

JAB Series

1 x 100Watt Class D Audio Amplifier Board - JAB2v2 (AA-JA31181)



Key Features

- 3.6 x 2.7 Inches PCB Size
- Bluetooth V5.0 apt-X HD
- High Receive Sensitivity with RF power up to 9dBm and -90dBm
- Supporting Various Audio Decode Formats as APTX, APTX HD, APTX-LL, SBC & AAC
- Lithium Battery Board Supported
- Bluetooth Pairing Cancellation
- Integrated with DSP
- Supporting PC UI Control
- Mixed Mono Output Provided
- Volume Control Port (Potentiometer)

Distributors



All Audio Amplifier boards are complied with ROHS and they are pre-tested with our power supply solution to comply with FCC and CE. We could provide FCC, CE and RoHs certifications for customers' convenience. The test reports will be provided upon requests by e-mails only for customers who apply for bulky purchase of MOV USD\$10,000 or MOQ 500pcs.

Ready for:



Contact Info

• Email:
info@wondom.com



Overview

JAB2v2 is audio amplifier board integrated with Bluetooth V5.0 (supporting apt-X HD), including four models as 2 x 50W, 2 x 30W, 1 x 100W and 1 x 60W. Besides power supply, JAB2v2 supports battery power, which greatly improves the portability. Bluetooth, battery power, light weight and high quality audio performance make JAB2v2 perfectly suitable for portable Bluetooth speakers, home audio, garden audio and DIY applications.

Thanks to the equipped DSP chip, JAB2v2 supports PC UI control after connection with WONDOM ICP5 or higher version(s), through which, you can adjust volume, gain, frequency and EQ setting. As for the details, please refer to 'PC UI Control' part.

In addition to speaker output, JAB2v2 offers an extra mixed output. Customers can configure it into a subwoofer signal by frequency adjustment in PC UI.

Electrical Specifications

Specifications typical @ +20°C, Powered by 24V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter	Conditions	Min.	Typ.	Max.	Units	
Number of Channels	-	-	1	-	-	
Minimum Load Impedance	-	-	2	-	Ω	
Efficiency	1x 100W@20Ω, 1kHz	-	79	-	%	
Nominal Power Requirement	@24V, 1kHz	-	127	-	W	
Operating Voltage	@1kHz, 20Ω	12	24	26	V	
Idle Power	Signal detected	-	2.16	-	W	
	No Signal detected	-	1.92	-	W	
Switching Frequency	SD Floating@24V	-	400	-	kHz	
Power Consumption	1/4 of max output power@20Ω, 24V, 1kHz	-	32	-	W	
	1/8 of max output power@20Ω, 24V, 1kHz	-	17	-	W	
Control	Standby (Low = inputs enabled)	High-level Input Voltage	3.3	-	-	V
		Low-level Input Voltage	-	-	0.8	V
	Mute (High = outputs enabled)	High-level Output Voltage	3.3	-	-	V
		Low-level Output Voltage	-	-	0.8	V
Standby Power	SD short to GND, only when low power module available	-	240	-	mW	

*Battery Undervoltage Protection point is preset to 10.4V in order to protect Lithium-Ion battery, LiFePo4 battery is strictly prohibited and not supported by default. For any change to this battery protection setting, an MOQ of 500pcs will be applied.

It is suggested to use power supply whose output voltage is within DC15V-24V and output current is higher than 1A to charge batteries with AA-JA11113.

Audio Performance

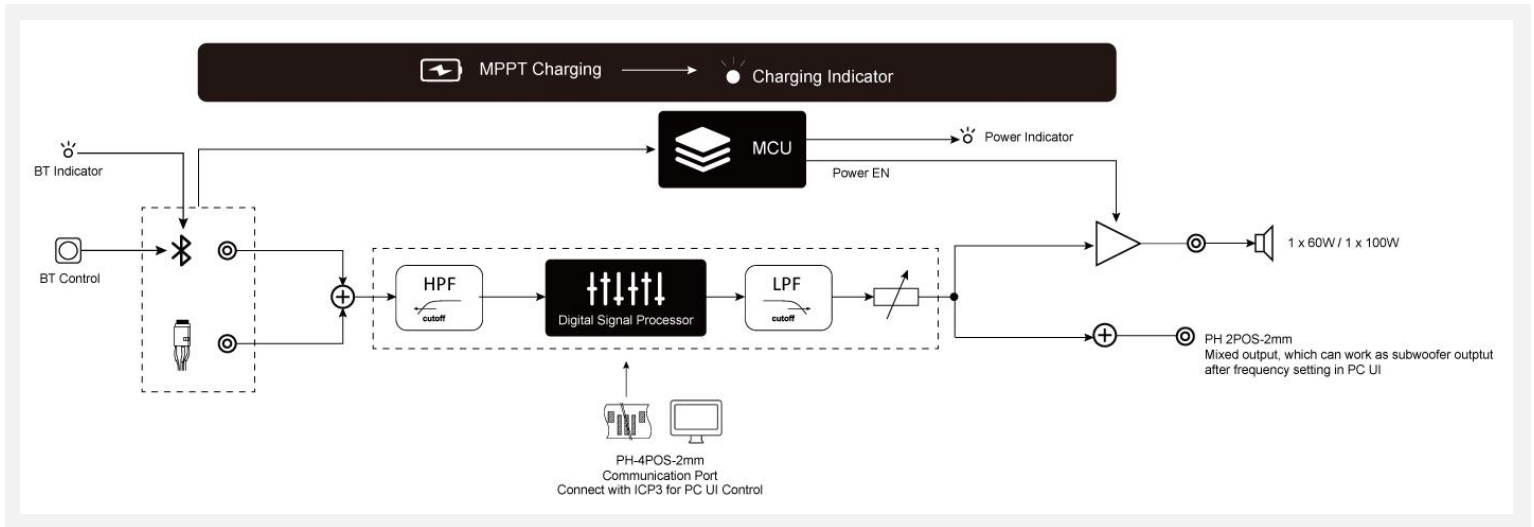
Specifications typical @ +20°C, Powered by 24V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter	Conditions	Min.	Typ.	Max.	Units
Amp Gain	@20Ω, 20Hz - 20kHz	-	19.6	-	dB
DSP Gain	SE1 (Single Amp)	-60	-	0	dB
	SE2 (Line Output)	-60	-	6.5	dB
Input Sensitivity	1x 100W@40Ω, 1kHz, 23.5dB	-	775	-	mV
Filter Gain	Butterworth, Q= 0.707	-	4	-	dB
Cutoff Frequency	HFP	0.25	-	2	kHz
	LFP	-	20	-	kHz
SNR	1x 100W@20Ω, THD+N=1%, 25.8dB, A-weighting	-	-	-	dB
THD+N	5W@20Ω, 1kHz, 25.8dB	-	0.19	-	%
	10W@20Ω, 1kHz, 25.8dB	-	0.21	-	%
Input Impedance	-	-	10	-	kΩ
Supported Sampling Rates	-	-	48	-	kHz
Output Noise Level	A-weighting, Input Connected to GND, 25.8dB	-	110	-	uV
DC Offset	-	-	10	-	mV
Crosstalk Separation	20Hz-20kHz, Gain=26dB	-	-60	-	dB

Note:

Sure Electronics could modify the JAB series cutoff frequency by first order crossover filter according to customers' requirements. 500 pieces MOQ will be applied. Please feel free to contact with info@sure-electronics.com for more detailed information.

Block Diagram



LED lights for JAB2v2

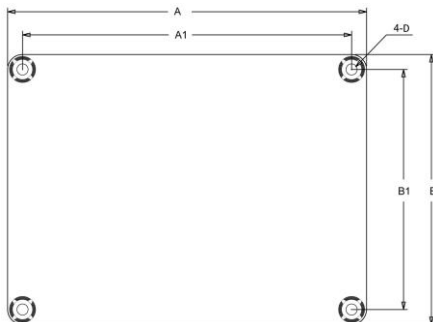
	LED Status			Function
	LED1 (Bluetooth)	D4 (MPPT Charging)		
On Board	ON	/		Bluetooth working properly
	Blinking	/		Bluetooth searching for network
	/	Blinking or ON		MPPT Charging
	/	OFF		MPPT Charging finished
Extended Ports	J7 (Bluetooth)	J8 (MPPT)	J6 (Power)	
	/	Blinking or ON	/	MPPT Charging
	/	OFF	/	MPPT Charging finished
	ON	/	/	Bluetooth working properly
	Blinking	/	/	Bluetooth searching for network
	/	/	ON	Working
LED On Extension Board	Red LED (Power)	Green LED (Switch)		
	ON	ON		Working
	OFF	OFF		Mute
	OFF	/		Power Disconnected

Diagram 1

Note:

There are 3 colors for extended LED indicators, which are red, green and blue. The LED color for each port is at random.

Mechanical Dimensions



Dimensions	A (inch/mm)	A1 (inch/mm)	B (inch/mm)	B1 (inch/mm)	D (inch/mm)
	3.60/91.44	3.30/83.8	2.70/68.6	2.40/61.0	0.14/3.6

Notes:

- All dimensions are typical in inches/mm
- Tolerance x.xx = $\pm 0.02 (\pm 0.50)$
- Height: (Tolerance x.xx = $\pm 0.2 \text{ inch} / 5 \text{ mm}$)

AA-JA32171:0.79inch/20.1mm

- The height of the boards is measured from the bottom of the boards to the top of the components.

Notes:

1. The output power is rated at the condition THD+N 10%, 1kHz sine wave.
2. Stresses beyond the power supply range maximum ratings may cause permanent damage.
3. None typical load may cause rated power reduction.
4. Dimensions mean length and width of PCB only, excluding excessive part out of the PCB outline.
5. All parameters were tested with Rohde & Schwarz UPV audio analyzer (AES17 filter enabled) and AP AUX0025 filter. Linear Power Supply units were used for testing.
6. Sure Electronics promises all standard products life cycle more than 5 years. Sure Electronics reserves the right to update the version without notice and we will reserve the right to stop supporting or providing limited support for the old version to be compatible with new version. Please recognize PCB version of JAB series before using and refer to the matched documents. Any problem, please feel free to contact us.
7. Some incompatibility problems may occur due to version update, like popping noise, which will not affect the normal use. All the products sent to retail customers are the latest version. We will provide back-to-order service (100 Pieces MOQ needed) for our distributors in 5 years.
8. There is a built-in antenna on the board for stable connection. An external antenna port is also provided on board to ensure stable connection even if JAB2v2 is installed in a cabinet.
9. Two jumpers are provided on J11. Please do not remove them unless J11 is used to connect with JAB3 or the external volume control potentiometer.



WONDOM Audio Technology

Wonder Meeting with Melody!

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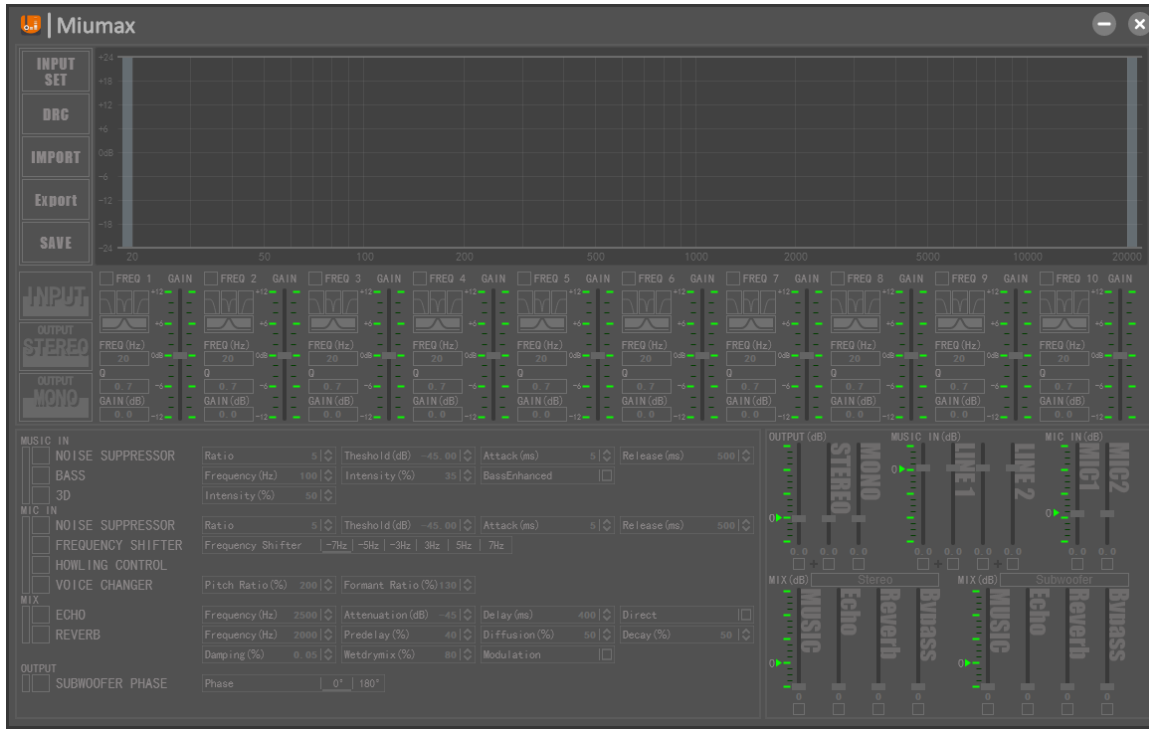
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PC UI Control

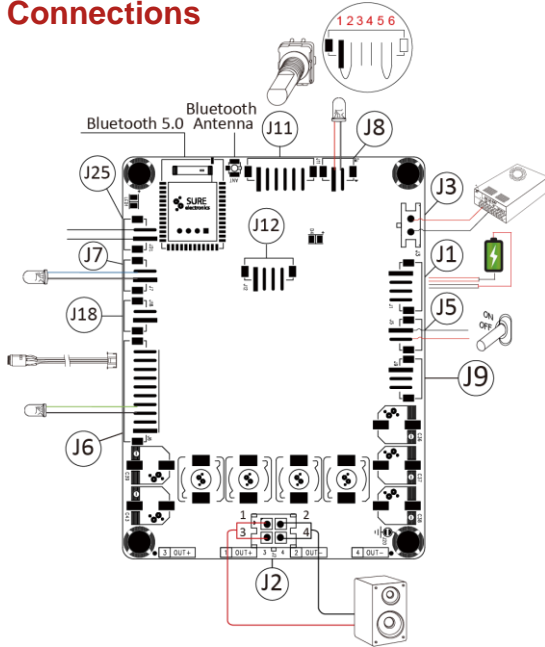


With connection of WONDOM ICP5 or higher version(s), Customers can get PC UI control method for JAB2v2, which is full of playability and provides various functions.

Multiple Functions:

- Gain adjustment
- Volume adjustment
- High-pass filter
- Low-pass filter
- Noise suppressor
- Bass
- 3D
- Frequency shifter
- Voice changer
- Echo
- Reverb
- EQ setting
- Graphic Interface

Connections



Power

Power Connector:
• J3 Molex-2Pin-3mm

Pin	Definition
1	VCC
2	GND

Battery Charging Connector:
• J1 PH-4Pin-2mm

Pin	Definition
1	VBAT
2	VBAT
3	GND
4	GND

It is suggested to use a power supply, whose output voltage is within DC15-24V and current is higher than 1A to charge the batteries with AA-JA11113.

Audio Output

Speaker Output Connector:
J2 Molex-4Pin-3mm

Pin	Definition
1	OUT+
2	OUT-
3	OUT+
4	OUT-

Mixed Audio Output Connector:
• J25, PH-2Pos-2mm

Pin	Definition
1	AGND
2	Mixed Out

External Bluetooth LED Indicator Connector:
• J7, PH-2Pin-2mm

Pin	Definition
1	LED-
2	ED+

Control

Bluetooth Pairing Cancellation Connector:
• J18 PH-2Pin-2mm

Pin	Definition
1	EN
2	+3.3V

Short circuit 'EN' and '+3.3V' to cancel the Bluetooth pairing.

Shutdown Control Connector:
• J5 PH-2Pin-2mm

Pin	Definition
1	GND
2	EN

Short circuit 'GND' and 'EN' to shut down JAB2v2.

Synchronization Port:
J9 PH-3Pin-2mm

Pin	Definition
1	STBY
2	GND
3	MUTE

Programming Port:
• J12, PH-4Pos-2mm

Pin	Definition
1	VIN
2	GND
3	RXD
4	TXD

Connect with ICP5 or higher version(s) for PC UI control.

External MPPT Charging LED Indicator Connector:
• J8, PH-2Pin-2mm

Pin	Definition
1	LED+
2	LED-

Volume Control Connector:
• J11 PH-6Pin-2mm

Pin	Definition
1	LIN
2	LOUT
3	GND
4	GND
5	ROUT
6	RIN

There are two jumpers coming with J11 port. Please don't remove them unless J11 port is used for connection with JAB3 or the external volume control potentiometer.

Extension Functions

Extension Connector:
J6 PH-10Pin-2mm

Pin	Definition
1	VCC
2	VCC
3	GND
4	LED1
5	KEY1
6	LIN
7	GND
8	RIN
9	KEY2
10	LED2

JAB2v2 can connect with Interface extension board (AA-JA11112) to get AUX-IN and...

External Power LED Indicator Connector:
Pin 3,4 of J6 is used as power LED indicator.

Pin	Definition
3	LED-
4	LED+

Audio Input

Bluetooth 5.0 Module

There is a built-in antenna on the board for stable connection. A port for external antenna is also provided for such applications that JAB2v2 may need to be installed in a cabinet. You can find the external antenna in the Functional cables kit. (AA-JA11114).

3.5mm AUX IN port:

Pin 6, 7, 8 of J6 is used for AUX-IN.

You can get the 3.5mm AUX-IN cable in the Functional cables kit. (AA-JA11114 / AA-JA11116)

LED Indicators

- LED1, Bluetooth LED Indicator
- D4, MPPT Charging LED Indicator

As for the details about the indicators, please refer to 'LED Lights for JAB2v2' part.

Sure Electronics

Make Your Audio Application Simple!

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