

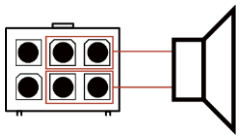
Speaker Output

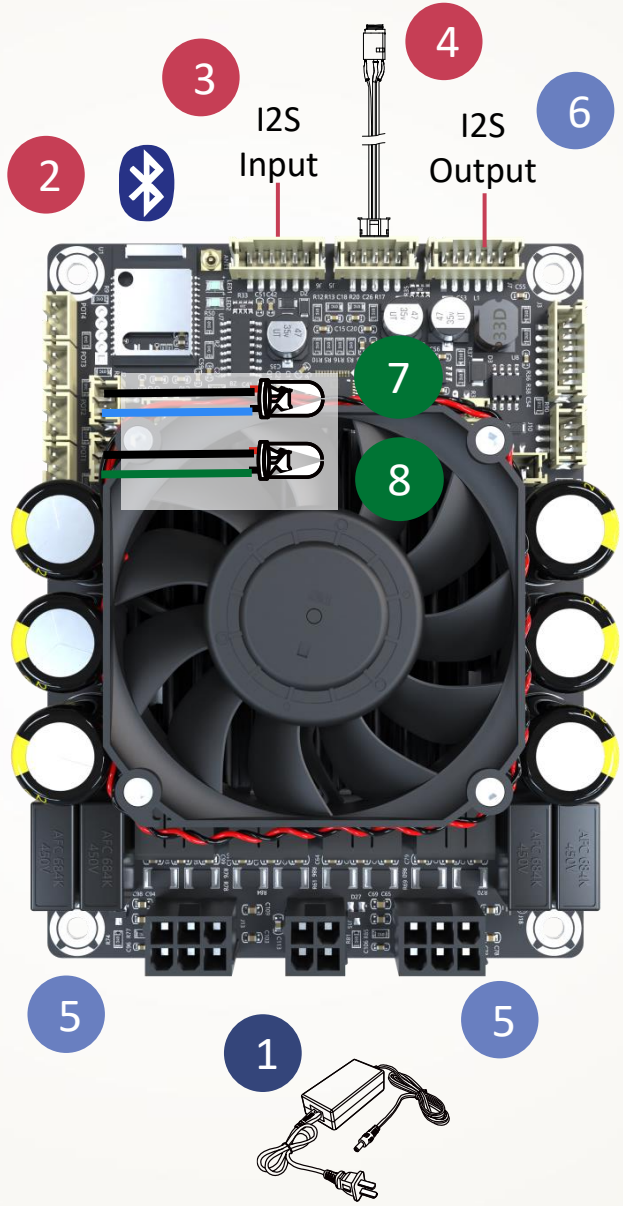
JAB5 supports BTL and PBTL mode, each 2 channels can be configured as one channel with doubled output power. The switching of the output mode is based on cables identification circuit and the settings is as follows.

BTL MODE



PBTL MODE





Power Supply

1 DC10V-39V power supply

Audio Input

2 Bluetooth 5.0 module

3 I2S Input

4 Analog Line Input

Audio Output

5 Stereo speaker output

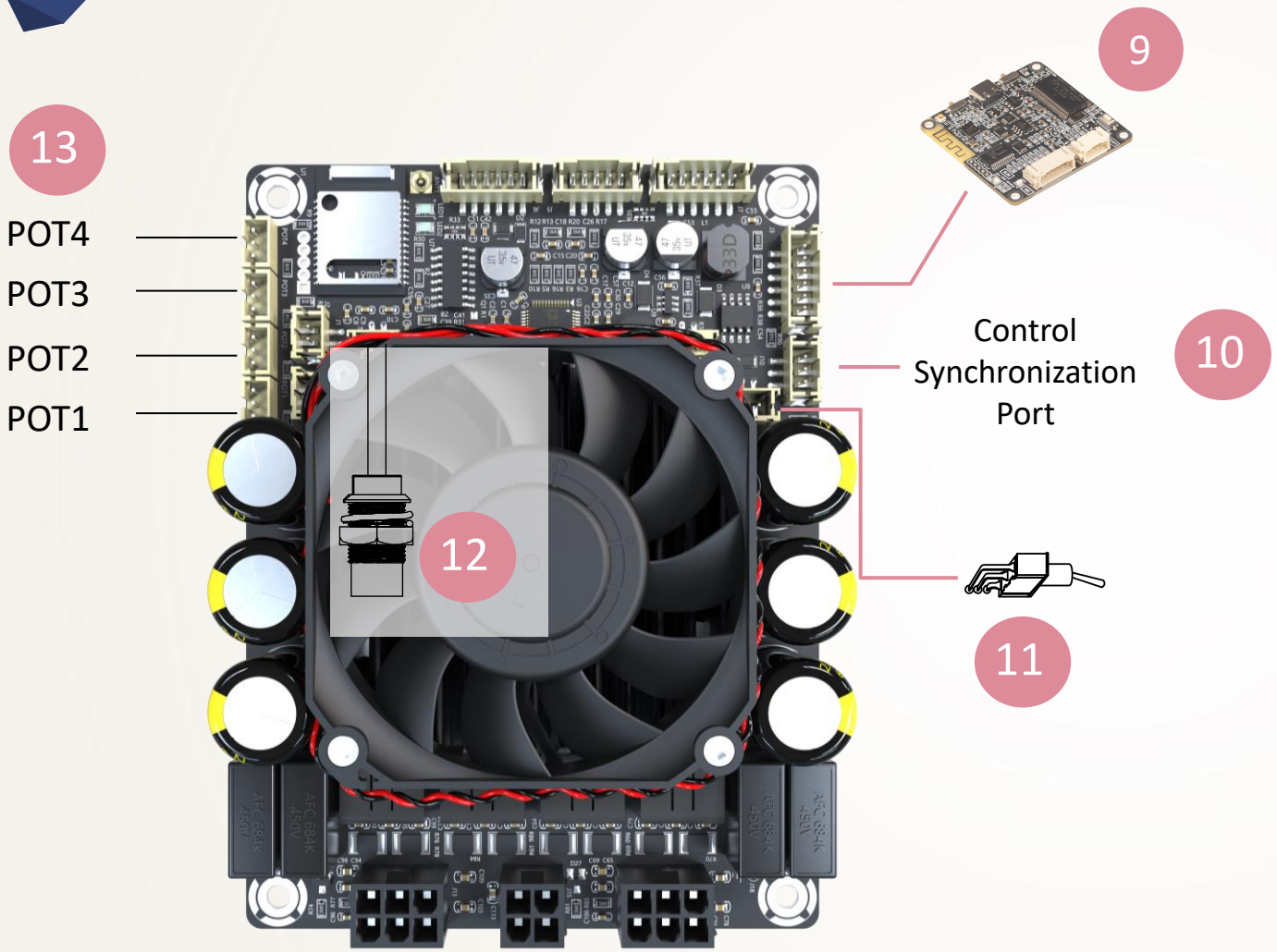
6 I2S Output

LED Indicator

7 Bluetooth indicator

8 Signal detection indicator

Connection Diagram



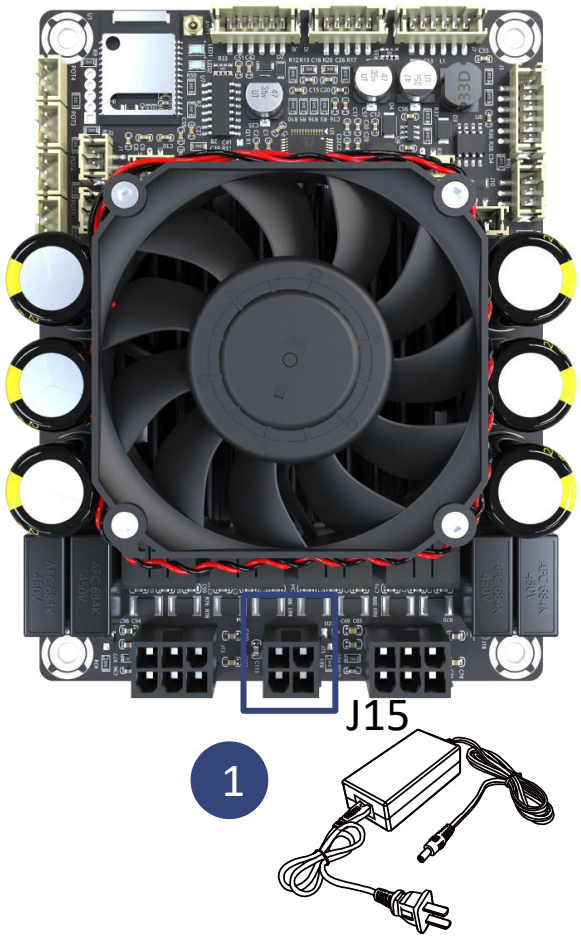
Control

- 9 Programming
- 10 Control Synchronization Port
- 11 Standby Control
- 12 Bluetooth Pairing Cancellation
- 13 Potentiometers

SW1: Switching between Master mode and Slave mode.

Power Supply

Power adapter



1. Power supply – J15

Suggested power supply should be 350W, DC36V. You can also use any power supply whose output voltage is within DC10-39V and current is higher than 4A. Please note power supply out of the recommended range may cause damage to the amplifier board.

We recommend 350W Single Output Switching Power Supply LRS-350 Series. We also recommend Mean Well GST-160A 36V version.

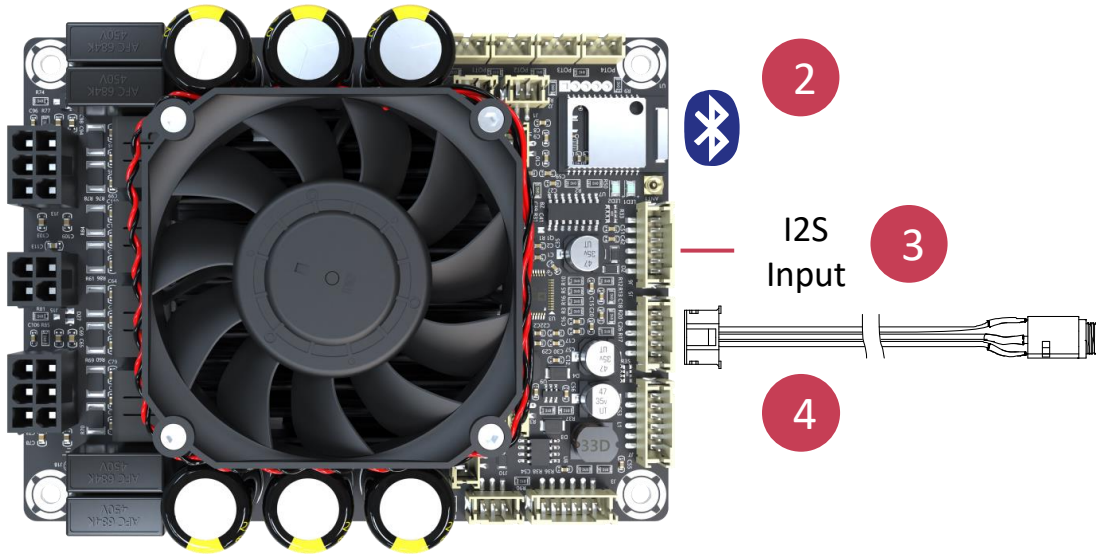
The terminal interface used for power supply is Molex MiniFit-2x2Pos-4.2mm.

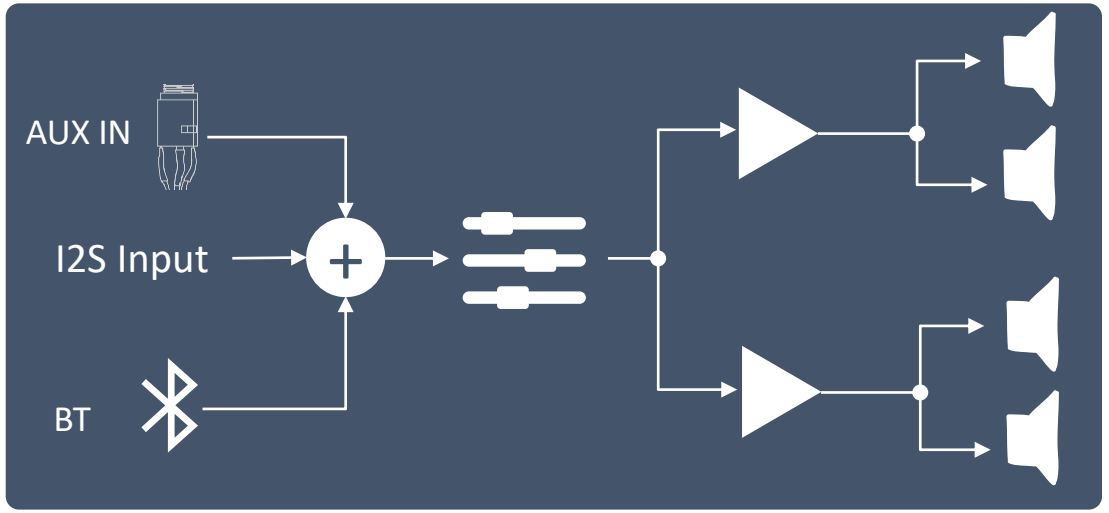
A power supply cable is in basic cable, which comes as a standard accessory with JAB5 in the package. You can connect the cable to Mean Well GST-160A.

Audio Input

BT & 3.5mm AUX IN & I2S input

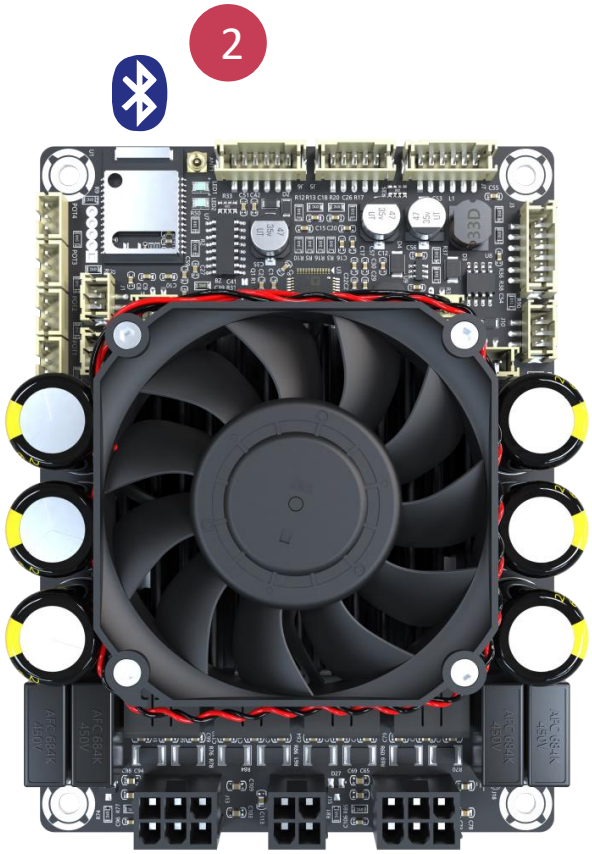
JAB5 supports three inputs: BT 5.0, I2S input and analog line input, which makes it suitable for various audio projects. All signals would be mixed.





Audio Input

Bluetooth input



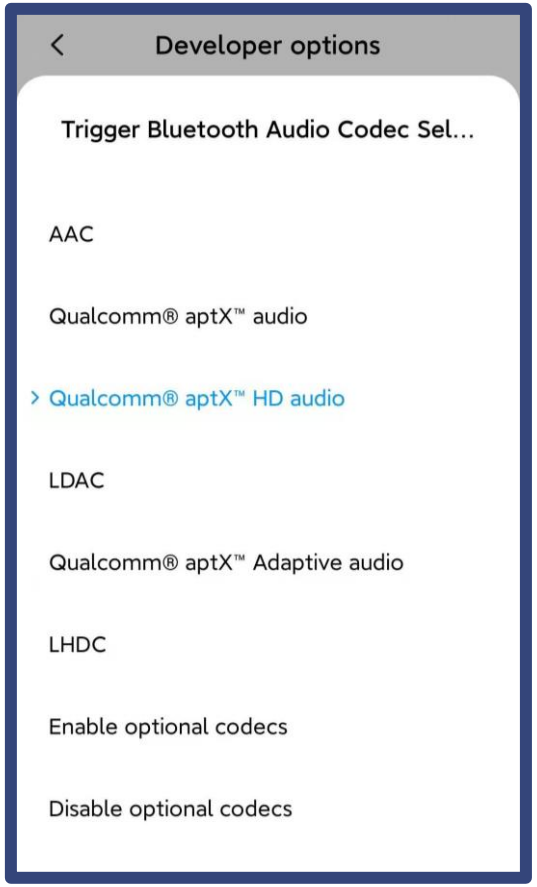
2. Bluetooth input

JAB5 is integrated with Bluetooth 5.0 module, supporting various audio formats as apt-X, aptX HD, apt-X LL, SBC & AAC .

Note: The device used with this hardware needs to support the following Bluetooth Audio Codec. Devices that are not aptX HD compatible will not have the option available on the UI. All Apple devices are not compatible with aptX HD.

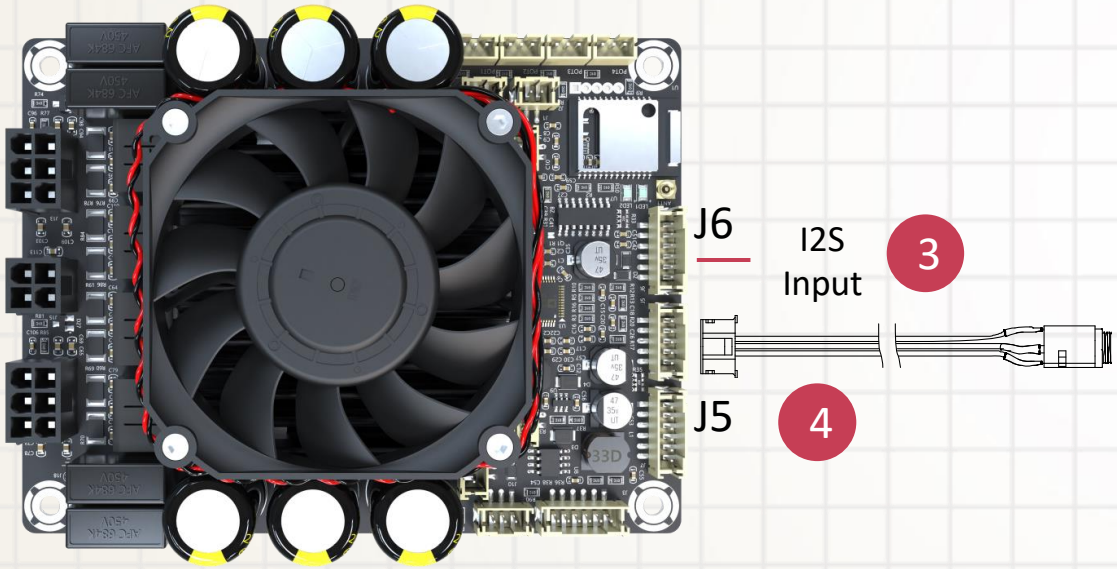
There is a built-in Bluetooth antenna on the board for easy connection. So you can directly use JAB5 for audio playback.

You can find the IPX to SMA conversion cable and external antenna in the Functional Cables Kit.



Audio Input

3.5mm Line in & I2S input



3. I2S Input – J6

JAB5 supports digital input as I2S input.

You can find the PH-6Pos cable in the Functional Cables Kit.

4. Analog Line Input – J5

JAB5 supports analog input and J5 is used for 3.5mm AUX IN.

You can find 3.5mm AUX IN cable in the Functional Cables Kit.

Audio Output

Speaker output

5. Stereo speaker output – J13, J14

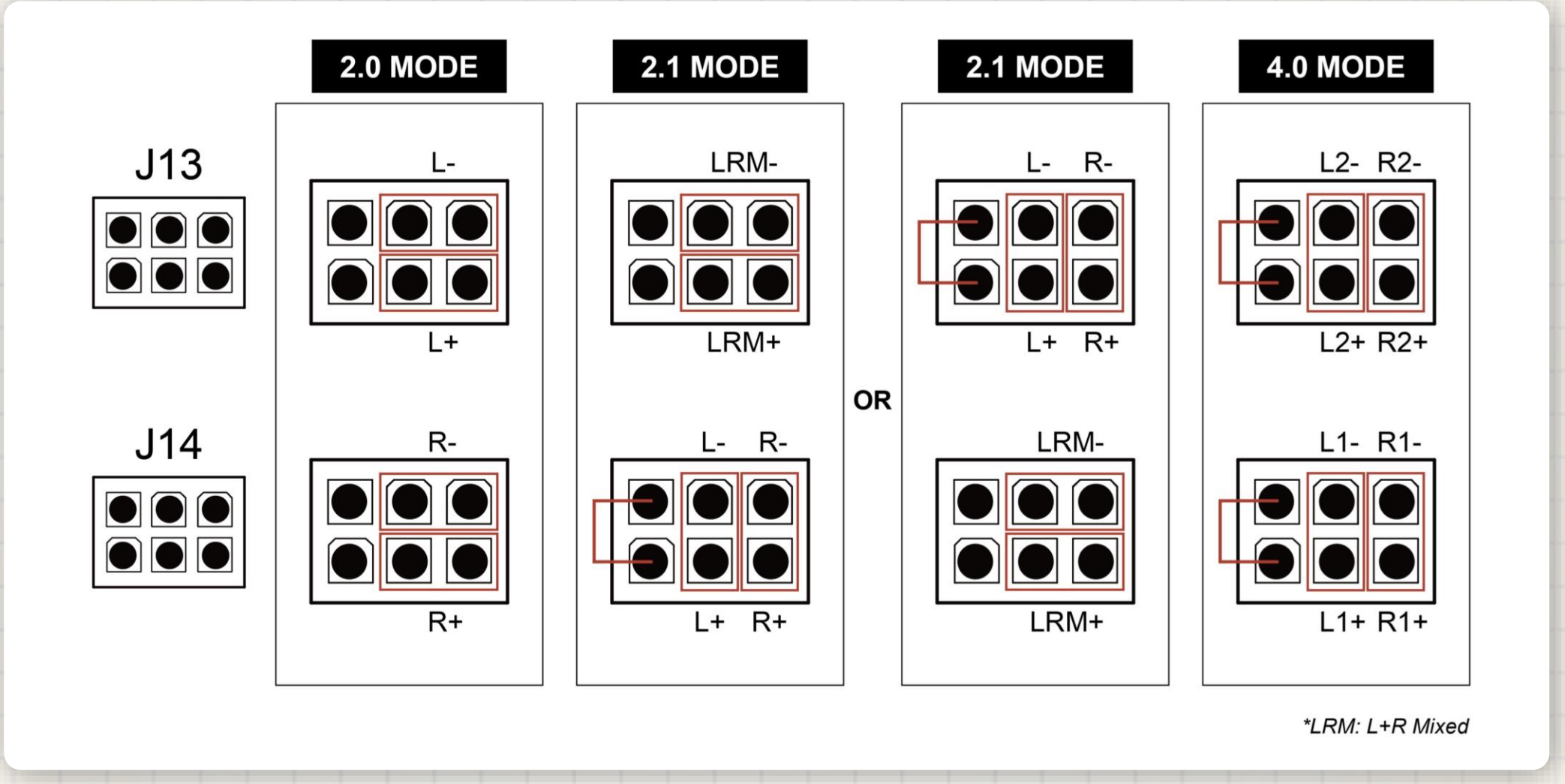
JAB5 works as 4 x 100W. It also supports configured as 2.0 / 0.2 mode (2 x 200W) or 2.1 mode (2 x 100W + 1 x 200W). The switching is achieved by automatic cables identification.

If you want to use JAB5 as 0.2 mode, you need to set frequency in the PC UI. 0.2 mode is not supported when using hardware control.

The terminal blocks used for speaker output is Molex-MiniFit-2x3Pos-4.2mm.
Two speaker cables come with JAB5 as the basic cables.

Audio Output

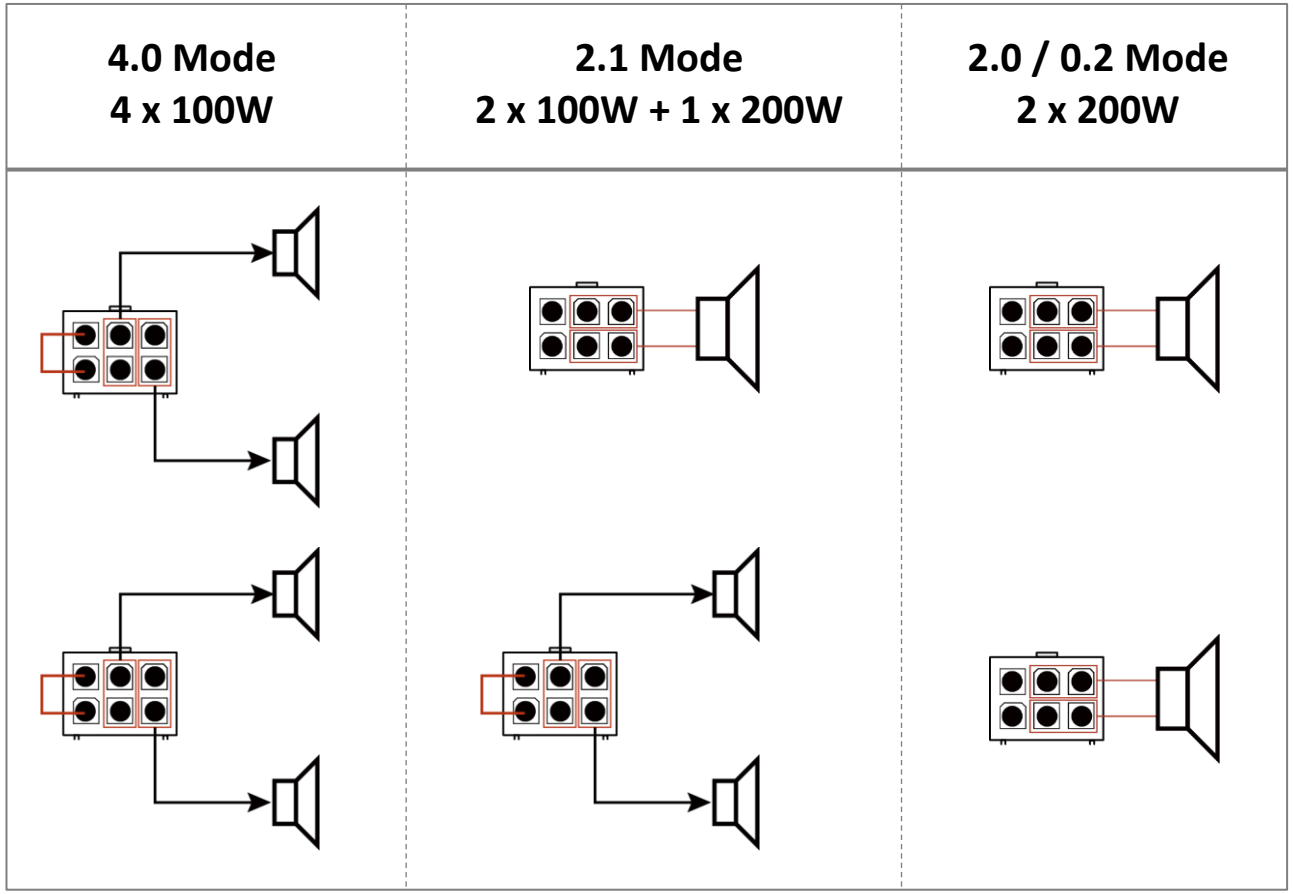
Speaker output



Audio Output

Speaker output

Output Mode
&
Settings



Audio Output

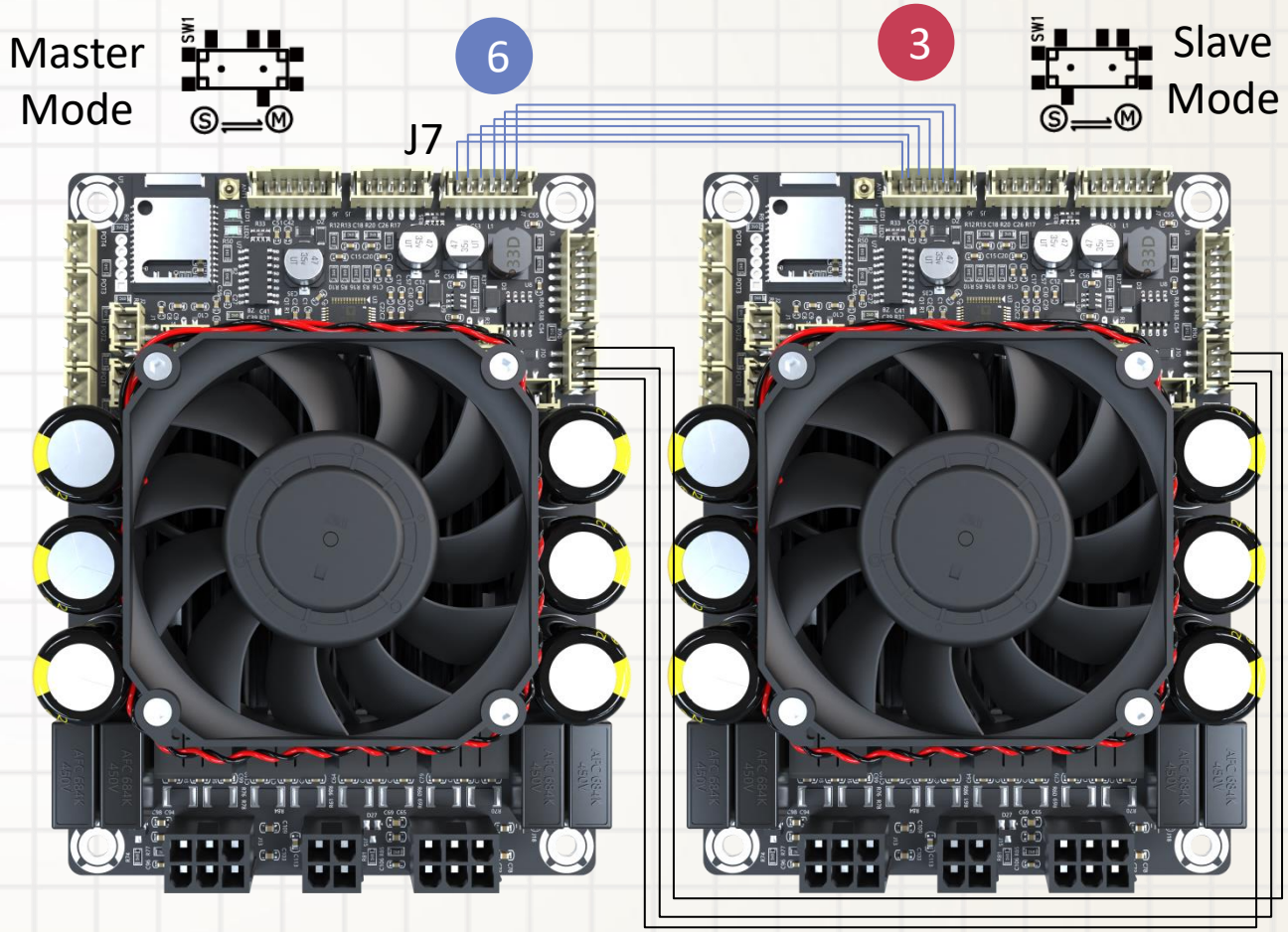
I2S output

6. I2S output – J7

Besides speaker output, JAB5 provides I2S output, which can be transmitted into another I2S amplifier board.

You can connect 2 JAB5 to build an 8 x 100W audio system.

A switch is provided on JAB5 to set as master mode or slave mode.

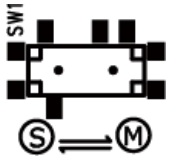


Audio Output

I2S output

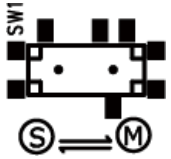
7. I2S output – J7

If JAB5 receives I2S from other device, it must be set as slave mode through the SW1 provided on board.

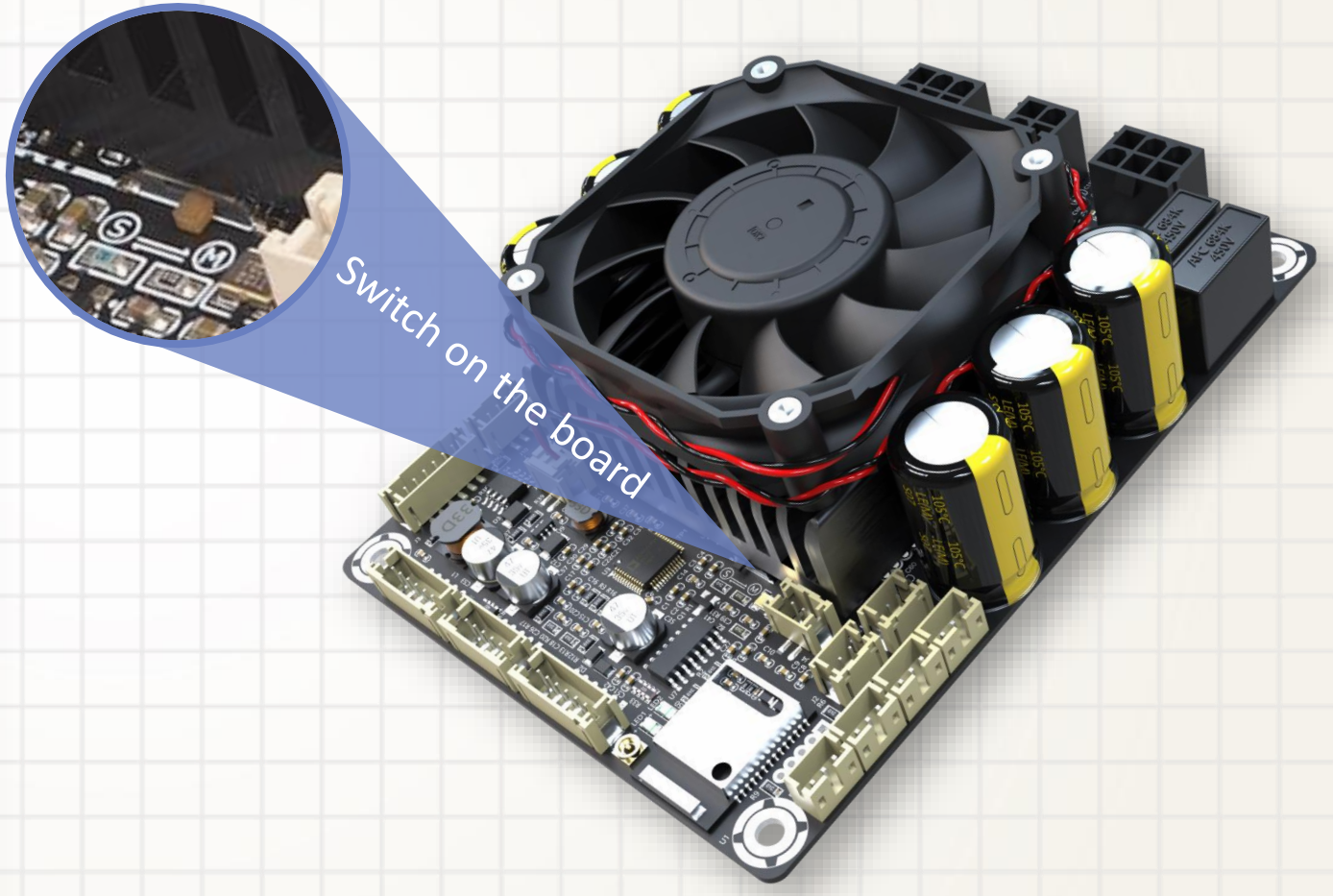


Slave Mode

If JAB5 provides I2S signal to other device, it must be set as master mode through the SW1 provided on board.

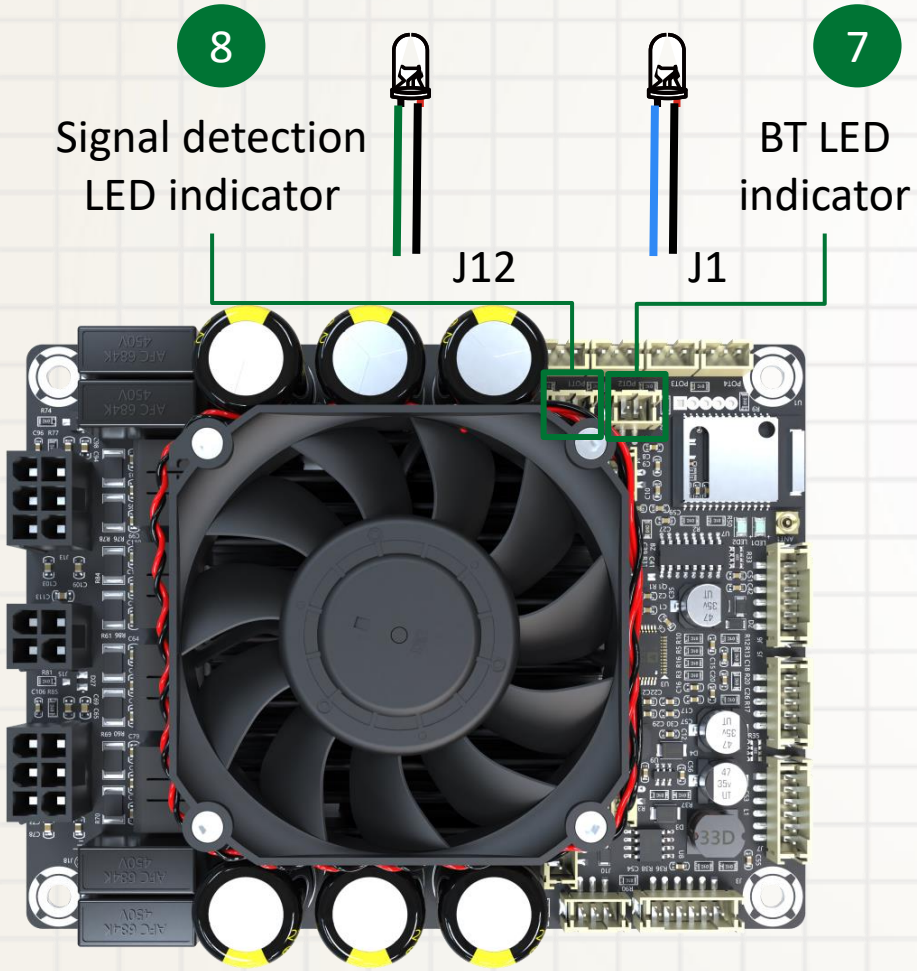


Master Mode



LED Indicator

Bluetooth & Signal detection



8. Bluetooth LED indicator – J1

When Bluetooth is paired, the LED will be ON;
When Bluetooth is searching, the LED will BLINK.

9. Signal Detection LED indicator – J12

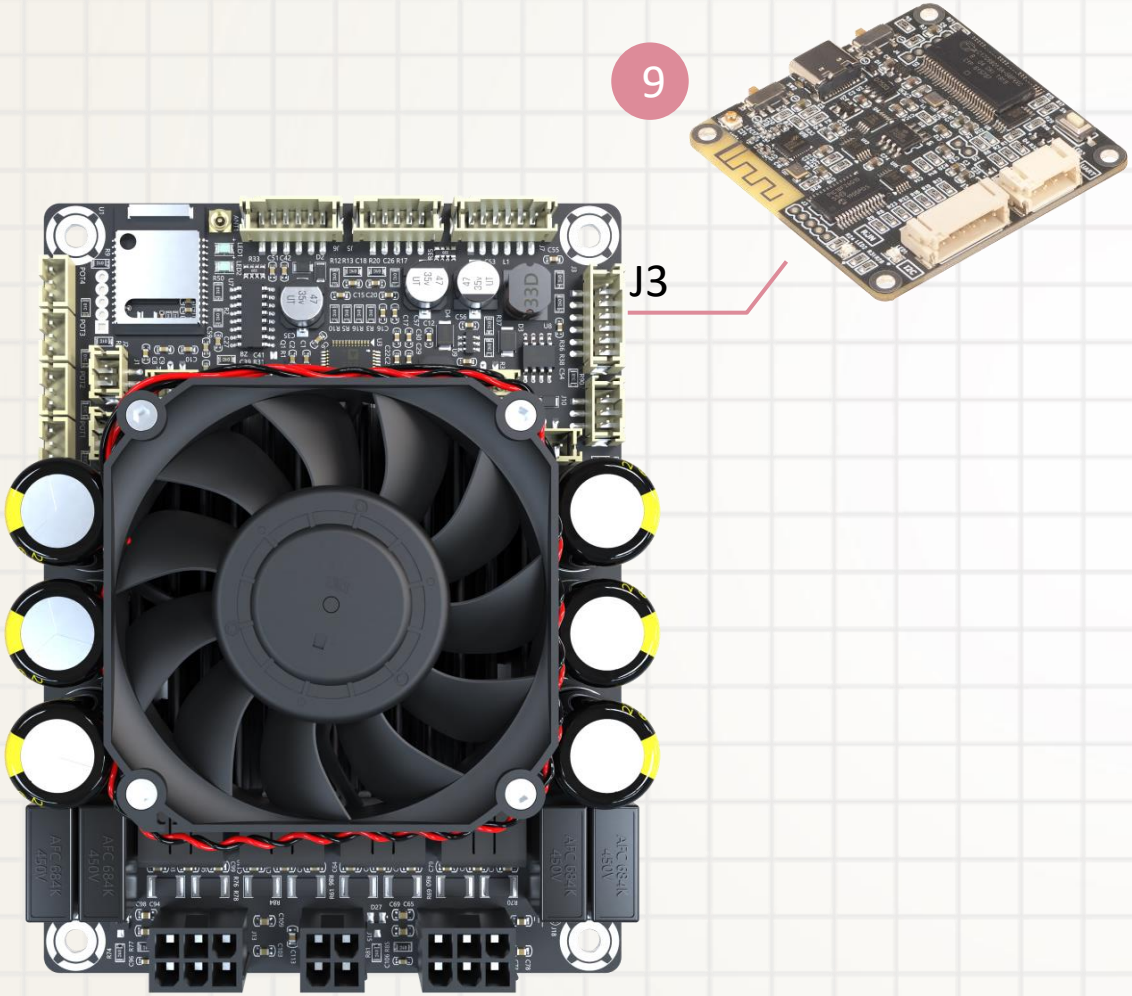
Signal level sensor system is employed in JAB5 for lower power consumption. Therefore, JAB5 provides an indicator for signal detection.

When there is signal detected, the LED will be ON;
When there is no signal detected, the LED will be OFF.

Note: Take definition for J1 and J12 from data sheet.

Control

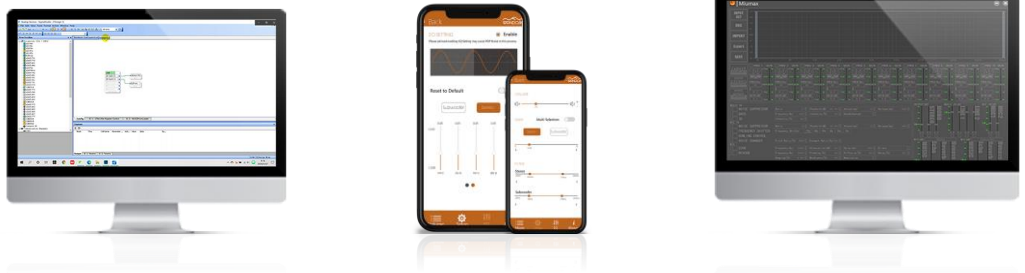
Programming



10. Programming – J3

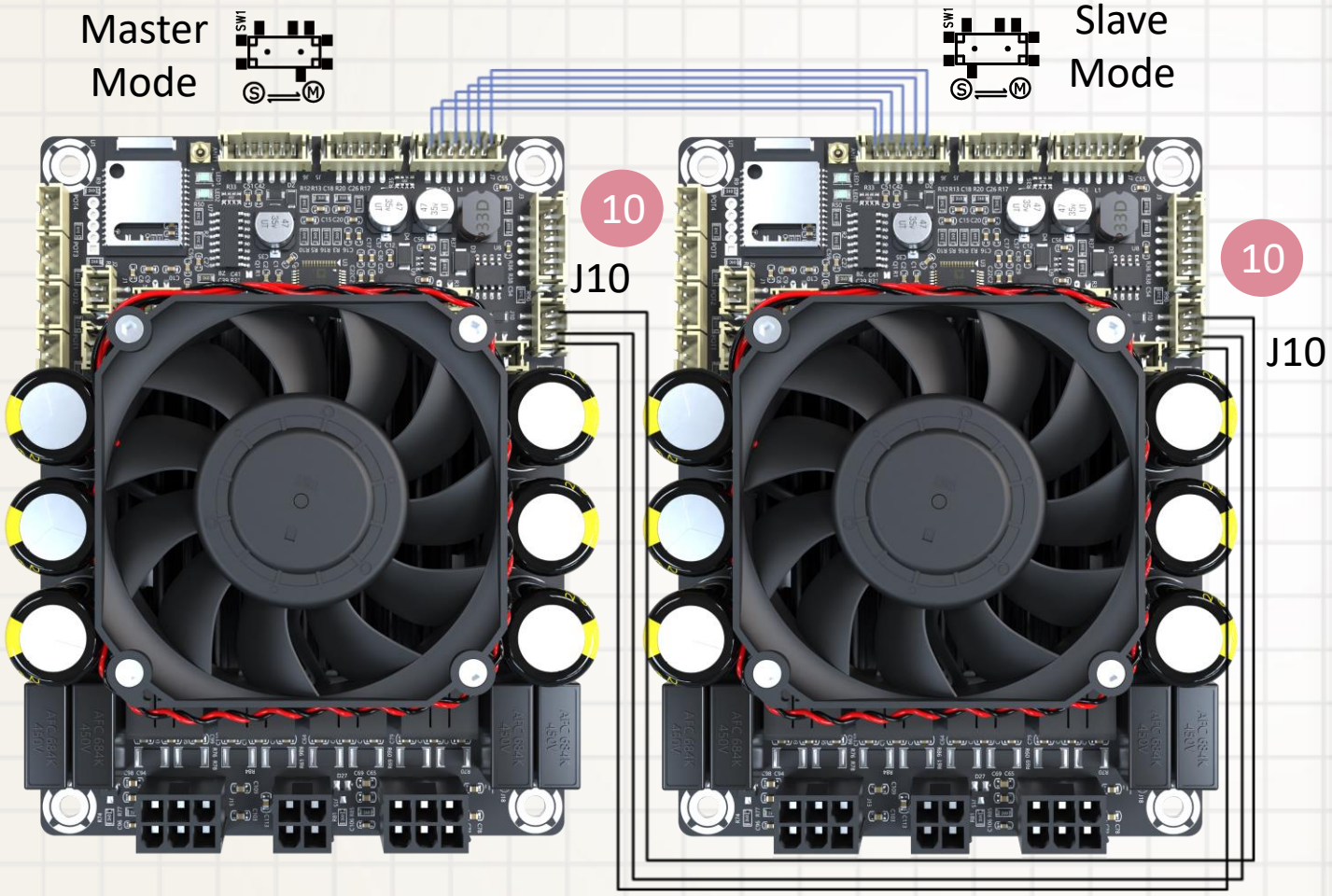
Based on integrated ADAU1701 DSP, you can connect JAB5 with ICP5 or higher version(s) to get PC UI control, SigmaStudio Control or Bluetooth LE control.

You can adjust parameters of the audio system to customize your audio by any of the three methods.



Control

Control Synchronization Port



11. Control Synchronization Port – J10

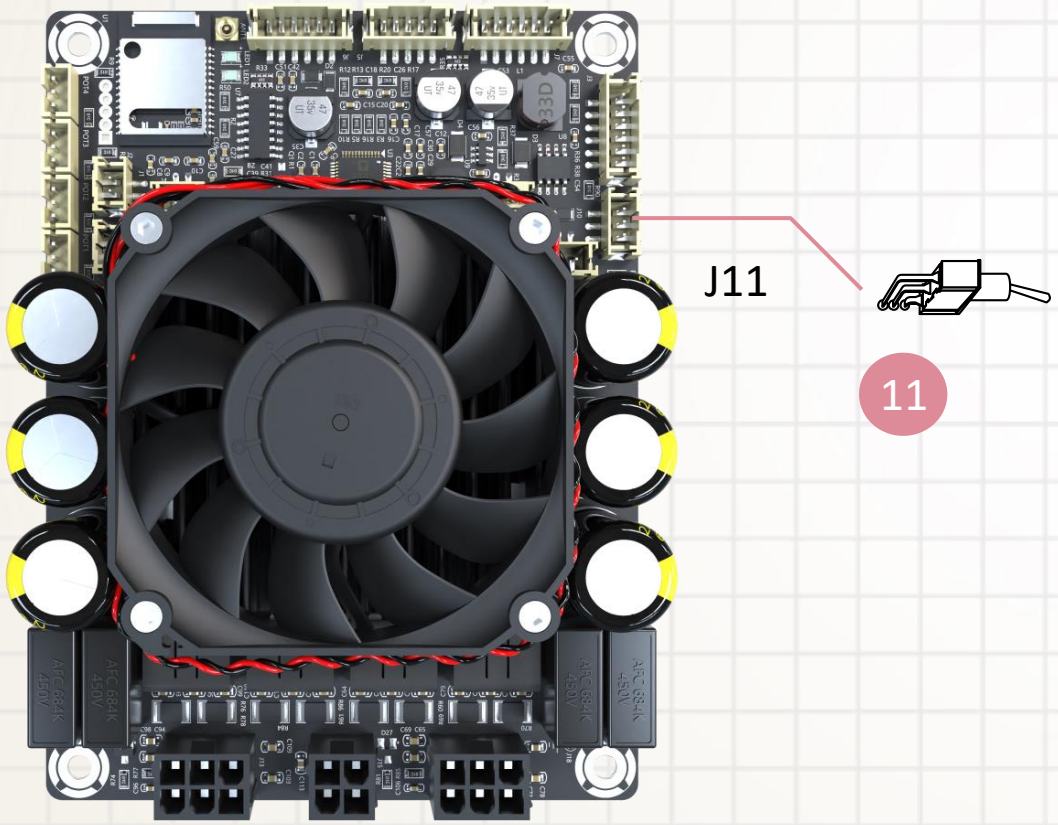
JAB5 supports cascading with another JAB5 to get 8 x 100W or other audio systems.

This control synchronization port is provided to make sure the control logic of two connected boards are consistent, so that the built audio systems eliminate “POP” noise and offer simple control.
Please do not use J10 when JAB5 is used separately.

You can find the PH-3Pos cable in the Function cables kit.

Control

Standby Control



12. Standby Control – J11

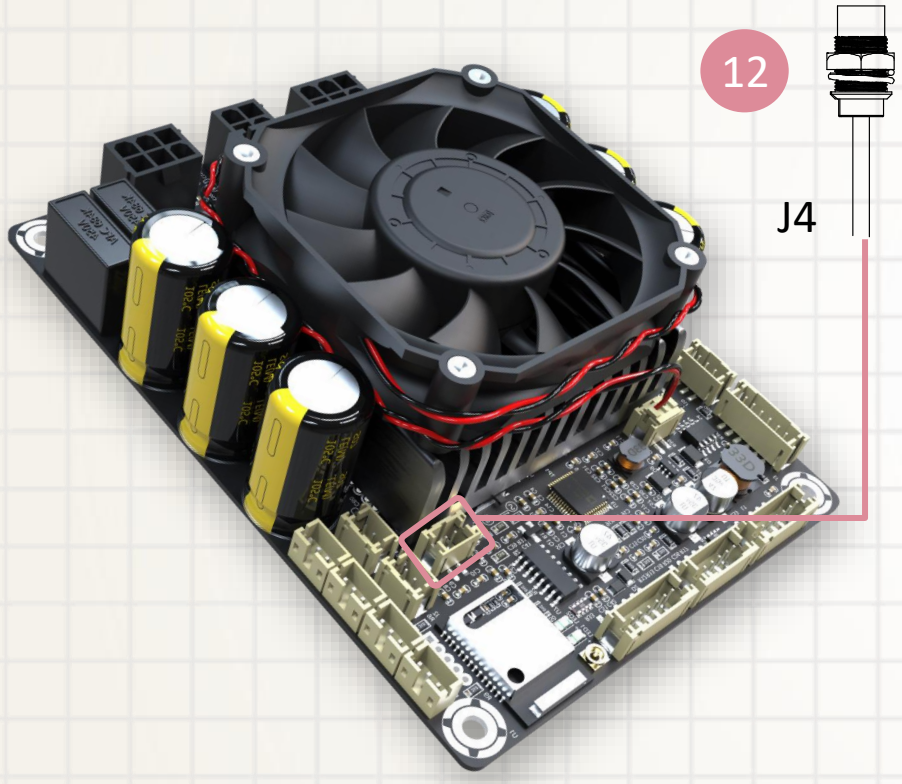
J11 port is provided for easy control of the audio systems.
Short circuit J11, JAB5 will enter into standby mode.
Leave J11 open, JAB5 will work normally.

You can find the PH-2Pos cable in the Functional cables kit.

Note: Take definition for J1 and J12 from data sheet.

Control

Bluetooth Pairing Cancellation



13. Bluetooth Pairing Cancellation Port – J4

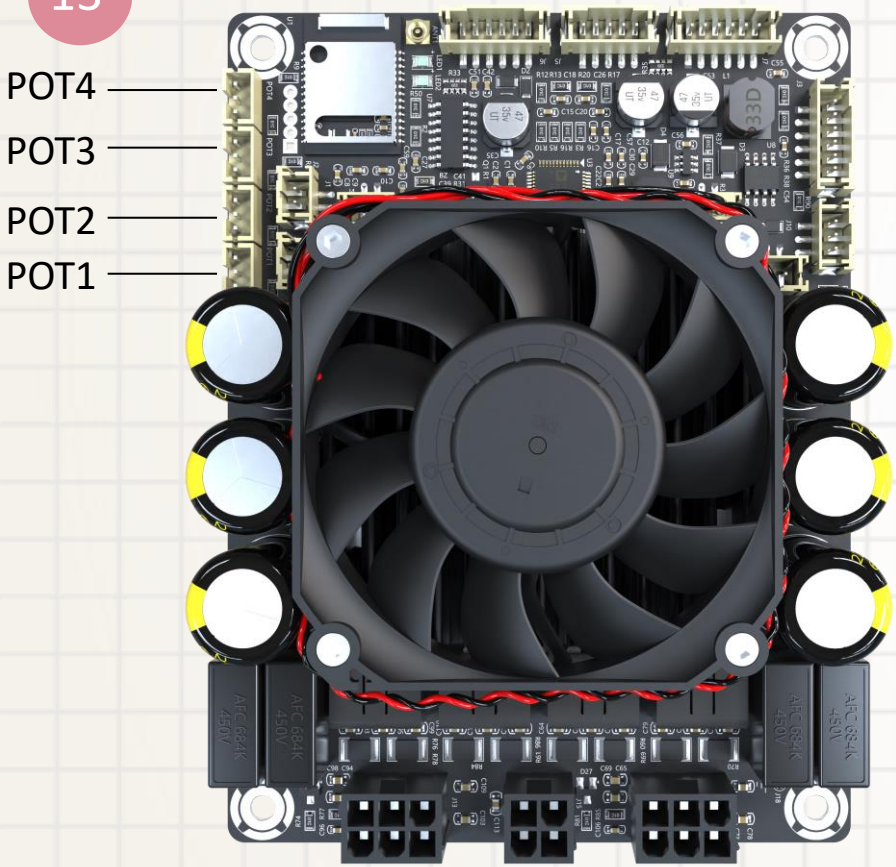
When Bluetooth is paired, short circuit J4 (press the button) to cancel pairing.
After cancellation, please release.

You can find the Bluetooth pairing cancellation cable with a button in the Functional cables kit.
When Bluetooth is paired, press and hold the button until the Bluetooth indicator is blinking for cancellation.

Control

Potentiometers

13



14. External Potentiometers

Four ports for external potentiometers are provided on JAB5 for hardware control of the whole system. You can find the cables along with potentiometers in the Functional cables kit.

POT4: Overall Volume

POT3: High-pass filter / Bandpass filter of power stage channel 1

POT2: High-pass filter / Bandpass filter of power stage channel 2

POT1: Relative Gain of power stage channel 2

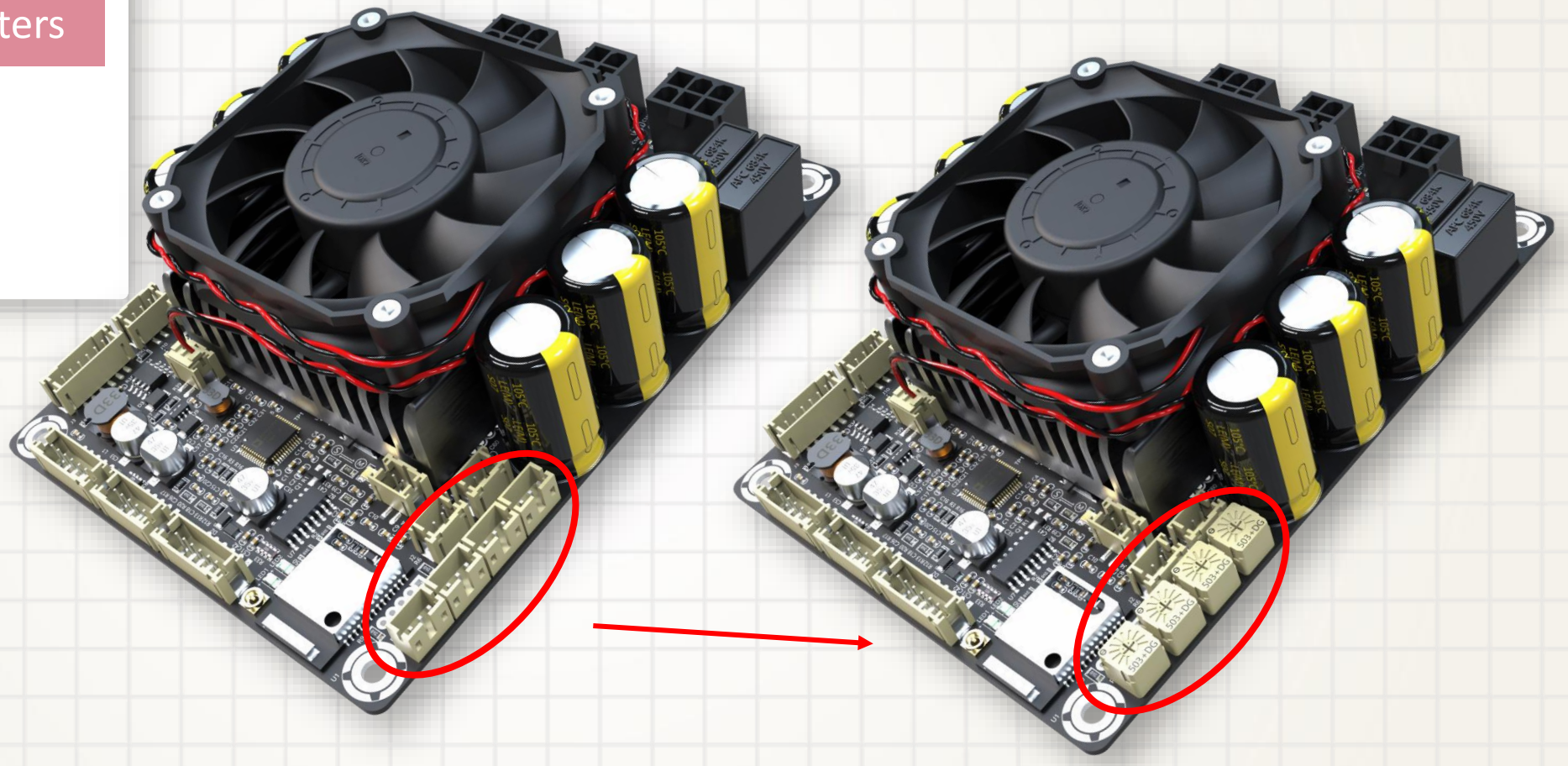
- As for the details, please refer to the datasheet.
- If you want on-board potentiometers, please contact us. MOQ500pcs would be required.

Control

Potentiometers

14. External Potentiometers

- If you want on-board potentiometers, please contact us. MOQ500pcs would be required.



Control

Potentiometers

Port	Function	4.0 / 2.0 Mode	2.1 Mode (CH1 - Mono)	2.1 Mode (CH2 - Mono)
POT1	CH2 Relative Gain	Relative Gain of CH2	Relative Gain of CH2	Relative Gain of CH2
POT2	CH2 HPF or BPF	High-pass Filter of CH2	High-pass Filter of CH2	Band-pass Filter of CH2
POT3	CH1 HPF or BPF	High-pass Filter of CH1	Band-pass Filter of CH1	High-pass Filter of CH1t
POT4	Overall Volume	Overall Volume	Overall Volume	Overall Volume

Note:

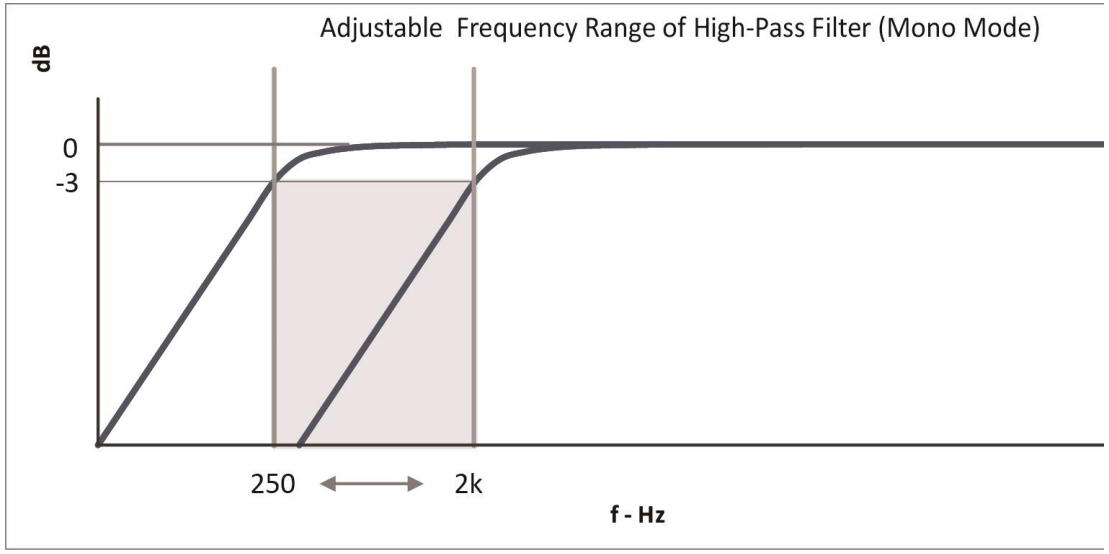
1. The channel 1 speaker output (J14) of JAB5 is defined as CH1; channel 2 speaker output (J13) is defined as CH2.
2. POT1 and POT2 are used to adjust CH2 output, POT3 is used to adjust CH1 output. POT4 is for overall volume control. When JAB5 works as 2.1 mode, you can configure any channel as 0.1. The function of potentiometers will be changed accordingly. If you want to use JAB5 as 0.2 mode, you can set through the PC UI. Please note 0.2 mode is not available when using hardware control.
3. HPF refers to High-pass Filter; BPF refers to Band-pass Filter. When CH1 (CH2) is stereo output, the function of POT3 (POT2) is HPF; when CH1 (CH2) is mono output, the function of POT3 (POT2) is BPF.
4. For the functions of potentiometers when used in other applications, please contact us at store@sure-electronics.com.

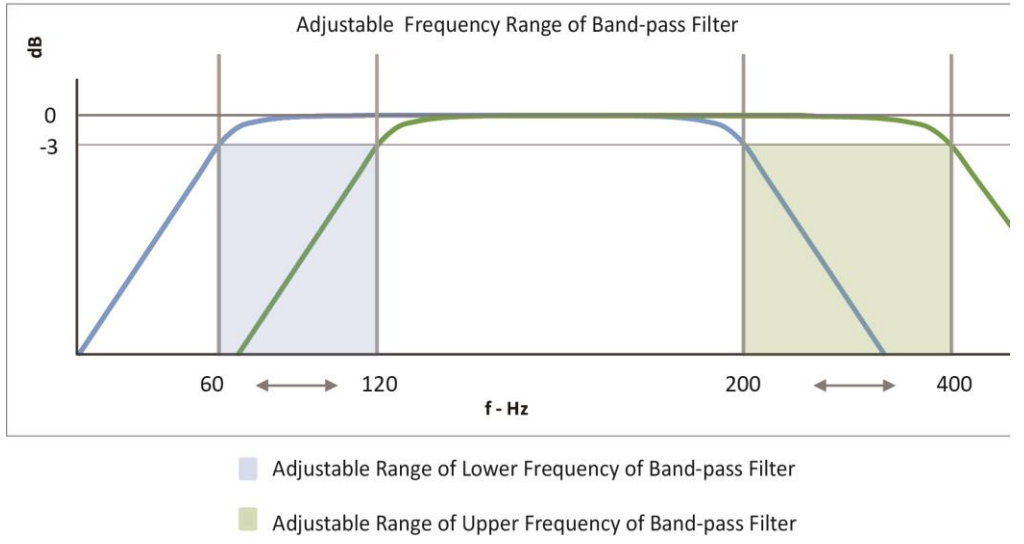
Control

Hardware Control

Customer could customize frequency range through Sigma Studio,
We provide SigmaStudio source code for downloading.
(APP Control only works with default firmware.)

Function	Range of Frequency
High-pass Filter (4.0 / 2.0 Mode)	20Hz- 2kHz
High-pass Filter (2.0 Mode)	250Hz- 2kHz
Band-pass Filter	60HZ-120Hz (High-pass)
	200Hz-400Hz (Low-pass)





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