

HA-300 | 真空管耳机功率放大器 DIRECT HEATED TRIODE TUBE HEADPHONE AMPLIFIER

User Manual



Thank you for choosing Cayin HA-300 Direct Heated Triode Tube Headphone Amplifier

We have inserted protective foam inside the Vacuum Tube Cage in order to protect the vacuum tubes during transportation. Please remove these foams before you connect the amplifier into your sound system. Fail to do so might cause serious damage to the amplifier or disaster such as fire accident.

We have prepared this user manual to help you understand the features and get familiar with the operation of the amplifier. We suggest all customers read through this manual before they start to use the device.

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Notice

This amplifier is designed, optimized and manufactured by factory designated components. Cayin reserves the right to void the warranty of the product in case of unauthorized repair, modification or change to the product, and we shall not responsible to any failure or damage caused by replacement of non-designated components.

Package Contents

Please place the box in upright position according to the marking of the package. Please examine the product package before you open it, the package should be free from any physical damage or water stain. You should find the following items when you open the package:

1. Cayin HA-300 x1
2. Product User Manual (Chinese) x1
3. Warranty Card x1
4. AC Power Cord x1
5. Umbilical Power cable x1
6. Replacement Fuse x2

Recommendation

Please keep all packaging materials for future use as you may need to repackage the amplifier in the future. Please fill in the product warranty card immediately and mail it to authorized dealer to safeguard your after-sales service.

Note: Please make sure the AC voltage of your local power supply match the voltage information printed on the back panel before you power up the amplifier. Incorrect input voltage setting will cause damage to the machine or might even lead to serious household accident. Cayin reserves the right to refuse service or responsibility on related instances. If the marked voltage is different from your local power supply voltage, please contact your authorized dealer or Zhuhai Spark Electronic Equipment Co., Ltd.

Attention: the product package should include only the items in the list above.

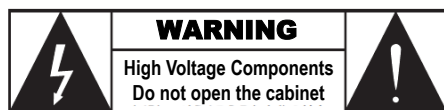


Product Features

1. Single-ended amplification approach brings out the charm of the tubes with natural and realistic music playback.
2. Voltage Amplification: one piece of Shuguang WE6SN7 (replica of Western Electric) per channel
3. Power Amplification: one piece of Full Music gold pins ceramic base 300B per channel
4. Support Balanced (XLR) and single-ended (RCA) input. To maintain single-ended amplification, balanced input will transform to single-ended through a pair of input transformer.
5. The output from 300B will feed into a pair of custom design in-house manufactured high quality EI output transformer for single-ended (6.35mm) or balanced (4-pins XLR) headphone output.
6. To make sure HA-300 can handle vast variety of headphones satisfactory, the output transformers are designed to support three sets of impedance matched output (L, M and H).
7. Powerful headphone output, can handle demanding low sensitivity current hungry planar headphone with ease..
8. Excellent vacuum tube shock absorber implementation provides quiet and realistic playback from sensitive headphones
9. One set of speaker terminal as alternative output, can be used as an integrated speaker amplifier with 8W+8W Class A output
10. Outboard power supply provides pure and steady power for the amplification circuit with minimum interference from power transformer
11. Custom design in-house manufactured high quality toroidal power transformer
12. High voltage power rectification with set of four NOS RCA 22DE4 tubes
13. Exotic multi-stage dedicated power supply approach, reduce interference to signal amplification effectively through independently regulated power supply for voltage amplification circuit. Optimize power provision to all circuit and enhance audio performance significantly
14. Effective design with sensible layout and effective shielding and isolation, the corner stone for excellent overall performance.
15. Handmade, point-to-point welding on all circuit,
16. High-Precision 24 steps potentiometer
17. MUNDORF MCap RELY SilverGold premium grade coupling capacitor
18. High quality shielded silver-plated cable for internal wiring, minimize interference during internal transmission.
19. Detachable vacuum tube shielding cage, easy to detach and install

Safety Precautions

1. Unplug the power cord if you are not going to use the amplifier for an extended period of time, and keep the machine in proper condition
2. Tube amplifier will built-up it operation temperature after long hours of operation. Please keep the amplifier at a well-ventilated environment and do not cover the amplifier or blocked the vents. Poor ventilation will lead to excessively high operation temperature and can cause malfunction or fire
3. To avoid damaging the amplifier, you must connect a source device to the input terminals before you select that as the active input of your HA-300.
4. To avoid damaging the amplifier, short circuit among the output terminals are strictly forbidden.
5. Do not attempt to service this product yourself. Opening the cover may expose you to electric shock or other hazards.
6. Do not attempt to disassemble the machine. Cayin reserves the right to void the warranty of the product in case of unauthorized repair, modification or change to the product. All service and maintenance must be conducted by authorized service technician.
7. The amplifier must be keep away from water dripping or water splitting, do not place any objects filled with liquids such as vases or some others on the top or around the amplifier.
8. Please disconnect power cable before you attempt to clean the machine. Please use soft clean cloth to wipe clean the chassis, do not use volatile solution or corrosive to clean product.
9. Please handle with care, avoid tempering to the machine



- To avoid electrical shock, please do not remove the cover or back panel
- All repair can only be carried out by qualified technician for repair
- To avoid fire or electrical shock, please keep away from water spill or moisture environment



This symbol warns the users that uninsulated voltage within the unit may be sufficient to cause electrical shock. It is dangerous to make any kind of contact with any part inside the unit.



This symbol alerts the users that important information concerning the operation and maintenance of this unit has been provided. The information should be read carefully to avoid problems.



We recommend customers to use this amplifier under 2000 meters above sea level and non-tropical climate environment



Specifications

Headphone output

Rated Output (Balanced)	1800mW+1800mW(L), 2200mW+2200mW(M), 3700mW+3700mW(H)
Rated Output (Single Ended)	1100mW+1100mW(L), 2400mW+2400mW(M), 5000mW+5000mW(H)
Frequency Range	10Hz ~ 50kHz \pm 3dB
TH+D	1%(1kHz)
Sensitivity	200mV ~ 440mV
S/N Ratio	100dB (A-weighted)
Headphone Impedance	L : 8~64 Ω ; M : 65~250 Ω ; H : 251~600 Ω
Headphone Connectors	4pin XLR x1, 6.35mm x1

Speaker Output

Rated Output	8W + 8W Class A
Frequency Range	10Hz~60kHz \pm 3dB
TH+D	1%(1kHz)
S/N Ratio	100dB (A-weighted)
Input Sensitivity	440mV
Output Impedance	4~8 Ω
Input Impedance	100k Ω

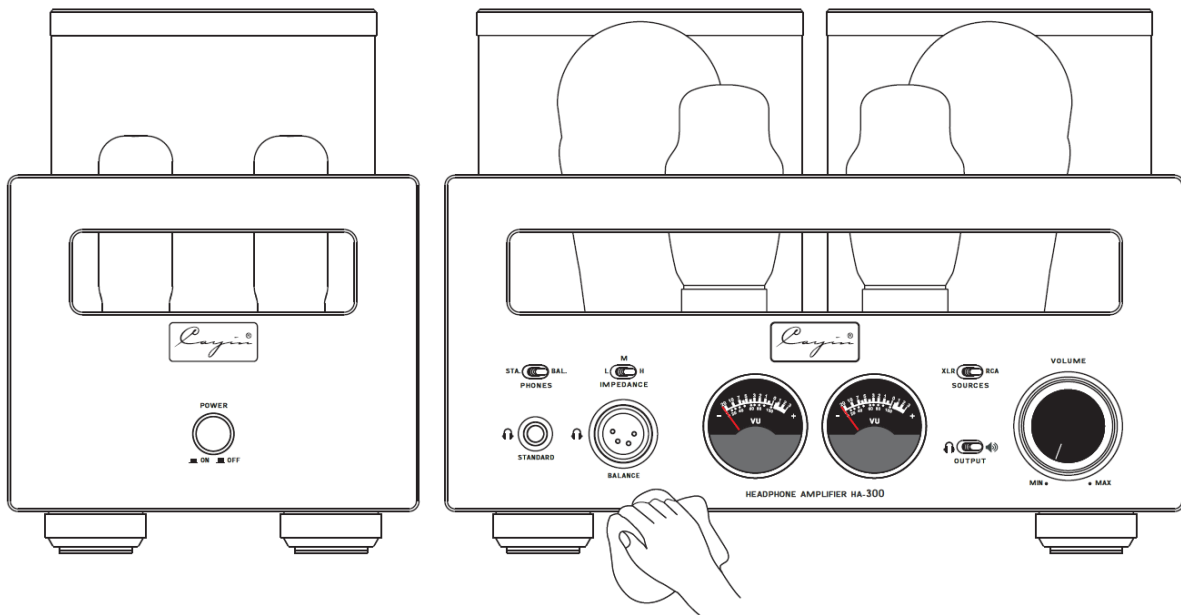
Others

Input Connector	XLR, RCA
Tubes used	300B x 2, 6SN7x2, 22DE4x4
Dimension	Amplifier: 286mmx368mmx210mm; Power Supply: 286mmx368mmx210mm
Weight	Amplifier: 20Kg; Power Supply: 9.5Kg
Fuse	~220V-240V: T1.6AL250V; ~100V-120V: T3.15AL250V
Power Consumption	185W
Working Condition	Temp: 0°C~40°C; Humidity: 20% - 80%
Storage Condition	Temp: -20°C~70°C; Humidity: 20% - 90%

Daily Care

Notice

- Please use soft clean cloth to clean the chassis regularly
- Do not use volatile solution or corrosive cleaning product or pre-treated cloth

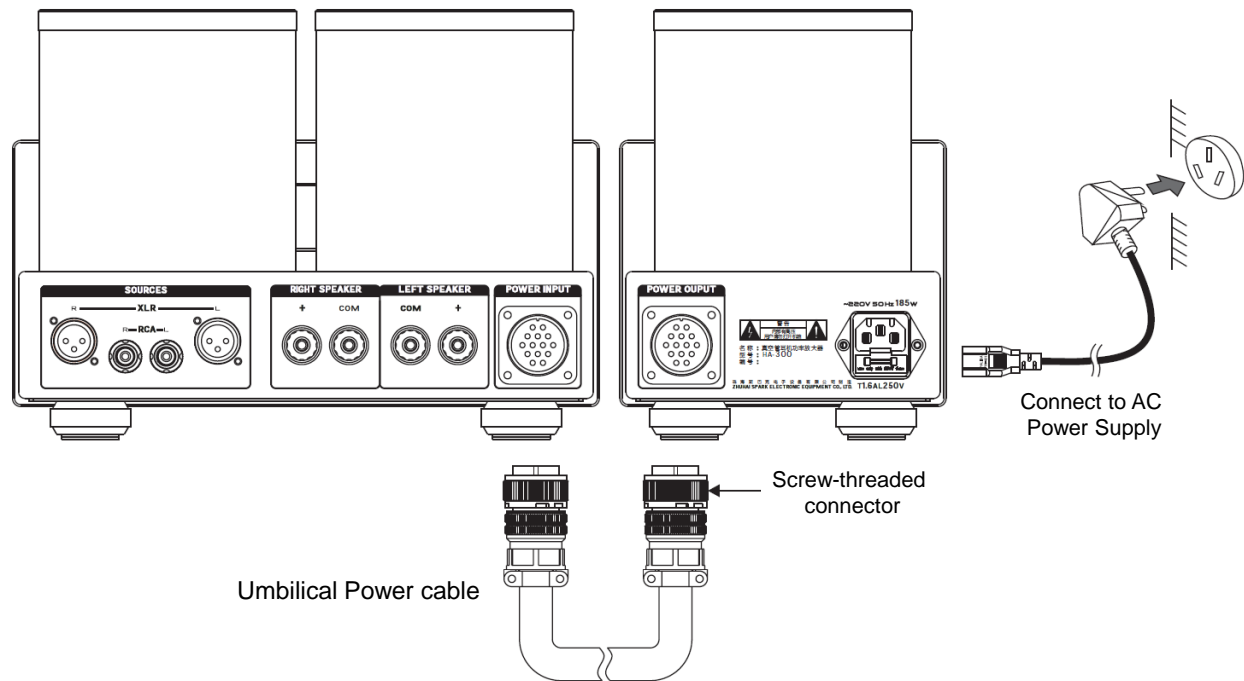


Warranty Service

1. The Product is warranted for a period of twelve (12) months from the date of original purchase (the "Warranty Period"). Replacement Products are warranted for the remainder of the original twelve (12) month warranty period.
2. The defective product must be returned to our authorized agent or Zhuhai Spark Electronic Equipment Co., Ltd (the "Company") for service. You must receive approval from our authorized dealer or the "Company" before you send out the defective product.
3. Do not attempt to disassemble the machine without prior approval of the "Company" otherwise we reserves the right to void the warranty of the product

Note: The information in this manual is subject to change without prior notice.

Preparation



- **Connecting Umbilical Power cable and AC Power cord**

After connecting the speaker and source equipment, connect the AC power cord and umbilical power cord to the Amplifier

- **Umbilical Power Cord Connection**

Position the alignment groove of screw-threaded connector on the umbilical power cord against the alignment pin of power input/output connector of the amplifier/power supply unit, push the umbilical power cord into the connector and start to turn the screw-threaded connector clockwise until the connector is secured and is difficult to turn further with bare hand. Complete the connection by repeating the process with the other end of the screw-thread connector on the umbilical power cord.

- **Please leave ample space around the power socket so that the power cord can be easily disconnected.**

Attention

- Connect power cord after all equipment and speakers are connected p.
- It is normal that the transformers will emit heat when the amplifier is used for long hours
- Please unplug the power plug if you won't use the amplifier for a long time.
- Please make sure the AC voltage of your local power supply match the voltage of the amplifier. Cayin will not be responsible for the damage or accidents such as fire caused by incorrect input voltage

Front Panel Functional Description

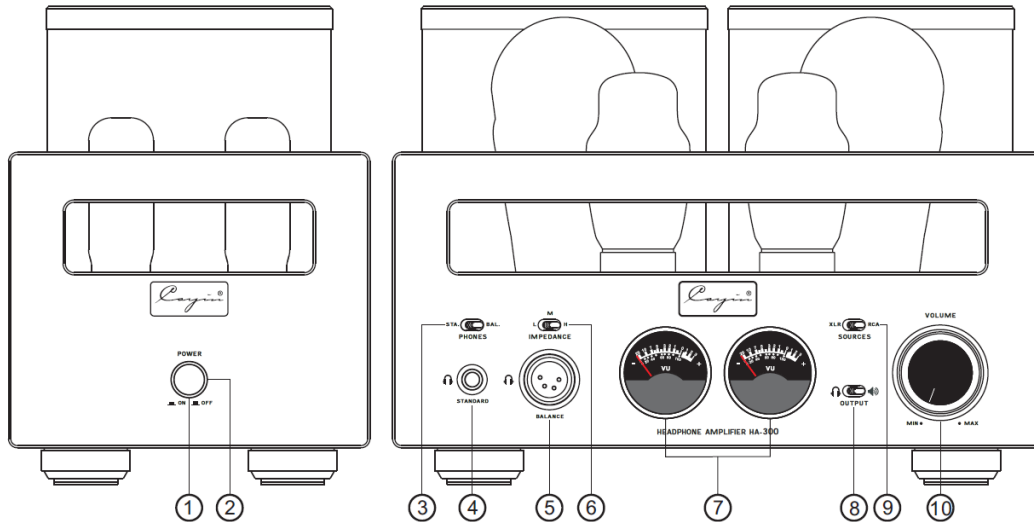


Diagram 1: HA-300 Front Panel

- ① **Power On/Off:** Turn on and off the amplifier. Press “down” the button to turn on the amplifier, Press again the button will resume to original position and the amplifier will power off.
- ② **Power Indicator:** Indicate the working status: The indicator will remain always on when the amplifier is in regular operation
- ③ **Headphone Output Selector:** Select Balanced or Single-ended headphone output
- ④ **STANDARD:** Output for headphones terminated in 6.35mm TRS connector
- ⑤ **BALANCE:** Output for headphones terminated in 4pins XLR connector
- ⑥ **IMPEDANCE:** Select the most desirable impedance-matched output from the amplifier, three options were offered: (L:8~64Ω; M:65~250Ω; H: 251~600Ω)
- ⑦ **VU meter:** monitor output level of the amplifier
- ⑧ **OUTPUT:** select headphone or speaker output
- ⑨ **SOURCES:** select balanced or single-ended input
- ⑩ **VOLUME:** Control volume of amplifier, turn the knob clockwise to increase volume, and turn the knob counterclockwise to reduce the volume.

Attention

- If your want to connect a 3.5mm terminated headphone to the amplifier, you need a 3.5mm to 6.3mm adapter (not included in the package).
- Listening through headphones at a high volume for extended periods of time can result in hearing impairments.
- Please do not use mono (TS) phone plug with this amplifier as this might cause serious damage such as short circuit in the amplifier.
- Please unplug the power plug from AC power circuit if the amplifier is not used for a long time

Rear Panel Functional Description

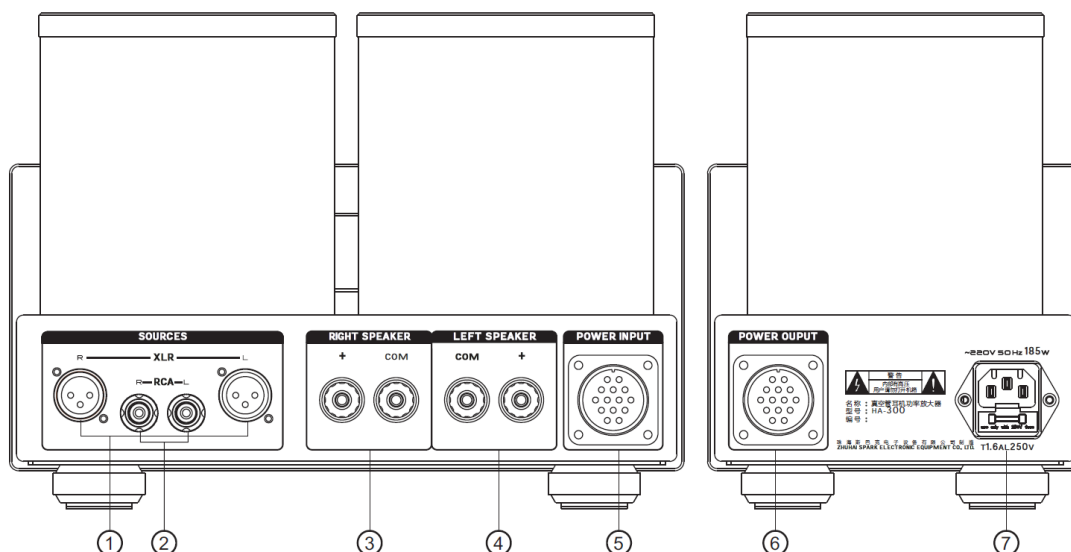


Diagram 2: HA-300 Rear Panel

- ①. Balanced input (XLR)
Connect a balanced audio input to the amplifier. Please make sure the left and right channel is connected correctly
- ②. Single-ended input (RCA)
Connect a single-ended audio input to the amplifier. Please make sure the left and right channel is connected correctly
- ③. Right Channel Speaker Terminal connect to the right channel speaker
- ④. Left Channel Speaker Terminal connect to the left channel speaker
- ⑤. Power Input for Amplifier chassis
- ⑥. Power Output from power supply unit
- ⑦. AC Power Input with Fuse Holder: please replace fuse with the same specification

Attention

Please make sure the AC voltage of your local power supply match the voltage of the amplifier. Cayin will not be responsible for the damage or accidents such as fire caused by incorrect input voltage

Top Panel Functional Description

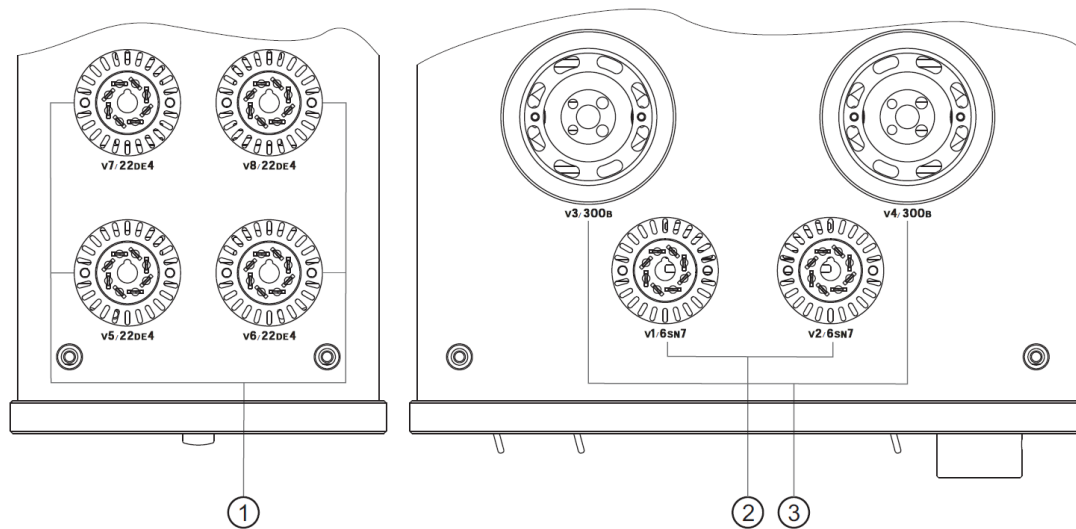


Diagram 3: HA-300 Top Panel

- ① V5、V6、V7、V8: 22DE4 Vacuum Tube
- ② V1、V2: 6SN7 Vacuum Tube
- ③ V3、V4: 300B Vacuum Tube

Attention

- The vacuum tube will become very hot during operation, please be careful and don't get burned.
- Please turn off the amplifier for 20 minutes before replacing the vacuum tube. Hold the base of vacuum tube firmly and to avoid damaging the fragile part of the vacuum tube.
- When install vacuum tube to the amplifier, position the vacuum tube correctly according to the alignment pin before push the vacuum tube base into the socket.
- Only used matched pair 300B and 6SN7 in the HA-300 amplifier.



Installation

Please make sure all associated equipment are in perfect working condition before you install the amplifier\

Please pay attention to the following details when you install the amplifier.

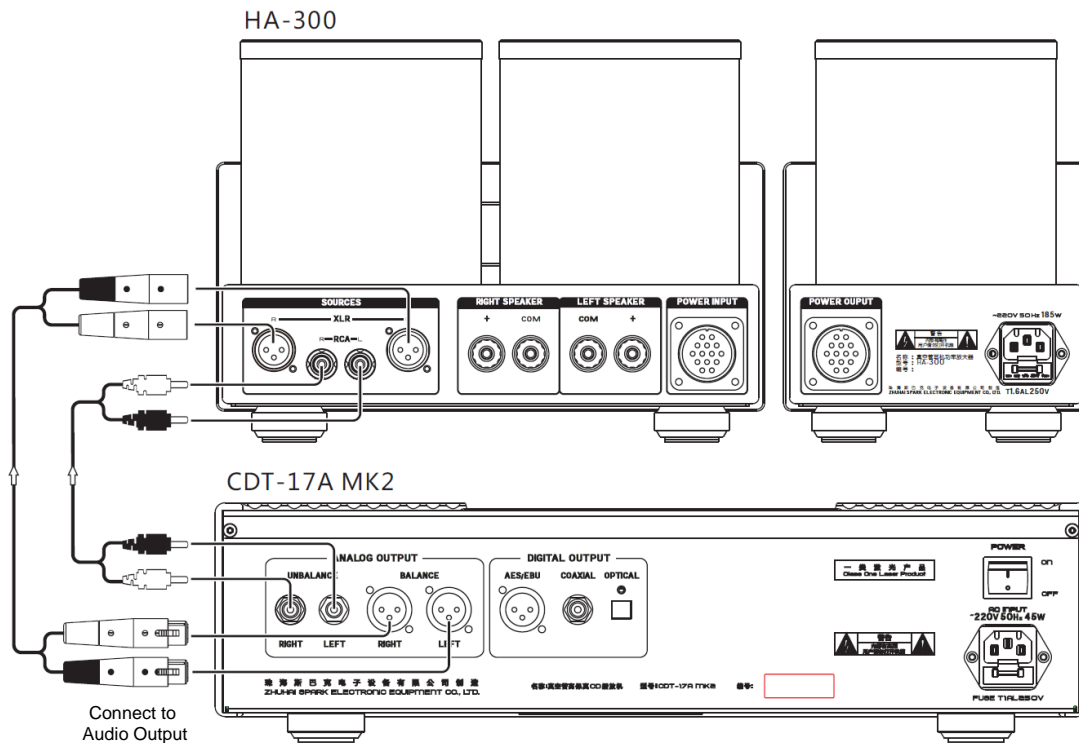
- Do not place the power amplifier under direct sunlight or near other heat sources
- To prevent the amplifier from overheating, please keep the amplifier at a well-ventilated environment and do not cover the amplifier or blocked the vents
- Avoid moisture, keep the amplifier from dust if possible
- Make sure the amplifier are setup at a location that can be connected to the AC power supply and other audio equipment conveniently.
- Place the amplifier at a flat surface, make sure all four supporting tips are evenly loaded.
- Please keep amplifier not less than 15cm away from and the wall.

Vacuum Tube Substitution

Vacuum Tube	Acceptable Substitution
6SN7	6SN7GT、6H8C、ECC32、6N8P、CV181
22DE4	22DE4
300B	300B

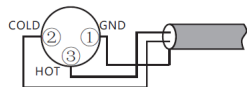
Connect to Audio Equipment

This section will illustrate how to connect audio equipment to the HA-300 amplifier.

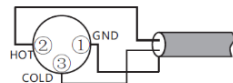


Balanced Connector:

1. This amplifier use XLR connectors that are commonly used in professional application for balanced connection.
2. There are two XLR wiring standards:
 - European standard: pin 1=Ground, Pin 2 = COLD, Pin 3 = HOT



- American standard: pin 1=Ground, Pin 2 = HOT, Pin 3 = COLD

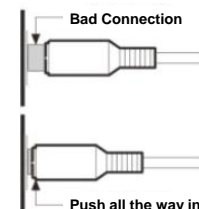


3. This amplifier use American standard. When connect to audio equipment with balanced output wired in European, the playback signal might be in reversed phase. We advise user to maintain the phase of the system correctly.

Attention to Audio Connection:

1. Please refer to the manual of associated equipment whenever necessary.
2. Do not connect the power cord until all equipment are properly connected
3. "R" indicates the right channel; "L" indicates left channel.
4. Please make sure all connectors are securely installed. Bad connection might cause noise and degrade in audio performance, or even damaging your equipment
5. Please do not tie the power cord, audio interconnects, and speaker cable together or run them in parallel because this will produce adverse effect on audio performance

Note: Please make sure + and -, left and right are connected properly.



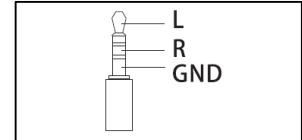
Connect to Headphones

Selecting Headphone Connection

HA-300 provided two types of headphone output: 4-pins XLR for balanced, 6.35mm for singled-end, we have optimized the headphone amplifier to perform satisfactory for both output, user are free to use both headphone output according to their need without worrying one is better than the other.

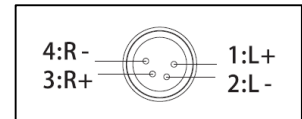
Single-ended Headphone Connection

- HA-300 provides one set of 6.35mm headphone input, the pin definition of the headphone connector is as illustrated.
- Headphones terminated with 3.5mm connector will require a 3.5mm to 6.35mm adapter in order to use it with this headphone amplifier.



Balance Headphone Connections

- HA-300 provide one set of 4-pin XLR headphone input, the pin definition of the XLR connector is as illustrated.
- Headphones terminated with dual XLR (3-pins), 4.4mm or 2.5mm balanced headphone connectors will require corresponding XLR4 adapter in order to use it with this headphone amplifier,



IMPEDANCE matched output

- Headphones are currently available from 8Ω to 600Ω , in view of this wide range of impedance rating, HA-300 provides three sets of impedance matched outputs (L: $8\sim 64\Omega$; M: $65\sim 250\Omega$; H: $251\sim 600\Omega$) to make the headphone amplifier can handle vast variety of headphones satisfactory.
- We recommend users to start with the output setting that match the impedance rating of your headphone.
- It is technically safe to select any impedance setting for your headphone. You can try other impedance setting without worrying causing any damage to your headphone.

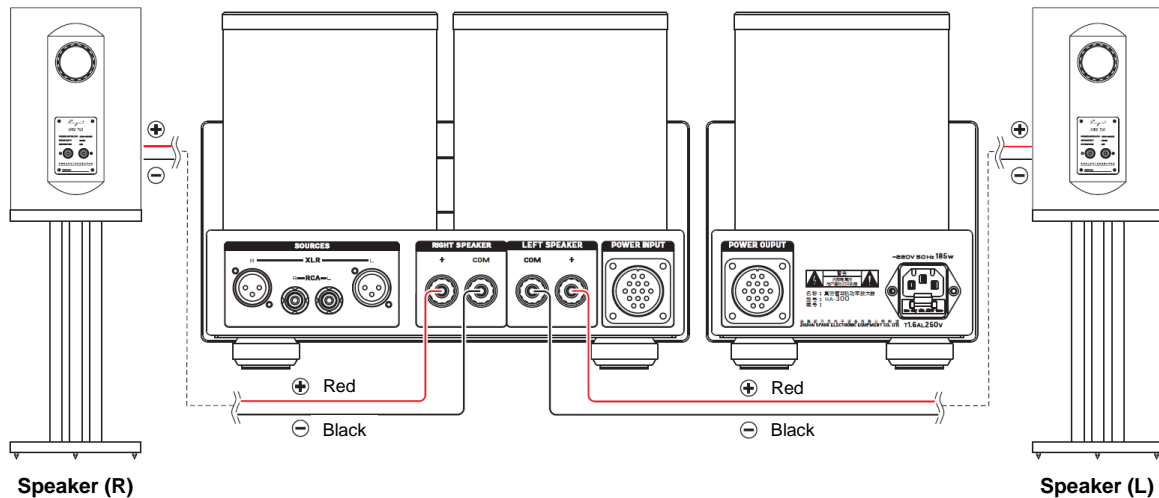
Attention

- Balanced headphones can convert it into single-ended headphone with appropriate converter and use the 6.35mm headphone output.
- Single-ended headphone cannot use an adapter to plug into the XLR4 balanced headphone output of the N8, it can cause damage to your headphone and/or headphone amplifier.

Connect to Speakers

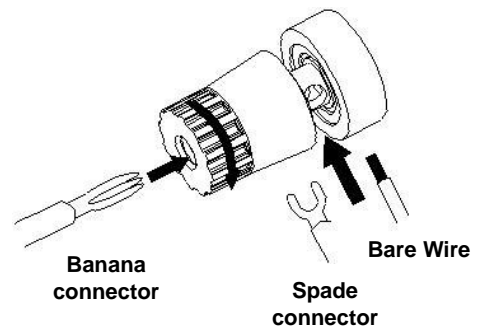
Connect the speaker to the terminals on the rear panel (as illustrated)

- Connect the red speaker cable to the positive terminal (+) and the black speaker cable to the negative terminal (COM)
- If the positive and negative terminals are reversed during connection, the speaker will be out of phase, the sound will become unnatural and does not have focus.



Connecting Speaker Cable

- If your speaker cable is terminated by spade speaker connector, turn the top part of the speaker terminal anti-clockwise to release the locking mechanism, insert the spade connector into the gap as illustrated, and tighten the speaker terminal again.
- If your speaker cable is terminated by banana speaker connector, you can insert the connector to rear connection hole directly. Some banana connector has a locking mechanism, please refer to the instruction of the banana terminal for detail.
- If your speaker cable is not terminated (bare wire), you should follow the procedure as spade connector but you need to insert the bare wire into the hole of the center rod of the speaker terminal before you tighten the terminal.





Basic Operation

Please make sure all connections are correct and power supply voltage is stable before turn on the amplifier.

1. Turn on the amplifier, the power indicator will light up.
2. When the power indicator remains lighted up steadily, the amplifier is ready for operation. If the power indicator will become steady (always ON). It means that the amplifier is ready for operation. If the power indicator did not light up, the amplifier is malfunction, please turn off the power and contact your local dealer for service support.
3. The tubes regulated power supply might require around 30-60 seconds to ramp up the voltage gradually, it is normal if you heard ting-ting noise from your headphone or speaker during this time.
4. The vacuum tube might require 10 minutes of warm up before they reach optimum performance.
5. Select your input source: XLR for balanced input, RCA for single-ended input
6. Select your output option to headphone or speaker according to the icon on the front panel.
7. If you are using single-ended headphone, insert the 6.35mm connector of your headphone into the **STANDARD** headphone output on the front panel. Switch the headphone output selector (**PHONES**) to **STA**.
8. If you are using balanced headphone, insert the XLR4 connector of your headphone into the **BALANCE** headphone output on the front panel. Switch the headphone output selector (**PHONES**) to **BAL**.
9. Select the appropriate output (**L**, **M**, or **H**) on the **IMPEDANCE** switch according to the specification of your headphone for optimized performance
10. Adjust **Volume** to appropriate level and enjoy your music.

Attention

- Please do not disconnect your interconnect or speaker cable when the amplifier is operating, this might cause damage to the amplifier or associated equipment
- You can swap headphones during playback, but to avoid damaging your sensitive headphone and protect your hearing, please turn the volume down to 0 when you unplug or plug in another pair of headphone.
- If you have turn off the amplifier, please wait 2 minutes before you turn in on again, ot it might cause damage to the vacuum tubes.

Maintenance

Read the Manual: to operate the amplifier correctly, please read this user's manual carefully to understand product features and safety precaution

Keep the Manual: Please keep this manual properly for future reference.

Signage: Do not tear off or rub away the serial number.

Operation: Please follow the operations in this manual strictly.

Accessories: If you are going to use non-factory supplied accessories such as power cord or fuse, please make sure they are fully compatible with the safety requirements otherwise might cause damage due to improper usage.

Placement: The amplifier is heavy and the vacuum tubes are fragile, please place the amplifier on a stable, flat surface, preferably a strong cabinet or rack. If the amplifier falls down because of insecure placement, the amplifier will suffer damage and possibly causing serious household accident.

Power Supply: Please make sure your household AC power supply matches the power requirement of your amplifier. If you are uncertain about the power supply situation, please contact your authorized dealer or local power supply institutions.

Overloading: If you have to connect the amplifier to a power stripe or multi-socket, please make sure the loading is within safety consideration. Overloaded power connection might lead to electric shock or fire accident

Warranty Service: Do not attempt to disassemble the machine or modify the component, this will void the warranty service and might exposure yourself to electric shock.

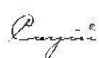
Troubleshooting: If you encounter any abnormal behavior during setup or playback, please refer to the advices in next pages of this manual to recover your amplifier back to normal operation. If you fail to rectify the problems after that, please contact your authorized dealer for technical support.

Troubleshooting

To ensure the amplifier will function at optimum condition, please follow the safety precaution and operation instruction as advised. Some of the perceived malfunction might be caused by improper operation, crosscheck with the following table might resolve your problems. Sometime the problems are related to associated equipment, please also check and make sure everything including power cords and interconnects are in proper condition. If the problem persists after thorough troubleshooting process, please contact your authorized dealer for technical support.

Problem		Cause	Solution
No Sound after power on	Power Indicator is OFF	Power is not connected	Connect power cord securely Check main power supply
		Main fuse is out	Replace fuse with same specification
	Power Indicator is On	No input signal	Check source equipment is working Select input source correctly
		Volume at minimum position	Turn up volume
		Interconnect not properly connected	Connect all cables securely
		Headphone cable not properly connected	Connect headphone cable properly
		Headphone output not specified correctly	Select headphone output correctly
		Selected the wrong output	Select headphone or speaker output correctly
		Umbilical Power cable not properly connected	Reconnect the umbilical power cable, position the alignment groove correctly before tighten up the screw-threaded connector
Excessive noise		Input source badly connected	Install interconnect properly
		Interconnect grounding disconnected	Replace interconnect
		Equipment malfunction	Contact authorized dealer for technical support.
Soundstage and imaging not focused		Left and right channel of source equipment reversed	Reinstall related cabled correctly
		Headphone cable polarity reversed	
		Speaker cable polarity reserved	

Important Notice



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