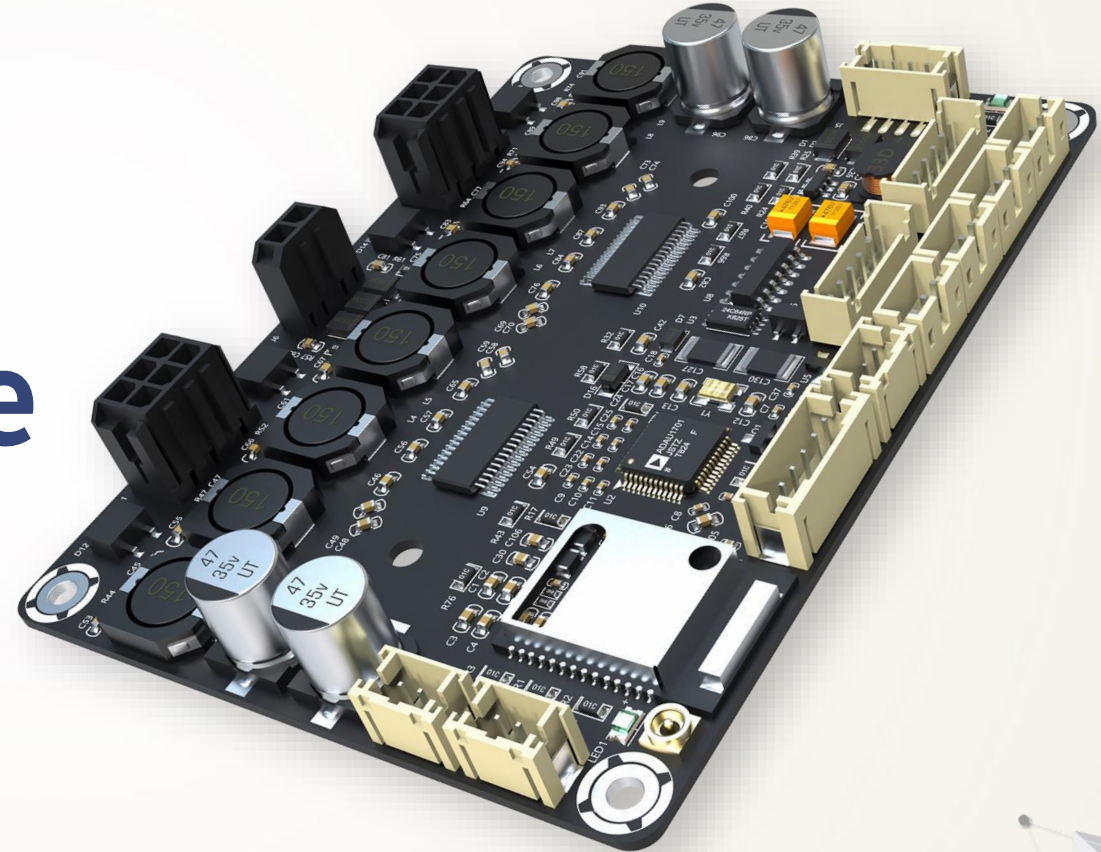
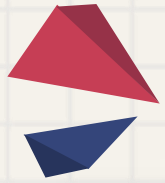




JAB4 Connection Guide

BY SURE ELECTRONICS CO., LTD.





What is JAB4?

JAB4 is an audio amplifier **integrated with both ADAU1701 DSP and Bluetooth 5.0**, supporting various audio format decode, such as aptX, aptX HD, aptX LL, SBC and AAC. JAB4 is a 4CH audio amplifier based on TI's TPA3118, delivering 30W into an 8Ohm load. Furthermore, JAB4 supports PBTTL configuration, meaning that each two channels can be configured as one channel with double output power. Therefore, JAB4 can work as **2.1 mode (2 x 30W + 1 x 60W)**, and **2.0 mode (2 x 60W)**. Thanks to the equipped cable identification circuit, the switching among the output modes is automatically achieved by plug-in cables. JAB4 features high quality audio performance, high efficiency, high flexibility and expandability, perfectly suitable for DIY applications, Home audio, Hotel audio, Desktop audio, Garden audio and demanding industrial audio applications.



Portable
Bluetooth Speaker



Home
Audio



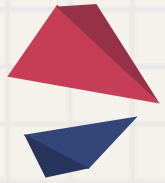
Car
Audio



DIY
Applications



Digital
Crossover

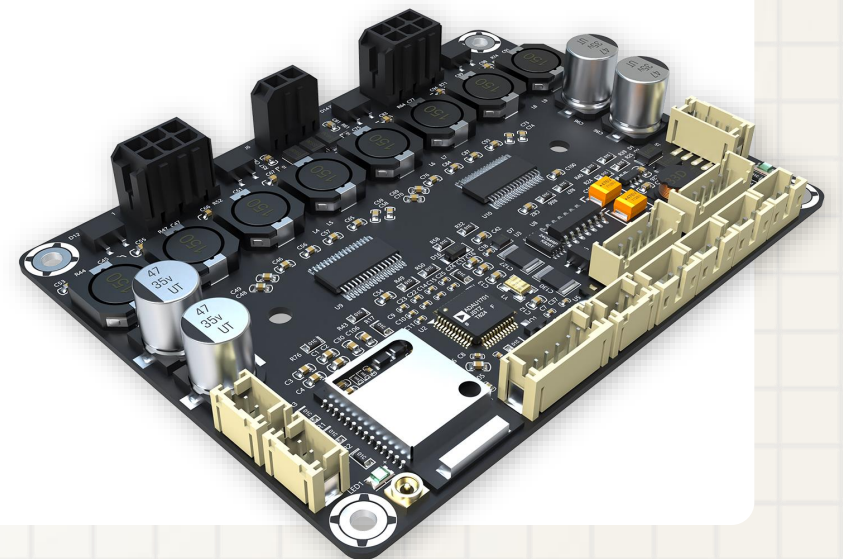


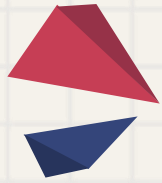
What is JAB4?

Besides Bluetooth input, JAB4 supports 3.5mm line input. The signal from both input methods would be mixed before being transmitted to audio processing. JAB4 provides an I2S signal output. You can connect which to an I2S audio amplifier board. Thanks to the employed ADAU1701 DSP chip, JAB4 supports hardware control and software control. Four ports for external potentiometers are offered on board as default. After connection with the potentiometers, you can adjust the gain, volume and frequency. What's more, JAB4 supports programming with SigmaStudio and remote control through PC UI after connection with ICP5.

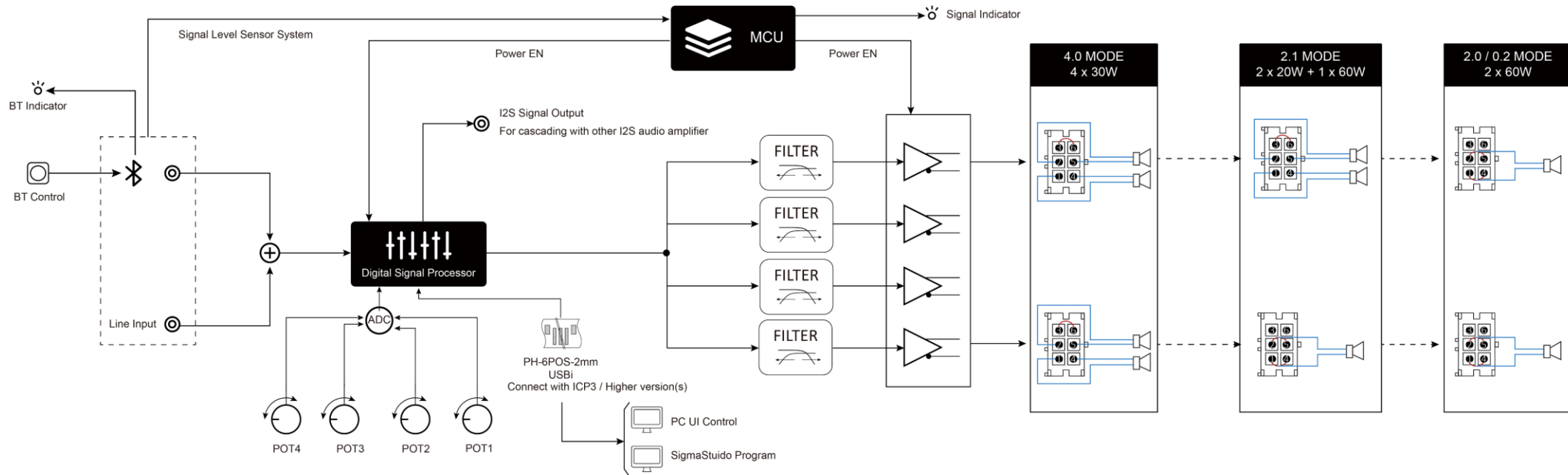
Key Features:

- **Integrated with Bluetooth V5.0 & ADAU1701 DSP**
- **Supporting line input and I2S output**
- **Supporting programming with SigmaStudio or remote control**
- **One product, four modes suitable for audio 4.0 / 2.1 / 2.0 / 0.2 system**

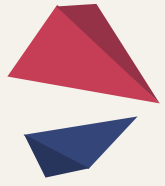




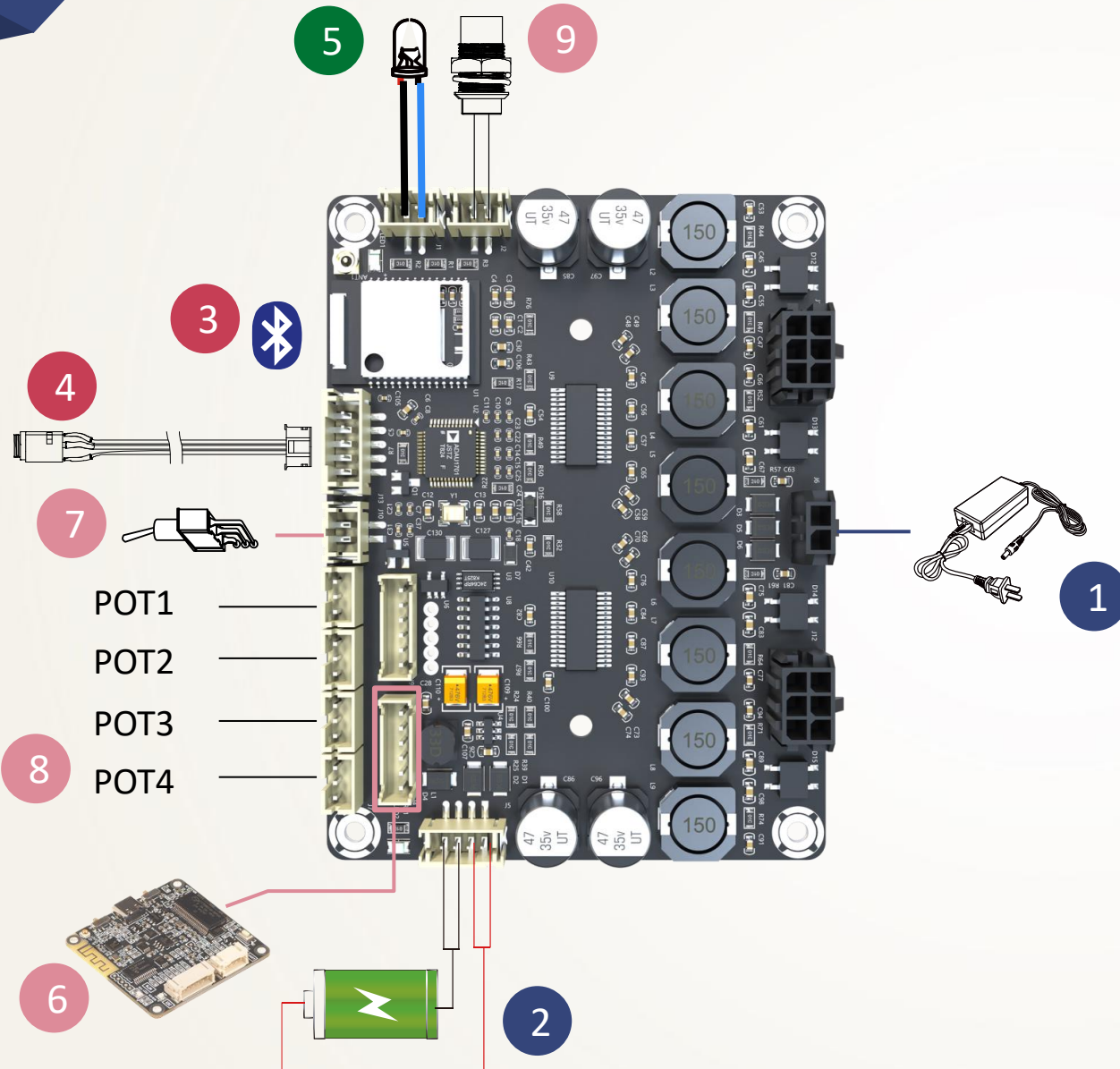
Block Diagram



The switch between 4.0 mode, 2.1 mode and 2.0 mode is achieved by automatic cable identification.



Connection Diagram



Power Supply

- 1 DC10V-26V power supply
- 2 WONDOM BCPB series

Audio Input

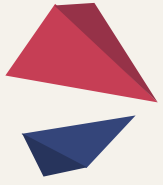
- 3 Bluetooth 5.0 module
- 4 Analog Line Input

LED Indicator

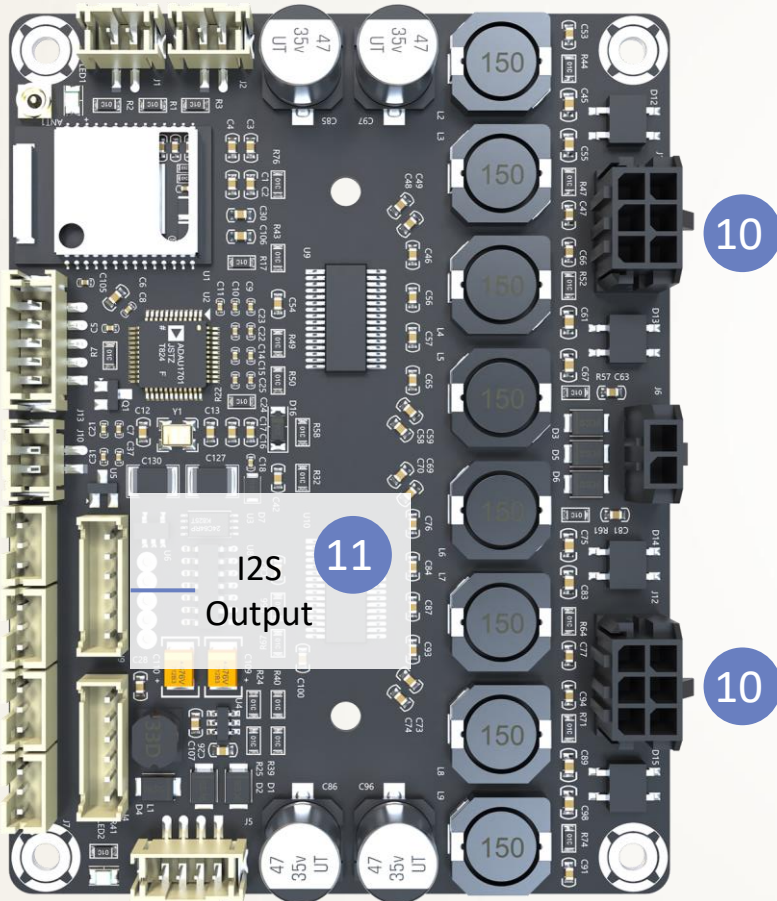
- 5 Bluetooth indicator

Control

- 6 Programming
- 7 Standby Control
- 8 Potentiometers
- 9 Bluetooth Pairing Cancellation



Connection Diagram



Audio Output

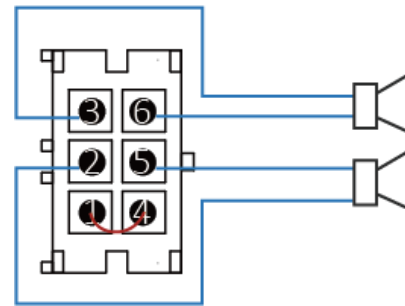
10 Speaker output

11 I2S Output

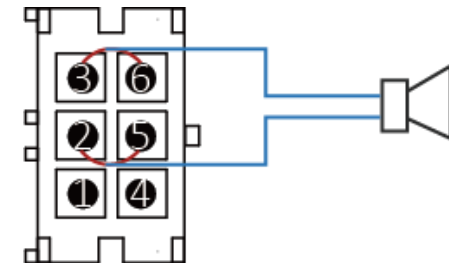
Speaker Output

JAB4 supports PBTL mode, each 2 channels can be configured as one channel with double power.

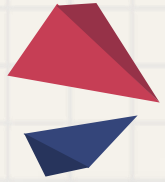
The switching of the output modes is based on equipped cables identification circuit and the settings is as follows.



Stereo Mode

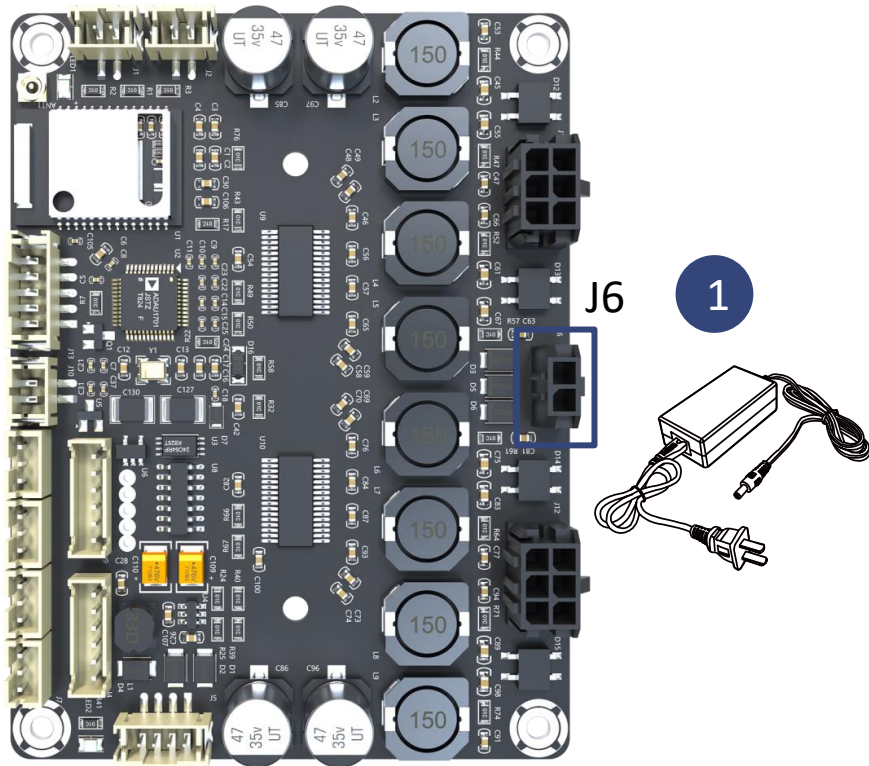


Mono Mode



Power Supply

Power adapter



1, Power supply – J6

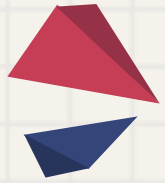
Suggested power supply should be DC24V, 3A.

You can also use any power supply whose output voltage is within DC10-26V and current is higher than 3A. Please note power supply out of the recommended range may cause damage to the amplifier board.

We recommend MeanWell LRS-100-24 Single Output Switching Power Supply. We also recommend Mean Well GST-90A 24V version.

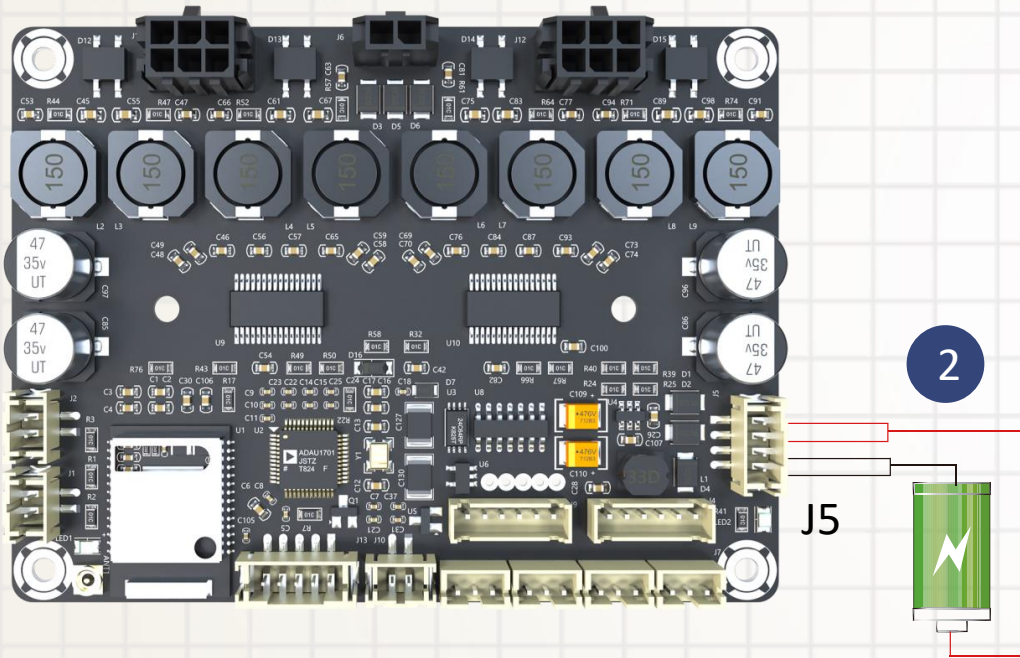
The terminal interface used for power supply is Molex MicroFit-2Pos-3mm.

A power supply cable is the basic cable, which comes with JAB4 in the package.



Power Supply

Power adapter



1, Battery Board– J5

JAB4 supports battery power, which greatly improves the portability of the audio systems.

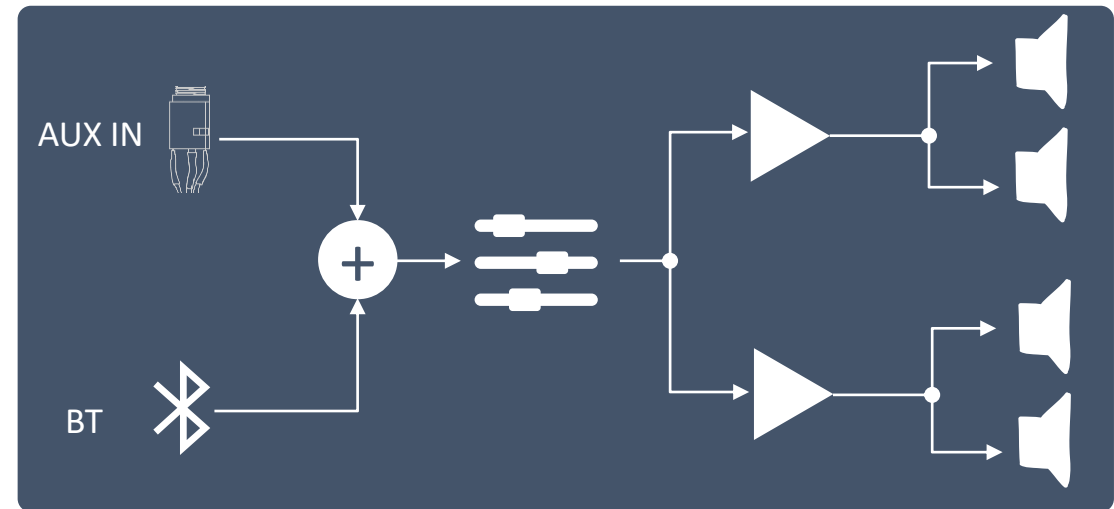
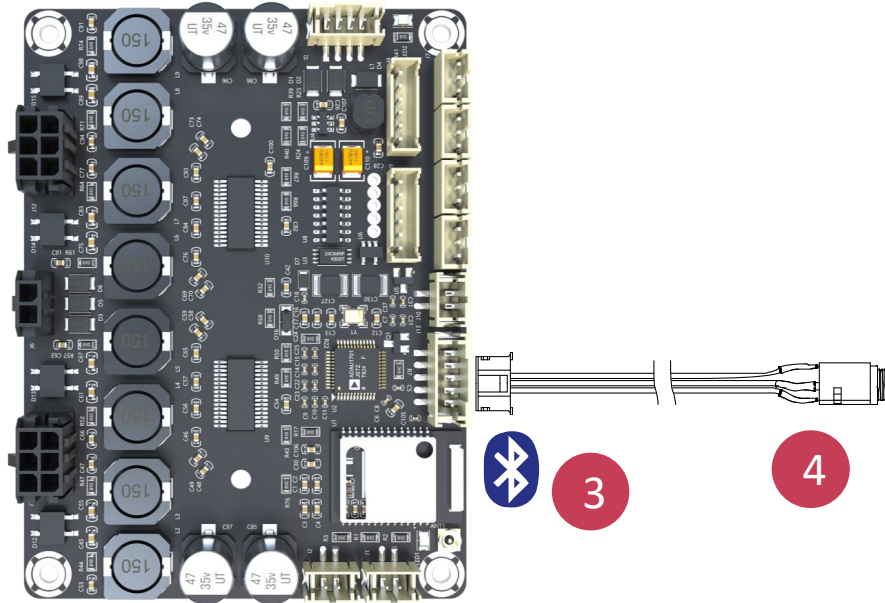
It is suggested to use WONDOM BCPB series to power JAB4 since there is no charging circuit equipped on JAB4.

The terminal interface used for battery power supply is PH-4Pos-2mm.

Audio Input

BT & 3.5mm AUX IN

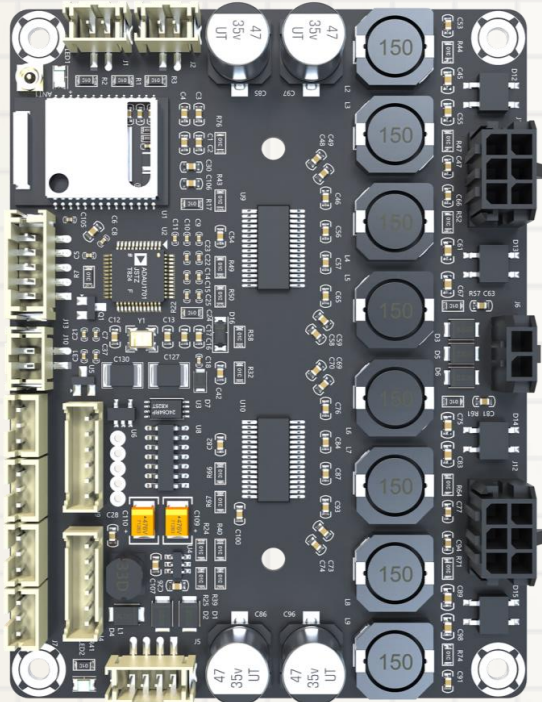
JAB4 supports both Bluetooth input and analog line input, which makes it suitable for various audio projects. The two input methods can be used at the same time. All the signal would be mixed.



Audio Input

Bluetooth input

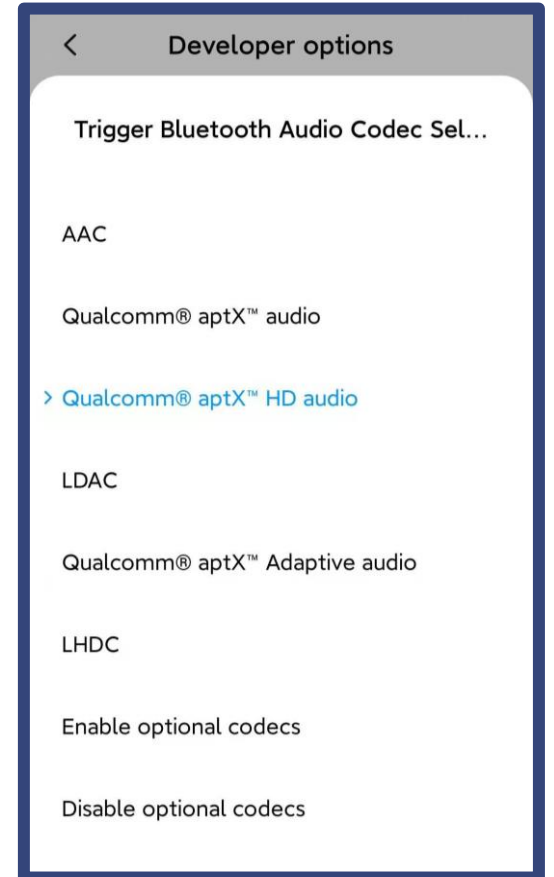
3



3, Bluetooth input

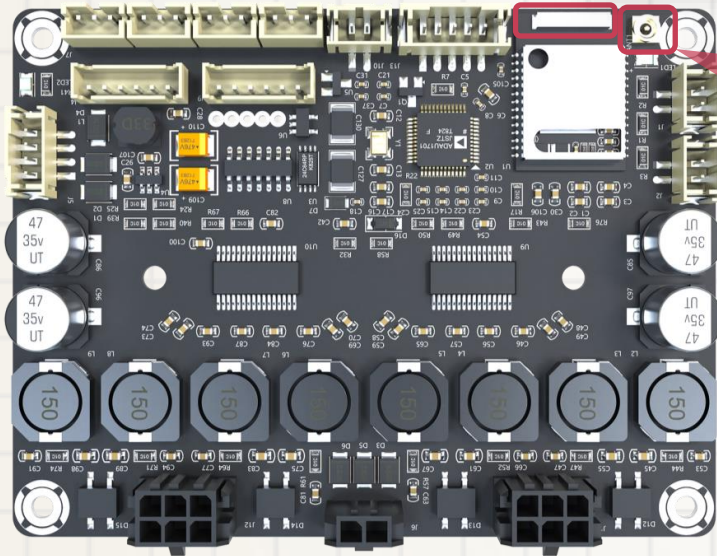
JAB4 is integrated with Bluetooth 5.0 module, supporting various audio formats as apt-X, aptX HD, apt-X LL, SBC & AAC .

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.



Audio Input

Bluetooth input



Built Bluetooth Antenna

There is a built-in Bluetooth antenna on the board for easy connection. So you can directly use JAB4 for audio playback.

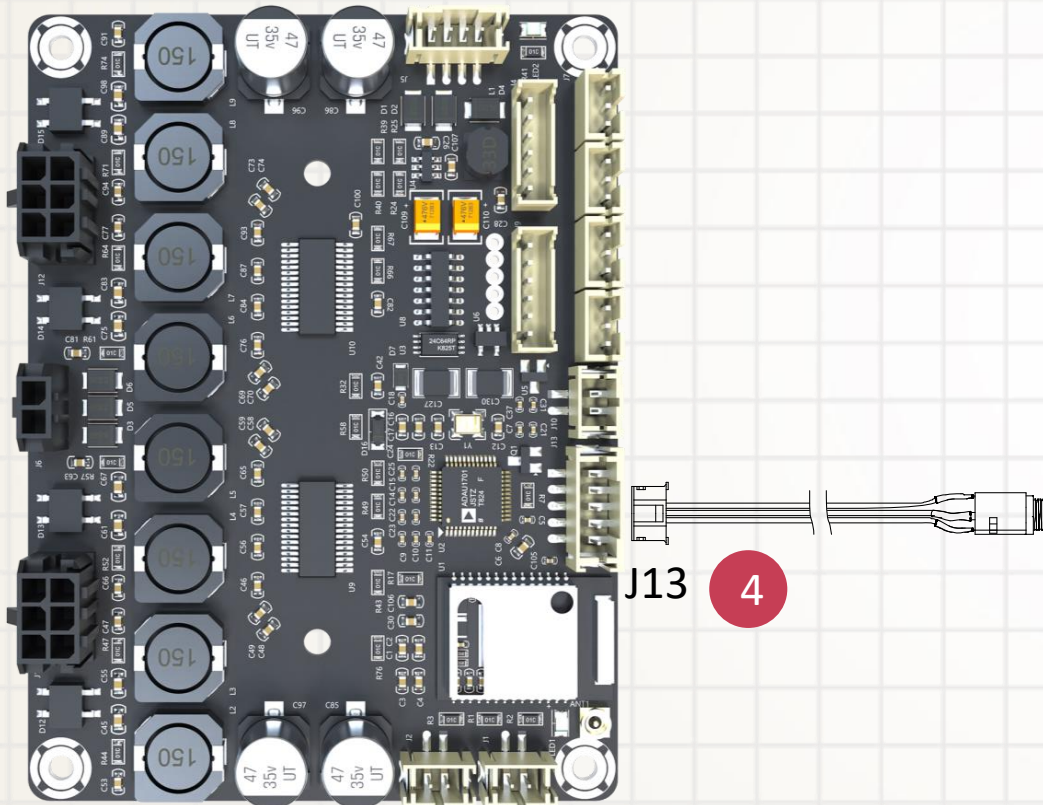
External Bluetooth Antenna

An external Bluetooth antenna port is also provided, which ensures the stability even if JAB4 is installed in a cabinet.

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

Audio Input

3.5mm Line in

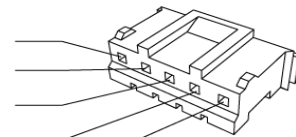


4, Analog Line Input – J13

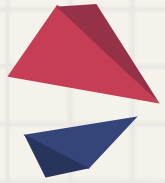
JAB4 supports analog input and J13 is used for 3.5mm AUX IN.

The terminal block used is PH-6pos-2mm. You can find the 3.5mm AUX IN cable in the Functional Cables Kit (AA-JA11117).

PIN 1 NC
PIN 2 NC
PIN 3 RIN
PIN 4 GND
PIN 5 LIN

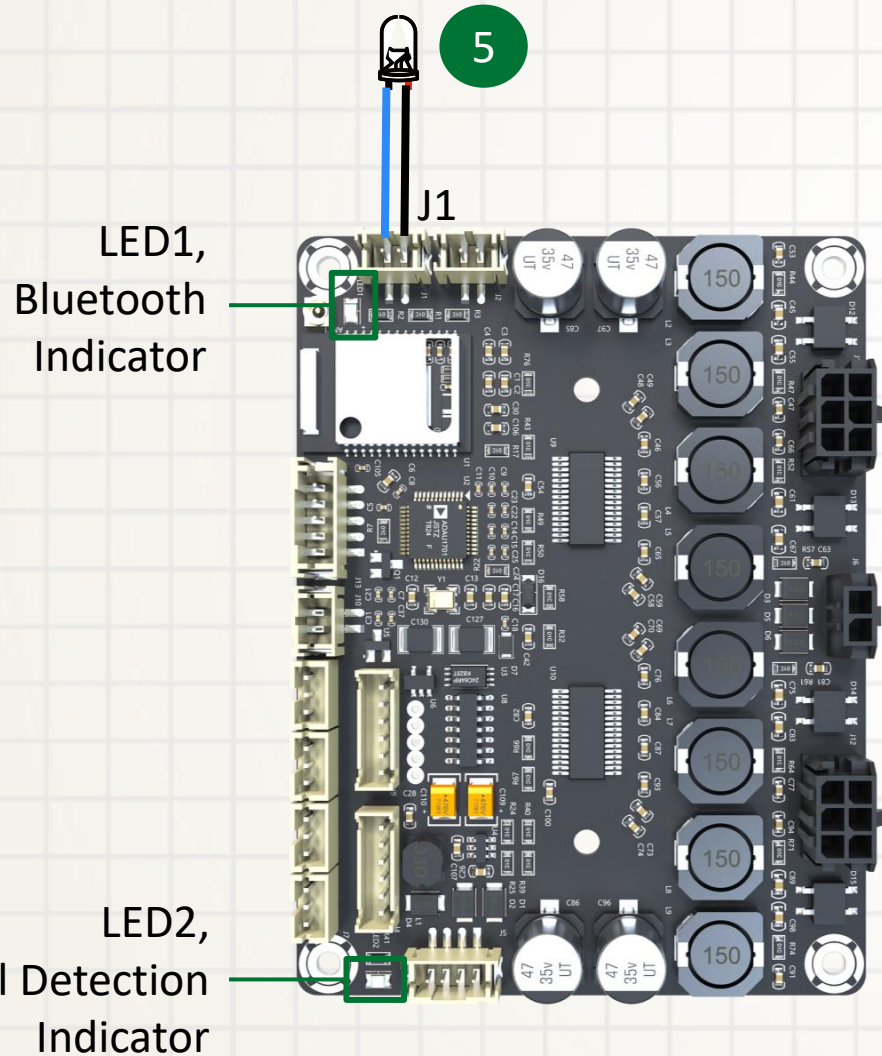


Pin definition of
3.5mm AUX IN cable



LED Indicator

Bluetooth & Signal detection



5, Bluetooth LED indicator – J1

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

On-board LED indicator

LED1, Bluetooth LED indicator

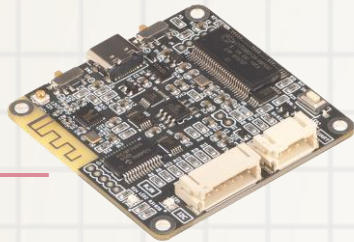
LED2, Signal detection LED indicator

Signal level sensor system is employed in JAB4 for lower power consumption.

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

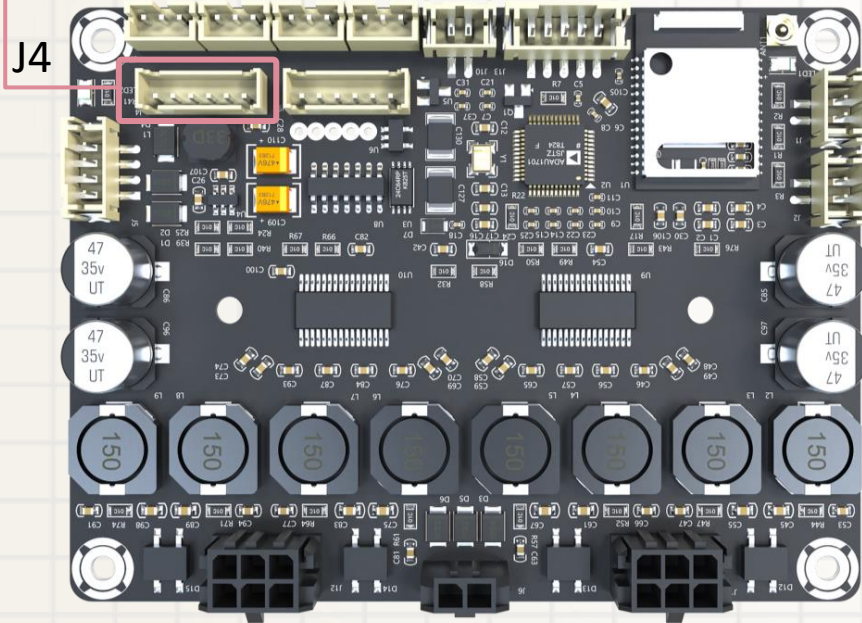
Control

Programming



6

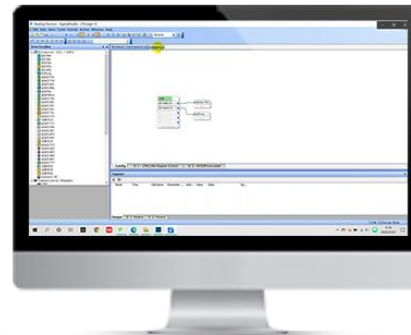
*ICP5 will be released soon.

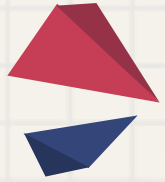


6, Programming – J4

Based on integrated ADAU1701 DSP, you can connect JAB4 with ICP5 to get SigmaStudio Control or PC UI control. You can also use JAB4 as 0.2 mode after frequency setting under software control.

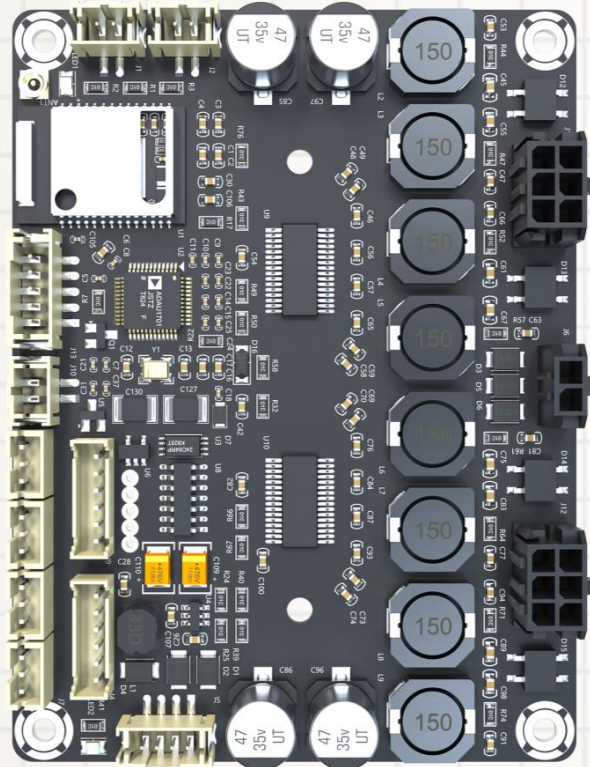
You can adjust parameters of the audio system to customize your audio.





Control

Standby Control

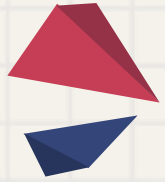


7, Standby Control – J10

J10 port is provided for easy control of the audio systems.

Short circuit J10, JAB4 will enter into standby mode.
Leave J10 open, JAB4 will work normally.

You can find the PH-2Pos cable in the Functional cables kit (AA-JA11117).

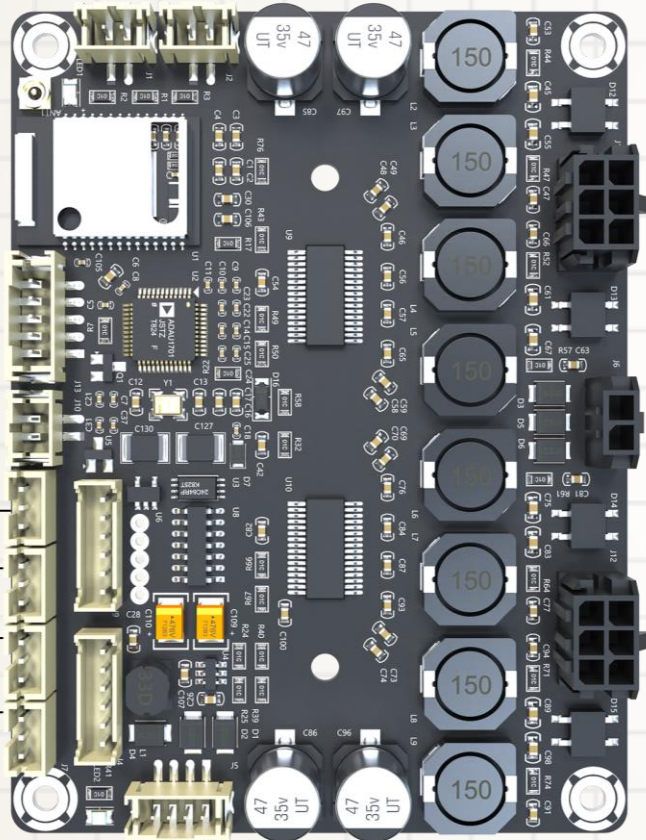


Control

Potentiometers

8

POT1
POT2
POT3
POT4



8, External Potentiometers

Four ports for external potentiometers are provided on JAB4 for hardware control of the whole system. You can find the cables along with potentiometers in the Functional cables kit (AA-JA11117).

POT4: Overall Gain

POT3: High-pass filter / Bandpass filter of power stage channel 2

POT2: High-pass filter / Bandpass filter of power stage channel 1

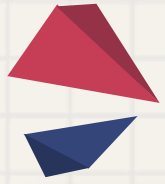
POT1: Relative Gain of power stage channel 1

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

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

Note:

1. The channel 1 speaker output (J11) of JAB4 is defined as CH1; channel 2 speaker output (J12) is defined as CH2.
2. POT1 and POT2 are used to adjust CH1 output, POT1 is used to adjust the gain of CH1 on the basis of overall gain. POT3 is used to adjust CH2 output and POT4 is used for overall gain. When JAB4 works as 2.1 mode, you can configure any channel as 0.1. The function of potentiometers will be changed accordingly.
3. HPF refers to High-pass Filter; BPF refers to Band-pass Filter. When CH1 (CH2) is stereo output, the function of POT2 (POT3) is HPF; when CH1 (CH2) is mono output, the function of POT2 (POT3) is BPF.
4. For the functions of potentiometers when used in other applications, please contact us at store@sure-electronics.com.

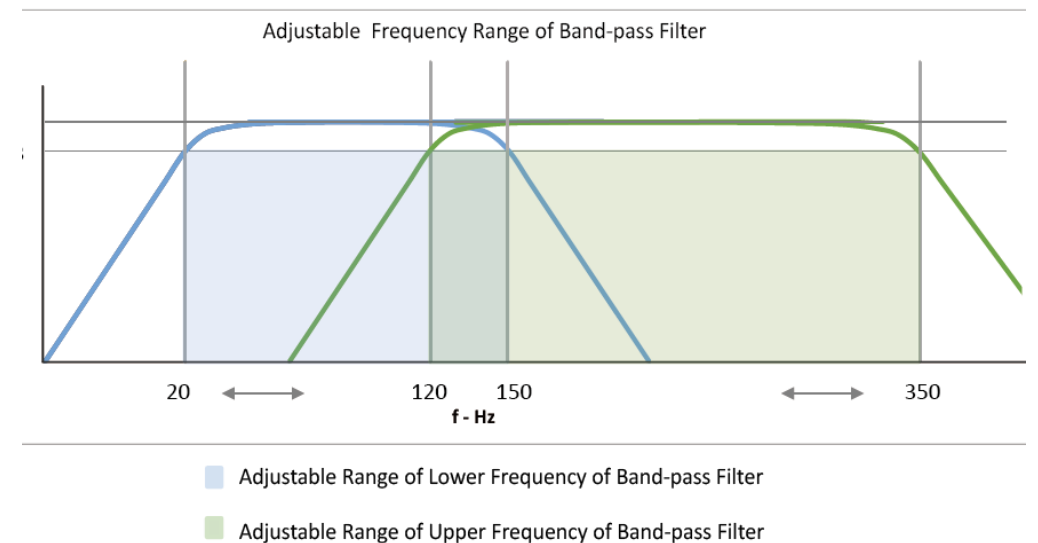
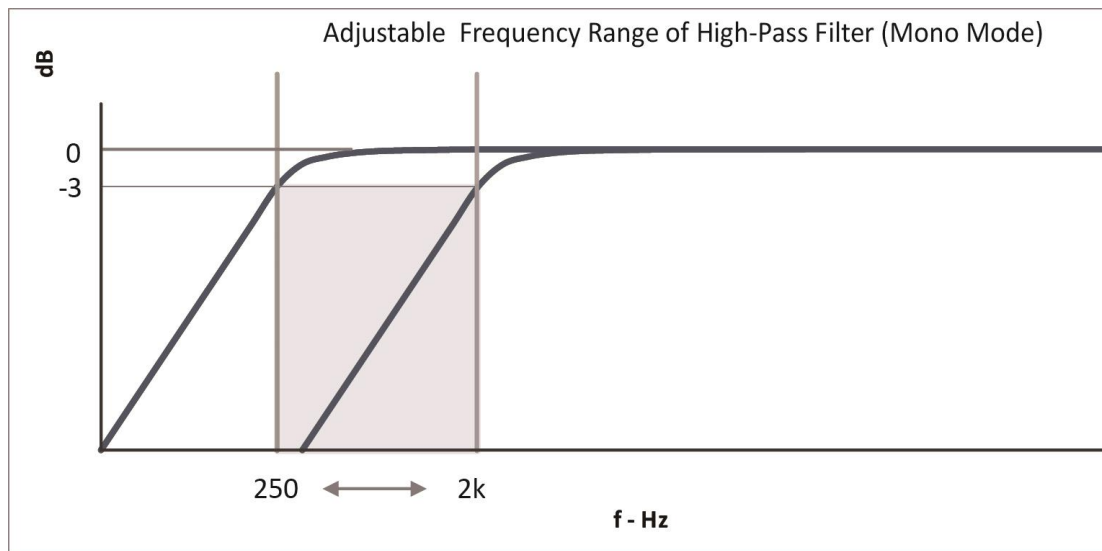


Control

Hardware Control

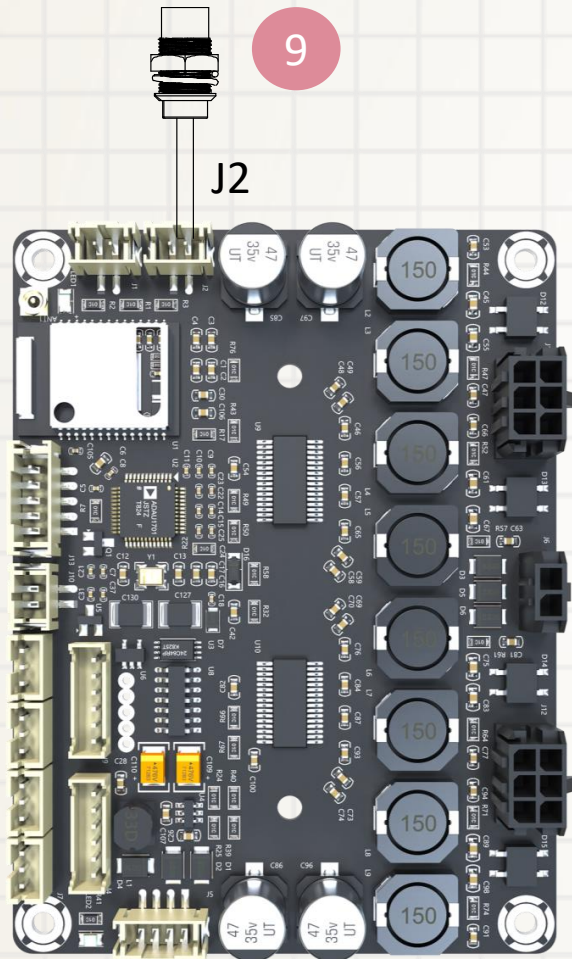
Customer could customize frequency range through Sigma Studio,
We provide SigmaStudio source code for downloading.
(PC UI Control only works with default firmware.)

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	20HZ-150Hz (High-pass)
	120Hz-350Hz (Low-pass)



Control

Bluetooth Pairing Cancellation

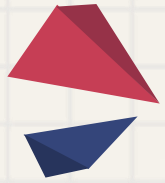


9, Bluetooth Pairing Cancellation Port – J2

When Bluetooth is paired, short circuit J2 to cancel pairing.

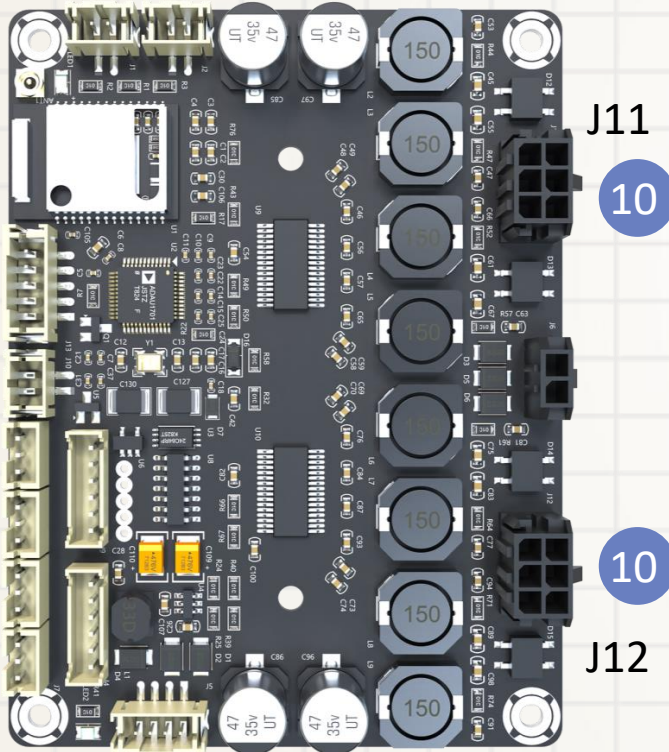
After cancellation, please release short circuit.

You can find the Bluetooth pairing cancellation cable with a button in the Functional cables kit (AA-JA11117). When Bluetooth is paired, press and hold the button until the Bluetooth indicator is blinking for cancellation.



Audio Output

Speaker output



10, Stereo speaker output – J11, J12

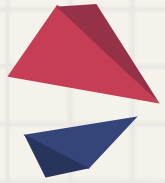
JAB4 works as 4 x 30W. It also supports configured as 2.0 / 0.2 mode (2 x 60W) or 2.1 mode (2 x 30W + 1 x 60W).

The switching is achieved by automatic cables identification.

Make sure the power is off when switching the output mode, otherwise the amplifier will enter into protection mode.

Please note if you want to use JAB4 as 0.2 mode, you need to set frequency with PC UI. 0.2 Mode is NOT supported when using hardware control (potentiometers).

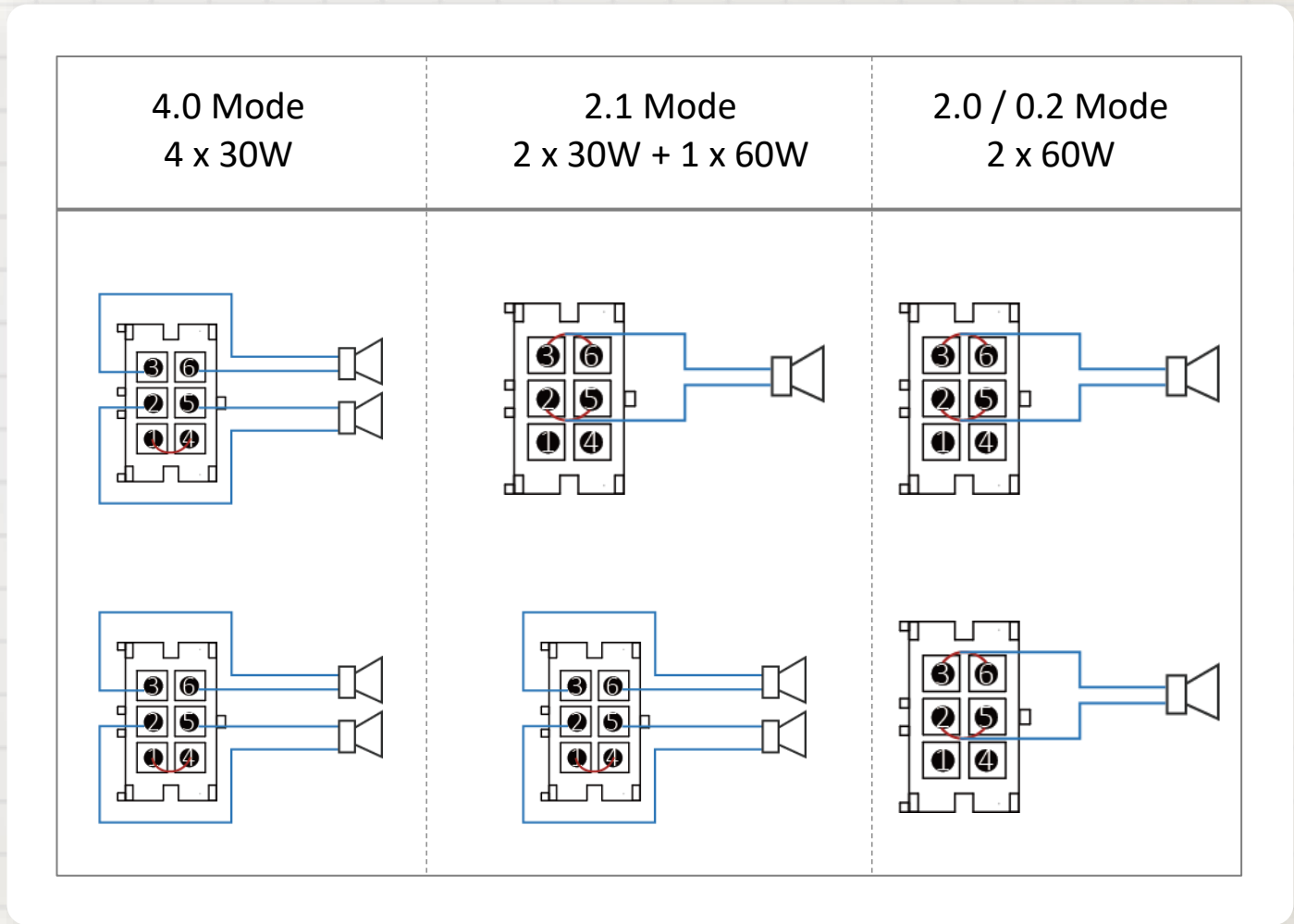
The terminal blocks used for speaker output is Molex-MicroFit-2x3Pos-3mm. Two speaker cables comes with JAB4 as the basic cables.

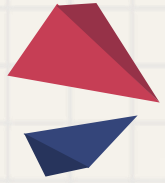


Audio Output

Speaker output

Output Mode
&
Hardware Settings





Audio Output

I2S output

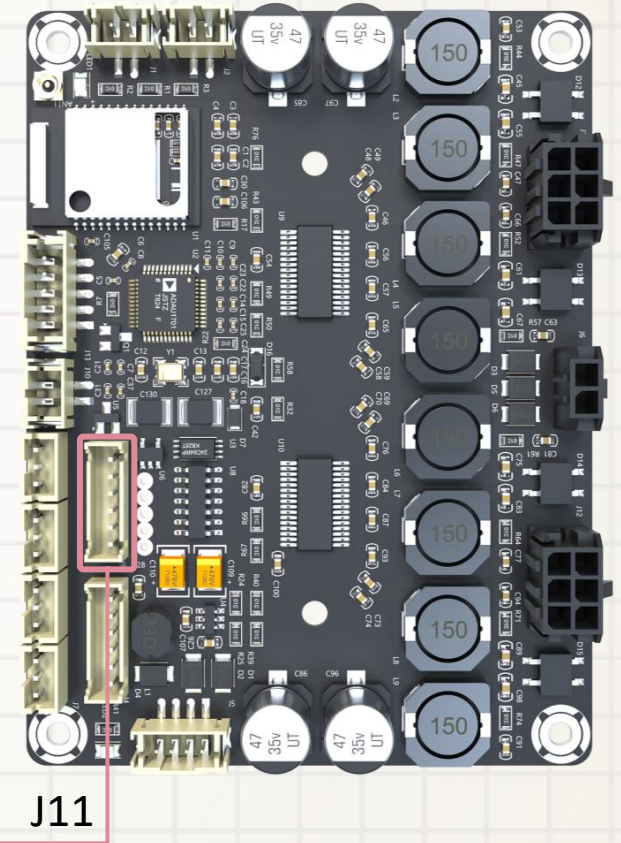
11, I2S output – J9

Besides speaker output, JAB4 provides I2S output, which can be transmitted into another I2S amplifier board.

In this condition, JAB4 is set as master mode as default.

The terminal block used for I2S output is PH-6Pos-2mm.

11
I2S Output



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Website



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Online Shop