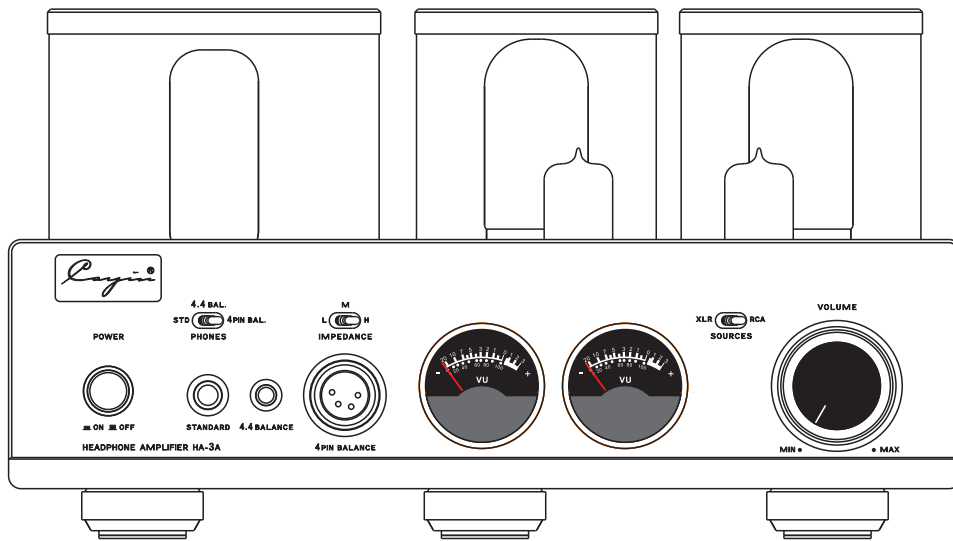


Cayin®



HA-3A | HEADPHONE AMPLIFIER

User's Manual

REV: 1.0



Thank you for choosing Cayin HA-3A 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 be 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-3A x1
2. User's Manual x1
3. AC Power Cord x1
4. Spare Fuses:
 - ①.External Main Fuse x2 (~ 220V-240V : T1AL250V; ~ 100V-120V: T2AL250V)
 - ②.External Fuse for high voltage x2 (T125mAE250V)

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


- ◆ Point to point wiring with premium grade of wires. The entire circuitry is hand-wired by skillful craftsman.
- ◆ Matched-pair custom build EI output transformers.
- ◆ In-house Designed Premium Toroid Power Transformer with high inductance and high efficiency.
- ◆ 22DE4 from RCA are used as Tube Rectifier providing stable and clean power supply to the Voltage Amplification Stage.
- ◆ Multi-stage independent power supply voltage amplification employs independent regulator design minimum ripple effect of power interference ensure outstanding audio performance, free from any grain and harshness.
- ◆ Dedicated implementation of single-ended amplification circuit offer simple, pure and devoted music presentation.
- ◆ JJ 12AU7/ECC82 are used for voltage amplification.
- ◆ JJ 6V6S are used for power amplification.
- ◆ Premium grade RealCap coupling capacitor improves resolving capability and soundstage.
- ◆ High quality Neutrik 6.35mm single-ended headphone, NIPPON DICS 4.4mm balanced headphone, and Neutrik 4-pin balanced headphone are included.
- ◆ In-house designed output transformers provide three set of impedance matched outputs (High, Mid, Low) from 8Ω to 600Ω at your direction.
- ◆ Two sets of line input XLR balanced RCA single-ended.
- ◆ Strong output power to match with wide range of headphone in the market.
- ◆ High performance Alps Potentiometer offers durable, high-precision Volume Control.
- ◆ Soft start function (about 60 seconds).
- ◆ Special shielding and anti-shock design.
- ◆ Design with an innovative circuit layout and highly effective shielding consideration, the components will function at premium environment to ensure high quality audio performance from the amplifier.
- ◆ Equipped with easily-installed tube cover for protection.

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 its 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-3A.
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.

	<p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK</p> <p>DO NOT OPEN</p>		<ul style="list-style-type: none"> ◆ To reduce the risk of electric shock, do not remove the cover. ◆ No user serviceable parts inside. Refer servicing to qualified service personnel. ◆ To reduce the risk of fire or electronic shock, do not expose the unit to rain or moisture.
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 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.



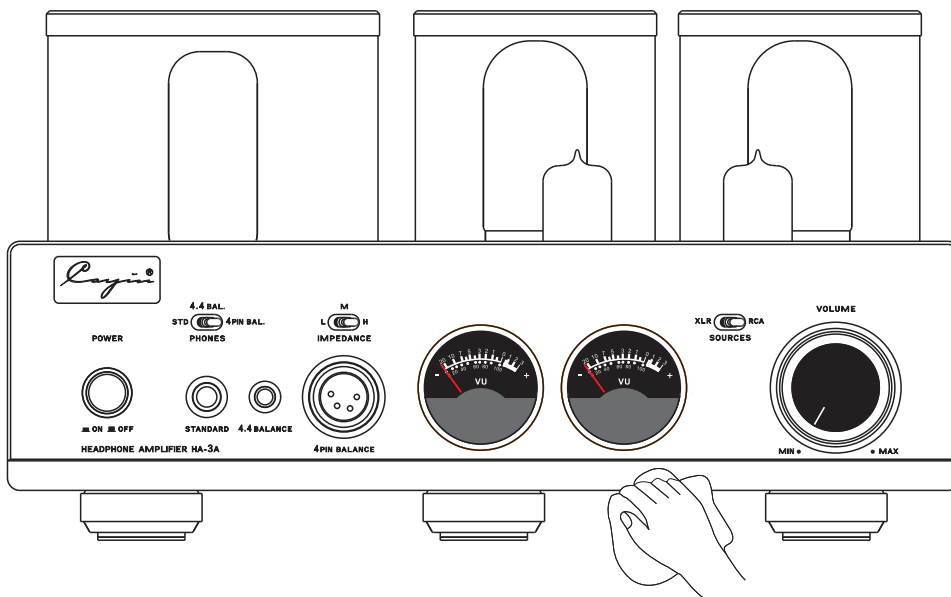
Specifications

ITEM		SPECIFICATIONS
【Rated Output】	STD	400mW+400mW (L) ; 600mW+600mW (M) ; 700mW+700mW (H)
	4.4 BAL.	230mW+230mW (L) ; 350mW+350mW (M) ; 400mW+400mW (H)
	4PIN BAL.	600mW+600mW (L) ; 750mW+750mW (M) ; 850mW+850mW (H)
【Frequency Range】	18Hz~30kHz ±3dB	
【TH+D】	0.2% (1kHz, 200mW)	
【Sensitivity】	300mV~480mV	
【S/N Ratio】	100dB (A-Weighted)	
【Headphone Impedance】	L: 8~64Ω; M: 65~250Ω; H: 251~600Ω	
【Headphone Connectors】	6.35mm x1 ; 4.4mm BALANCEx1; 4pin XLR x1,	
【Input Impedance】	40kΩ	
【Input Connector】	XLR,RCA	
【Tube used】	JJ 12AU7/ECC82×2、 JJ 6V6S×2、 RCA 22DE4×1	
【Dimension】	306mm×260mm×170mm	
【Net Weight】	12KG	
【Fuse】	~ 220V-240V: T1AL250V; ~ 100V-120V: T2AL250V	
【External Fuse for 6V6】	T125mAE250V	
【Power Consumption】	80W	
【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

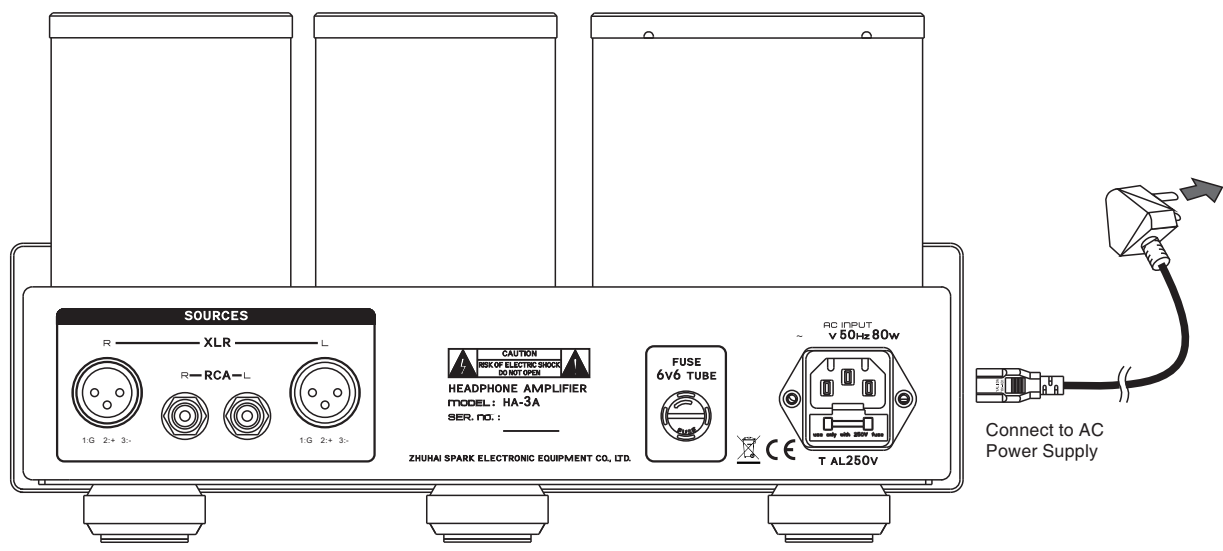
1. The Product is warranted for a period of twelve (12) months from the date of original purchase (the “Warranty Period”). Replacement Products are warranted for the remainder of the original twelve (12) month warranty period. Six-month warranty on stock vacuum tubes.
2. The defective product must be 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.



Precautions



Connecting AC Power Cord

Connect the signal cables first and then insert the power cord into the power socket.

Attention:

- ◆ Connect power cord after all equipments are well connected.
- ◆ 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

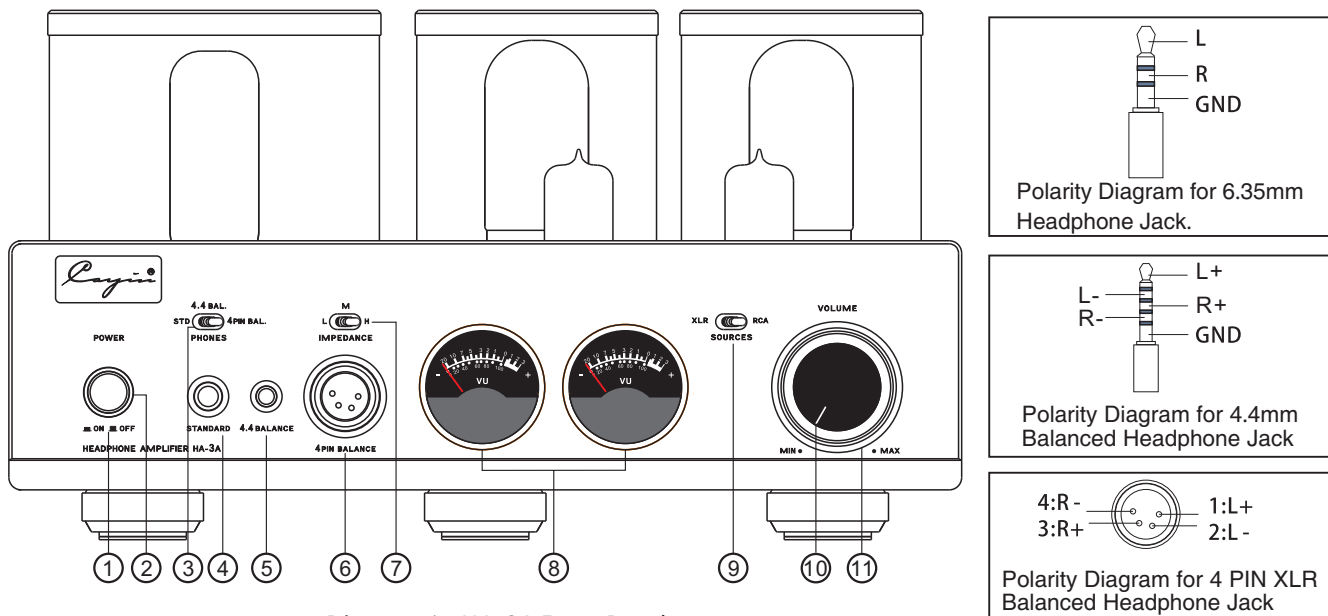


Diagram 1: HA-3A Front Panel

- 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:** With the switch you can select the suitable type of headphone output. HA-3A offers three types output.
- ④. **STANDARD:** Output for headphones terminated in 6.35mm TRS connector
- ⑤. **4.4 Balance Output:** 4.4 balance output for headphone terminated in 4.4mm connector.
- ⑥. **4PIN BALANCE:** Output for headphones terminated in 4pins XLR connector
- ⑦. **IMPEDANCE:** Select the most desirable: impedance-matched output from the amplifier, three options were offered: (L:8~64Ω; M:65~250Ω; H: 251~600Ω)
- ⑧. **VU meter:** monitor output level of the amplifier
- ⑨. **SOURCES:** select balanced or single-ended input
- ⑩. **Working State Indicator/Mute Indicator**
Used to indicate the working state. The indicator will be on when it is working normally. The indicator will flicker for 30 seconds when it delays to work. The indicator will keep flickering when it is at mute state.
- ⑪. **Volume Knob**
Used to control 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

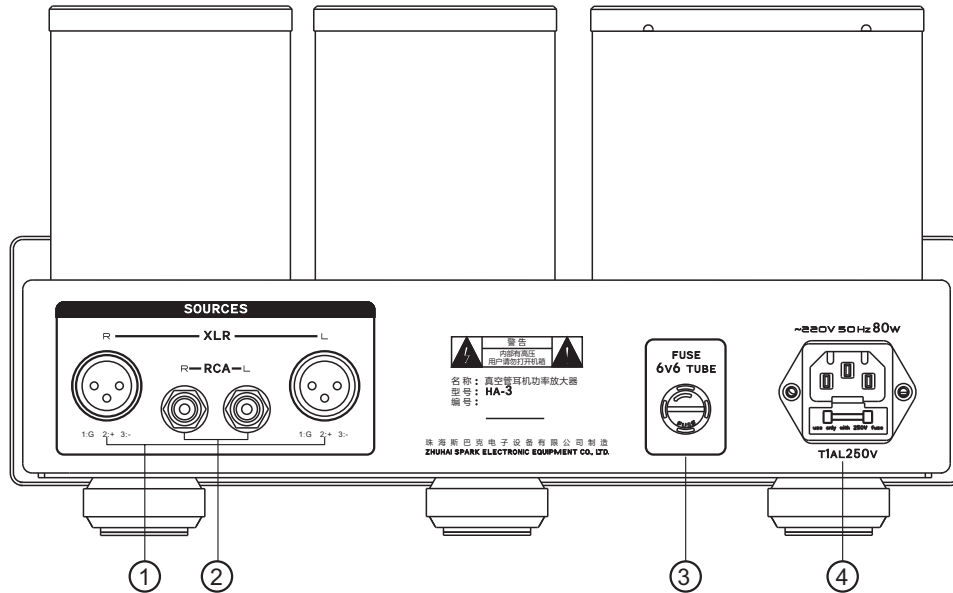


Diagram 2: HA-3A Rear Panel

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. External Fuse for high voltage

(T160mAL250V)

④. 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

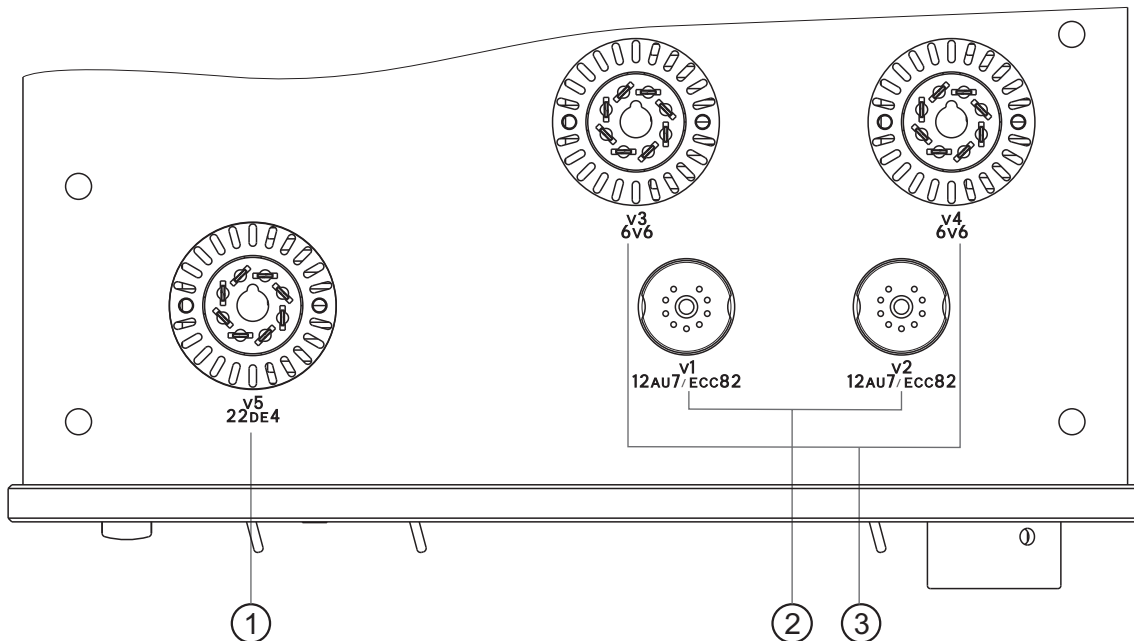


Diagram 3: HA-3A Top Panel

- ①.V5: RCA 22DE4 Vacuum TUBE
- ②.V1、 V2: JJ 12AU7/ECC82 Vacuum TUBE
- ③.V3、 V4: JJ 6V6 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.



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.

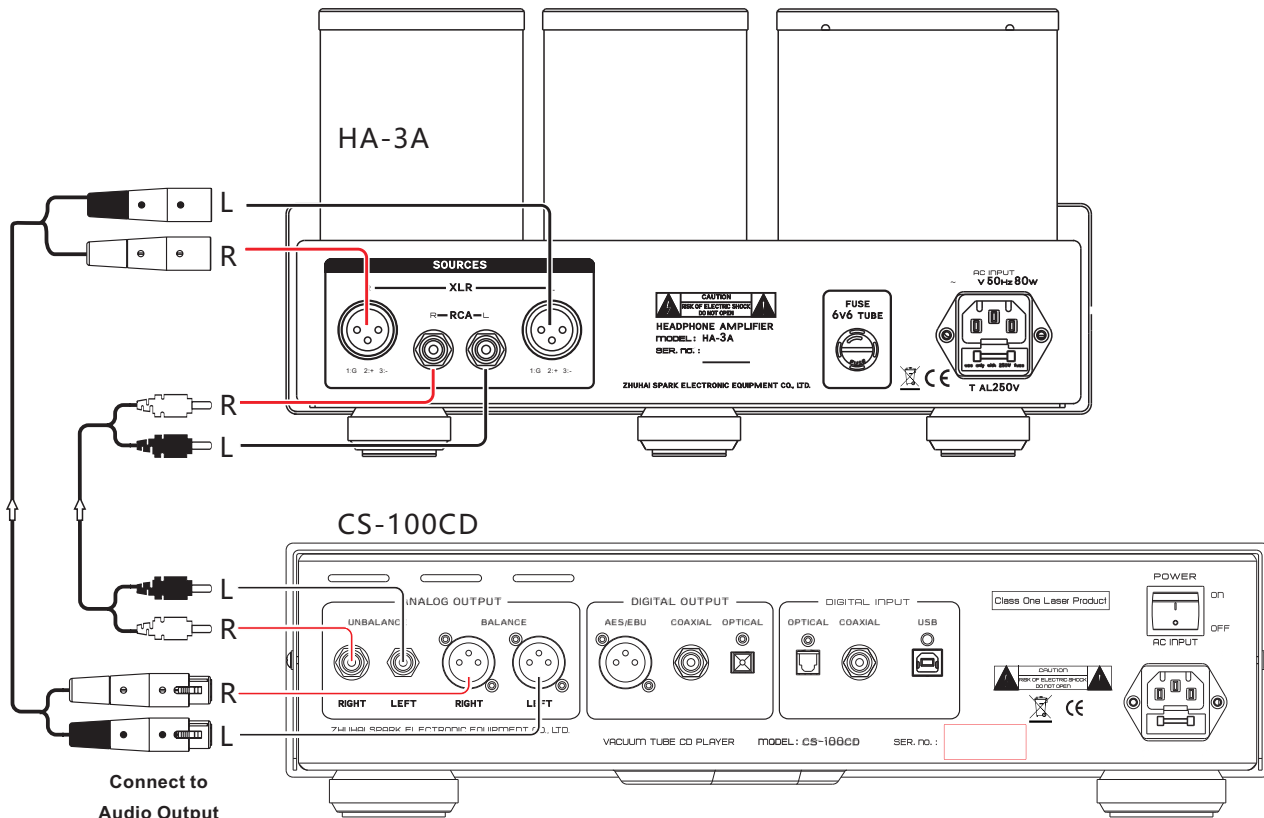
- ◆ Do not place the power amplifier under direct sunlight or near other heat sources.
- ◆ To prevent the amplifier from overheating, please keep the amplifier at a well-ventilated environment and do not cover the amplifier or blocked the vents.
- ◆ Avoid moisture, keep the amplifier from dust if possible.
- ◆ 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	Substitution
RCA 22DE4	22DE4
JJ 12AU7/ECC82	12AU7、ECC82、E82CC、ECC802S
JJ 6V6	6V6

Connect to Audio Equipment

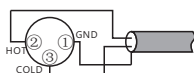
This section will illustrate how to connect audio equipment to the HA-3A amplifier.



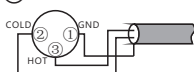
BALANCE Socket:

- The BALANCE socket is with XLR input. The functions are following:
 - ◆ Music signal is transferred as balance signal without the outside disturbance.
 - ◆ Professional XLR connectors are used to raise reliability of connection.
- In the following two systems, professional XLR connectors are used for inside connection.

- USA System:** ①PIN1 : GND; ②PIN2 : HOT; ③PIN3 : COLD



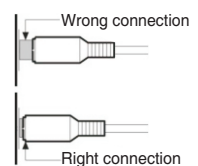
- European System:** ①PIN1 : GND; ②PIN2 : COLD; ③PIN3 : HOT



- This amplifier uses the a USA System. If the XLR balance connector is used by European system, the restored signal of pre-amplifier or main amplifier will be inverse. Therefore, please setup the correct phase in advance.

Attention to Audio Connection:

- Please refer to the manual of associated equipment whenever necessary.
- Do not connect the power cord until all equipment are properly connected
- “R” indicates the right channel; “L” indicates left channel.
- Please make sure all connectors are securely installed. Bad connection might cause noise and degrade in audio performance, or even damaging your equipment.
- 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.



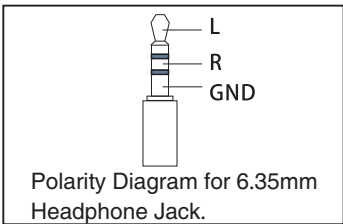
Connect to Headphones

Selecting Headphone Connection

HA-3A provided three types of headphone output: 4-pins XLR for balanced, 4.4mm Balanced, 6.35mm for single-ended, we have optimized the headphone amplifier to perform satisfactory for all outputs, user are free to use any headphone output according to their need without worrying one is better than the other.

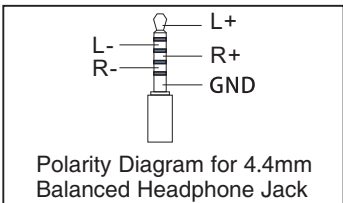
Single-ended Headphone Connection

- HA-3A 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.



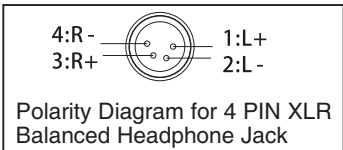
4.4mm Balanced Headphone Connection

- HA-3A provides one set of 4.4mm headphone input, the pin definition of the headphone connector is as illustrated.
- Headphones terminated with 2.5mm connector will require a 2.5mm to 4.4mm adapter in order to use it with this headphone amplifier.



XLR Balance Headphone Connections

- HA-3A 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 8 to 600 , in view of this wide range of impedance rating, HA-3A provides three sets of impedance matched outputs (L:8~64 ; M:65~250 ; H: 251~600) to ensure 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 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 HA-3A, it can cause damage to your headphone and/or headphone amplifier.
- ◆ Turning the volume to the minimum when you exchange the Headphone.

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. 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.
7. If you are using a 4.4mm balanced headphone, insert the 4.4 connector of your headphone into the 4.4 BALANCE headphone output on the front panel. Switch the headphone output selector (PHONES) to 4.4 BAL.
8. If you are using a 4pin XLR balanced headphone, insert the XLR4 connector of your headphone into the 4 PIN BALANCE headphone output on the front panel. Switch the headphone output selector (PHONES) to 4 PIN 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 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, or 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

Please follow the instruction in the manual in order to keep the amplifier under proper working condition. If the amplifier is not functioning as intended, please check according to following tip to look for the possible reason.

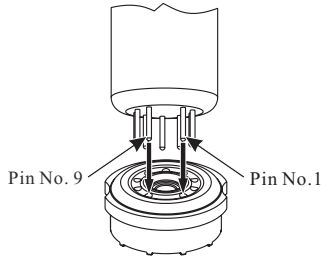
Problem		Cause	Solution
No Sound after power on	Power Indicator is OFF.	Power is not connected	Connect power cord securely Check main power supply
		Main fuse is out.	Replace fuse with same specification
	Power Indicator is ON.	NO input signal .	Check source equipment is working Select input source correctly
		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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How to Install Vacuum Tubes

How to Install 9-Pin Vacuum Tubes



Applicable vacuum tube:

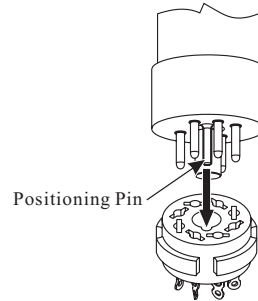
12AU7 (ECC82)、12AX7 (ECC83)、5BK7、12BH7、12AT7 (ECC81)、6922 (ECC88), etc. 9-Pin vacuum tubes.

Instructions to Change and Install the vacuum tubes:

To install a nine-pin vacuum tube, align the pins of the vacuum tube with the holes of the tube socket and insert the tube vertically up and down (as shown in the figure above).

▲ Please note that when installing the nine-pin vacuum tube, pay attention to the alignment of the vacuum tube pins with the holes of the tube socket. Otherwise wrong insertion will cause damage to the vacuum tube and prevent the amplifier from working properly, which may lead to failure of the amplifier.

How to Install 8-Pin Vacuum Tubes



Applicable vacuum tube:

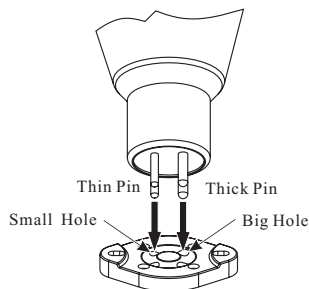
KT150、KT170、KT88、6550、EL34、6V6、6SN7、6SL7、5AR4, etc. 8-pin vacuum tubes.

Instructions to Change and Install the vacuum tubes:

To install an eight-pin vacuum tube, align the positioning pin of the tube with the grooves in the positioning holes of the tube socket, and install the tube by pulling up and down vertically (as shown in the figure above).

▲ Please note that when installing the eight-pin vacuum tube, pay attention to the alignment of the vacuum tube positioning pin with the positioning hole of the tube socket. Otherwise wrong insertion will cause damage to the vacuum tube and prevent the amplifier from working properly, which may lead to failure of the amplifier.

How to Install 4-Pin Vacuum Tubes



Applicable vacuum tube:

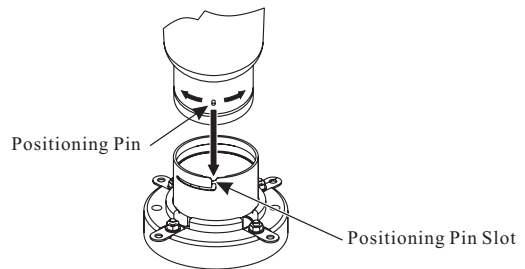
300B、2A3 etc. 4-pin vacuum tubes .

Instructions to Change and Install the vacuum tubes:

To install a four-pin vacuum tube, please pay attention to the thickness of different pins of the vacuum tube and the size of the tube socket hole. Thick pin should be aligned with the big hole, and the thin pin should be aligned with the small hole. Install the tube vertically up and down (as shown in the figure above).

▲ Please note that when installing the four-pin vacuum tube, pay attention to the thickness of different pins of the vacuum tube and the size of the tube socket holes. Otherwise wrong insertion will cause damage to the vacuum tube and prevent the amplifier from working properly, which may lead to failure of the amplifier.

How to Install Big 4-Pin Vacuum Tubes



Applicable vacuum tube:

845、805、211 etc. 4-pin vacuum tubes.

Instructions to Change and Install the vacuum tubes:

To install the big four-pin vacuum tube, align the vacuum tube positioning pin with positioning pin slot of the tube socket and then rotate 45° clockwise to tighten. (As shown in the picture above). To take out the big four-pin vacuum tube, turn the tube 45° counterclockwise and take it out upward after loosening.

▲ Please note that when installing the big four-pin vacuum tube, pay attention to the alignment of the vacuum tube positioning pin with positioning pin slot of the tube socket and then rotate 45° clockwise to tighten. It is strictly forbidden to install the vacuum tube when the positioning pin is off or missing. Otherwise wrong insertion will cause damage to the vacuum tube and prevent the amplifier from working properly, which may lead to failure of the amplifier.

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Cayin SINA Weibo



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