

# ACEPRO<sup>AV</sup>

## Mini Digital Amplifier



# 1. Introduction

## 1.1. Introduction to Mini Digital Amplifier

The Mini Digital Amplifier is a compact-size digital amplifier (Class-D) with 3 inputs (2 line in and 1 balanced MIC). It is integrated with powerful functions, including 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.

## 1.2. Features

- 2x20Watt@4Ohm as the default amplifier output.
- Bridge connection function. User can switch the Mini Digital Amplifier to be 1x40Watt@8Ohm by bridge connection.
- Two stereo audio inputs, switchable by button, IR remote & RS232.
- Volume/Bass/Treble controllable by buttons IR remote & RS232.
- MIC port can support balance/unbalance signal, suppress the external noise effectively.
- Line audio output at 3.5mm jack, with volume controllable.
- Dual-mono function. User can sum up the stereo audio to two times mono audio.
- MIC mixer function. The microphone will be mixed to the line audio output, and be controlled separately.
- MIC input supports 48V phantom power, dynamic MIC and wireless MIC.
- Auto noise gate. It keeps detecting the audio and MIC input, will mute the output when there is no input.
- Ultra low inrush current, no need for power sequencing. This allows multiple Mini Digital Amplifier to be powered on simultaneously without overloading power circuits.
- Convection cooler, fan is not needed.
- Antistatic case design: providing good protection for long-term and stable performance.

## 1.3. Package List

- 1 x Mini Digital Amplifier (The mounting ears and Mini Digital Amplifier are as a whole.)
- 2 x Pluggable Terminal Blocks
- 1 x RS232 Cable
- 1 x Power Adapter
- 1 x Power Cord

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- 4 x Plastic Cushions
- 1 x User Manual

### Notes:

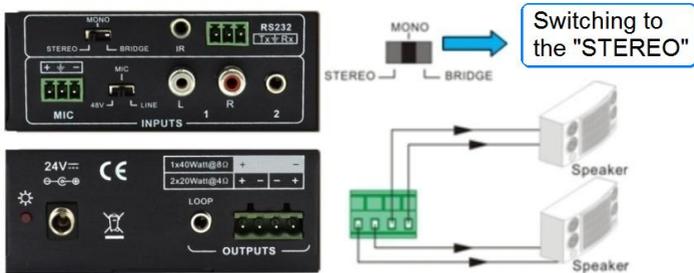
- The IR remote and its battery are offered for charge separately.
- The IR receiver is also offered for charge.
- Please confirm if the product and the accessories are all included, if not, please contact with the dealers.

## 2. System Connection Introduction

### 2.1. Audio Output

#### 2.1.1. Default output: 2x20Watt@40Ohm

The default output of amplifier is 2x20Watt@40Ohm, so user can connect the amplifier output in the regular way. As the picture below:

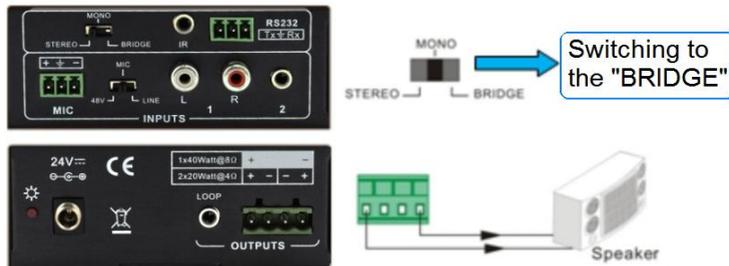


Connecting the four pins, like this

#### 2.1.2. Bridge connection: 1x40Watt@80Ohm

The Mini Digital Amplifier has the bridge connection, to double the output power at 1x40Watt@80Ohm. 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:

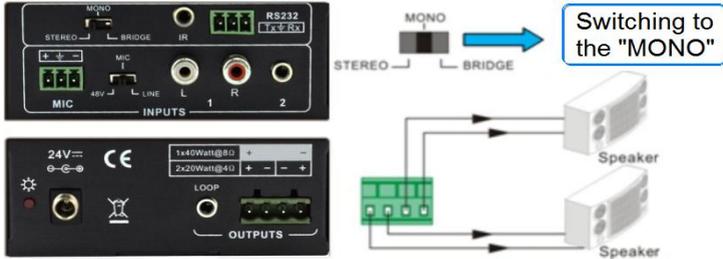


Connecting the two pins, like this

### 2.1.3. Dual-mono Output

The Mini Digital Amplifier 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

## 2.2. Microphone input

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



### 2.2.1. 48V phantom power input

When the switch turns to “48V”, the MIC input will provide a 48V phantom power. This is usually used for power supply for condenser microphone, Connection is: “+” connects to positive, “-” connects to negative and “⊥” to ground.

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

### 2.2.2. 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:

“⊥” connects to ground, and “-” connects to signal.

“⊥” connects to ground, and “+” connects to signal.

2) Balanced connection: “+” connects to positive, “-” connects to negative and “⊥” connects to ground.

### 2.2.3. 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:

“⊥” connects to ground, and “-” connects to signal.

“⊥” connects to ground, and “+” connects to signal.

### 2) Balanced connection: “+” connects to positive, “-” connects to negative and “⊥” connects to ground.

## 3. Operation of the Control Panel and the IR Remote

### 3.1. Operation of the Control Panel

The buttons provides the control of volume/EQ control and switching. The following content introduces audio switching and EQ control in detail.

#### 3.1.1. Audio switching

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

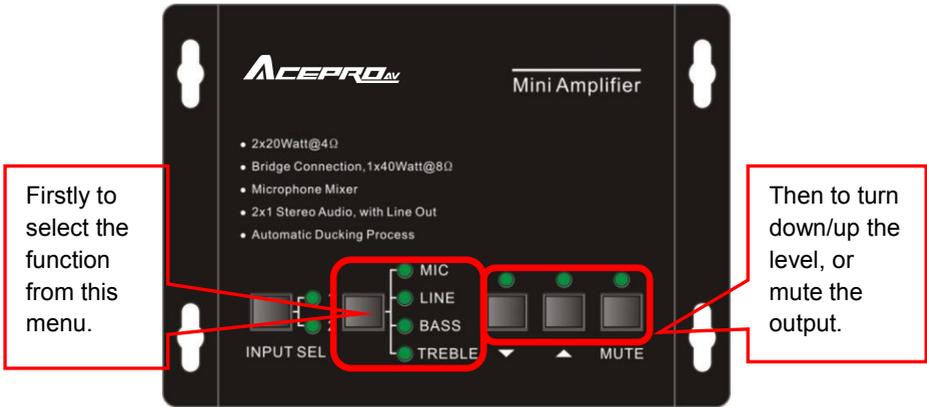


#### 3.1.2. Volume/EQ controlling

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

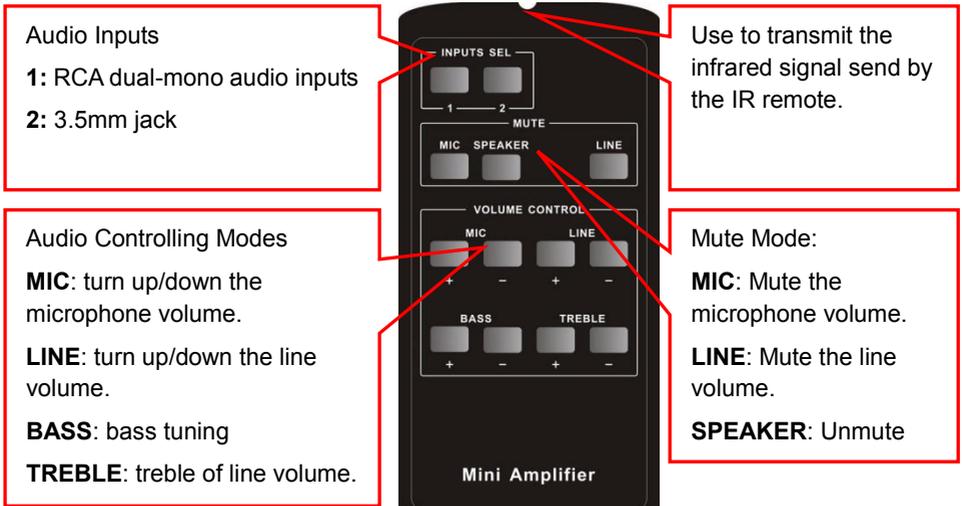
The MIC Volume/LINE volume/LINE bass/LINE treble will be selected by the buttons, and controlled up/down/mute by the function buttons. Please check the picture below:

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

### 3.2. Usage of the IR Remote



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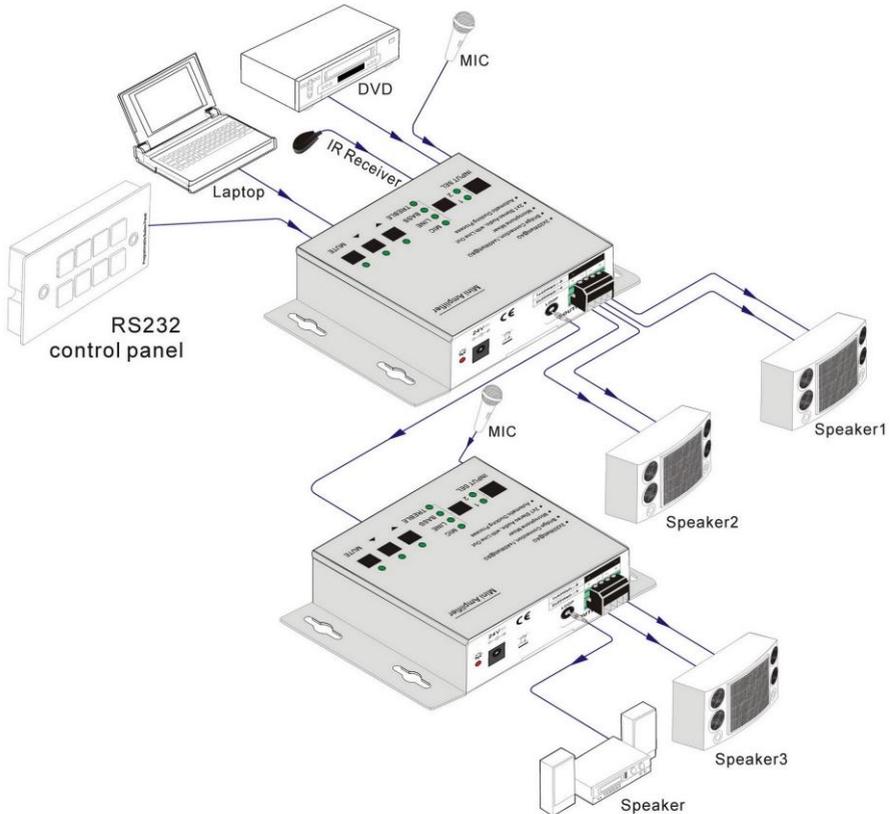
IR receiver head, works in conjunction with the IR remote. Please point the IR remote at the IR receiver when use, to avoid getting out of control as there is no signal detected.



3.5mm jack, insert it into the specialized socket (3.5mm) to connect the IR receiver with the amplifier

**Notice:** The IR remote, the IR receiver, and the battery of the IR remote are all offered for charge.

### 4. System Diagram



## 5. Communication Protocol and Command Codes

**Communication Protocol:** RS232 Communication Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Command	Function Description	Feedback Code
<b>1A1.</b>	Switching the audio to input 1	A: 1 -> 1
<b>2A1.</b>	Switching the audio to input 2	A: 2 -> 1
<b>0A0.</b>	Mute Audio of MIC and Line out	Mute
<b>1A0.</b>	Mute audio of MIC	Mute MIC
<b>2A0.</b>	Mute audio of line out	Mute LIN
<b>0A1.</b>	Unmute Audio	Unmute
<b>3A0.</b>	Switch on Noise Gate	Gate On
<b>4A0.</b>	Switch off Noise Gate	Gate Off
<b>600%</b>	Checking the working status	A: 1 -> 1 Volume: 30 Bass: 00 Treble: 00
<b>601%</b>	MIC volume up	Volume of MIC: 51
<b>602%</b>	MIC volume down	Volume of MIC: 51
<b>603%</b>	Line volume up	Volume of LINE: 51
<b>604%</b>	Line volume down	Volume of LINE: 51
<b>605%</b>	Bass level up	Bass of LINE: 04
<b>606%</b>	Bass level down	Bass of LINE: 04
<b>607%</b>	Treble level up	Treble of LINE: 04
<b>608%</b>	Treble level down	Treble of LINE: 04
<b>609%</b>	Initialization, back to the default setting	Init OK
<b>5[x][x]%</b>	Preset MIC volume, [xx] arranges from [00] to [60]. 61 degrees in total.	Volume of MIC: 50
<b>7[x][x]%</b>	Preset line volume, [xx] arranges from [00] to [60]. 61 degrees in total.	Volume of LINE: 50
<b>8[x][x]%</b>	Preset the bass level, [xx] arranges from [00] to [08]. 9 degrees in total.	Bass of LINE: 04
<b>9[x][x]%</b>	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 changeable.

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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, RS232 command is: **[2A1.]**

**Example 2:**

Turning up the volume of line audio, RS232 command is: **[603%]**

**Example 3:**

Preset the MIC volume to "21" degree, RS232 command is: **[521%]**

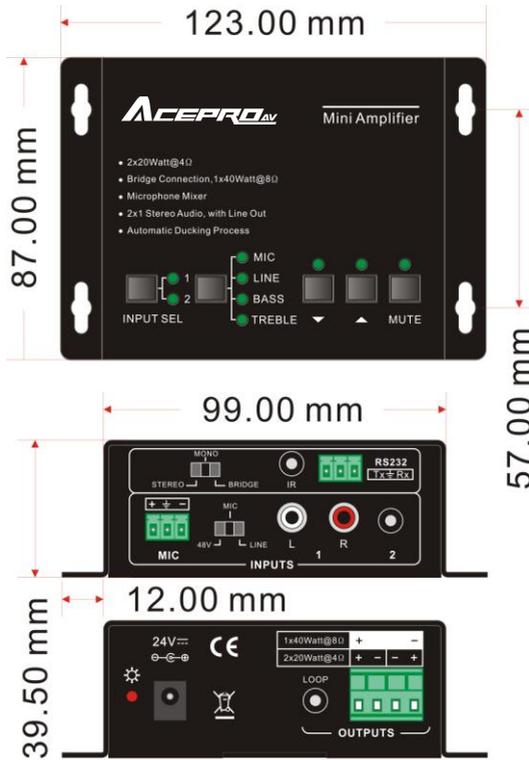
**Example 4:**

Checking the working status of Mini Digital Amplifier, RS232 command is: **[600%]**

## 6. 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 pluggable terminal block (3P,3.81mm),	Output Connector	1 3.5mm jack 1 pluggable terminal block (4P, 5.08mm)
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 Function			
RS232 Control	3-hole phoenix connector	Panel Control	Optional button control
IR Remote	Optional IR remote		

## 7. Panel Drawing



## 8. Troubleshooting & Maintenance

1) When there is no output audio:

- Check if there is any signal at the input.
- Check if there is any signal at the output.

We can check these by using an oscilloscope or a multimeter. If there is no signal input/output, maybe the input/output cables broken or the connectors loosen, please change for another cable.

- Check if the output port number is the same with the controlled one.
- If not the problem mentioned above, probably there is something broken inside the unit, please send it to the dealer for repairing.

2) If the **POWER** indicator doesn't work or no respond to any operation, please make sure the power cord connection is good.

3) If the output sound is interfered, please make sure the system is grounded well.

4) If the static becomes stronger when connecting the audio connectors, it probably due to bad grounding, please check the grounding and make sure it connected well, otherwise it would damage the converter.

5) If the Mini Digital Amplifier amplifier cannot be controlled by the keys on the front panel, RS232 port or IR remote, the unit may has already been broken. Please send it to the dealer for repairing.