USER MANUAL

PA2B

Mini Digital Amplifier, with EQ/Mixer

Index:

1. General Instruction

PA2B is a small digital amplifier (Class-D), with EQ control and MIC mixer function. It is compact-size but powerful functions, including the bridge connection, dual-mono, EQ control, microphone mixer etc.

It has a good application in different places, including classroom, small meeting room, lecture hall, bar, pub etc.

2. Product Picture

Front Panel

Rear Panel

Top Panel

3. Features

- 2x20Watt@4Ohm as the default amplifier output.
- Bridge connection function. The user can switch the PA2 to be 1x40Watt@8Ohm by bridge connection.
- Dual-mono function. The user can sum up the stereo audio to two times mono audio.
- Microphone mixer function. The microphone will be mixed to the line audio output, and separately controllable.
- MIC input supports 48V phantom power, condenser microphone available.
- MIC port with balance switching, can support balance/unbalance signal, suppress the external noise effectively.
- Ducking power technology. It keeps detecting the audio and MIC input, and reducing the power consumption when there is no input coming.
- Ultra low inrush current, no need for power sequencing. This allows multiple PA2B to be powered on simultaneously without overloading power circuits.
- Convection cooled, fan is not needed.
- Two stereo audio inputs, switchable by button, remote or RS232.
- Fast switching speed. It is the high speed for the good performance.
- Volume/Bass/Treble controllable by buttons or RS232
- Line audio output, with volume controllable.
- Optional control by IR remote.
- Extensibility: It can be controlled by PTN panel (WP8 & WP19), optional function.
- Antistatic case design: providing good protection for long-term and stable performance
- LED indicator, for power and working status.

4. Specification

Audio Input		**Audio Output**	
Input	2 stereo audio, 1 MIC	Output	1 amplifier, 1 stereo audio
Input Connector	2 RCA 1 3.5mm jack 1 captive screw connector,	Output Connector	1 captive screw connector 1 3.5mm jack
Input Impedance	>10KΩ	Output Impedance	50Ω/stereo, 4~8Ω/Amplifier
Audio General			
Frequency Response	20Hz ~ 20KHz	CMRR	>70dB@20Hz~20KHz
SNR	80dB at maximum output	Bandwidth	20Hz ~ 25KHz
Stereo Channel Separation	>75dB@20Hz to 20KHz	THD + Noise	1%@1KHz, 0.3%@20KHz at nominal level
Voltage Gain	32dB	Power Output	2x20 Watts (4 Ohms)
Control Parts			
Serial Control Port	RS-232, 9-pin female D connector	Pin Configurations	2 = TX, 3 = RX, 5 = GND
IR Remote	Optional IR remote		
Options	TCP/IP control by PTNET(PTN's programmable interface)		

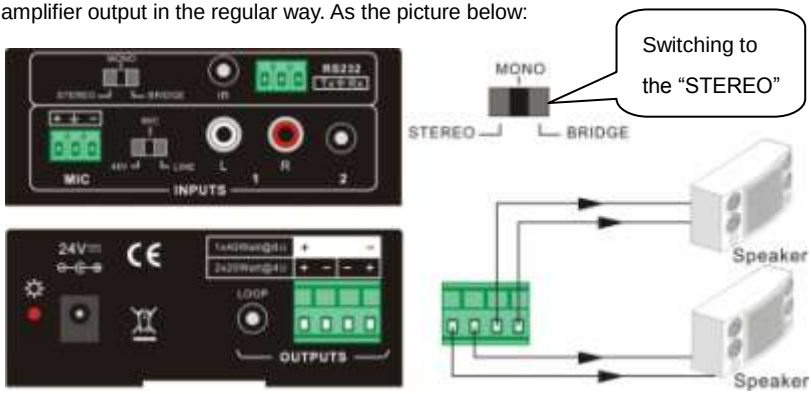
NOTE: All nominal levels are at ±10%.

5. Audio Connection

5.1 Audio Output

5.1.1 Default output: 2x20Watt@4Ohm

The default output of amplifier is 2x20Watt@4Ohm. So, the user can connect the amplifier output in the regular way. As the picture below:

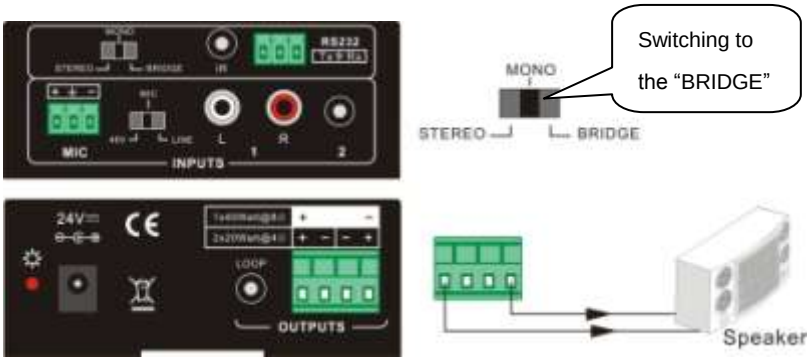


Connecting the four pins, like this

5.1.2 Bridge connection: 1x40Watt@8Ohm

The PA2B has the bridge connection, to double the output power at 1x40Watt@8Ohm. It will sum up the input left channel and input right channel to be mono output, and the power is up to 40Watt.

The bridge connection is:

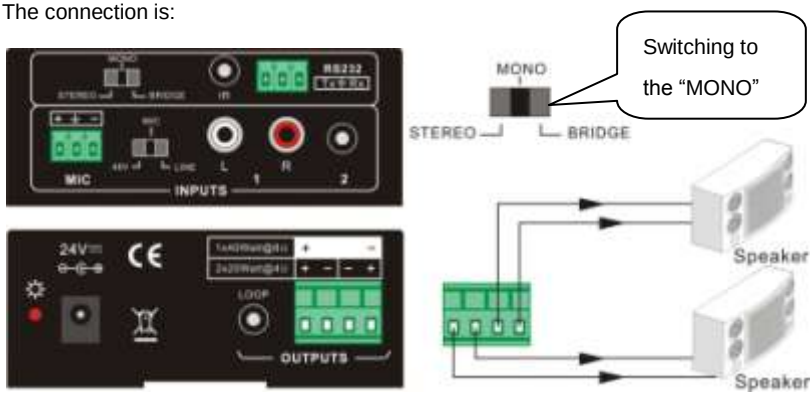


Connecting the two pins, like this

5.1.3 Dual-mono output:

The PA2B also has the function of double-mono output. It can sum up the left and right channel, to be the mono audio output. In this way, the both of the outputs are showing the same mono audio.

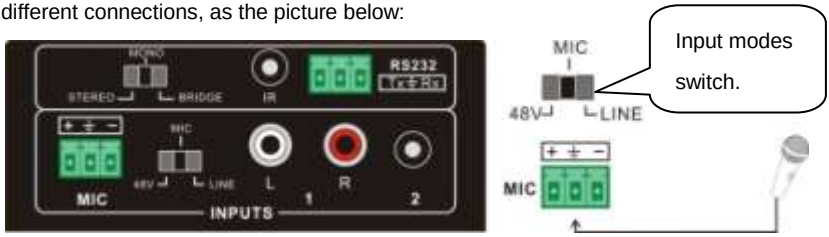
The connection is:



Connecting the four pins, like this

5.1 Microphone input

The microphone input of PA2B has three different modes, and different modes use different connections, as the picture below:



5.2.1 48V phantom power input

When the switch turns to “48V”, the microphone input will provide a 48V phantom power. This is usually used for power supply for condenser microphone.

The connection is: “+” connects to anode, “-” connects to cathode and “⏚” to ground.

NOTICE: In this mode, only condenser microphone can be connected with.

5.2.2 MIC input

When the switch turns to “MIC”, the microphone input is used for connecting with dynamic microphone. There are two different connections:

1) Unbalanced connection:
   a) "-" connects to signal, "+" and "⏚" connect to ground.
   b) "+" connects to signal, "-" and "⏚" connect to ground.
2) Balanced connection: "+" connects to anode, "-" connects to cathode and "⏚" connects to ground.

5.2.3 LINE input

When the switch turns to "LINE", the microphone input is used for connecting with normal audio or wireless microphone output. There are two different connections:

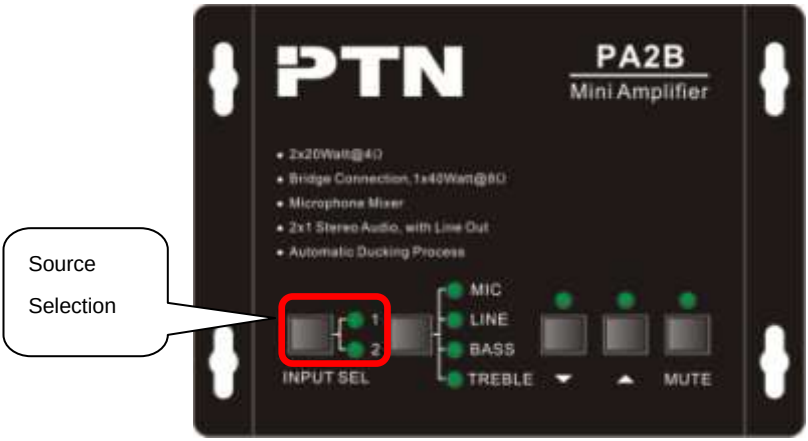
1) Unbalanced connection:
   a) "-" connects to signal, "+" and "⏚" connect to ground.
   b) "+" connects to signal, "-" and "⏚" connect to ground.
2) Balanced connection: "+" connects to anode, "-" connects to cathode and "⏚" connects to ground.

6. Buttons Controlling

The buttons provides the control of volume/EQ control and switching.

6.1 Audio switching

There are two switchable stereo audio inputs, one 2xRCA input, and one 3.5mm jack input, switchable through the buttons as below:



6.2 Volume/EQ controlling

The line volume and Microphone volume can be controlled by the buttons.

The MIC Volume/LINE volume/LINE bass/LINE treble will be selected by the buttons, and controlled up/down/mute by the function buttons. Please check the picture below:

For example, to turn up the line volume, you should select the “LINE” first, and then press the button “▲”.

7. RS232 Communication Protocol:

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

Command	Function Description	Feedback Code
1A1.	Switching the audio to input 1	A: 1 -> 1
2A1.	Switching the audio to input 2	A: 2 -> 1
0A0.	Mute Audio of MIC and Line out	Mute Audio
1A0.	Mute audio of MIC	Mute MIC
2A0.	Mute audio of line out	Mute LIN
0A1.	UnMute Audio	UnMute Audio
600%	Checking the working status	A: 1 -> 1 Volume: 30 Bass: 00 Treble: 00
601%	MIC volume up	Volume of MIC: 51
602%	MIC volume down	Volume of MIC: 51
603%	Line volume up	Volume of LINE: 51
604%	Line volume down	Volume of LINE: 51
605%	Bass level up	Bass of LINE：04
606%	Bass level down	Bass of LINE：04
607%	Treble level up	Treble of LINE: 04
608%	Treble level down	Treble of LINE: 04
609%	Initialization, back to the default setting	A: 1 -> 1 Volume: 50 Bass: 04 Treble: 04

Command	Function Description	Feedback Code
5[x][x]%	Preset MIC volume, [xx] arranges from [00] to [60]. 61 degrees in total.	Volume of MIC: 50
7[x][x]%	Preset line volume, [xx] arranges from [00] to [60]. 61 degrees in total.	Volume of LINE: 50
8[x][x]%	Preset the bass level, [xx] arranges from [00] to [08]. 9 degrees in total.	Bass of LINE: 04
9[x][x]%	Preset the treble level, [xx] arranges from [00] to [08]. 9 degrees in total.	Treble of LINE: 04

Notice:

1: The letter inside bracket [ ] is the variable code, which is the changeable.

2: The bracket [ ] is not included to the RS232 commands.

3: Any dot "." after the letters is part of the commands.

Example 1

Switching the input 2 to the line out. We should send the RS232 command: [2A1.]

Example 2

Turning up the volume of line audio. We should send the RS232 command: [603%]

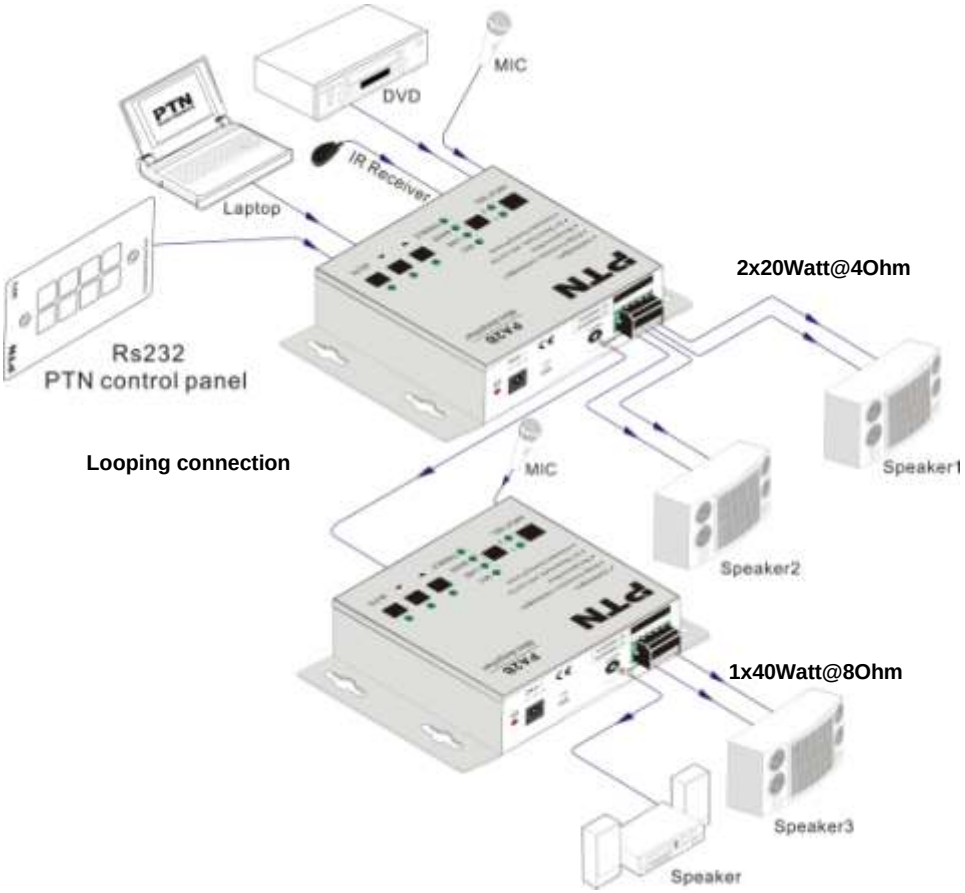
Example 3

Preset the MIC volume to be "21" degree. We should send the RS232 command: [521%]

Example 4

Checking the working status of PA2. We should send the RS232 command: [600%]

8. System Diagram



9. Panel Drawing

Unit: mm