JAB Series

4 x 100 Watt Class D Audio Amplifier Board w DSP & BT 5.0 – JAB5 (AA-JA33286)

Key Features

- 4.80 x 3.60 Inches PCB Size
- DSP & Bluetooth 5.0 Integrated
- Power Management Circuit
- Signal Level Sensor System
- I2S Input & Line Input Supported
- I2S Output
- Supporting 4.0 / 2.1 / 2.0 Mode
- Supporting cascading with another JAB5 for 8 x 100W
- Bluetooth Pairing Cancellation
- Four External Potentiometers Control
- Bluetooth LED Indicator
- Signal Detection LED Indicator
- Supporting ICP5 for Programming and APP / PC UI Control

Distributors:

PARTS EXPRESS YOUR ELECTRONICS CONNECTION

MCM

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AUDIOPHONICS

SOUND IMPORTS.

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 purchasement of MOV USD$10,000 or MOQ 500pcs.

Ready for:

FC CE

Contact Info

- **Email:**
  info@wondom.com

WONDOM™

Overview

JAB5 is a four channel audio amplifier board integrated with high performance Bluetooth 5.0 (Supporting APT-X HD) and DSP, which delivers 100W per channel into a 6Ohm load, 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. JAB5 supports 4.0 mode (4 x 100W), 2.1 mode (2 x 100W + 1 x 200W) and 2.0 / 0.2 mode (2 x 200W). The switching among these 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.

Ports for four external potentiometers are pre-mounted on the board for easy control of the audio systems. You can adjust the gain and frequency. As for the details, please take reference of '**Function of Potentiometers**' part. In addition to hardware control, with the connection of WONDOM ICP5, JAB5 supports programming with SigmaStudio or remote control through APP or PC UI.

Signal Level Sensor System, Power Management Circuit and full protection are equipped in JAB5 for lower power consumption, higher efficiency and stable operation.

Electrical Specifications

Specifications typical @ +25℃, powered by 36V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter		Conditions	Min.	Typ.	Max.	Units
Number of Channels		-	-	4	-	-
Minimum Load Impedance		-		6	-	Ω
Efficiency		4 x 100W@6Ohm, 1kHz	-	89.5	-	%
Nominal Power Requirement		@36V, 1kHz	-	100	-	W
Operating Voltage		@1kHz, 6Ohm	10	36	39	V
Idle Power		Signal detected	-	9.2	-	W
		No Signal detected	-	360	-	mW
Switching Frequency		SD Floating@36V	-	400	-	kHz
Power Consumption		1/4 of max output power@6Ohm, 24V, 1kHz	-	112.5	-	W
		1/8 of max output power@6Ohm, 24V, 1kHz	-	55.87	-	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	-	97	-	mW

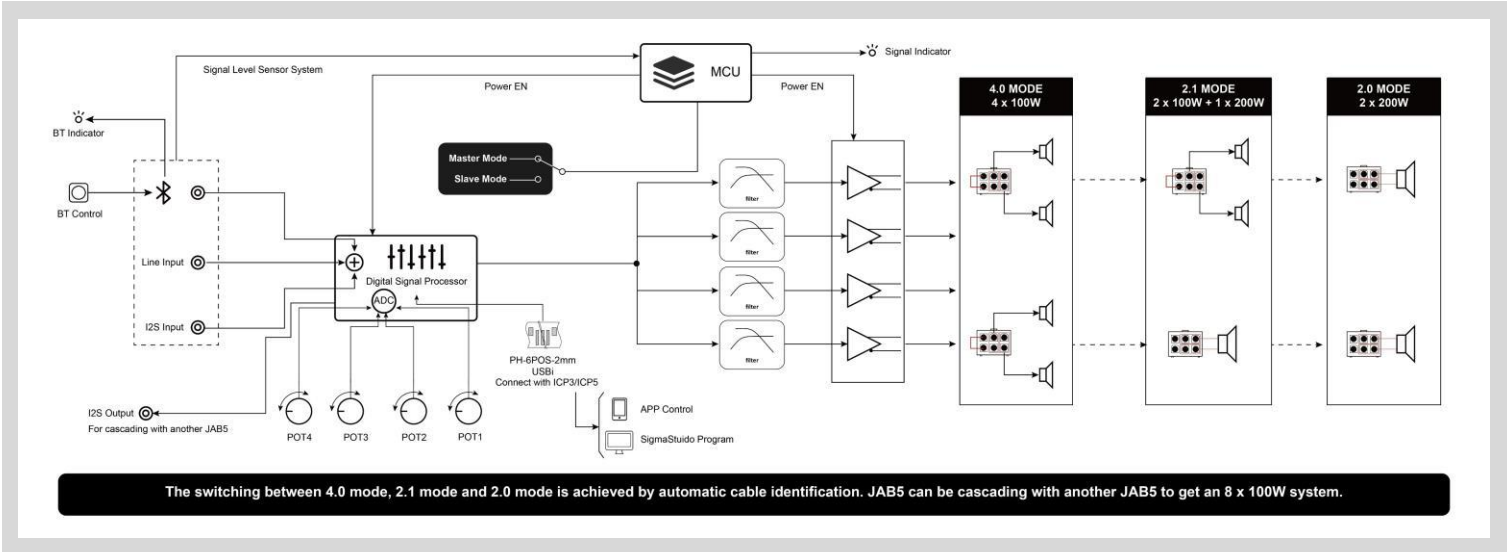
Audio Performance

Specifications typical @ +25℃, powered by 36V DC, unless otherwise noted. Specifications subject to change without notice.

Parameter		Conditions	Min.	Typ.	Max.	Units
Amp Gain		@6Ohm, 20Hz - 20kHz	-	26	-	dB
DSP Gain	SE1 (Single Amp)	@6Ohm, 1kHz	-60	-	0	dB
	SE2 (Line Output)	@6Ohm, 1kHz	-60	-	6.5	dB
Input Sensitivity		4 x 100W@6Ohm, 1kHz, Total Gain = 30dB (AMP Gain = 26dB)		775		mV
Filter Gain		Butterworth, Q= 0.707	-	4	-	dB
Cutoff Frequency		HFP	0.25	-	2	kHz
		LFP	-	20	-	kHz
SNR		100W/Channel@6Ohm, THD+N=1%, 30dB (Total Gain), A-weighting		97		dB
THD+N		5W@6Ohm, 1kHz, 30dB (Total Gain)		0.04		%
		10W@6Ohm, 1kHz, 30dB (Total Gain)		0.07		%
Input Impedance		-		10		kΩ
Supported Sampling Rates		-	-	48	-	kHz
Output Noise Level		A-weighting, Input Connected to GND, 30dB (Total Gain)		220		uV
DC Offset		-		10		mV

All parameters were tested with Rohde & Schwarz UPV audio analyzer (AES17 filter enabled) and Audio Precision AUX0025 filter. For authorized distributors and OEM customers who need more detailed performance graphs and parameter settings, please send an inquiry e-mail to us. (Not available for retail customers)

Block Diagram



Notes:

1. JAB5 supports 4.0 mode (4 x 100W), 2.1 mode (2 x 100W + 1 x 200W) and 2.0 / 0.2 mode (2 x 200W). The switching among these modes is achieved by automatic cables identification, without any need of other operations. Please note frequency adjustment in PC UI is required if you want to use JAB5 as 0.2 mode. That means, 0.2 mode is not supported when using hardware control (Potentiometers).
2. JAB5 can cascade with another JAB5 to build an 8 x 100W audio system or other systems through the I2S output and input ports.
3. Signal Level Sensor System has been employed in JAB5 for low power consumption. JAB5 will enter into standby mode when audio signal is not detected for long time (5min). Once audio signal is detected under this circumstance, JAB5 will restart to work. It is not malfunction if JAB5 enters into standby mode.
4. The basic cable package of JAB3 contains: one power cable and two speaker cables. If you have special requirements of cables, please contact us at store@sure-electronics.com.

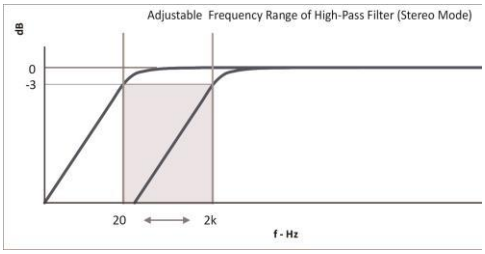
Function of Potentiometers

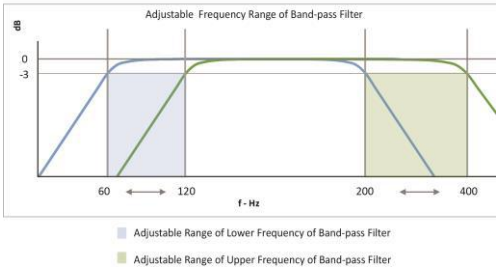
Port	Function	4.0 / 2.0 Mode	2.1 Mode (CH1 - Mono)	2.1 Mode (CH2 - Mono)
POT1	CH2 Relative Gain	Relative Gain of CH2	Relative Gain of CH2	Relative Gain of CH2
POT2	CH2 HPF or BPF	High-pass Filter of CH2	High-pass Filter of CH2	Band-pass Filter of CH2
POT3	CH1 HPF or BPF	High-pass Filter of CH1	Band-pass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

Note:

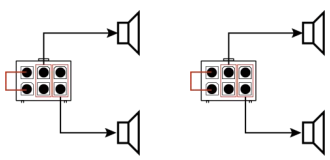
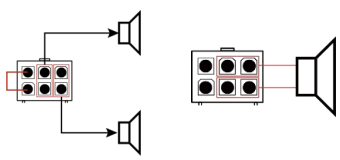
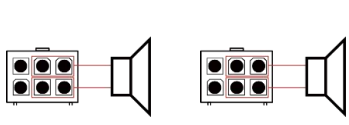
1. The channel 1 speaker output (J14) of JAB5 is defined as CH1; channel 2 speaker output (J13) is defined as CH2.
2. POT1 and POT2 are used to adjust CH2 output, POT3 is used to adjust CH1 output. POT4 is for overall volume control. When JAB5 works as 2.1 mode, you can configure any channel as 0.1. The function of potentiometers will be changed accordingly.
   If you want to use JAB5 as 0.2 mode, you can set frequency through the PC UI. Please note 0.2 mode is not supported when using hardware control (Potentiometers).
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.

Function	Range of Frequency
High-pass Filter (4.0 / 2.0 Mode)	20Hz- 2kHz
High-pass Filter (2.1 Mode)	250Hz- 2kHz
Band-pass Filter	60Hz-120Hz (High-pass)
	200Hz-400Hz (Low-pass)





Output Connection

4.0 Mode	2.1 Mode	2.0 / 0.2 Mode
		

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

Sure Electronics

Make Your Audio Application Simple!

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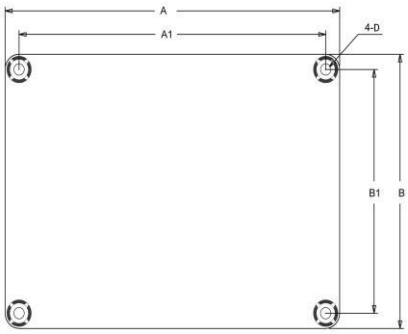
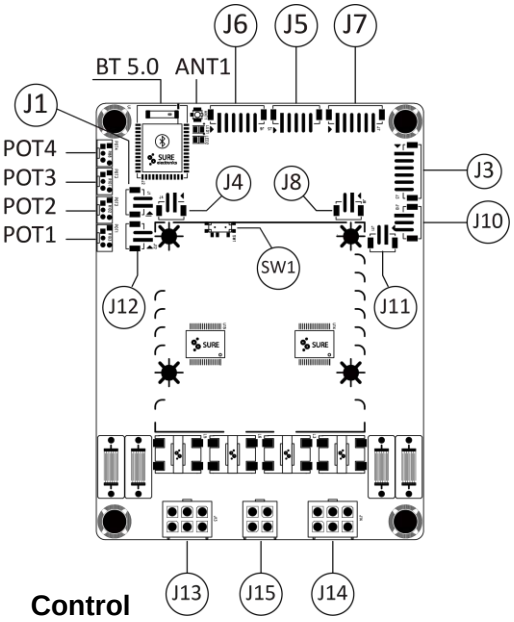
Mechanical Dimensions



Dimensions	A (inch/mm)	A1 (inch/mm)	B (inch/mm)	B1 (inch/mm)	D (inch/mm)
	4.80/121.92	4.40/111.76	3.60/91.44	3.20/81.28	0.15/3.8

Notes:
· All dimensions are typical in inches/mm
· Tolerance x.xx = ±0.02(±0.50)

Connections



Control

Bluetooth Pairing Cancellation Port:
·J4, PH-2Pos- 2mm

Pin	Definition
1	cancel
2	+3.3V

Short circuit 'cancel' with '+3.3V' to cancel Bluetooth pairing.

Programming Connector:
·J3, PH- 6Pin- 2mm

Pin	Definition	Pin	Definition
1	RST	4	WP
2	+5V	5	SCL
3	GND	6	SDA

This port is for connection with WONDOM ICP5 to achieve programming and remote control functions.

Standby Control:
·J11, PH-2Pos- 2mm

Pin	Definition
1	STBY
2	GND

Short circuit 'STBY' and 'GND' to enter into standby mode.

Control Compatible Port
·J10, PH-3Pos- 2mm

Pin	Definition	Pin	Definition	Pin	Definition
1	STBY	2	GND	3	MUTE

Connect J10 ports when JAB5 is used to cascade with another JAB5 for high sound quality.

Power Supply

Power Supply Connector:
·J15, Molex- 4Pos- 3mm

Pin	Definition
1	GND
2	GND
3	VCC
4	VCC

Audio Input

Bluetooth Input:
· BT 5.0

Line Input Connector:
·J5, PH- 5Pos- 2mm

Pin	Definition
1	INL
2	AGND
3	INR
4	NC
5	NC

I2S Input Connector:
·J6, PH- 6Pos- 2mm

Pin	Definition
1	MCLK
2	+5V
3	GND
4	DATA1
5	BCLK
6	LRCLK

External LED Indicator

External Bluetooth Indicator Connector:
·J1, PH-2Pos-2mm

Pin	Definition
1	LED+
2	LED-

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

External Signal Detection Connector:
·J12, PH-2Pos-2mm

Pin	Definition
1	LED+
2	LED-

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

Audio Output

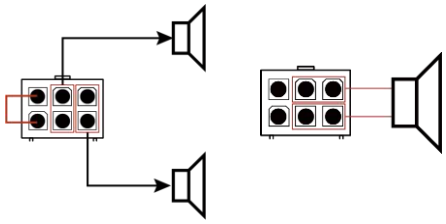
Speaker Output Connector:
·J14, Molex-MiniFit-2x3Pos-3mm

Pin	Stereo	Mono
1	OUTR1+	MONO1+
2	OUTL1+	MONO1+
3	GND	GND
4	OUTR1-	MONO1-
5	OUTL1-	MONO1-
6	MODE1	MODE1

·J13, Molex-MiniFit-2x3Pos-3mm

Pin	Stereo	Mono
1	OUTR2+	MONO2+
2	OUTL2+	MONO2+
3	GND	GND
4	OUTR2-	MONO2-
5	OUTL2-	MONO2-
6	MODE2	MODE2

JAB5 supports PBTL, so it can work as 4.0 mode, 2.1 mode or 2.0 mode. The switch between the three modes is achieved by automatic cables identification.

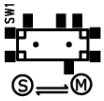


I2S Output Connector:
·J7, PH- 6Pos- 2mm

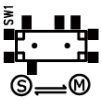
Pin	Definition
1	MCLK
2	+5V
3	GND
4	DATA0
5	BCLK
	LRCLK

JAB5 supports I2S output, which can be transmitted into an I2S input amplifier.
JAB5 supports cascading with another JAB5 through I2S I/O ports, in which condition, the one outputting I2S signal should be set as master mode and the other receiving I2S signal should be set as slave mode through the switch (SW1) on the board.

Master Mode



Slave Mode



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