



# User Manual

## TL-A70-40W

### 40 Watt Power Amplifier



All Rights Reserved

Version: TL-A70-40W \_160826

## Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage.

## Trademarks

Product model and its logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without our prior written consent.

## 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 manufacturer would void the user's authority to operate the equipment.



## SAFETY PRECAUTIONS

To insure 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 products' specifications 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, please treat them as normal electrical wastes.

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## 1. Introduction

### 1.1 Introduction to TL-A70-40W

TL-A70-40W is a 40 Watt Power Amplifier (Class-D) with high-impedance output (70V or 100V). It has [2] analog stereo inputs, [1] digital input, and [1] balanced microphone input. It includes powerful functions including ducking, EQ control, and a mic mixer. The microphone input MIC input supports condenser and dynamic microphones, or can be set to balanced line audio input (for use with a wireless microphone receiver).

### 1.2 Features

- Mono audio output at 40Watt.
- Switchable between 70V and 100V.
- Ducking function for the microphone.
- 16 selectable IDs to control multiple units using one RS232 connection.
- 3-level MIC input, supports condenser microphone, dynamic microphone and wireless microphone.
- MIC port can support balanced/unbalanced signal.
- 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.
- Convection cooling, no fans.
- LED indicators for power and status.
- Anti-static case design to provide good protection for long-term and stable performance.

### 1.3 Package Contents

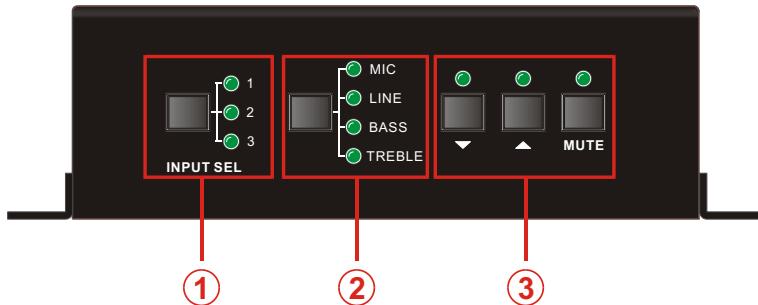
- 1 x TL-A70-40W
- 2 x Mounting ears (separated from TL-A70-40W)
- 4 x Screws
- 1 x Pluggable Terminal Block
- 1 x RS232 cable
- 1 x Power adapter (DC 24V)

- 1 x Power Cord
- 4 x Plastic Cushions
- 1 x User manual

**Note:** Ensure the product and the accessories are all included, if not, please contact with the dealers.

## 2. Panel Description

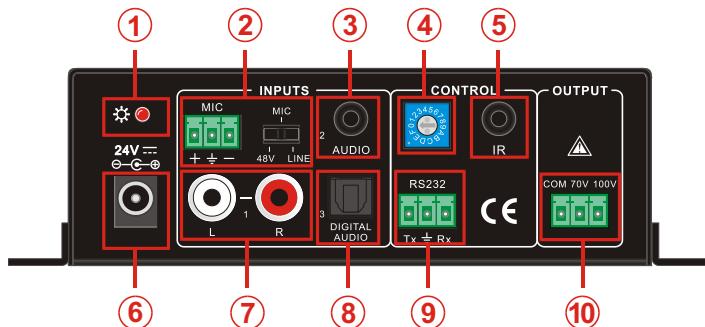
### 2.1 Front Panel



**Figure 1 Front Panel**

No.	Name	Function
①	Audio Input Selection	Audio source selection
②	Audio Control	Selector for adjusting the volume of the MIC, Line, or the level of Bass and Treble with this button
③	Audio Adjustment	To adjust or mute the corresponding audio. ▽: Turn down the volume (or Bass / Treble) △: Turn up the volume MUTE: Mute the output

## 2.2 Introduction of Rear Panel



**Figure 2 Rear Panel**

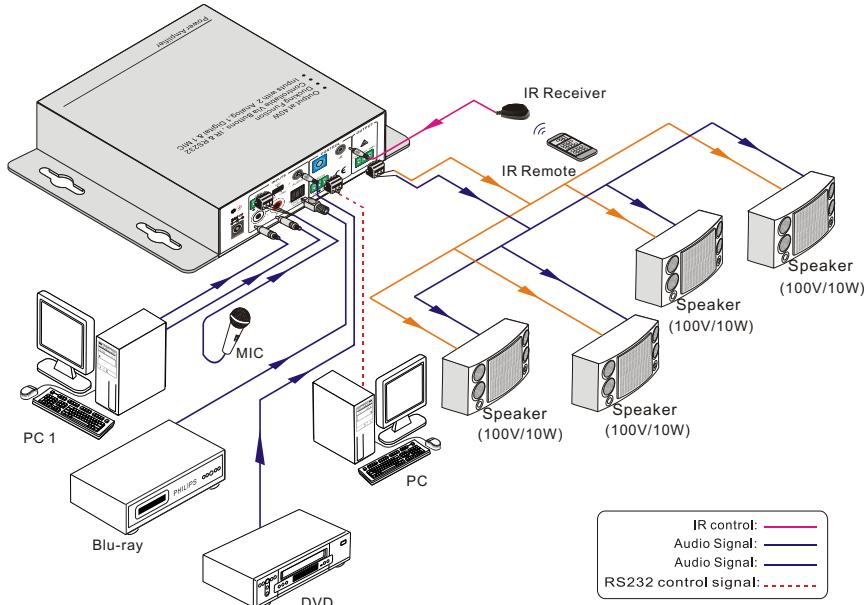
No.	Name	Function
①	Power Indicator	Turns red when power is connected.
②	Microphone input port	3-pole captive screw connector for microphone input, switch to select the microphone input, including 48V (for condenser microphone), MIC (for dynamic microphone) and LINE (for line audio).
③	Audio Inputs	3.5mm mini jack for stereo audio input, it can be connected with audio source device such as iPod.
④	ID Code	16 codes range from 0 to F (hexadecimal), works with the PC control software or RS232 control.
⑤	IR	To connect with the IR receiver, works with the IR remote (not included).
⑥	Power Port	To connect the power adapter (DC24V).
⑦	2 x RCA	Dual-mono audio input, which can be connected with audio source device such as a DVD or PC.
⑧	Digital Audio Input	Fiber optic connector for digital audio input (PCM format only), it can be connected with a device with fiber port, such as a BluRay 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 TL-A70-40W.
⑩	Audio Output	Speaker output (Select 70V or 100V depending on the input voltage of the speakers). COM is for grounding (GND).

### 3. System Connection

#### 3.1 Usage Precautions

- 1) Speakers must be connected before powering the amp on.

#### 3.2 System Diagram



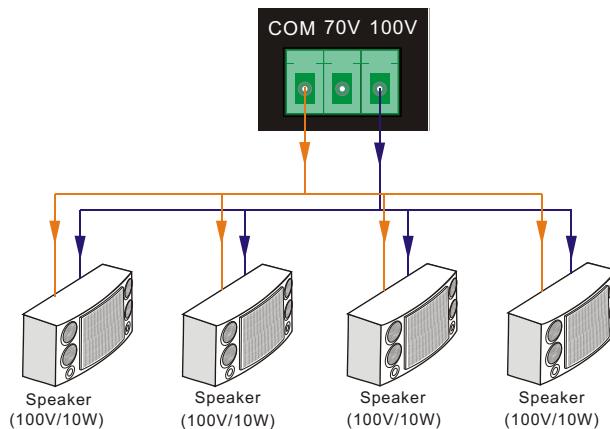
**Figure 3 System Diagram**

#### 3.3 Audio Signal Connection

##### 3.3.1 Audio Output

TL-A70-40W supports mono audio output, and the output voltage is 70V or 100V. 70V and 100V systems are regulated by country safety regulations, you must adhere to all local codes. The COM pin should be connected to the (-Minus) terminals of the speaker run. The amplifier has a rated power at 40Watt, so the TL-A70-40W 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.

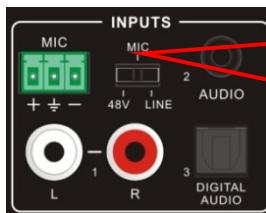


**Figure 4 Audio Output Connection**

**Note:** Speakers to be connected should be with constant impedance (with transformer), as opposed to low impedance loads (like 4 or 8 ohm systems).

### 3.3.2 Audio Inputs

The TL-A70-40W provides 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 '48V' is selected on the switch the MIC input will provide a 48V phantom power. This is usually used to supply power to a condenser microphone. Connection is: "+" connects to positive, "-" connects to negative and "—" to ground.

➤ **MIC input**

When "MIC" is selected on the switch, the microphone input is used for connecting a dynamic microphone. There are two different connections:

a) Unbalanced connection:

"+" and  connects to ground, and "-" connects to signal.

"-" and  connects to ground, and "+" connects to signal.

b) Balanced connection: "+" connects to positive, "-" connects to negative and  connects to ground.

➤ **LINE input**

When "LINE" is selected on the switch, the microphone input is used for connecting with line audio or a wireless microphone output. There are two different connections:

a) Unbalanced connection:

"+" and  connects to ground, and "-" connects to signal.

"-" and  connects to ground, and "+" connects to signal.

b) Balanced connection: "+" connects to positive, "-" connects to negative and  connects to ground.

● **Digital Audio Input**

TL-A70-40W features a fiber optical port to connect a digital audio source device.

Notice: This digital audio input can support/decode PCM format signal only. If the CD/DVD is DTS or AC3 (Dolby Digital) format, please set the player to PCM format output before connecting to the TL-A70-40W.

## 3.4 System Applications

TL-A70-40W can be used in different applications, such as classrooms, small meeting room, lecture halls, bars and hotels etc.

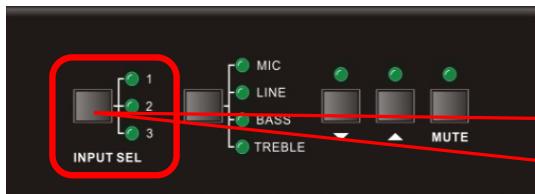
## 4. System Operations

### 4.1 Operations of Front Panel

The buttons provide control of volume, EQ control, and switching. The LED indicators will show status. The following content introduces audio switching and EQ control in detail.

#### 4.1.1 Audio switching

There are three switchable audio inputs, one dual-mono RCA input, one 3.5mm jack input, and one digital fiber audio input, switchable through the buttons as below:



**Audio Source Selection:**

1: RCA audio  
 2: 3.5mm audio  
 3: Digital audio.

**Figure 6 Audio Source Selection Button**

#### 4.1.2 Volume/EQ controlling

The line volume and MIC volume can be controlled separately by using 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:



**Volume Adjustment:**

▽ : Turn down the volume  
 △ : Turn up the volume  
 MUTE: Mute the output

**Audio Mode Switching**

**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

TL-A70-40W can be controlled using IR, using an IR Receiver and the IR remote.

**Notice:** The IR Receiver and the IR remote are not included, but can be purchased from TechLogix Network – Part# TL-A70-40W-IR

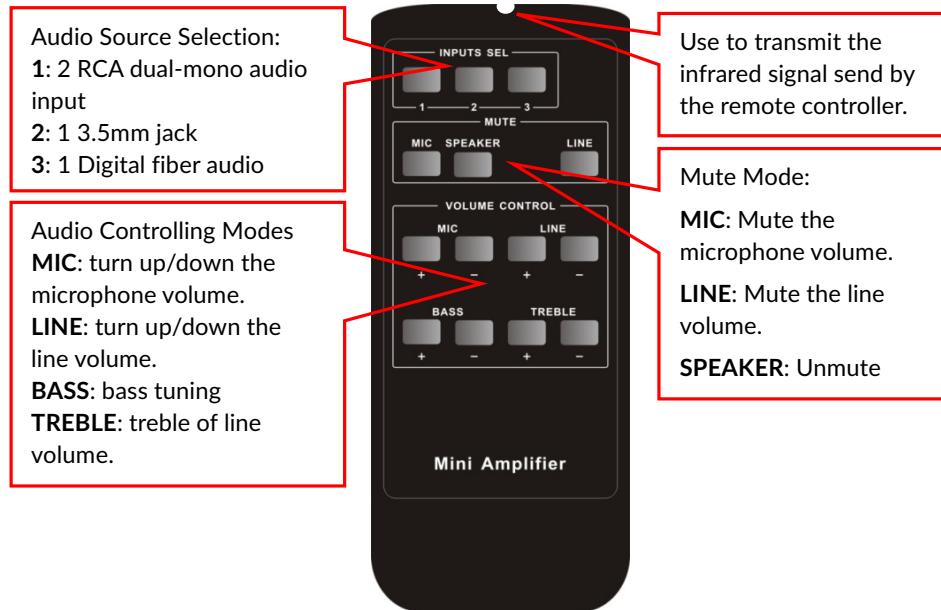


Figure 8 IR Remote



Figure 9 IR Receiver

## 4.3 Operations of Control Software

### 4.3.1 Connection with Computer

When the amplifier connects to the COM port of a 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 CommWatch software published on the [www.tlnetworkx.com](http://www.tlnetworkx.com).

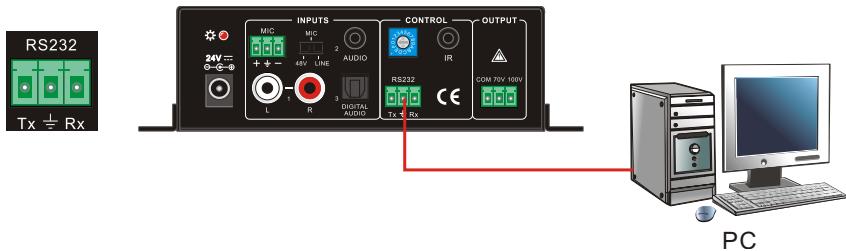


Figure 10 Connection of RS232 Port

### 4.3.2 Installation/uninstallation of RS232 Control Software

- **Installation**

- Connect the input source devices and the output device according to the system diagram.
- Copy the RS232 control software to the computer, and then connect the RS232 port of the computer to the TL-A70-40W.
- 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

With the control software installed, you can use the software to send RS232 commands to control TL-A70-40W.

#### 4.3.4 Function Settings

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

The interface of the control software is showed as below:

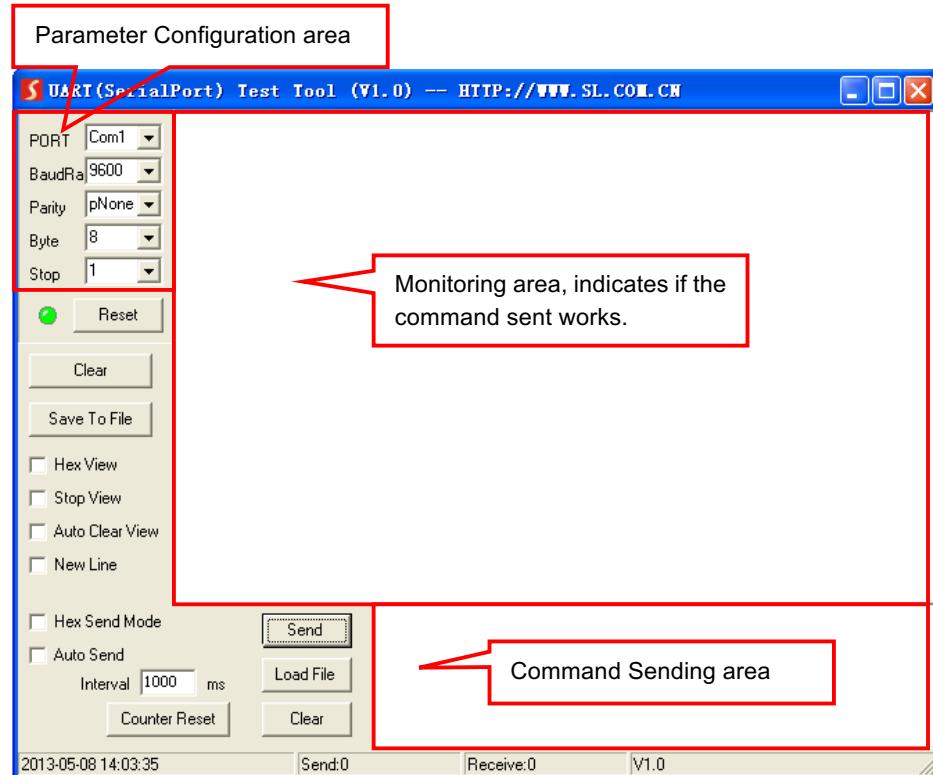


Figure 12 Main Interface of Control Software

#### 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.	Switch the audio to input 1	A: 1 -> 1
2A1.	Switch the audio to input 2	A: 2 -> 1
3A1.	Switch 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] ranges from [00] to [60]. 61 values in total.	Volume of MIC: 50
7[x][x]%	Preset line volume, [xx] ranges from [00] to [60]. 61 values in total.	Volume of LINE: 50
8[x][x]%	Preset the bass level, [xx] ranges from [00] to [08]. 9 degrees in total.	Bass of LINE: 4
9[x][x]%	Preset the treble level, [xx] ranges from [00] to [08]. 9 degrees in total.	Treble of LINE: 4

**Notice:**

1. The letter inside bracket [ ] is the variable code, which is changeable.
2. The bracket [ ] is not included to the RS232 commands.
3. Any dot “.” after the letters is part of the commands.
4. **Ducking function:**

With the MIC input, 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 value. If you need to disable/enable the ducking function, just send the command “**610%**” again.

**5. ID coding**

The ID codes of TL-A70-40W range from 0 to F (hexadecimal), when sending RS232 commands, please take notice of the address of the ID code.

If the amp address ID code is **0**, all RS232 commands will control the amp.

If the address is in **1~F**, it has a unique ID code.

If the ID code is **1~F**, please add “[ID] /” before sending the command.

For example, if the ID code is **5**, and 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:**

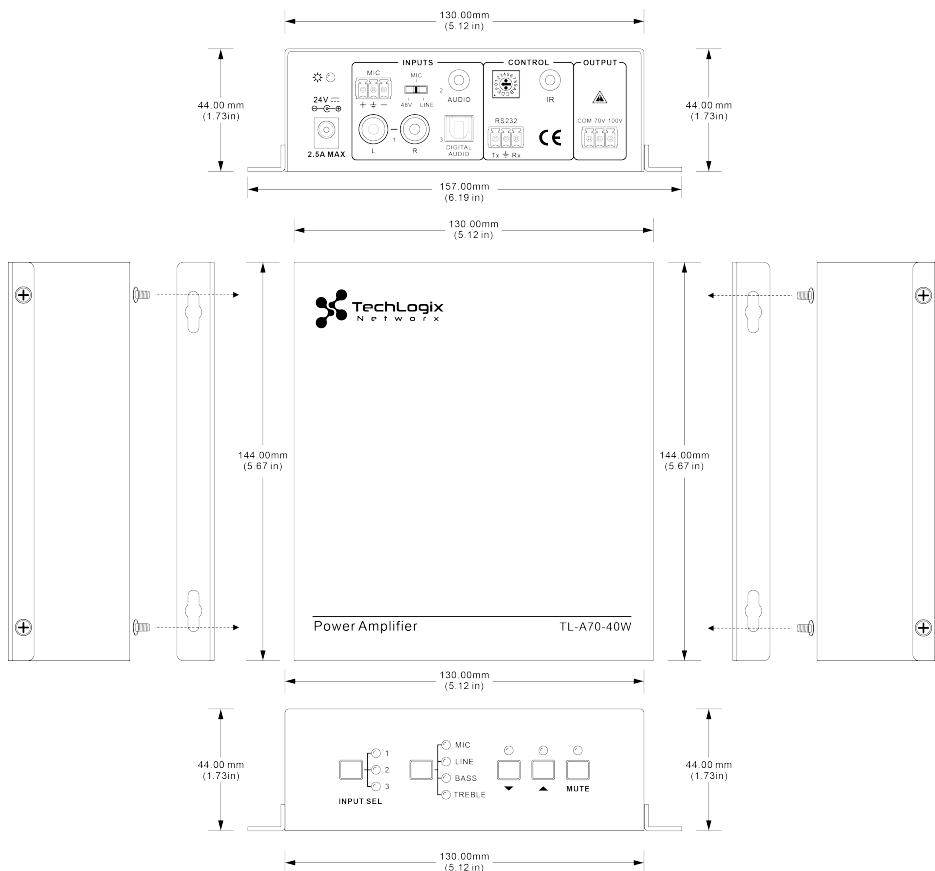
- 1) Switching the input 2 to the line out, the command is: **2A1**.
- 2) Turning up the volume of line audio, the command is: **603%**
- 3) Preset the MIC volume to “21” value, the command is: **521%**
- 4) Checking the working status of **TL-A70-40W**, the command is: **600%**
- 5) If the ID code is **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

I/O Connections	
Analog Inputs	Two(2) RCA jack, One(1) 3.5mm TRS jack
Digital Input	One(1) optical jack
MIC Input	One(1) 3-pin captive screw connector/3.81mm
IR Input	One(1) 3.5mm TRS Jack
RS232 Control	One(1) 3-pin captive screw connector/3.81mm
RS232 ID Selector	One(1) 16 ID codes for control
Button Control(Front Panel)	Five(5) buttons in total
MIC Signal Type Selector	One(1) 3-position slider switch
70V or 100V amplifier Output	One(1) 3-pin captive screw connector/3.81mm
DC 24V Power	One(1) Power connector with locking screw (5.5mm outside diameter, 2.1mm inside diameter)
Audio Performance	
Input Impedance	>10k Ω
Output Type	Constant voltage 70V or 100V
Maximum Rated Power Output	40 Watts
Frequency Response	120 Hz ~ 20 kHz
Common Mode Rejection Ratio (CMRR)	>70 dB at 20 Hz ~ 20 kHz
Signal to Noise Ratio (SNR)	80 dB (Max)
Total Harmonic Distortion + Noise (THD+N)	1% at 1 kHz; 0.3% at 20 kHz at Nominal Level
Voltage Gain	26 dB
Chassis and Environmental	
Enclosure	Painted aluminum
Dimensions (W x H x D)	130mm x 44mm x 144mm (5.12in x 1.73in x 5.67in)
Shipping Weight	1.10Kg(2.43bls)
Operating Temperature (Environment)	-10° ~ +40° C(+14° ~ +104° F)

Operating Temperature (Chassis)	45° C(113° F)
Operating Humidity (Environment)	10% ~ 90% Non-condensing
Storage Temperature (Environment)	-15° ~ +70° C(+5° ~ +158° F)
Storage Humidity (Environment)	10% ~ 90% Non-condensing
<b>Power, ESD, Regulatory</b>	
Maximum Power Consumption	45W
Power Supply	DC 24V at 2.5A
ESD Protection	15KV
Regulatory	CE, FCC
<b>Other</b>	
Standard Warranty	3 Year
Indicators	1 Power, 2 Input Select ,4 Signal select, 1 Up, 1 Down, 1 Mute
Included Items	Installation guide, Power adapter, Mounting ears (2 ea), Mounting screws (4ea), RS232 cable, Plastic cushions (4 ea), Pluggable terminal block

## 6. Panel Drawing



**Figure 13 Panel Drawing**

## 7. Troubleshooting and Maintenance

Problems	Causes	Solutions
No output audio	No signal at input/ output end	Check input/ output connections
	Failed cable connection	Change for another cable.
	Broken unit	Send it to the dealer for repair.
POWER indicator doesn't work, unit does not 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 has interference		
Cannot control the device by front panel buttons, RS232 port or IR remote	Broken unit	Send it to the dealer for repair.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

## 8. After-sales Service

If there appear some problems when running the device, please check and deal with the problems referenced in this user manual.

- 1) **Product Limited Warranty:** We warrant that our products will be free from defects in materials and workmanship for **three years**. Please see warranty page posted on [www.tlnetwork.com](http://www.tlnetwork.com) for more info.
- 2) **What the warranty does not cover:**
  - Warranty expiration.
  - Factory applied serial number has been altered or removed from the product.
  - Damage, deterioration or malfunction caused by:
    - Normal wear and tear
    - Use of supplies or parts not meeting our specifications
    - No certificate or invoice as the proof of warranty.
    - The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
    - Damage caused by force majeure.
    - Non-authorized service
    - Other causes which does not relate to a product defect
  - Delivery, installation or labor charges for installation or setup of the product
- 3) **Technical Support:** Email to our after-sales department or make a call, please inform us the following information about your cases.
  - Product version and name.
  - Detailed failure situations.
  - The formation of the cases.

**Remarks:** For any questions or problems, please try to get help from your local distributor.