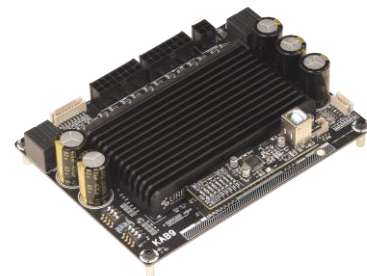


# Game Machine Audio Amplifier Series

## 8CH 50W Class D 8.0 / 7.1 / 5.1 / 4.2 / 4.0 Configurable Audio Amplifier Board for Kiosks (AA-KA32473)



### Overview:

As an audio amplifier specially designed for game machine applications on the basis of standard products platform, WONDOM KAB9 inherits Sure Electronics consistent high reliability and high cost-performance. Fully taking customers' requirements into consideration, we employ four AMP chip on KAB9 as 8 x 50W, all of which supports separate configuration into PBTL mode – 1 x 100W. That means KAB9 can be set as 8 x 50W for 7.1 audio system, 6 x 50W + 1 x 100W for 6.1/5.1 system, 4 x 50W + 2 x 100W for 4.2 system, 4 x 100W for 4.0 system and so on. Only one board can be configured for several applications, greatly improving system flexibility. The switching is conveniently achieved by the switches on the board, without any need of complex soldering. KAB9 is capable of delivering a peak output power of 8x 100W if it is equipped with a fan.

KAB9 supports differential input. In addition, KAB9 can support multiple input methods through connecting with an external plug-and-play module as a daughter board. We have released a 7.1 USB codec module for joint use with KAB9, which can avoid ground noise and ensure high quality audio playback. In future, we will develop various input module to extend more functions and possibilities with KAB9.

### Distributors:



### Applications:

- Game Machine Applications
- Racing Simulator
- Vibrator
- Home Theater
- Audio 7.1/5.1/4.2/4.0 System
- Video Conference Application
- Home DIY

### Key Features:

- 8 x 50W Audio Amplifier
- Independent PBTL/BTL Configuration of Four Stereo Amplifier Chips
- Supporting External Plug-and-Play Modules as Daughter Boards
- 7.1 USB Codec as Audio Input
- Higher Output Power with Fan Installed
- Five Level Gain Adjustable through Switch
- Shutdown, Mute and Synchronize Control
- Overcurrent Protection
- Weight: 168g/0.37lbs (±10%)
- Size: 6.0 x 4.5 x 1.8 inches

### Electrical Specifications

Specifications typical @ +25°C, unless otherwise noted. Specifications subject to change without notice.

Parameter	Conditions	Min.	Typ.	Max.	Units	
Number of Channels	-	-	8	-	-	
Minimum Load Impedance	-	3	4	-	Ω	
Efficiency	8 x 50W@40hm, 1kHz	-	87	-	%	
Nominal Power Requirement	@24V, 1kHz	-	400	-	W	
Operating Voltage	@1kHz, 40hm	12	24	30	V	
Idle Power	Signal detected	-	7.44	-	W	
Switching Frequency	SD Floating@24V	-	400	-	kHz	
Power Consumption	1/4 of max output power@40hm, 24V, 1kHz	-	118	-	W	
	1/8 of max output power@40hm, 24V, 1kHz	-	60	-	W	
Control	Shutdown (Low = inputs enabled)	High-level Input Voltage	3.3	-	V	
	Mute (High = outputs enabled)	Low-level Input Voltage	-	-	0.8	V
		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	

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



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**Notes:**

1. Sure Electronics does not provide technical support for any behavior of powering KAB9 with power supply out of the recommended range. Warranty will be lost due to this.

2. The 7.1 USB codec module is the default input module. If you need analog input or differential input module, please contact us.

3. Please connect to the computer with USB cable before powering KAB9.

4. If KAB9 would be run in higher power than 8 x 50W continuously, it is suggested to install a fan for better dissipation. Any need, please contact us.

5. KAB9 provides five levels adjustable gain. As for details, please refer to "Switch Settings" chapter.

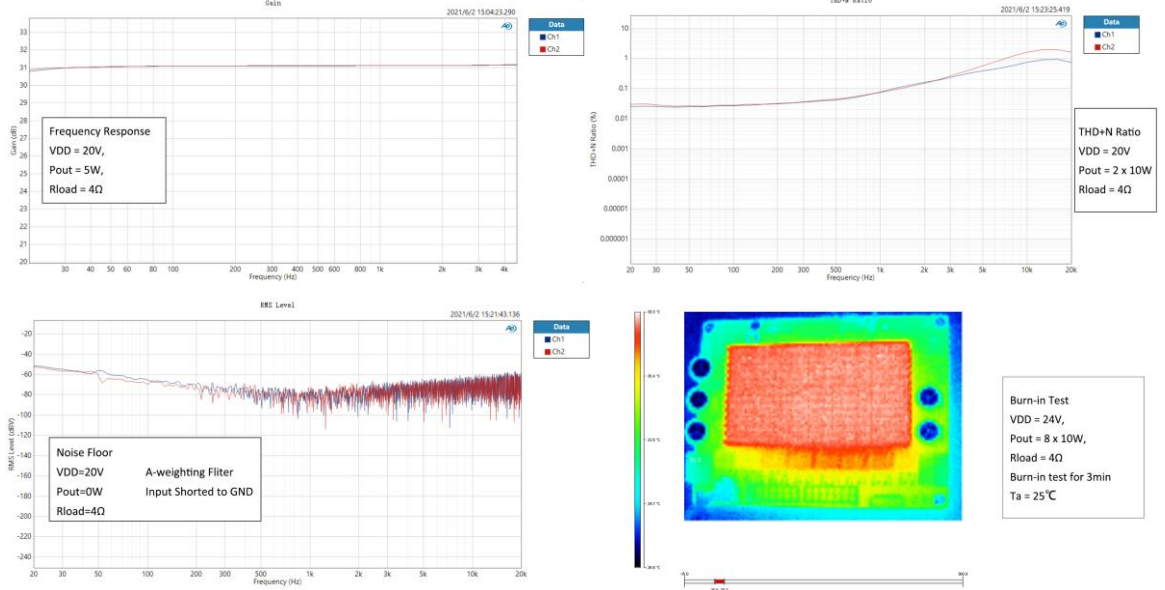
6. There are no standard cables coming with KAB9. If you need matched cables for test, please contact us.

# Audio Specifications

Specifications typical @ +25°C, unless otherwise noted. Specifications subject to change without notice.

Parameter	Conditions	Min.	Typ.	Max.	Units
Amp Gain	SW1: 1-4, OFF	-	31	-	dB
	SW1: 1, ON; Others: OFF	-	35.8	-	dB
	SW1: 2, ON; Others: OFF	-	33.3	-	dB
	SW1: 3, ON; Others: OFF	-	29.8	-	dB
SW1: 4, ON; Others: OFF	-	23.8	-	dB	
Input Sensitivity	8 x 50W@4Ohm, 1kHz, 26dB	-	460	-	mV
SNR	8 x 50W@4Ohm, THD+N=1%, 26dB, A-weighting	-	91	-	dB
THD+N	5W@4Ohm, 1kHz, 24dB / CH	-	0.03	-	%
	10W@4Ohm, 1kHz, 24dB / CH	-	0.04	-	%
Input Impedance	-	-	10	-	kΩ
Output Noise Level	A-weighting, Input Connected to GND, 26dB	-	340	-	uV
DC Offset	-	-	10	-	mV

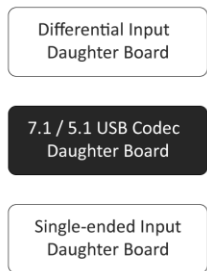
## Typical Performance Graphs



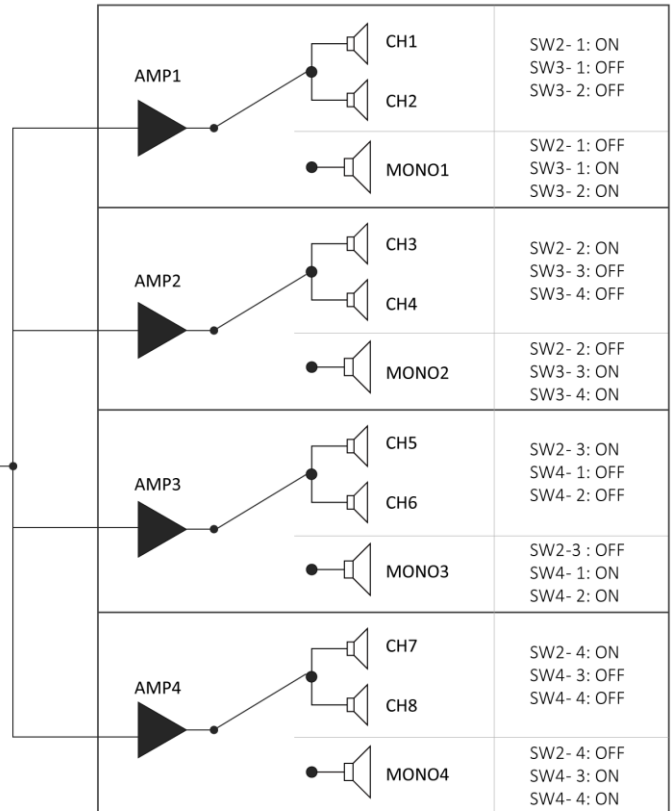
## Block Diagram

KAB9 can supports various input methods through connection with input daughter board. We provide a 7.1 / 5.1 USB Codec input module as the default input method. In addition to that, we also offer differential input and single-ended input daughter board. If you are interested, please contact us.

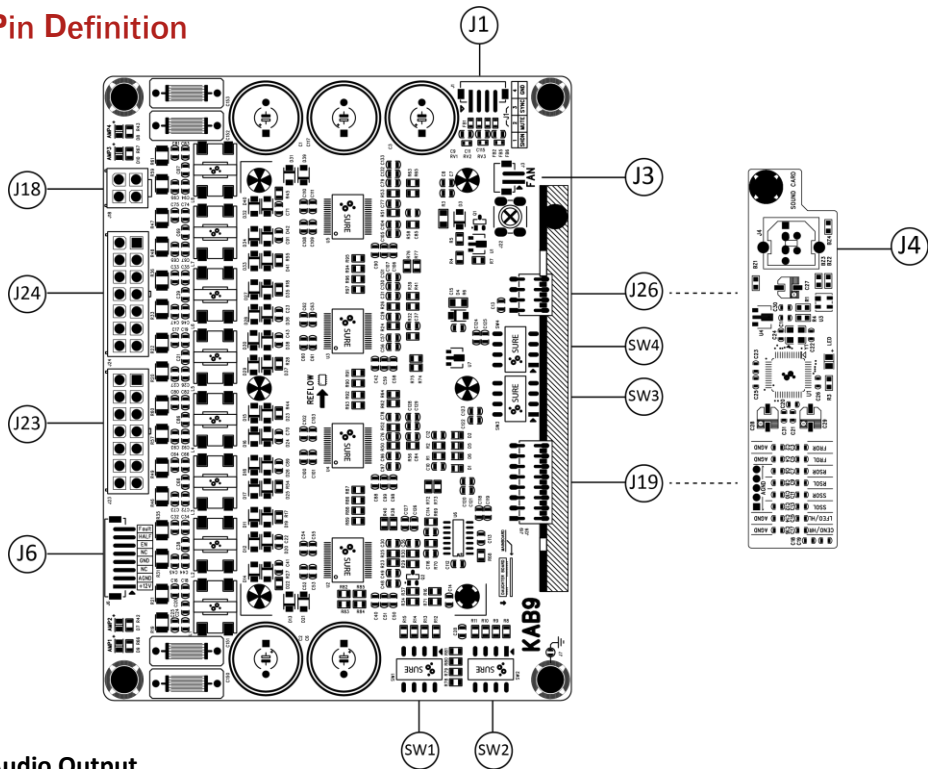
As shown in the block diagram, KAB9 employs four amp chips, each of which can be configured as stereo or mono output via setting the corresponding switches.



Gain	SW1
31 dB	All OFF
23.8 dB	4: ON Others: OFF
29.8 dB	3: ON Others: OFF
33.3 dB	2: ON Others: OFF
35.8 dB	1: ON Others: OFF



## Pin Definition



### Audio Output

Each AMP chip of KAB9 supports BTL (stereo) and PBTL (mono), here is the pin definition. As for settings, please refer to “Switch Settings” Part.

- J23 Molex MiniFit-4.2mm-14Pos

Stereo Mode:

Pin	1	2	3	4	5	6	7
Definition	OUT1+	OUT2+	PLIMIT1	NC	OUT3+	OUT4+	PLIMIT2
Pin	8	9	10	11	12	13	14
Definition	OUT1-	OUT2-	GND	NC	OUT3-	OUT4-	GND

Mono Mode

Pin	1	2	3	4	5	6	7
Definition	MONO1+	MONO1+	PLIMIT1	NC	MONO2+	MONO2+	PLIMIT2
Pin	8	9	10	11	12	13	14
Definition	MONO1-	MONO1-	GND	NC	MONO2-	MONO2-	GND

- J24 Molex MiniFit-4.2mm-14Pos

Stereo Mode:

Pin	1	2	3	4	5	6	7
Definition	OUT5+	OUT6+	PLIMIT3	NC	OUT7+	OUT8+	PLIMIT4
Pin	8	9	10	11	12	13	14
Definition	OUT5-	OUT6-	GND	NC	OUT7-	OUT8-	GND

Mono Mode

Pin	1	2	3	4	5	6	7
Definition	MONO3+	MONO3+	PLIMIT3	NC	MONO4+	MONO4+	PLIMIT4
Pin	8	9	10	11	12	13	14
Definition	MONO3-	MONO3-	GND	NC	MONO4-	MONO4-	GND

**AC/DC Power Supply Control Port:** J6, PH-2.0mm-6Pos

This port is used to synchronize the working sequence for lower power consumption when connected with WONDOM AC/DC power supply. Any need, please contact us.

### Power Supply

- J18, Molex MiniFit-4.2mm-4Pos  
DC 15V-30V

Pin	Definition
1	GND
2	GND
3	VIN
4	VIN

### Audio Input

KAB9 supports differential input in default. Besides, it can also plug in various daughter board to support various input methods. We have released a matched 7.1 USB codec card as the default input module.

- J19, Female Header Dual Row SMD-16Pos

Pin	Definition	Pin	Definition
1	IN1L-	9	IN1L+
2	IN1R-	10	IN1R+
3	IN2L-	11	IN2L+
4	IN2R-	12	IN2R+
5	IN3L-	13	IN3L+
6	IN3R-	14	IN3R+
7	IN4L-	15	IN4L+
8	IN4R-	16	IN4R+

- J26, Female Header Dual Row SMD-8Pos

Pin	Definition	Pin	Definition
1	GND	5	MUTE
2	VCC	6	SHDN
3	AGND	7	PWR_EN
4	FAULT	8	HALF_PWR

### Control & Switching Frequency Synchronization

- J1, PH-2.0mm-4Pos

Pin	Definition
1	SHDN
2	MUTE
3	SYNC
4	GND

“SHDN” and “MUTE” is active low, when shorted circuit with GND, KAB9 will enter into shutdown or mute mode. “SYNC” position is used for switching frequency synchronization with another board.

### Fan

- J3, PH-2.0mm-2Pos

Pin	Definition
1	GND
2	GND

A robust heatsink is mounted on KAB9 for heat dissipation. If you need to run KAB9 in higher power than 8 x 50W continuously, it is highly suggested to install a fan for better dissipation. Any need, please contact us.



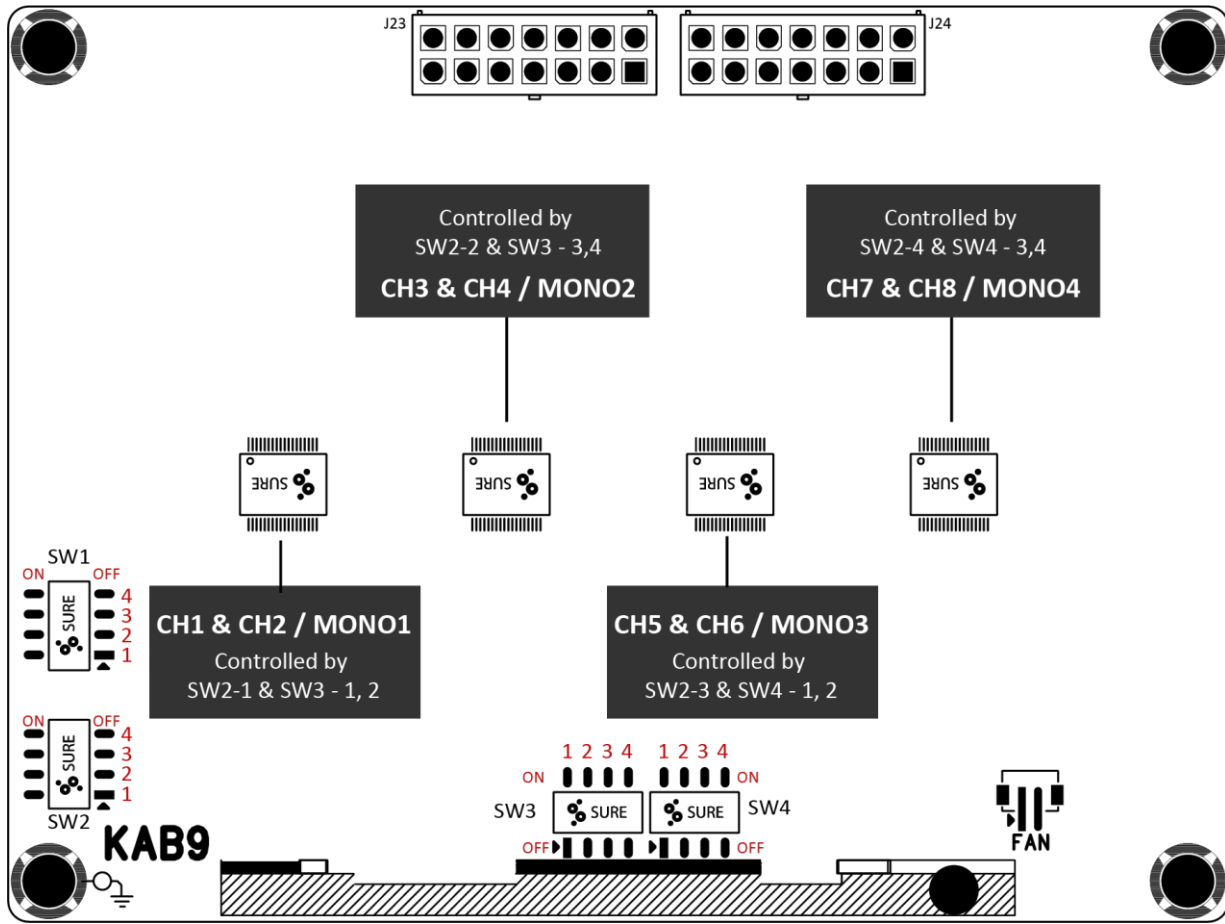
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## Switch Settings



### Gain Adjustment Switch

KAB9 supports five adjustable gain levels. SW1 is used for adjusting overall gain of KAB9.

SW1-1	SW1-2	SW1-3	SW1-4	Gain
OFF	OFF	OFF	ON	23.8dB
OFF	OFF	ON	OFF	29.8dB
OFF	ON	OFF	OFF	33.3dB
ON	OFF	OFF	OFF	35.8dB
OFF	OFF	OFF	OFF	31dB

### Output Mode Switch

As we mentioned above, KAB9 employs 4 AMP chips, and each can be configured as mono mode separately. The switching of each amp chip is realized by the combination of SW2, SW3 and SW4.

#### APM1 – CH1 & CH2 / MONO1

AMP1 is controlled by SW2-1 and SW3-1, 2.

Mode	SW2-1	SW3-1	SW3-2
Stereo	ON	OFF	OFF
Mono	OFF	ON	ON

#### APM2 – CH3 & CH4 / MONO2

AMP2 is controlled by SW2-2 and SW3-3, 4.

Mode	SW2-2	SW3-3	SW3-4
Stereo	ON	OFF	OFF
Mono	OFF	ON	ON

#### APM3 – CH5 & CH6 / MONO3

AMP3 is controlled by SW2-3 and SW4-1, 2.

Mode	SW2-3	SW3-1	SW3-2
Stereo	ON	OFF	OFF
Mono	OFF	ON	ON

#### APM4 – CH7 & CH8 / MONO4

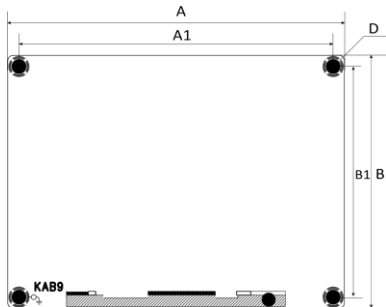
AMP4 is controlled by SW2-4 and SW4-3, 4.

Mode	SW2-2	SW3-3	SW3-4
Stereo	ON	OFF	OFF
Mono	OFF	ON	ON

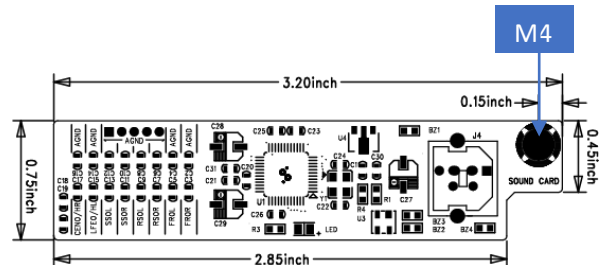
### LED Indicators:

There are four LED indicators on KAB9, corresponding to four AMPs. If the AMP is active, the LED would be ON.

## Mechanical Dimensions



A (inch/mm)	A1 (inch/mm)	B (inch/mm)	B1 (inch/mm)	D (inch/mm)
6.00/152.40	5.60/142.24	4.50/114.3	4.10/104.14	0.15/3.8



The height of the USB codec input module is 1.09inch / 27.6mm.



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