# Multi-function digital amplifier kit with features of microphone broadcasting and audio via Bluetooth® receiver

## INTRODUCTION

60W RMS left and right channel digital amplifier extra supporting microphone broadcasting is ideal for being used in classroom, conference or SOHO room.
The devices is designed to enhance sound reinforcement through audio input connectors either wired or wireless- Bluetooth®. Additionally, supporting access control over IR extension through the provided IR receiver using the customized remote control is also an additional feature.

## PARTS LIST

**VAB-1231**
Amplifier with BT receiver module



**IRS-3060**
IR RECEIVER

| | |
|---|---|
| **PWS-24**<br>24V switching power,2.5A as recommended<br>  | **RMC-110**<br>Customized amplifier remote control<br>  |

## SPECIFICATIONS AND FEATURES:

**INPUTS:**

1 x stereo audio input via 2xRCAs in parallel connection with wireless BT-input

1 x stereo audio input via 3.5mm jack

1 x microphone input via 6.3mm jack

**OUTPUTS:**

1 x loop via 3.5mm jack with unit link up to 3units or external amplifier

1 x 4-P screw connector for speakers out

**2 SELECTABLE SPEAKERS OUTPUT:**

- STEREO
- MONO

# *Specification*

| **Audio General** | | | |
|---|---|---|---|
| Frequency Response | **25Hz ~ 30kHz**<br>**20Hz ~ 22kHz(Bluetooth) under aptX protocol** | Input Sensitivity | *1.5V* |
| Volume Control Range | *❸65dB* | SNR | *>90dB(A-weighted)* |
| Bass Control Range | *☛12dB* | Treble Control Range | *☛12dB* |
| Power Output | *2❹ 30W(RMS) @ 8Ω(*Stereo) | Stereo Channel Separation | *< ❸55dB* |
| THD | *<1% @ 1kHz（2W）*<br>*<10% @ 1kHz (max power)* | | |
| **Audio Input** | | **Audio Output** | |
| Input | *2 Stereo audio*<br>*1 MIC* | Output | *1 Amplifier(Speaker)*<br>*1 Stereo audio(Loop)* |
| Input Connector | *RCA❹ 2*<br>*3.5mm jack ❹ 1*<br>*6.5mm jack ❹ 1* | Output Connector | *4-P screw connector ❹ 1*<br>*3.5mm jack ❹ 1* |
| Input Impedance | *>20kΩ(Stereo audio)*<br>*600Ω(MIC)* | Speaker Output Impedance | *8Ω* |
| | | Loop Output Impedance | *>20kΩ* |
| **Bluetooth Receiver Module (VAB-1231 only)** | | | |
| Version | *2.1❷EDR(3M/bps)* | Profile Support | **A2DP profile** |
| Reception Range | *Up to 30ft (depending on environmental conditions.)* | | |
| **Control Parts** | | | |
| IR Remote | **RMC-110** | IR Receiver | **IRS-3060 (38kHz)** |
| RS-232 Pin Configurations | *2=TX, 3=RX, 5=GND* | | |
| **General** | | | |
| Power Supply | **DC 24V, 2.5A** | Product Weight | *397g ~ VAB-1231* |
| Case Dimension | *140mm(L) x 105mm(W) x 45mm(H) ~ VAB-1231(BT module included)* | | |

**CONTROL INTERFACES:**

Source selection with 3 different inputs available as stated below, control up& down of treble, bass & volume all can be reached over any one of the interfaces, including front keypads, IR remote (through the optional accessories of remote control RMC-110/& IR receiver IRS-3060) or RS-232.

**Source selection over remote control RMC-110:**

˙Input 1: Stereo RCA (default source)

˙Input 2: Stereo 3.5mm

˙MIC

**Sound levels and tone settings over remote control RMC-110:**

˙The overall volume level (0 lowest ~ 20 highest), factory preset value at 5

˙Bass (L.1 lowest ~ L.9 highest), factory preset value at 5

˙Treble (H.1 lowest ~ H.9 highest), factory preset value at 5

˙Mute : No signal output.

Note: The unit has memory function for all these above controls of including Source Selection, control of Volume, Bass, Treble, Mute while power shut down. But all these can be reset and go back default settings again when press and hold the "Mute" button for 3seconds until red LED illuminated steadily after 3times flashing. This reset function over Mute key can be reached over through either keypads or remote control!

**BT RECEIVER MODULE (included):**

- Support to play back the audio signal from BT-enabled devices Version 2.1 such as PC, note book or mobile phone that supporting A2DP profile
- 1- blue LED indicator to show modes of operation over BT receiver such as blinking for pairing mode and steadily light on meaning the connection completed between BT-enabled device and the receiver
- Unique 4-digit alpha-numeric ID for identifying each individual receiver when multiple units are used in one house.
- Reception Range: up to 30 feet depending on housing structure and environmental conditions.
- For indoor use only. Keep away from extreme temperatures, humidity, and moisture.

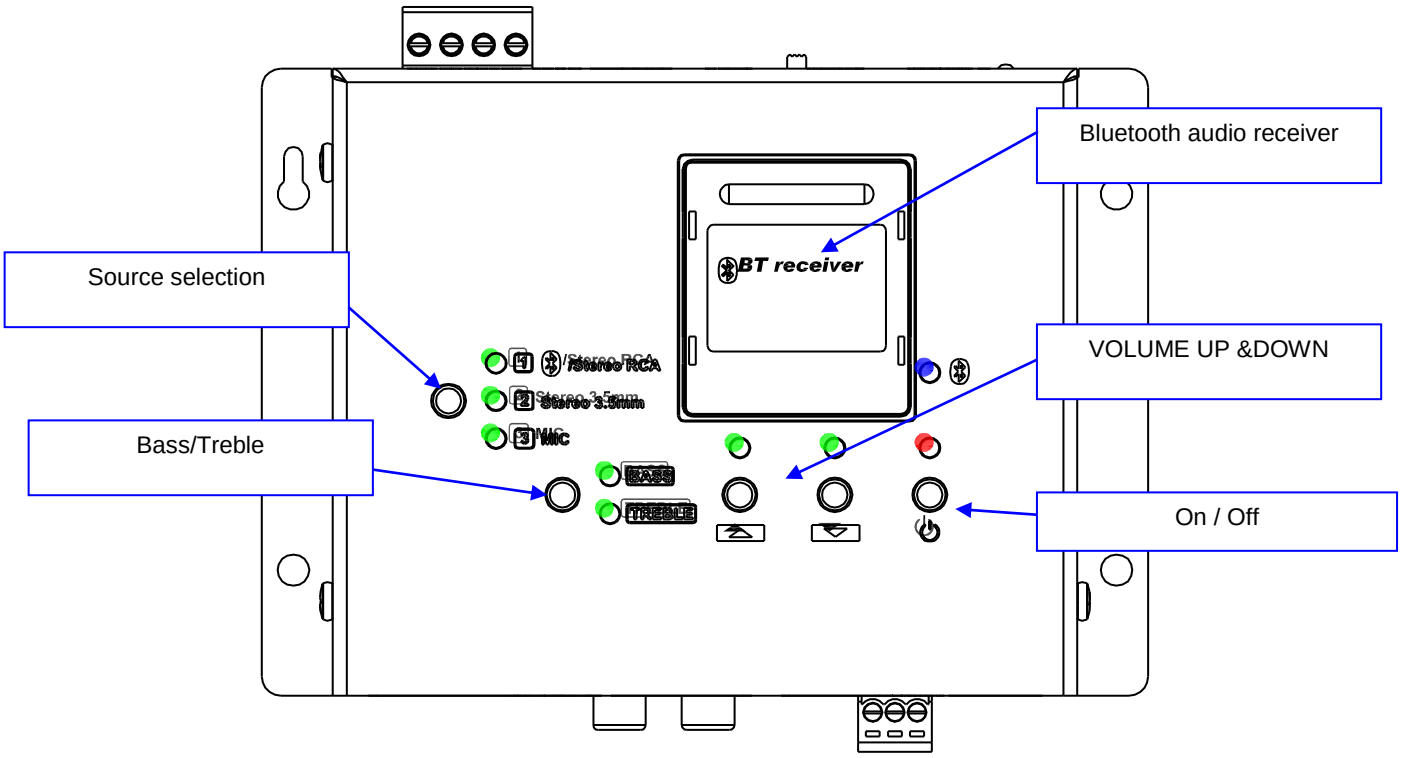
System power requirement: 24V, 2.5A

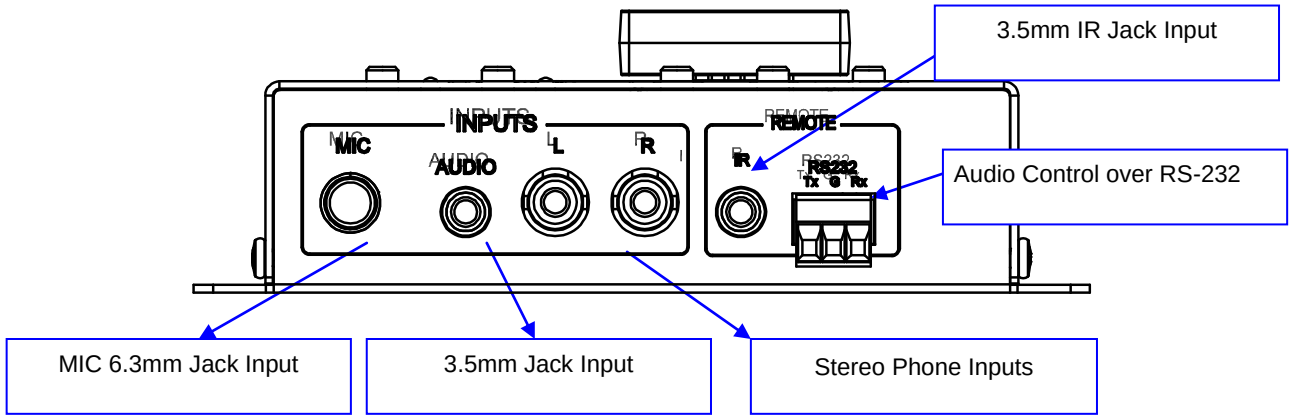
**Dimensions:** 140mm (L) x 105mm (W) x 45mm (H) - the risen height of BT module included –VAB-1231

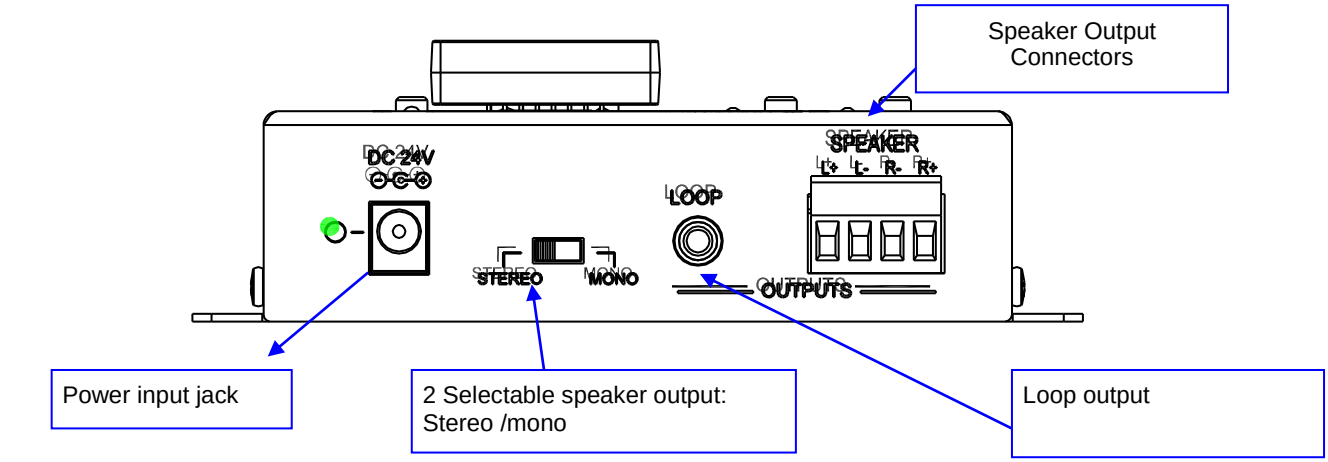
**Key Features & Benefits of aptX®**

- Outstanding Bluetooth® Stereo audio quality
- Audio bandwidth matching CD performance
- Flat Frequency Response. Full audio bandwidth faithfully reproduced
- Low audio coding delay. Minimizes latency and 'lip-sync' issues
- Non destructive transcoding, means there are no dueling effects with other algorithms
- Uses Time Domain ADPCM principle rather than Psychoacoustic masking
- Small code / data memory size
- Backward Compatibility: When aptX is not available target device will pair down to SBC

# PRODUCT VIEWS OF PA_VAB-1231:



# INSTALLATIONS AND WIRING DIAGRAMS:

## INSTALLATIONS:

**Step 1: Audio connection**

Connect line level audio devices such as MP3, CD, DVD, notebook…etc., to the unit via connectors of Dual-RCA L/R jacks or stereo 3.5mm jack, extra with one MIC input also available for connection while necessary. Or wireless audio source from BT-enabled devices also can be connected while system installed is VAB-1231.

**Notes:**

The wireless audio input of VAB-1231 is in parallel with dual-RCA input; if both present the signal at the same time then two sources will be mixed together.

**Step 2: Speaker connection**

4-p connectors for 14~22 AWG cable. (L+, L-, R-, R+)

**Step 3: power connection**

Plug in the provided power for turning system to be Mute status/ with LED indicator at the top of "Mute" button and also LED of input 1 stereo RCA will be light on as the factory preset.

**Note:** Power requirement 24V at current rating 2.5A as minimum is recommended and this can avoid power supplies shut down or heated due to power overloaded.

**Step 4: IR receiver connection**

Plug in 3.5mm IR receiver to the IR input jack and remote control of such as source selection, volume control up & down, treble, bass becomes reachable through IR receiver IRS-3060 using RMC-110 customized remote control.

## OPERATIONS:

- Press "Mute" button(LED will be vanished) to turn VAB-1231 into "WORKING MODE"
- Powering and playing your audio source with suggested volume setting in a half way and then increase the volume of VAB-1231 with factory preset volume at 5 until the levels be desirable.
- Procedures of pairing your Bluetooth® device with VAB-1231:

  **a. Switch source to input 1 is a must**

  b. Place your Bluetooth® device within 1m of this unit.

  c. Perform pairing procedure from your Bluetooth® device to detect VAB-1231 and you will find the ID name of "Audio adapter XXXX" will be appeared on the listing your BT-device. If not, switch to different source and again go back to the BT-source input which this can reset BT function and then repeat the pairing operation.

  d. Select "Audio adapter XXXX" on the display of the Bluetooth® device.

  e. Input passkey/pin code "0000" is always required for first time connection from a same device.

  f. Start the Bluetooth® connection from the Bluetooth® device.

  Capable of storing up to 8 pairings and also the unit is able to automatically reconnect to the previously last one paired device.

**Notes on Bluetooth operations**

**1) Working mode/sleep mode:**

There is 3minutes working time for pairing or making connection when the Bluetooth receiver is powered on and entering into a working mode.

If there is no pairing/connection being made within 3 minutes, the Bluetooth receiver will enter into a sleep mode which means the **"pair"** option is no longer available until the Bluetooth receiver has been reset usually via power off and power on again to retrieve this 3minutes working time.

However the Bluetooth receiver can be woken up manually by any one of previously **"8 paired"** device for "**connection"** even if the Bluetooth receiver is being under the sleep mode.

**2) Automatic connection:**

The Bluetooth receiver will be in few seconds of searching once being powered on to sense and connect automatically to the previously **last one- paired** device.

**3) Memory function:**

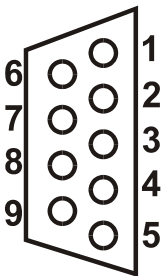
The Bluetooth receiver is capable of storing up to 8 **pairings** and any new **pairing** will override the earliest one.

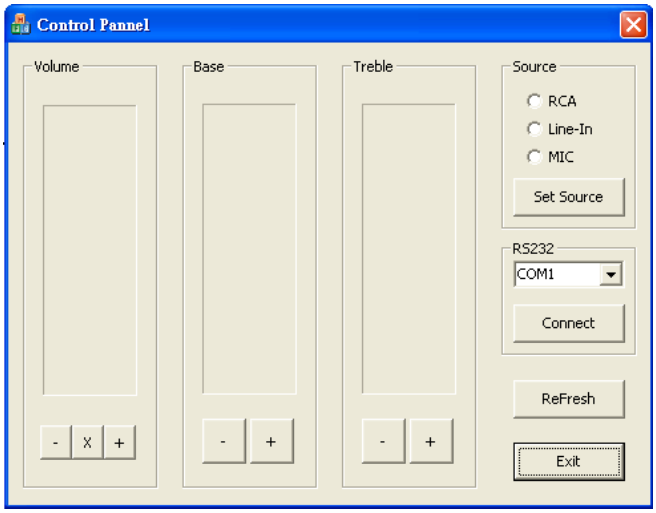
**4)** The Bluetooth connection between receiver & transmitter might be disconnected when it is out of the reception range regularly by 30feet, but the Bluetooth receiver is able to automatically connect to the transmitter device if the reception range is returning back to 30feets again in 30seconds.

**5)** Bluetooth blue LED indicator shows the modes of operation for the BT receiver as described below: Blinking for pairing mode, a steadily light ON means a successful connection has been completed between the BT-enabled device and the receiver. If the connected BT device is enabled with aptX, the blue LED indicator will turn to blink every two seconds when music is playing and this blinking will continue until disconnection.

- IR control through RS232 interface with reference picture pasted below from the computer:
  RS232 Pins Configuration over the connector:

**2＝TX , 3＝RX , 5＝GND**




Assembling & set up control software:

Step1: Wiring VAB-1231 to connector cable according to above configuration. Make sure the wiring of TX/RX is not reserved which TX should be connected to PIN-2 and RX to PIN-3 for avoiding the control not working.

Step2: Plug in connector to PC end.

Step3: Set baud rate to 9600 in your PC and install control software from the provided CD until your PC appears the display of Control Panel like as right above shown that means completed.

Step4: Press “Connect” for making the unit to get access with RS232 control and press the button of “Refresh” can feedback the update control of volume, bass, treble & source.

**Notes:**

a) While the unit being controlled through RS232 using our control panel, there will be 9units as maximum to be linked through one PC by manual setting over from COM1 to COM9 as the assigned ports.

b) While RS232 connection needs to be extended over the cable, please ensure **2＝TX , 3＝RX**.

**RS232 communication ASCII CODE protocol:**

**Note:** The coding system:8n1: 1 start bit + 8 data bits + 1 stop bit per byte = 10 bits per byte.

The serial port speed/baud rate:9600

| Group | Command | Function Description | Feedback Code |
|---|---|---|---|
| Source Switch Setting | 1A1 | Switching the source to input 1 | A:1->1← |
| | 2A1 | Switching the source to input 2 | A:1->2← |
| | 3A1 | Switching the source to input 3 | A:1->3← |
| Mute Setting | 1A0 | Mute All | Mute All← |
| | 0A0 | unMute All | UnMute All← |
| Step Setting | 600% | Volume Up | Volume:15← |
| | 601% | Volume Down | Volume:15← |
| | 602% | Base Up | Base:02← |
| | 603% | Base Down | Base:02← |
| | 604% | Treble Up | Treble:03← |
| | 605% | Treble Down | Treble:03← |
| Initialization | 609% | Initialization, back to the default setting | A:1->1←<br>Volume:00←<br>Base:05←<br>Treble:05← |
| Request | 690% | Checking the working status | A:1->1←<br>Volume:15←<br>Base:02←<br>Treble:03← |
| | 691% | Checking the Source status | A:1->1← |
| | 692% | Checking the Volume status | Volume:15← |
| | 693% | Checking the Base status | Base:02← |
| | 694% | Checking the Treble status | Treble:03← |
| | 7[x][x]% | Preset Volume, [x][x] is arranging from [0][0] to [1][9], 20 degree in total | Volume:15← |
| | 8[x][x]% | Preset Base, [x][x] is arranging from [0][1] to [0][9], 9 degree in total | Base:02← |
| | 9[x][x]% | Preset Treble, [x][x] is arranging from [0][1] to [0][9], 9 degree in total | Treble:03← |
| | | | |

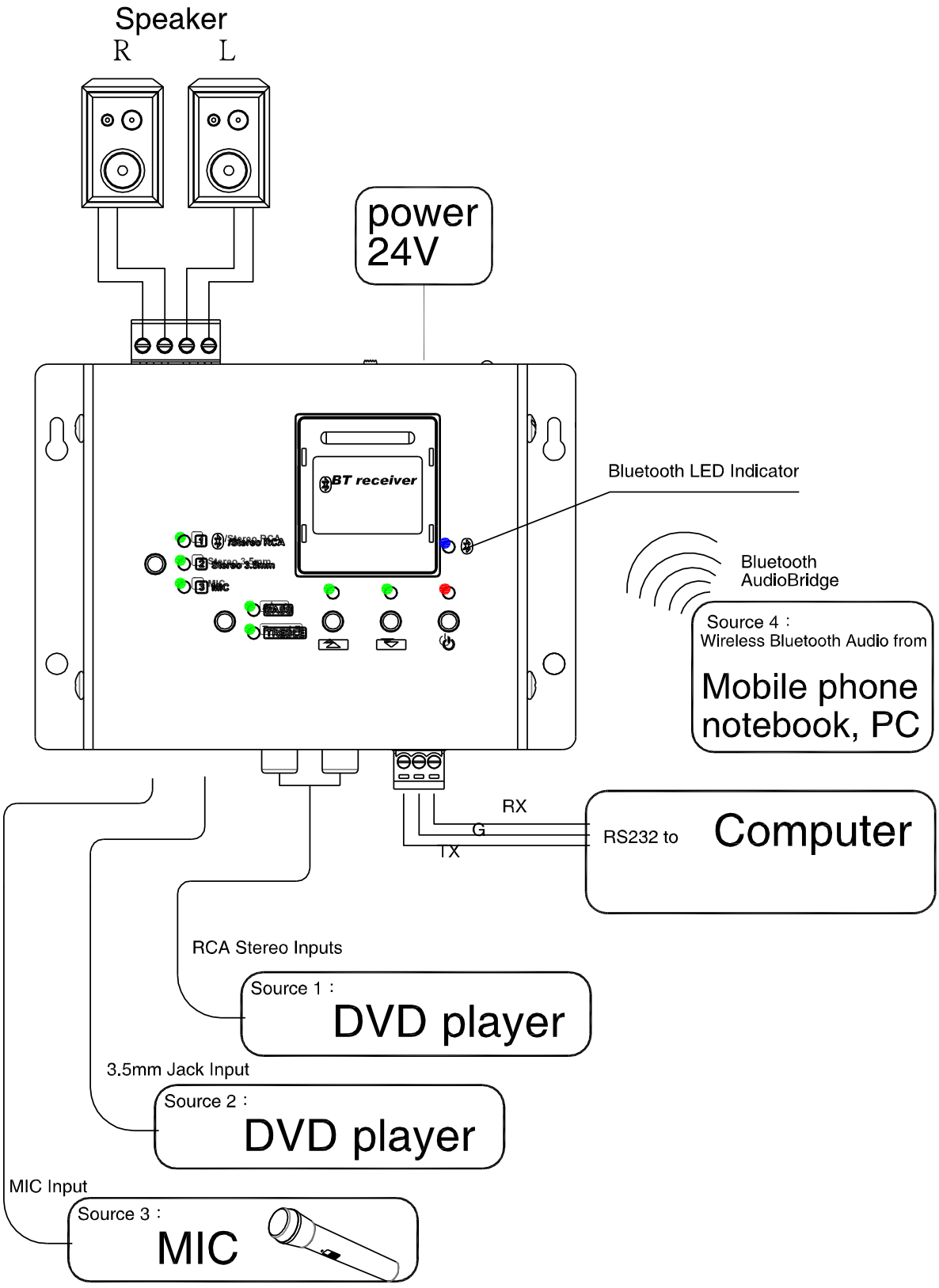
**EX:**

**MUTE ALL：1A0**

Volume Up：**600%**

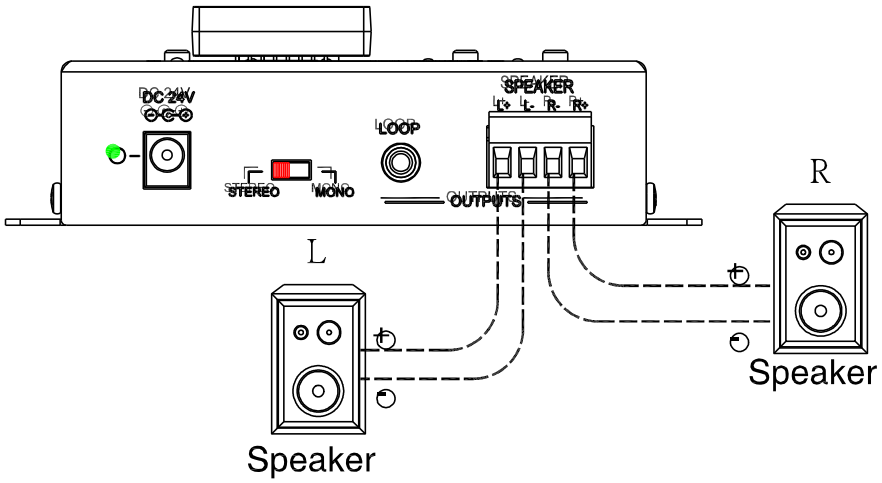
## WIRING DIAGRAMS:

### A) EXAMPLE OF APPLICATION



## B) 2 DIFFERENT APPLICATIONS OF SPEAKER OUT:

STEREO 2x30W@8Ohms




**“STEREO” mode at 8ohms speaker**

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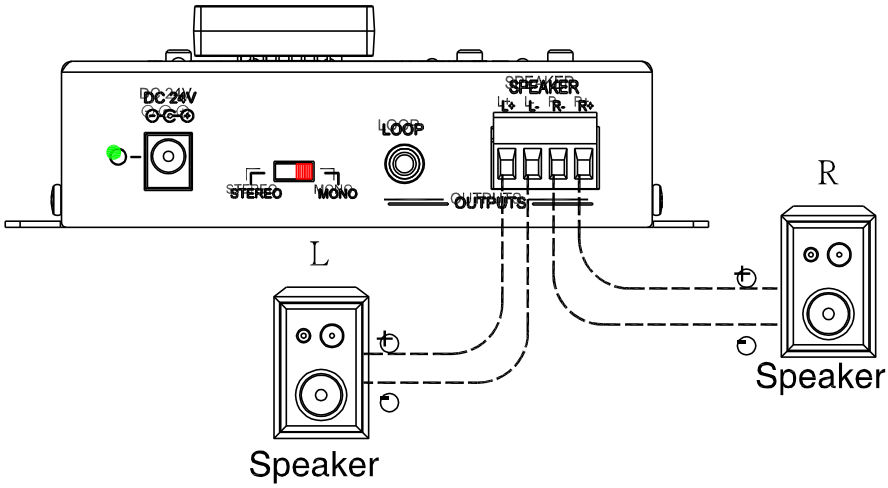
MONO 2x30W@8Ohms




**“MONO” mode at 8ohms speaker**

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## 3) AUDIO ONLY LOOP UPTO 3UNITS OF VAB-1231:

**Note:**

This loop connection also can be the other alternative as a fixed line-level audio output for boosting power extra with connection of an external amplifier!