User Manual

TL-A80-20W

Mini Digital Amplifier

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Version: TL-A80-20W _160627

Preface

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

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

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 manufacture 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.

Table of Contents

1. Introduction

1.1. Introduction to TL-A80-20W

The TL-A80-20W is a compact-size digital amplifier (Class-D) with 3 inputs (2 line in and 1 balanced MIC). It includes powerful functions, including output bridging, dual-mono inputs, EQ control, microphone mixer etc.

1.2. Features

- 2x20Watt@4Ohm as the default amplifier output.
- Bridge output function. User can switch the TL-A80-20W to be 1x40Watt@8Ohm by bridging.
- Two stereo audio inputs, switchable by buttons, IR remote & RS232.
- Volume/Bass/Treble controllable by buttons, IR remote & RS232.
- MIC input can support balanced/unbalanced signals.
- Variable line audio output on 3.5mm jack.
- Dual-mono summing.   Stereo inputs can be summed to dual mono audio.
- MIC mixer function. The microphone will be mixed to the line audio output, and be controlled separately.
- MIC input supports condenser mic (48V phantom power), dynamic MIC and wireless MIC.
- Auto noise gate. It detects the audio of the MIC input, and will mute the channel when there is no input.
- Ultra-low inrush current, no need for power sequencing. This allows multiple TL-A80-20W amps to be powered on simultaneously without overloading power circuits.
- Convection cooling, no fan needed.
- Antistatic case design: provides good protection for long-term and stable performance.

1.3. Package List

- ➢ 1 x TL-A80-20W (mounting ears permanently affixed).
- ➢ 2 x Pluggable Terminal Blocks
- ➢ 1 x RS232 Cable
- ➢ 1 x Power Adapter

➢ 1 x Power Cord

➢ 4 x Plastic Cushions

➢ 1 x User Manual

Notes：

➢ The IR receiver, IR remote, and its battery are offered as an optional accessory (TL-A8O-20W-IR)

➢ Please confirm if the product and the accessories are all included, if not, please contact the reseller.

2. System Connection Introduction

2.1. Audio Output

#### 2.1.1. Default output: 2x20Watt@4Ohm

The default output of amplifier is 2x20Watt@4Ohm, connect the amplifier output as shown in the picture below:
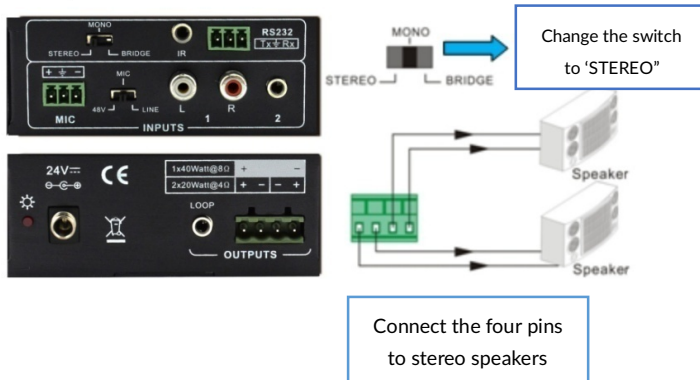
2.1.2. Bridge connection: 1x40Watt@8Ohm

The TL-A80-20W has output bridging, to double the output power to 1x40Watt@8Ohm. It will sum the input left channel and input right channel to mono output, and the power is up to 40Watt.

The bridging connections are:
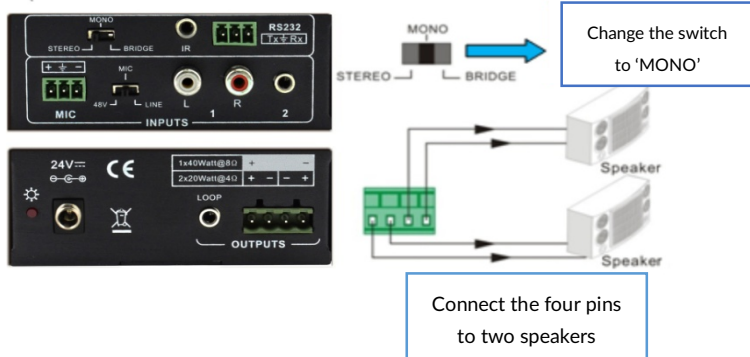
Change the switch to 'BRIDGE"

Connect the two pins to a single speaker
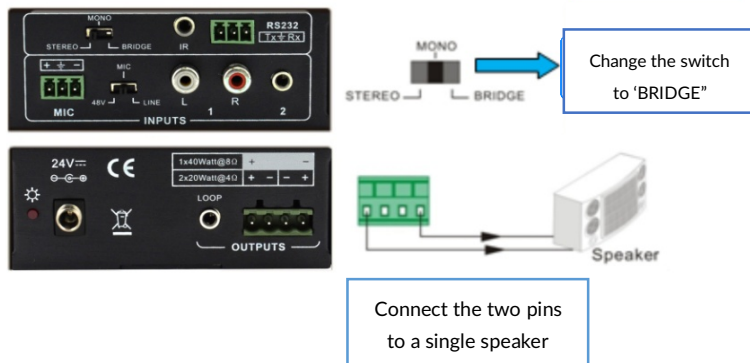
2.1.3. Dual-mono Output

TL-A80-20W 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:

Change the switch to 'MONO'

Connect the four pins to two speakers

2.2. Microphone input

The microphone input of TL-A80-20W has three modes, and each different mode requires a different connection:

2.2.1. 48V phantom power input

When the switch is moved to "48V", the MIC input will provide 48V phantom power. This is used to supply power to a condenser microphone. Connection is:
"+" connect to positive, "-" connect to negative and "⏚" to ground.
Note: In this mode, only condenser microphone can be connected.

2.2.2. MIC input

When the switch is moved to "MIC", the microphone input is used for connecting to a dynamic microphone. There are two different connections:
1) Unbalanced connection:
  "⏚" 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 is moved to "LINE", the microphone input is used to connect to a standard 'line' audio or wireless microphone output. There are two different connections:
1) Unbalanced connection:
  "⏚" connects to ground, and "+" connects to signal.
2) Balanced connection: "+" connects to positive, "-" connects to negative and "⏚" connects to ground.
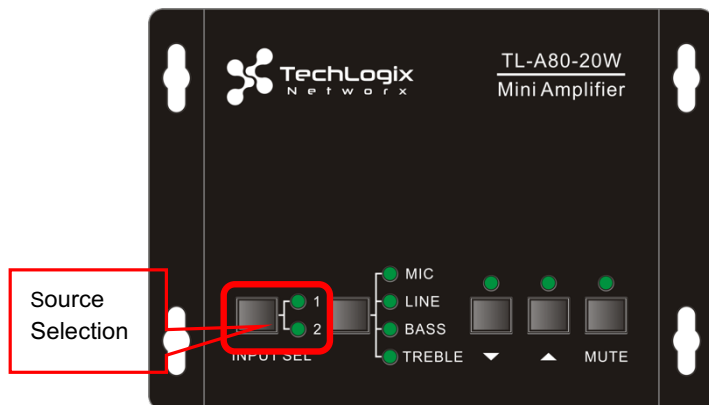
3. Operation of the Control Panel and the IR Remote

3.1. Operation of the Control Panel

The buttons provide control of volume, EQ control, and switching.

3.1.1. Audio switching

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

3.1.2. Volume/EQ control

The line volume and MIC volume can be controlled by the buttons.
The MIC Volume/LINE volume/LINE bass/LINE treble are selected by the 'select' button, and controlled up/down/mute by the 'function' buttons. Please check the picture below:
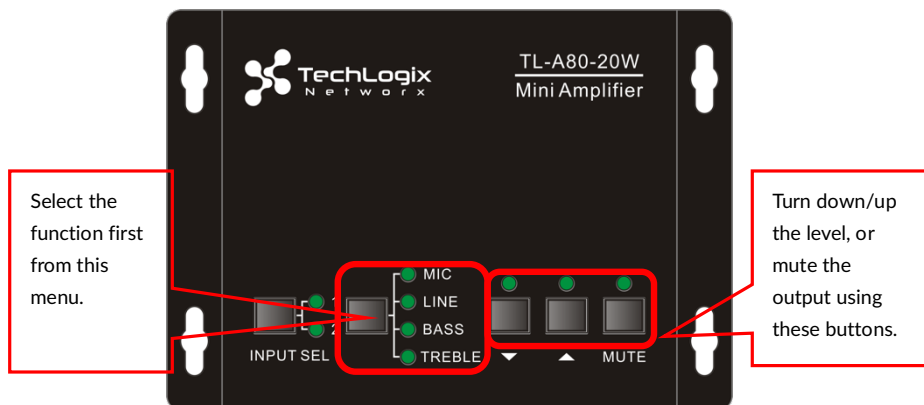
For example, to turn up the line volume, you should select the "LINE" first, and then press the button " ▲ ".

3.2. Use of the IR Remote

Audio Inputs

1: RCA stereo audio input.

2: 3.5mm jack

Use to transmit the infrared signal sent by the IR remote.

Audio Control Modes:

MIC: turn up/down the microphone volume.

LINE: turn up/down the line volume.

BASS: bass of line audio.

TREBLE: treble of line audio.

Mute Mode:

MIC: Mute the microphone.

LINE: Mute the line.

SPEAKER: Mutes all inputs (MIC and LINE)

INPUTS SEL

1 — 2

MUTE

MIC SPEAKER LINE

VOLUME CONTROL

MIC LINE

+ − + −

BASS TREBLE
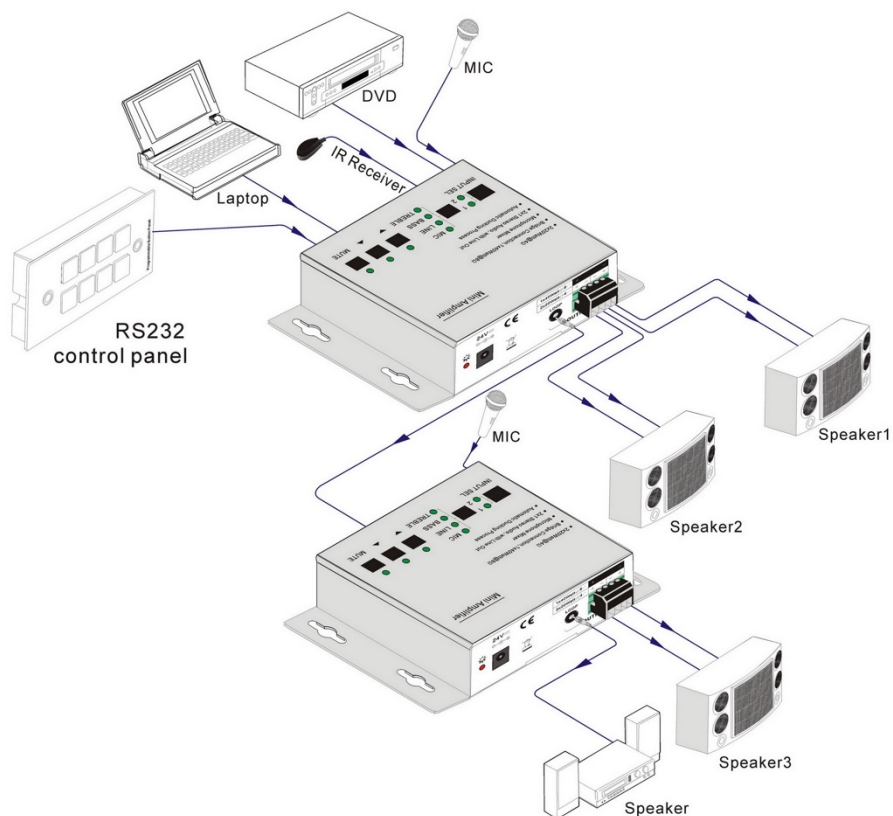
+ − + −

Mini Amplifier

IR receiver, works in conjunction with the IR remote. Point the IR remote at the IR receiver to control the amp.

3.5mm jack, insert into the special 'IR' socket (3.5mm) on the amplifier.

Notice: The IR remote, the IR receiver, and the battery of the IR remote are all offered as an accessory (TL-A8O-20W-IR).

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
1A1.	Switch the audio to input 1	A: 1 -> 1
2A1.	Switch the audio to input 2	A: 2 -> 1
0A0.	Mute Audio of MIC and Line out	Mute
1A0.	Mute audio of MIC	Mute MIC
2A0.	Mute audio of LINE	Mute LIN
0A1.	Unmute MIC and LINE	Unmute
3A0.	Enable Noise Gate	Gate On
4A0.	Disable Noise Gate	Gate Off
600%	Status query	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%	Factory reset	Init OK
5[xx]%	Set MIC volume, [xx] ranges from [00] to [60]. 61 values in total.	Volume of MIC: 50
7[xx]%	Set LINE volume, [xx] ranges from [00] to [60]. 61 values in total.	Volume of LINE: 50
8[xx]%	Set the bass level, [xx] ranges from [00] to [08]. 9 values in total.	Bass of LINE: 04
9[xx]%	Set the treble level, [xx] ranges from [00] to [08]. 9 values in total.	Treble of LINE: 04

Notice:

1: Letters inside brackets [ ] is variable.

2: The brackets [ ] should not be included in the RS232 commands.

3: Any dot "." after the code should be included in the RS232 commands.

Example 1:

Switch to input 2, the RS232 command is: **2A1.**

Example 2:

Increase the volume of line audio, the RS232 command is: **603%**

Example 3:

Set the MIC volume to "21" value, the RS232 command is: **521%**

Example 4:

Status query of the TL-A80-20W, the RS232 command is: **600%**

6. Specification

I/O Connections	
Analog Inputs	One (1) RCA L/R jack, One(1) 3.5mm TRS 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
Button Control(Top Panel)	Five(5) buttons in total
MIC Signal Type Selector	One(1) 3-position slider switch
Output Signal Format Selector	One(1) 3-position slider switch
Analog Loop Output	One(1) 3.5mm TRS jack
Amplifier Output	One(1) 4-pin pluggable terminal block/5.08mm
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 Impedance	50 Ω Analog output; 4/8 Ω Speaker output
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	32 dB
Chassis and Environmental	
Enclosure	Painted aluminum
Dimensions(W x H x D)	123.0mm x 39.5mm x 87mm (4.84in x 1.56in x 3.43in)
Shipping Weight	0.83Kg(1.83bls)
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
Power, ESD, Regulatory	
Power Supply	DC 24V at 2A
ESD Protection	15KV
Regulatory	CE, FCC
Other	
Standard Warranty	3 Year
Indicators	1 Power, 2 Input select ,4 Signal select, 1 Up, 1 Down, 1 Mute
Included Items	Installation guide, Power adapters, Mounting ears(2 ea), RS232 cable, Rubber feet(4 ea), Pluggable terminal blacks(2 ea)

Panel Drawings
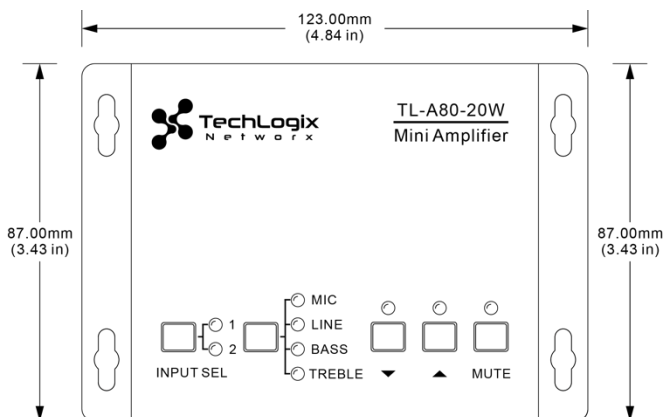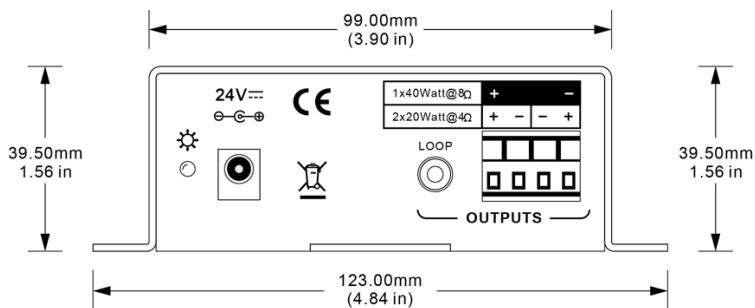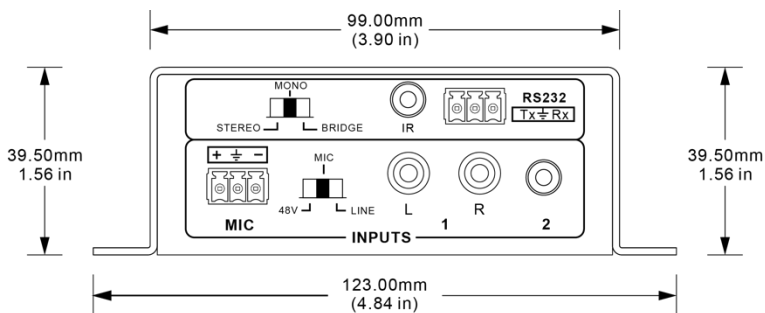
7. Troubleshooting & Maintenance

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, the input/output cables may be damaged or the connectors loose, please change the cable.

- Check if the correct input is selected.

2) If the **POWER** indicator doesn't illuminate or the unit does not function at all, please make sure the power cord connection is good and the circuit is energized.

3) If static or noise is present in the output audio, please make sure the system is grounded well.

4) If the static becomes stronger when connecting the audio connectors, the unit is grounded improperly.

5) If the TL-A80-20W amplifier cannot be controlled by the keys on the front panel, RS232 port or IR remote, the unit may be damaged. Please contact reseller for replacement.

1) **Product Limited Warranty:** We warrant that our products will be free from defects in materials and workmanship for **three years.** Please see the warranty page posted on www.tlnetworx.com for more info.
2) **What the warranty does not cover (servicing available for a fee):**
   - 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.
     - Servicing not authorized
     - Any 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 or call to our support department (support@tlnetworx.com), please provide the following information about your case.
   - Product version and name.
   - Detailed failure situations.
   - Any open case number.