DVDO

DVDO-AA40W-1

40W 70/100V Class-D Audio Amplifier with 3 Inputs

User Manual

Version v1.0

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user’s authority to operate the equipment.

SAFETY PRECAUTIONS

To ensure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the specifications of product may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, and please treat them as normal electrical wastes.

Table of Contents

1. Product Introduction

The product is a 40 Watt power amplifier (Class-D) with output alternatively at 70V or 100V. It has 2 stereo inputs (1x3.5mm jack for line in, 2xRCA for L&R), 1 digital input & 1 balanced MIC. It is integrated with powerful functions, including ducking function, EQ control, MIC mixer etc., and MIC input supports 3 levels with condenser MIC, dynamic MIC & line audio input.

As for power amplifier we have normally voltages at 70V and 100V for different countries, but the amplifier is designed to integrate with both voltages to meet different requirements.

1.1 Features

- Mono audio output at 40Watt.
- Switchable between 70V and 100V.
- Ducking function.
- 16 ID codes for controlling between different amplifiers.
- 3-level MIC input, supports condenser microphone, dynamic microphone and wireless microphone.
- MIC port can support balance/unbalance signal, suppress the external noise effectively.
- Two stereo audio inputs and one digital audio input, switchable by button, IR remote & RS232.
- Volume/Bass/Treble controllable by buttons, IR remote & RS232.
- Fast switching speed for good performance.
- Convection cooler, fan is not needed.
- LED indicator, for power and working status.
- Antistatic case design to provide good protection for long-term and stable performance.

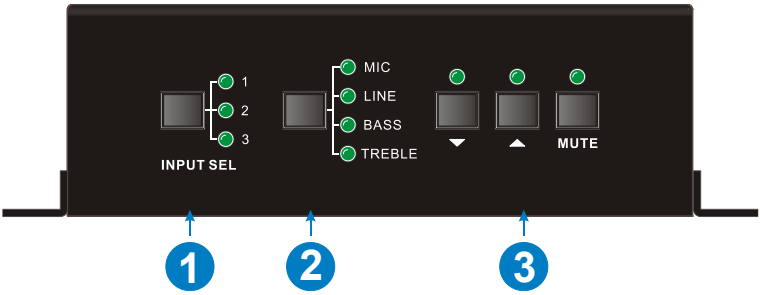
1.2 Package Contents

- 1x DVDO-AA40W-1 Power Amplifier
- 2x Mounting ears with 4 Screws
- 4x Plastic Cushions
- 2x Pluggable Terminal Blocks
- 1x RS232 Cable
- 1x Power Adapter (DC 24V 2.71A)
- 1x User manual

Note: *Please contact your distributor immediately if any damage or defect in the components is found.*

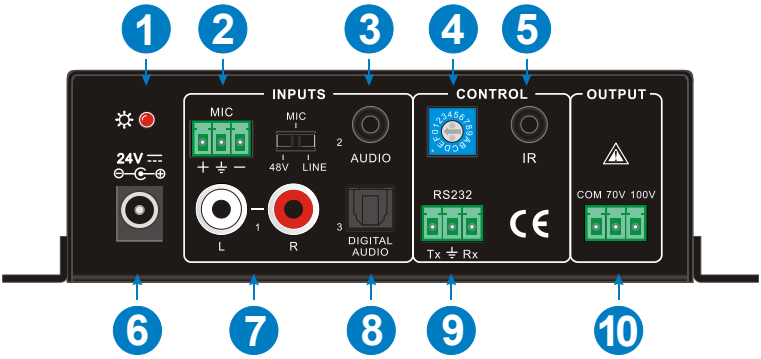
2. Panel Description

2.1 Front Panel



No.	Name	Function
①	Audio Input Selection	To select the input audio source, after choosing the audio source, the corresponding LED indicator will be on. No.1 is for dual mono audio input (2 RCA connectors for L&R), No.2 is for stereo audio input (3.5mm mini jack), and No.3 is for digital fiber audio input.
②	Audio Control	Adjust the volume of the MIC, Line, or the level of Bass and Treble with this button
③	Volume Adjustment	To turn up/down or mute the corresponding audio. ▽: Turn down the volume △: Turn up the volume MUTE: Mute the output

2.2 Rear Panel



No.	Name	Function
①	Power Indicator	Turns red when power on.
②	Microphone input port	3-pole captive screw connector for microphone input, the dial switch in right side is to select the micro input kind, including 48V (for condenser microphone), MIC (for dynamic microphone) and LINE (for line audio).
③	Audio Inputs	3.5mm mini jack for stereo audio input, it can be connected with audio source device such as DVD player.
④	ID Code	16 codes range from 0 to F (hexadecimal), works together with the PC control software.
⑤	IR	To connect with the IR receiver, works together with the IR remote.
⑥	Power Port	To connect with the power adapter (DC24V).
⑦	L+R RCA	Dual-mono audio input, which can be connected with audio source device such as a PC.
⑧	Digital Audio Input	Fiber connector for digital audio input (PCM format only), it can be connected with a device with fiber port, such as blue-ray player.
⑨	RS232	3-pole captive screw connector for serial control, it can be connected with PC (Use a 3-pole captive to 9 pin female D connector and serial control software) to control the amplifier.
⑩	Audio Output	To connect with audio output devices, such as speakers (To select 70V or 100V depends on the input voltage of the speakers). COM is for grounding (GND).

3. System Connection

3.1 Usage Precautions

- Make sure all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

3.2 System Diagram

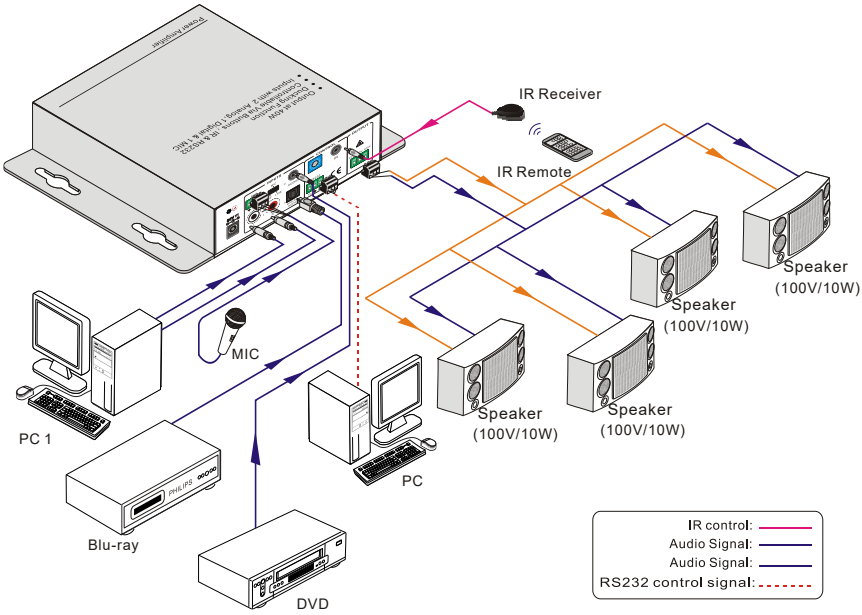


Figure 3 System Diagram

3.3 Audio Connection

3.3.1 Audio Output

The amplifier supports mono audio output, and the output voltage is 70V or alterative 100V. With its dual-purpose design, it can be applied in different areas. The end COM is for grounding. The amplifier to be connected is mono audio output with a rated power at 40Watt, so the amplifier can be connected with several speakers in parallel connection

way (Total power mustn't be more than 40Watt).

The following figure shows us how to connect with the speakers. Here we take the 100V/10W speakers for each as example.

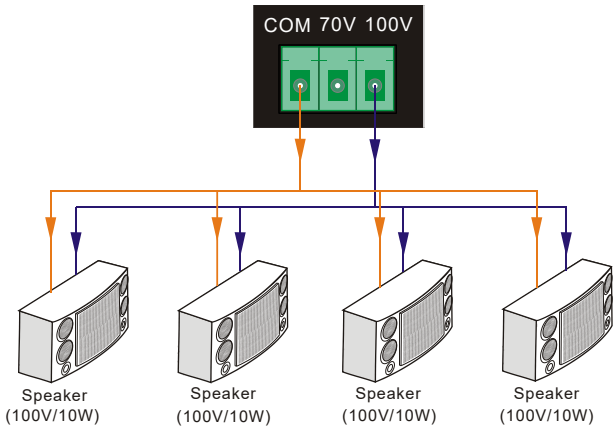


Figure 4 Audio Output Connection

Note: Speakers to be connected should be with constant pressure.

3.3.2 Audio Inputs

The amplifier provides with 2 stereo audio inputs, one microphone input and one digital fiber audio input. The following figure shows the audio input ports.

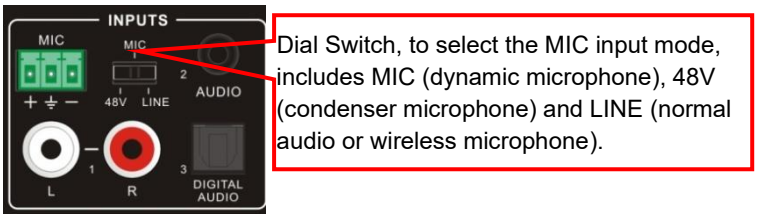


Figure 5 Audio Input Ports

➢ **48V phantom power input**

When the switch turns to "48V" (It has a good frequency characteristic, high input impedance and high sensitivity in this mode), 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.

➢ **MIC input**

When the switch turns to “MIC” (It has a low frequency characteristics, and wide frequency response in this mode), the microphone input is used for connecting with dynamic microphone. There are two different connections:

a) Unbalanced connection:
“+” and “⏚” connect to ground, and “-” connects to signal.
“-” and “⏚” connect to ground, and “+” connects to signal.
b) Balanced connection: “+” connects to positive, “-” connects to negative and “⏚” connects to ground.

➢ **LINE input**

When the switch turns to “LINE” (It has a low frequency characteristics, and wide frequency response in this mode), the microphone input is used for connecting with normal audio or wireless microphone output. There are two different connections:

a) Unbalanced connection:
“+” and “⏚” connect to ground, and “-” connects to signal.
“-” and “⏚” connect to ground, and “+” connects to signal.
b) Balanced connection: “+” connects to positive, “-” connects to negative and “⏚” connects to ground.

➢ **Digital Audio Input**

The amplifier provides with a fiber optical port to connect with digital audio source device. With the SPF optical fiber, the audio signal can be transmitted faster, more stable, reliable, and can be transmitted over a long distance without distortion.

Notice: This digital audio input can support/decode PCM format signal only. If the CD/DVD is DTS or AC3 format, please set the player to PCM format output before connect to the amplifier.

3.4 System Applications

The amplifier can be applied in different occasions, such as classroom, small meeting room, lecture hall, bar and hotel etc.

4. System Operations

4.1 Operations of Front Panel

The buttons provides the control of volume/EQ control and switching. The LED indicator will show the connecting status. The following content introduces audio switching and EQ control in detail.

Operations: Press the corresponding button again for cyclic switching.

4.1.1 Audio switching

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

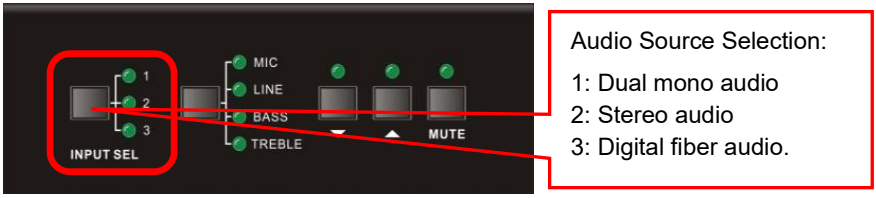


Figure 6 Audio Source Selection Button

4.1.2 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:

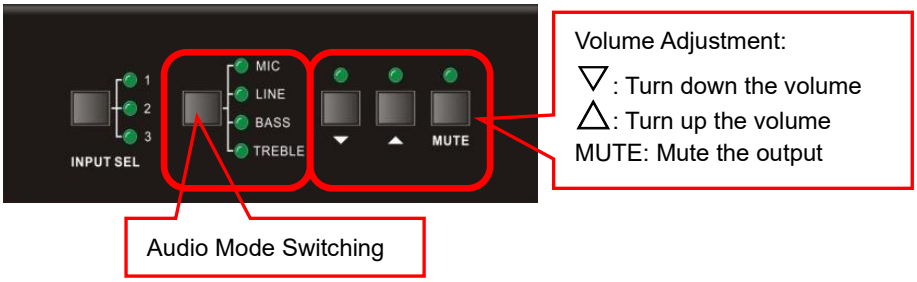


Figure 7 Audio Mode and Volume Adjustment buttons

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

4.2 Operations of IR Remote

The amplifier provides with an IR eye, with the IR Receiver and the IR remote, user can control the amplifier remotely.

Notice: The IR Receiver and the IR remote are all offered for charge.

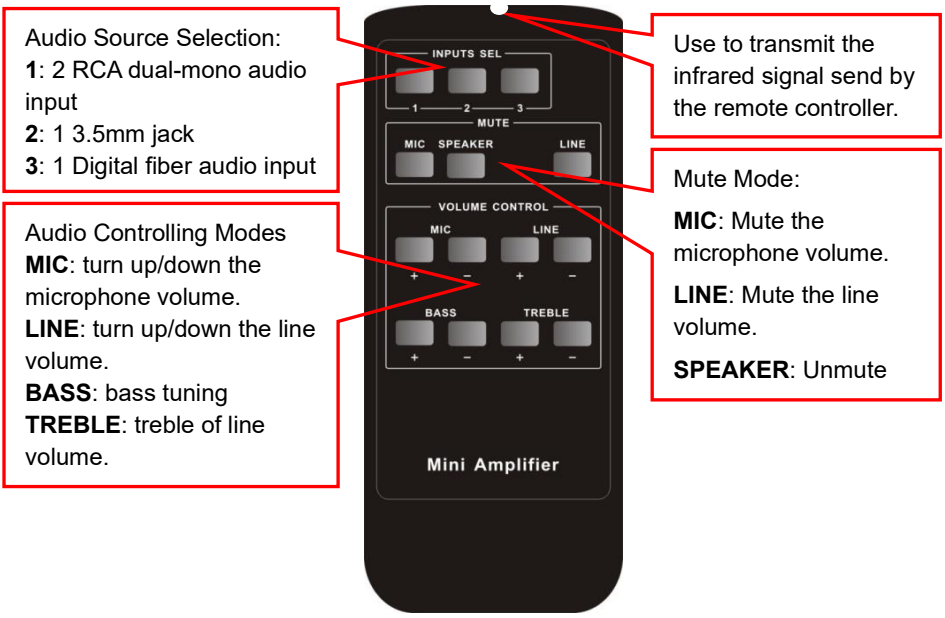


Figure 8 IR Remote

Figure 9 IR Receiver

4.3 Operations of Control Software

4.3.1 Connection with Computer

When the amplifier connects to the COM1 or COM2 of the computer with control software, users can control it by that computer.
To control the amplifier, users should use a 3-pole male captive screw to 9-pin HD female connector and use the public COM software.

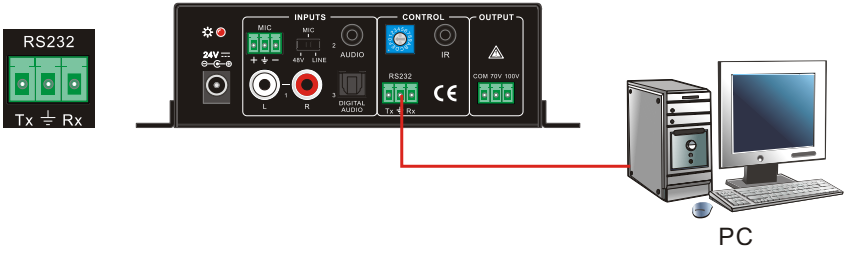


Figure 10 Connection of RS232 Port

4.3.2 RS232 Control Software

- **Installation**

➢ Connect the input source devices and the output device according to the system diagram.
➢ Copy the RS232 control software to one computer, and then connect the RS232 port of this computer and the amplifier.
➢ Double-click the EXE program to execute the software.

Here we take the software **CommWatch.exe** as example. The icon is showed as below:

Figure 11 Control Software

- **Uninstallation** Delete all the control software files in corresponding file path.

4.3.3 Running Environment

While the control software is installed, we can activate the software through the RS232 port and set the parameters, to make it able to send RS232 commands to control the amplifier.

4.3.4 Function Settings

With the control software, we can easily switch the input channel, mute the output, check the working status, and adjust the volume etc. Please refer the details in *RS232 Communication Commands*.

The interface of the control software is showed as below:

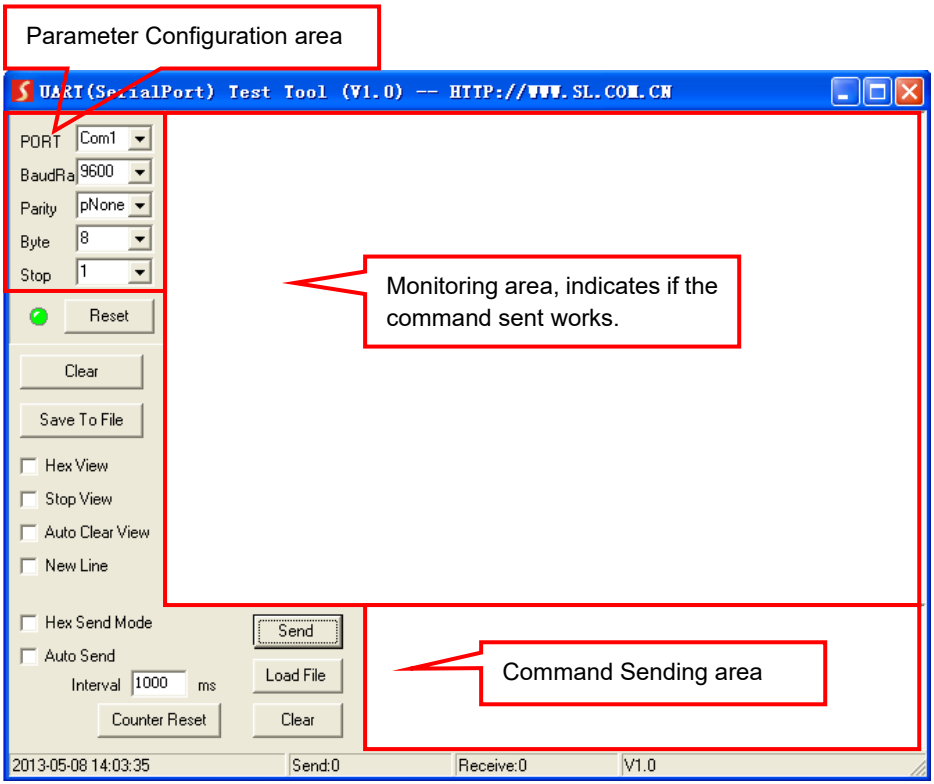


Figure 12 Main Interface of Control Software

4.3.5 RS232 Communication Commands

Communication Protocol: 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
3A1.	Switching the audio to input 3	A: 3 -> 1
0A0.	Mute Audio of MIC and Line out	Mute
1A0.	Mute audio of MIC	Mute MIC
2A0.	Mute audio of line out	Mute LIN
3A0.	Enable noise gate.	Gate On
4A0.	Disable noise gate.	Gate Off
0A1.	Unmute Audio	Unmute Audio
600%	Checking the working status	A: 1 -> 1 Volume of MIC : 50 Volume of LINE : 50 Bass of LINE : 4 Treble of LINE : 4 Ducking Off
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: 4
606%	Bass level down	Bass of LINE: 4
607%	Treble level up	Treble of LINE: 4
608%	Treble level down	Treble of LINE: 4
609%	Initialization, back to the default setting	Init OK
610%	Enable/disable the ducking function.	Ducking off/Ducking on
4[x][x]%	Preset the volume level of ducking function. [xx] arranges from [00] to [60]. 61 degrees in total.	Ducking of LINE: 50
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: 4
9[x][x]%	Preset the treble level, [xx] arranges from [00] to [08]. 9 degrees in total.	Treble of LINE: 4

Notice:

- The letter inside bracket [ ] is the variable code, which is changeable.
- The bracket [ ] is not included to the RS232 commands.
- Any dot "." after the letters is part of the commands.
- **Ducking function:**

  When input with MIC, the volume of the line audio will be automatically turned down to the preset volume level, if there is no input MIC audio signal after 5 seconds, then the volume will be automatically turned up to the original one. If you need to disable/enable the ducking function, just send the command "**610%**" again.

- **ID coding:**

  The ID codes of the amplifier ranges from 0 to F (hexadecimal), when sending RS232 commands, please take notice of the address of the ID code.

  If the address of the ID code is **0**, any RS232 command is available.

  If the address is in **1~F**, it has one unique ID code (If the ID code is not the same with the address, no RS232 command will work).

  While the ID code is in **1~F**, please add "**ID/**" before sending the command.

  For example, if the ID code is **5**, the RS232 command needed is "**604%**", the correct command is in this format: **5/604%**.

  There is no need to add "**ID/**" before the command when the ID code is **0**.

Examples:

- Switching the input 2 to the line out, the command is: **2A1**.
- Turning up the volume of line audio, the command is: **603%**
- Preset the MIC volume to "21" degree, the command is: **521%**
- Checking the working status of the amplifier, the command is: **600%**
- If the ID code is 0, sending command **601%** is able to turn up the MIC volume.
- If the ID code is 2, sending command **601%** will not work, and the MIC volume remains unchanged. The right command is **2/601%**.

5. Specifications

Audio Input	
Input	(2) Stereo Audio (1) MIC (1) Digital Fiber Audio
Input Connector	(2) RCA (1) 3.5mm Jack (1) 3-pole 3.81mm Captive Screw Connector (1) SPF Fiber Connector
Input Impedance	>10KΩ
Audio Output	
Output	(1) Mono Amplifier
Output Connector	(1) 3-pole 3.81mm Captive Screw Connector
Output Type	Constant voltage 70V or 100V.
Audio General	
Frequency Response	20Hz ~ 20KHz
CMRR	>70dB@20Hz~20KHz
SNR	80dB (Max)
Rated Power Output	40Watt
THD + Noise	1%@1KHz, 0.3%@20KHz at nominal level
Voltage Gain	26dB
Control Function	
RS232 Control	(1) 3-pole 3.81mm Captive Screw Connector
Front Panel Control	Buttons
ID Code Control	16 ID Codes for control.
Optional	IR Remote & TCP/IP controlled by programmable interface
General	
Operation Temperature	0℃ ~ +40℃
Storage Temperature	-10℃ ~ +60℃
Storage Humidity	10%-90%
Power Supply	DC 24V 2.71A Power Adapter
Standby Power Consumption	5W
Case Dimension	W130 x H44 x D144mm (1U high)
Product Weight	860g

6. Troubleshooting and Maintenance

Problems	Potential Causes	Solutions
No output audio	No signal at input/ output end	Check input/ output signal by an oscilloscope or a multimeter.
	Failed cable connection	Change for another cable.
	Broken unit	Send it to the dealer for repairing.
POWER indicator doesn't work or no respond to any operation	Failed power connection	Make sure the power cord connection is good
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.
Output audio is interfered		
Cannot control the device by front panel buttons, RS232 port or IR remote	Broken unit	Send it to the dealer for repairing.

Note: *If your problem still remaining after following the above troubleshooting steps, please contact your local dealer or distributor for further assistance*.

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