

High Sound Quality
MPPT Solar Charging
PBT Mode Configurable
Bluetooth Pairing Name Customizable

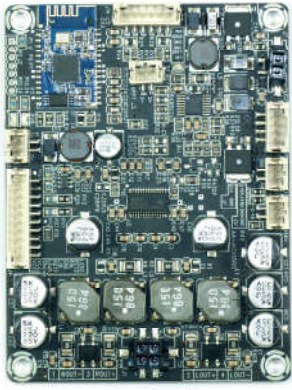


Bluetooth Audio Amplifier Board for Portable Bluetooth Speakers

For Wireless Speaker, Game Machine,
Portable Bluetooth Speaker, Jukebox,
Recreational Vehicle, Yacht,
Consumer Audio Applications, etc.

Preliminary

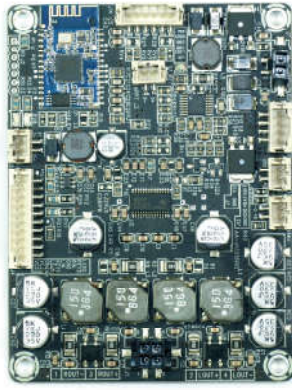
1 Overview



\$19.90

2 x 15 Watt Class D Audio Amplifier Board- JAB1 (AA-JA32151)

- 3.6 x 2.7 Inches PCB Size
- Bluetooth V2.1 +EDR, A2DP
- Power Management Circuit
- Disconnection from Lithium Battery
- Higher Output Power with Power Adapter
- PBTL Configurable
- LED Indicators Ports (Power, Battery Charging & Bluetooth)
- 3.5mm AUX Port
- Volume Control Port (Potentiometer)
- Power Switch Port



\$29.9/ \$34.9

2 x 30/50 Watt Class D Audio Amplifier Board - JAB2 (AA-JA32472/AA-JA32171)

- 3.6 x 2.7 Inches PCB Size
- Bluetooth V4.0 APT-X +EDR, A2DP
- Power Management Circuit
- Disconnection from Lithium Battery
- Higher Output Power with Power Adapter
- PBTL Configurable
- LED Indicators Ports (Power, Battery Charging & Bluetooth)
- 3.5mm AUX Port
- Volume Control Port (Potentiometer)
- Power Switch Port



\$2.99

Interface Extension Board (AA-JA11112)

- 2 x 1.6 inches PCB Size
- 2 USB Charging Ports
- 3.5mm AUX Jack
- Switch for ON/ OFF



\$7.99

Lithium Battery Charging Extension Board (AA-JAxxxxx)

- 3 Pieces 18650 Style Battery Holders
- Overvoltage Protection
- Undervoltage Protection
- Voltage Balance



\$1.99

L-type Aluminium Bracket

- 5.0" x 3.0" x 1.0" (L x W x H) Size
- Aluminium Alloy
- 4 M3.5 Screw Lock Standoffs
- 2 M3.5 Pre-drilled Mounting Holes

Note:

- 10 pin interface extension cable is attached with interface extension board package.
- 3 pieces 18650 Li-Ion batteries are not included in package due to strict air traffic control. Picture is for reference only.
- M3.5 screws are included with L-type aluminum bracket package. Sure Electronics could also provide different size of L-type aluminum brackets. Please contact info@sure-electronics.com for more detailed information.

Note:

Sure Electronics chooses Molex minifit and PH terminals for the JAB series amplifier boards for a easier installation. Customers could integrate this series boards into system just with several "clicks". Additional cost will be charged for cables and parts. For detailed cables information, please refer to Quick Installation and Installation chapters. For detailed accessories price, please refer to Price List chapter.

2 Quick Installation



During the practical Jukecase/ kiosk amplifier installation, high up to several tens of minutes will be spent on connection and debugging in last step of assembly and test. The reasons behind potential problems lies on many aspects of operation, such as power pins reverse polarity, the correct multi-channel orders, volume adjustment of each channel, signal channel disconnection caused by the poor contact and so on. In order to solve problems mentioned above and improve the effective connction and pass rate of test, we take the advantage of different forms of connctors for power connections, speaker connections, signal input connections and potentiometer connections. For example, 2CKTS Molex mini Fit JR vertical headers, 4CKTS/6CKTS JST PH SMT top entry type headers are populated in JAB for easy recognizations. Furthermore, we also provide the matched extension cables for different connectors, which are easily made distinguished from each other by different cable colors. We spare no effects in improving the connection and measurement efficiency and saving the cost on installations and debugging.

Power Cable	Overview	
A-1 MOLEX 43645-0200 Multi-view		
A-2 AWG22 Red & Black Cable	 1. AWG22, Temperature resistance: 80°C, Voltage rating: 300V, Length: 500mm.	
	A-1	A-2
	Unit : mm	

Speaker Cable	Overview	
A-1 MOLEX 43025-0400		
A-1 MOLEX 43025-0400 Multi-view	 1. AWG22, Temperature resistance: 80°C, Voltage rating: 300V, Length: 500mm.	
A-2 AWG22 Red & Black Cable	A-1	A-2
	Unit : mm	

Battery Charging Cable	Overview	
A-1 JST PHR-4-BK		
A-1 JST PHR-4-BK Multi-view	 1. AWG24, Temperature resistance: 80°C, Voltage rating: 300V, Length: 500mm.	
A-2 AWG24 Red & Black Cable	A-1	A-2
	Unit : mm	

Switch Cable	Overview	
A-1 JST PHR-2-BK		
A-1 JST PHR-2-BK Multi-view	 1. AWG24, Temperature resistance: 80°C, Voltage rating: 300V, Length: 500mm.	
A-2 AWG24 Black Cable	A-1	A-2
	Unit : mm	

AUX Line-in Cable	Overview	
A-1 JST PHR-5-BK		
A-1 JST PHR-5-BK Multi-view	 1. AWG24, Temperature resistance: 80°C, Voltage rating: 300V, Length: 500mm.	
A-2 AWG24 Black Cable	A-1	A-2
A-3 HONGBO PJ-341*M-4P	A-1	A-3
	Unit : mm	

Volume Control Cable	Overview	
A-1 JST PHR-6-BK		
A-1 JST PHR-6-BK Multi-view	 1. AWG24, Temperature resistance: 80°C, Voltage rating: 300V, Length: 500mm.	
A-2 AWG24 Black Cable	A-1	A-2
	Unit : mm	

LED Indicator Cable	Overview	
A-1 JST PHR-2-BK		
A-1 JST PHR-2-BK Multi-view	 LED Light Color: Red, Blue, Green	
A-2 AWG24 Black Cable	A-1	A-2
A-3 LED Lamp-socket	A-1	A-3
	Unit : mm	

Interface Extension Cable	Overview	
A-1 JST PHR-10-BK		
A-1 JST PHR-10-BK Multi-view	 PIN 10, PIN 9, PIN 8, PIN 7, PIN 6, PIN 5, PIN 4, PIN 3, PIN 2, PIN 1	
A-2 AWG24 Black Cable	A-1	A-2
	A-1	A-1
	Unit : mm	

● Basic Cables Package (Included): Power Cable x 1, Speaker Cable x 1

● Interface extension cable is attached with interface extension board package.

● ● Functional Cables Package (Optional): Power Cable x 1, Speaker Cable x 1, Battery Charging Cable x 1, Switch Cable x 1, Aux Line-in Cable x 1, Volume Control Cable x 1, LED Indicator Cables: Red x 1, Blue x 1, Green x 1

3 Applications



Soundbox



Jukebox



Desktop Audio



Jukecase



Coffee Machine



Vending Machine



Game Machine



Solar Amplifier



ATM



Ticket Checker



Guide Machine



Recreational Vehicle



Yacht



Motrocycle



Home Furnishing



Toy

4 Build for Your Applications

For any customization requirements, 500 pieces MOQ and engineering cost will be applied. For the add-on features, or you have some functions that you don't need from the standard one, price will be increased or decreased according to the quote table.

Customizable design contains:

- Bluetooth Pairing Name
- PBT Mode Configuration
- Output Power Configuration
- Number of Output Channel
- Audio Performance Optimization
- Integration with Audio DSP
- Cable Interfaces
- Safety Certification
- Special Package
- Manufacturing

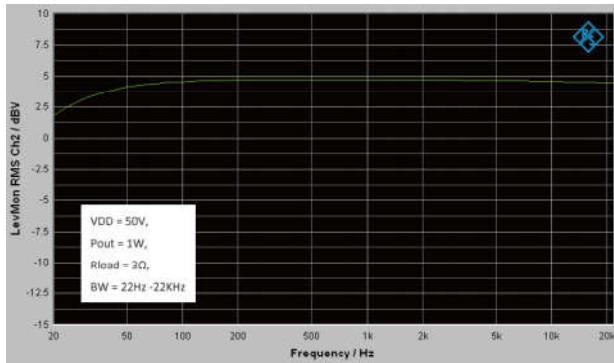
Of course, we will also provide full technical support in order to help you get the most from our products, and a sample policy in order to give you the opportunity to evaluate our fully functional products at a reduced price.

5 Benefits

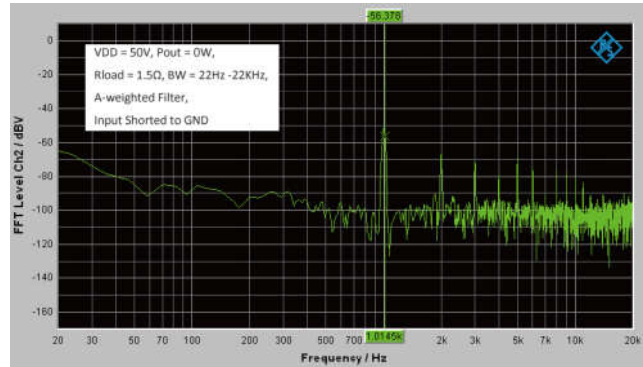
High Sound Quality

For sure we don't just offer low power consumption, Sure Electronics provides very high sound quality at the same time. Everything is nothing without a high sound quality. We can get less than $\pm 3\text{dB}$ frequency response at the AUX channel and which is same at the Bluetooth channel if APT-X is enabled. For most Sure Electronics audio amplifiers, we can get about 90dB or more SNR and 0.01% distortion when output 1Watt.

Frequency Response



Noise Floor



BQB, APT-X, CE and FCC Ready

This product series is a demonstration version for Bluetooth audio applications. Work together with Sure Electronics experienced engineers, all those products could pass Bluetooth SIG, CSR APT-X certification easily, what customer should do is to pay for the royalty cost to Bluetooth SIG or CSR. And they are also CE and FCC ready, there is no difficulty making the final product to get CE and FCC certifications, --- in EMI part.



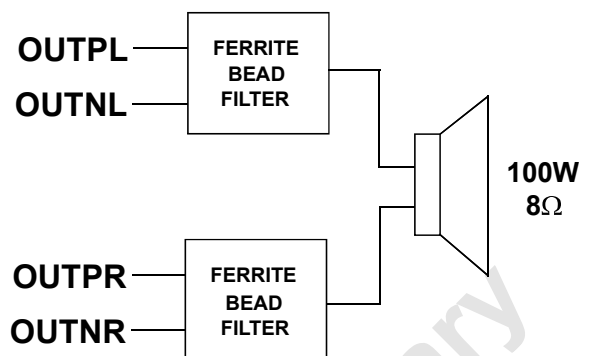
Bluetooth Pairing Name Configurable

For order quantity less than 100pcs, this service will cost \$0.99 each pcs, no MOQ. If the subtotal of an order is more than \$1000, or quantity is more than 100pcs, this service will be free. Customers could use any Bluetooth Pairing Name, and must send the Paring Name in email to info@sure-electronics.com for confirmation before placing the order. Be very careful about special character and space. Serial Number for each module is accepted.

PBTL (Mono) Mode Configurable

The JAB series amplifier boards offer the feature of parallel BTL operation with two outputs of each channel connected directly. To operate in this PBTL (mono) mode, apply the input signal to the RIGHT input and place the speaker between the LEFT and RIGHT outputs. Connect the positive and negative output together for best efficiency.

For PBTL mode configuration, 100 pieces MOQ will be requested. Customers must send an requirement email to info@sure-electronics.com for confirmation before placing the order.



Adaptive Power Supply Module for RV/Yacht Application

If your projects are powered by the battery system of the RV or Yacht, we provide the adaptive power supply which always output DC 24V when the input voltage is no less than 10V and no more than 40V. And the power supply module is capable of delivering 100W continuously and 200W with the efficiency high up to 85%, which is suitable for audio power amplifier application.

Multiple PowerPath

It will provide an MPPT charge function and also works well with typical power adapters. If your application will not need Lithium or Lead-Acid batteries operation mode, the MPPT charge controller could be removed to save your cost. But you can still evaluate this board with the built in MPPT controller, cause nothing is different if you don't need this option.

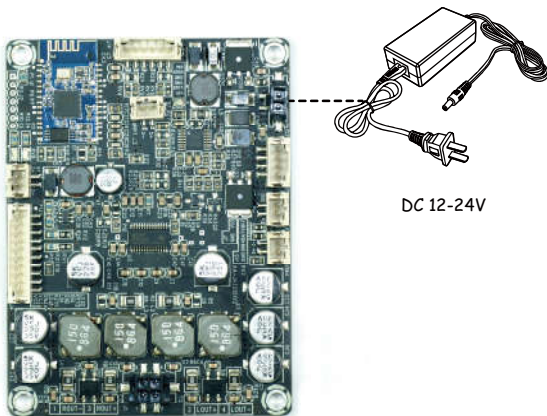
Input voltage should be 15-19V to make the battery fully charged. 3 Lithium Ion batteries in series will be more than 12.6V when fully charged, and Lead Acid batteries is more than 12.8V when fully charged, so if customer need batteries in their application, they must select adapters more than 15V and less than 24V, and maximum power output will be more than 30Watts.

Customers could also use solar panels for their applications, just remember to use solar batteries with float (open) voltage with 16.5-21.5V, and use 20-100Watt panels for this application. In fact, every power source can provide more than 15V and 0.15A will work with this board, the board will adjust the charge current automatically.

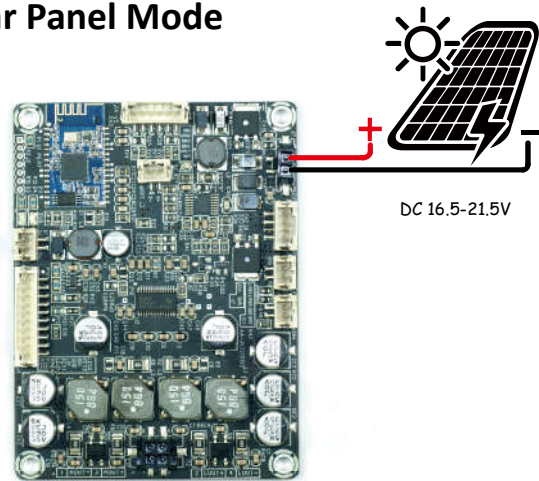
Sure Electronics boost converter boards which are especially designed for car audio could be used with JAB series amplifier boards. Please feel free to contact with info@sure-electronics.com for more detailed information.

8 AA (Alkaline) Batteries in series will be 12V to power the amplifier. Please notice that AA batteries couldn't be connected with charging port unless MPPT module removed.

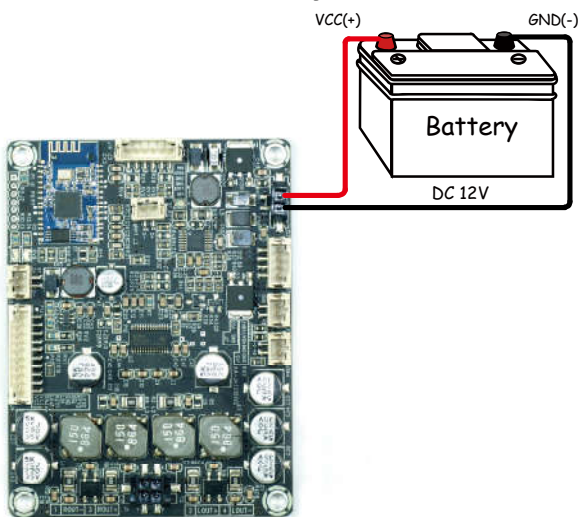
Adapter Mode



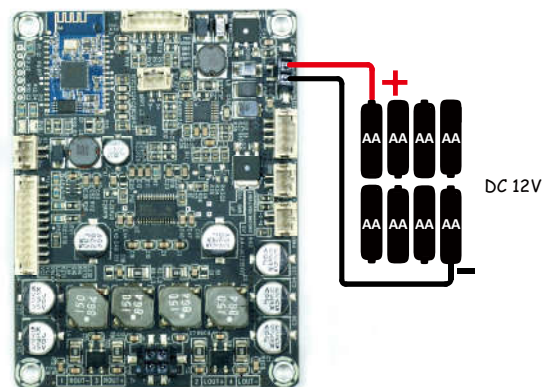
Solar Panel Mode



Lead Acid Car Battery Mode

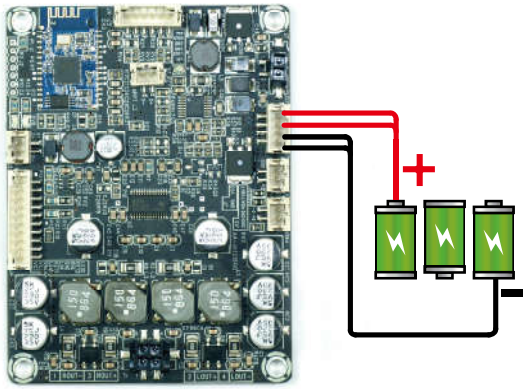


Alkaline Batteries Mode

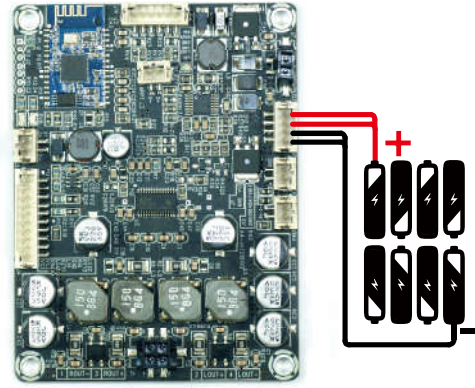


Multiple Chemical Components of Rechargeable Batteries

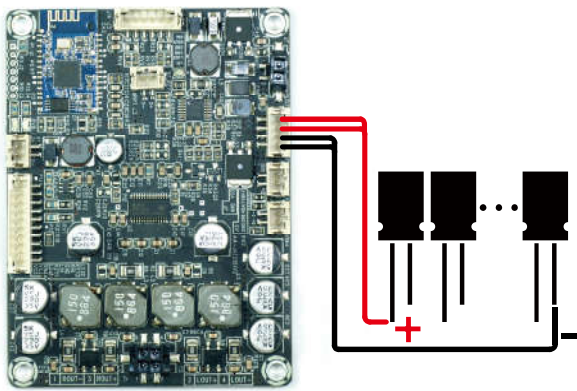
Lithium-ion batteries Mode



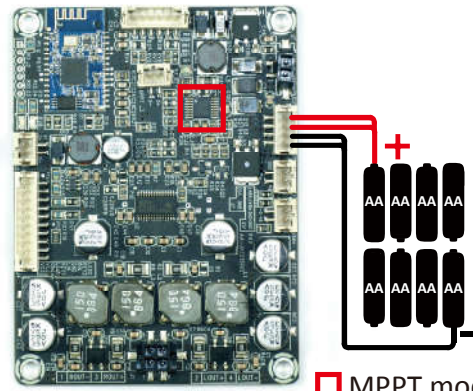
NI-MH batteries Mode



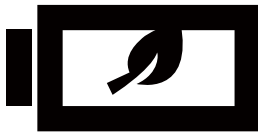
Super Farad Capacitors Mode



AA (Alkaline) Batteries Mode (Non-rechargeable)



MPPT module needs to be removed.



Low Power Consumption



24 hours Playback

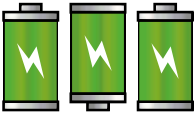



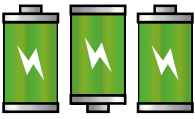
Extreme Low Standby Power

JAB series products could offer playback time up to 24 hours continuously, which was tested while Bluetooth is connected, and playing black Jazz style songs are playing back continuously. The maximum output voltage on the speaker is 4V RMS and the duty is no less than 5%. Speaker impedance is about 8ohm.

Sure Electronics also offers a solution with the continuous playback time up to 60 hours, which is more than 2 days with only 2 hours quick charge. This version can only provide a 7.5Watts maximum output at 4ohm loads, but that is already enough for most applications.

The standby time was calculated with Bluetooth always enabled, which means the Bluetooth could always be searched, the 7 days long standby time is not achieved by stopping the Bluetooth module. So comparing with competitive products, we can afford about 4 times more standby time, and this is because of using very high efficiency DC/DC converter and using low power consumption micro controller as the PMU (Power Management Unit).

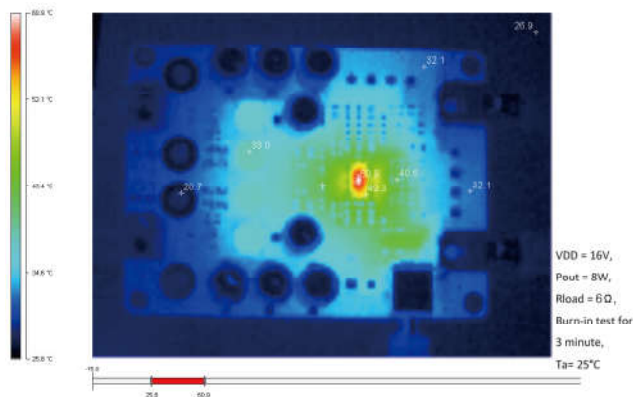
The standard samples you can order from this sheet is not the best performance ones we can provide. Sure Electronics can now proudly announce that we have solutions with more than 60 hours continuous playback time, and more than 10 days standby time. And it can provide extremely low distortion at the same time. Contact us right now for more details.

<p>* </p> <p>3 Lithium Ion batteries in series</p>	<p>Output Power: Speaker Impedance: Frequency Response: Batteries Capacity/ Voltage: Batteries Charging Time: Batteries life: Operating Temperature:</p>	<p></p> <p>4 Lithium Ion batteries in series</p>	<p>Output Power: Speaker Impedance: Frequency Response: Batteries Capacity/ Voltage: Batteries Charging Time: Batteries life: Operating Temperature:</p>
<p>* </p> <p>8 NI-MH batteries in series</p>	<p>Output Power: Speaker Impedance: Frequency Response: Batteries Capacity/ Voltage: Batteries Charging Time: Batteries life: Operating Temperature:</p>	<p></p> <p>8 AA batteries in series</p>	<p>Output Power: Speaker Impedance: Frequency Response: Batteries Capacity/ Voltage: Batteries Charging Time: Batteries life: Operating Temperature:</p>
<p>* </p> <p>Super Farad Capacitors</p>	<p>Output Power: Speaker Impedance: Frequency Response: Batteries Capacity/ Voltage: Batteries Charging Time: Batteries life: Operating Temperature:</p>		<p>Output Power: Speaker Impedance: Frequency Response: Batteries Capacity/ Voltage: Batteries Charging Time: Batteries life: Operating Temperature:</p>

* Data is from test based on 2 x 50 Watt 8 Ohm Class D Audio Amplifier Board BT4.0 (AA-JA32171)
Battery capacity, voltage, current and charging time, etc. may be affected by many uncertain factors. Measured data above are for reference only. Sure Electronics does not take any responsibilities for any inaccurate batteries time.
Sure Electronics could provide super farad capacitor board for your applications, please feel free to contact with info@sure-electronics.com for more detailed information.

Fully Protection, Robust Performance

The amplifier board series employs the TPA3116/8 and TPA3110 form TI as the main chip. Both of them are equipped with overcurrent and overtemperture protection, which is able to avoid permanent stressed caused by unproper operation.
Besides of built-in chip protection, ESD and spike protection components used throughout input and output of the amplifier board ensure its robustness and reliability. And all the available input and output pins are present as molex headers which facilitates mating and prevents accidental mis-mating during assembly.



High Performance Cost Ratio

More and more Jukecase and kiosk come to our daily life in different applications. Wherever in retail, vending&rental, health care or ticketing& check-in, gaming, security, etc., audio amplifier plays an important part in audio reinforcement of the system. Sure Electronics provide 3 audio amplifier boards according to different applications for easy integrations. These amplifier boards incorporate class D ICs, which features stable running for hours reliably, sufficient rating power, high sound quality, high efficiency and convenient connection. As for JAB series, 3.5mm AUX analog and Bluetooth input channels are configured flexibly, the volume is adjusted by the external potentiometers, 3 output power level versions are provided as 2 x 15W, 2 x 30W and 2 x 50W, which are listed at the price of \$19.9, \$29.9 and \$34.9. Various accessories including interface extension board, battery charging extension board, functional cables package and L-type alimuminium bracket provide more functional features and a convenient installation method. For more detail price information, please refer to Price List chapter. We will provide the Jukecase audio amplifier boards at the competitive price with the approach of no compromise for components quality, optimizing testing process, improving manufacturing and reducing total cost.

Extension Boards Optional

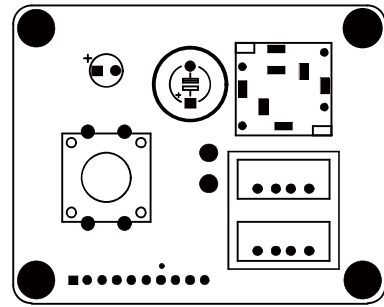
Sure Electronics has released one extension board to provide a simple panel amount solution in customer's applications. The extension board only cost \$4.99. Interfaces on board including a 3.5mm AUX jack, 2CKTS USB ports for charging, a switch button and a LED power indicator.

With the headers or a 10 pin cable, the interface extension board will be integrated to the amplifier board quickly.

The Sure Electronics lithium battery charging extension board provides 3 pieces 18650 battery holders. Customers could use solar panels for their applications, just remember to use solar batteries with float (open) voltage with 16.5-21.5V, and use 20-100Watt panels for this application. 3 Lithium Ion batteries in series will be more than 12.6V when fully charged.

The lithium battery charging extension board integrated with overvoltage and undervoltage protection circuits. It could balance different voltage between batteries.

The battery charging extension board is specially designed for 3 pieces 18650 batteries in series, for any customized requirement, MOQ 500 pieces is requested. Please feel free to contact with info@sure-electronics.com for more detailed information.



L-type Aluminium Bracket Optional

It is quite difficult to assemble the audio amplifier board into a closed space like most Kiosks and Jukecase applications. For improving the connection and measurement efficiency and saving the cost on installations, Sure Electronics provides a L-type aluminium bracket for JAB series. The aluminium bracket supports vertical and horizontal installation ways to satisfy different installation requirements. With 4 M3.5 screw lock standoffs and 2 M3.5 pre-drilled mounting holes, the audio amplifier board could be installed on the bracket easily.



5 Years Product Life

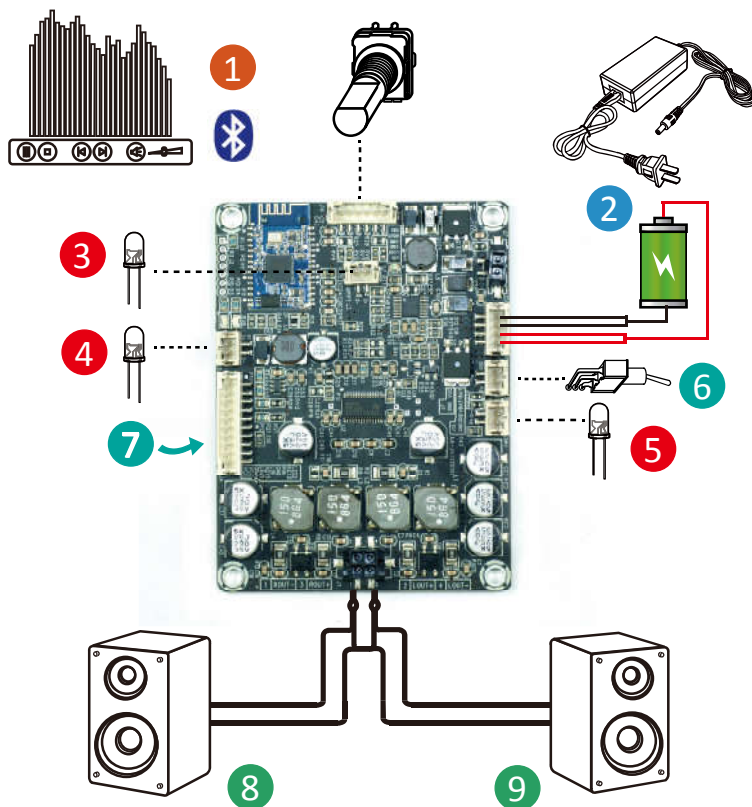
Sure Electronics ensure that no product will be stopped within 5 years. Bluetooth products is something that always get a short production life, but Sure Electronics always sign long term contract with its suppliers and guarantee a 5 years product life, even if we really get some problem in this, we will provide fully pin to pin, screw to screw compatible solution to our customers.

Zero Stock for Customers

To meet our customers requirement in Just - In - Time manufacturing, Zero Stock policy, Sure Electronics always provide enough stock, for most audio products, Sure Electronics always keep more than 1000pcs stock, and for best sellers, we keep more than 3000pcs, that means Sure Electronics keep about 100k pcs circuit boards as stock at any time, that is true, in our Nanjing Stock, we have more than 80 CBM of finished products, and more than 100 CBM for half finished products, they are turning in very fast cycles. We can ship more than 98% requirements of our standard products - that is amazing, right?

6 Installation

JAB1



Input

- ① Bluetooth 2.1 Module

Power Supply

- ② 19V adapter for 2 x 15W Audio Amplifier Board

12.8V lithium battery for 2 x 15W Audio Amplifier Board, lithium battery charged from 19V adapter

Note: Sure Electronics is an authorised power supply agency of MeanWell and HuntKey. If you have other power supply solutions, please feel free to contact us.

LED Indicators

- ③ Battery Charging Indicator
- ④ Bluetooth Indicator
- ⑤ Power Indicator

Control

- ⑥ Switch
- ⑦ Interface Extension Board

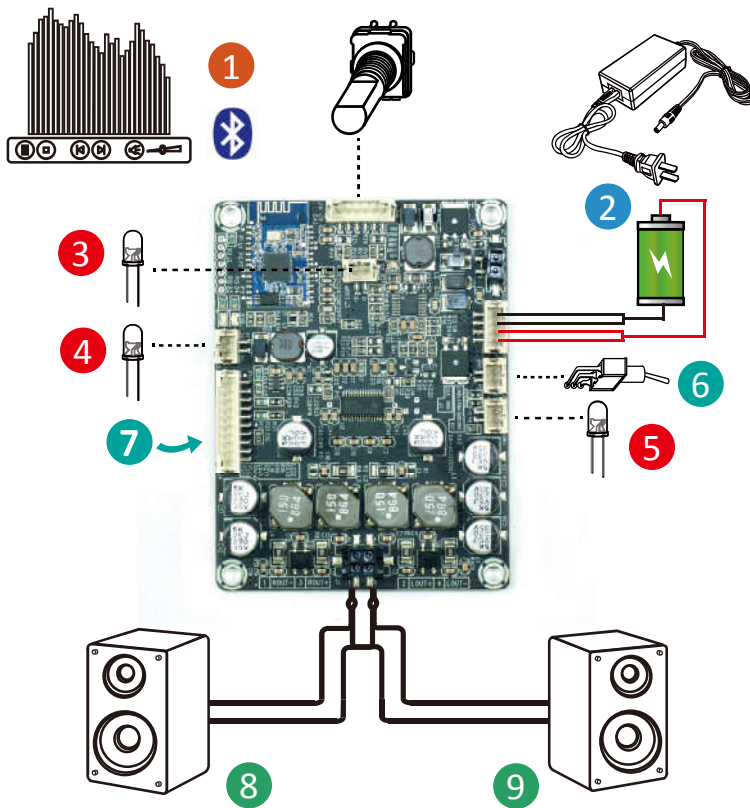
Output

- ⑧ Left Channel (PBTL: Speaker +)
- ⑨ Right Channel (PBTL: Speaker -)

Specification

Parameters	Conditions	Min	Typ	Max
Power Supply Range(VDC)	/	12	19	24
Idle power(W)	SD GND,BT Disconnection	/	0.06	0.07
	BT Connection	/	0.58	0.64
Standby Power(mW)	SD GND,only when low power module available	/	1	10
Battery Undervoltage Protection(VDC)	/	/	10.4	10.5
Constant Charging Voltage(V)	/	12.5	12.6	12.7
Charge Current(A)	/	/	0.5	1
BT Wireless Range(m)	Class 2	/	/	10
BT Version	/	2.1		
Supported Bluetooth Profiles	/	A2DP,AVRCP		
Gain(dB)	/	25	26	27
Output Power(W)	19V @ 8Ω	/	2x15	/

JAB2



Input

- 1 Bluetooth 4.0 Module

Power Supply

- 2 19V adapter for 2 x 30/ 50W Audio Amplifier Board

12.8V lithium battery for 2 x 30/ 50W Audio Amplifier Board, lithium battery charged from 19V adapter

Note: Sure Electronics is an authorised power supply agency of MeanWell and HuntKey. If you have other power supply solutions, please feel free to contact us.

LED Indicators

- 3 Battery Charging Indicator
- 4 Bluetooth Indicator
- 5 Power Indicator

Control

- 6 Switch
- 7 Interface Extension Board

Output

- 8 Left Channel (PBT: Speaker +)
- 9 Right Channel (PBT: Speaker -)

Specification

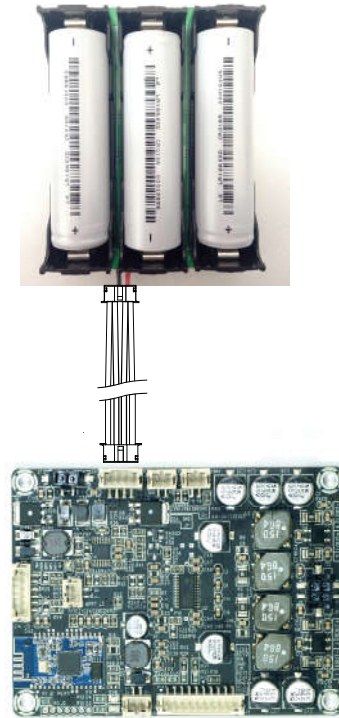
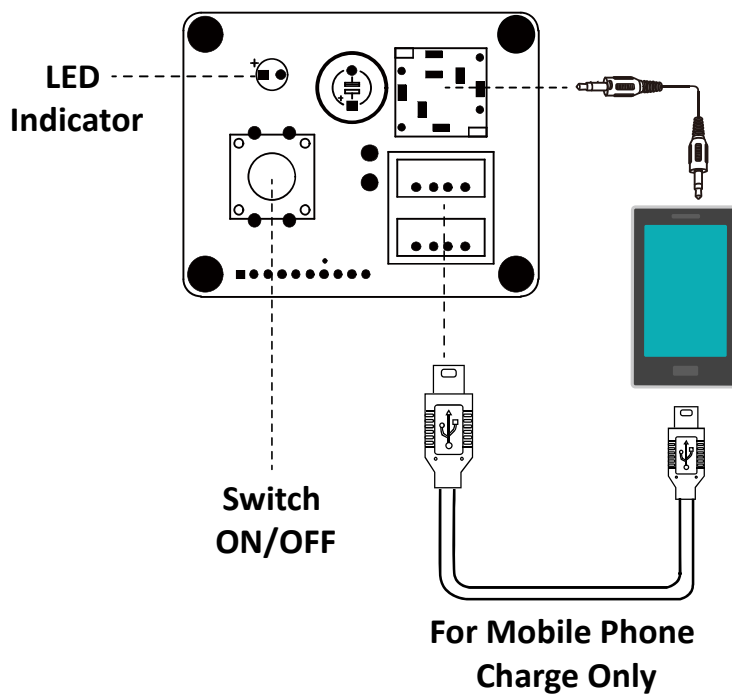
2 X 30 Watt Class D Audio Amplifier Board - TPA3118

Parameters	Conditions	Min	Typ	Max
Power Supply Range(VDC)	/	12	19	24
Idle power(W)	SD GND,BT Disconnection	/	0.06	0.1
	BT Connection	/	0.35	0.45
Standby Power(mW)	SD GND,only when low power module available	/	0.4	1
Battery Undervoltage Protection(VDC)	/	/	10.4	10.5
Constant Charging Voltage(V)	/	12.5	12.6	12.7
Charge Current(A)	/	/	0.5	1
BT Wireless Range(m)	Class 2	/	/	10
BT Version	/	4.0		
Supported Bluetooth Profiles	/	A2DP,AVRCP		
Gain(dB)	/	19	20	21
Output Power(W)	19V @ 8Ω	/	2x30	/

2 X 50 Watt Class D Audio Amplifier Board - TPA3116

Parameters	Conditions	Min	Typ	Max
Idle Power(W)	SD GND, BT Disconnection	/	0.06	0.1
	BT Connection	/	0.4	0.5
Standby Power(mW)	SD GND, only when low power module available	/	0.5	1
Gain(dB)	/	19	20	21
Output Power(W)	21V @ 4 Ω	/	2x50	/

7 Extension Board



8 Price List

Basic Products			
Package List	P/N	Item	Listed Price
JAB1	AA-JA32151	2 x 15 Watt 4 Ohm Class D Audio Amplifier Board BT2.1	\$19.90
JAB2-3	AA-JA32472	2 x 30 Watt 4 Ohm Class D Audio Amplifier Board BT4.0	\$29.90
JAB2-5	AA-JA32171	2 x 50 Watt 8 Ohm Class D Audio Amplifier Board BT4.0	\$34.90
Optional Accessories			
Accessories	AA-JA11114	Functional Cables Package	\$4.99
	AA-JA11112	Interface Extension Board	\$2.99
	AA-JA11113	Lithium Battery Charging Extension Board	\$7.99
	AA-JA11115	L-type Aluminium Bracket	\$1.99
Power Adapter	PS-SP11504	HuntKey HKA03619021-8C 19V 2.1A 40W AC/DC Power Adapter	\$16.90
	PS-SP11505	HuntKey HKA06519034-6J 19V 3.42A 65W AC/DC Power Adapter	\$22.90
	PS-SP11506	HuntKey HKA09019047-6D 19V 4.74A 90W AC/DC Power Adapter	\$39.90

Note:

Basic cables package including one piece 4 pin Molex minifit speaker cable and one piece 2 pin Molex minifit power cable. All cables listed above are 50cm. Additional \$0.29 will be charged for each 50cm length.

9 Contact Us

Have Fun With Us!



Sure Electronics Co., Ltd.

SUPERIOR DESIGN UNIFIED FORM REAL STRENGTH ENDURING QUALITY



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