



# H4n 四路耳机放大器

H4n 4-Channel Headphone Amplifier

用户手册

Owner's Manual

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# PLEASE READ CAREFULLY BEFORE PROCEEDING

\* Please keep this manual in a safe place for future reference.

## **WARNING**

Always follow the basic precautions listed below to avoid the possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

### **Power supply/Power cord**

- Only use the voltage specified as correct for the device. The required voltage is printed on the name plate of the device.
- Use only the included power cord.
- Do not place the power cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.

### **Do not open**

- Do not open the device or attempt to disassemble the internal parts or modify them in any way. The device contains no user-serviceable parts. If it should appear to be malfunctioning, discontinue use immediately and have it inspected by qualified ALCTRON service personnel.

### **Water warning**

- Do not expose the device to rain, use it near water or in damp or wet conditions, or place containers on it containing liquids which might spill into any openings.
- Never insert or remove an electric plug with wet hands.

### **If you notice any abnormality**

- If the power cord or plug becomes frayed or damaged, or if there is a sudden loss of sound during use of the device, or if any unusual smells or smoke should appear to be caused by it, immediately turn off the power switch, disconnect the electric plug from the outlet, and have the device inspected by qualified ALCTRON service personnel.
- If this device should be dropped or damaged, immediately turn off the power switch, disconnect the electric plug from the outlet, and have the device inspected by qualified ALCTRON service personnel.

## **CAUTION**

Always follow the basic precautions listed below to avoid the possibility of physical injury to you or others, or damage to the device or other property. These precautions include, but are not limited to, the following:

### **Power supply/Power cord**

- Remove the electric plug from the outlet when the device is not to be used for extended periods of time, or during electrical storms.
- When removing the electric plug from the device or an outlet, always hold the plug itself and not the cord. Pulling by the cord can damage it.

### **Water warning**

- Before connecting the device to other devices, turn off the power for all devices. Before turning the power on or off for all devices, set all volume levels to minimum.

### **Location**

- Before moving the device, remove all connected cables.
- Do not expose the device to excessive dust or vibrations, or extreme cold or heat (such as in direct sunlight, near a heater, or in a car during the day) to prevent the possibility of panel disfiguration or damage to the internal components.
- Do not place the device in an unstable position where it might accidentally fall over.
- Do not use the device in the vicinity of a TV, radio, stereo equipment, mobile phone, or other electric devices. Otherwise, the device, TV, or radio may generate noise.

### **Handling caution**

- Do not insert your fingers or hand in any gaps or openings on the device.
- Avoid inserting or dropping foreign objects (paper, plastic, metal, etc.) into any gaps or openings on the device. If this happens, turn off the power immediately and unplug the power cord from the AC outlet. Then have the device inspected by qualified ALCTRON service personnel.
- Do not rest your weight on the device or place heavy objects on it, and avoid use of excessive force on the buttons, switches or connectors.

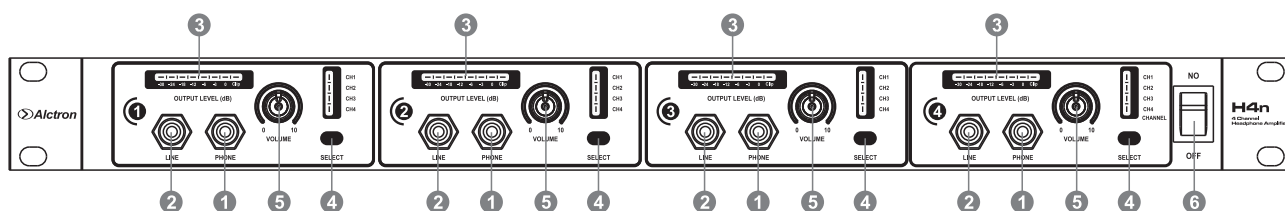
## FEATURES

With extensive switching functions, extreme efficiency, and unmatched sound quality, the ultra-versatile H4n is a universal 4-channel multi-purpose headphone amplifier/line distribution system—perfect for the most demanding professional stage and studio applications.

- Four totally independent stereo high-power headphone amplifier/line distribution channels in a convenient single rack package—an ingenious, easy-to-operate unit allowing a maximum variety of both useful monitoring and stereo line level signal distribution options.
- Input Source Select switches and Phone and Line 1/4" TRS stereo outputs on each channel, and 4 independent stereo input sections (each with servo-balanced L & R 1/4" TS jacks) enable independent selection of any of the 4 stereo signals for each headphone amp/line distribution channel. This allows selecting from up to 4 completely independent monitor signals for each set of headphones connected to the H4n for optimum monitoring flexibility or 4 separate choices for each channel's Line Output for enabling many useful, simple audio switching/routing solutions.
- Separate Volume control for each channel adjusts the level to both Phone and parallel Line outputs
- Easily expandable for optimum versatility in any application—up to four H4n's can be daisy chained for additional fully selectable headphone/line distribution requirements
- No-compromise circuit design, stringently selected tight-tolerance components and low-noise, extremely linear or amps for reference-quality, transparent audio with maximum headroom even at extremely high headphone volume levels
- High-quality, rugged construction for maximum reliability
- Shielded internal dual regulated power supply with ~115V(60Hz)/~230V(50Hz) select switch and fused IEC power cord connector

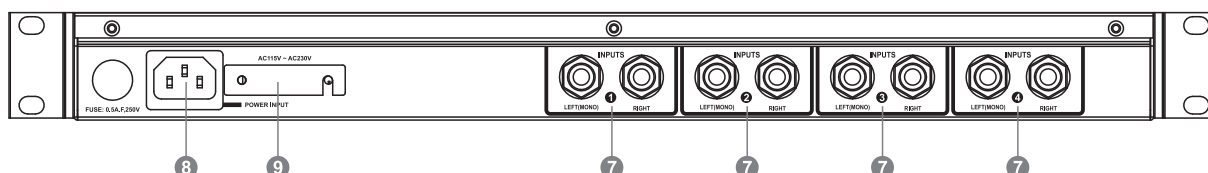
## FRONT & REAR CONNECTIONS

### FRONT PANEL



1. PHONE: four stereo 1/4" output jacks for connecting stereo headphones.
2. LINE: four stereo 1/4" line level output jacks for use for line distribution.
3. OUTPUT LEVEL: the 8-digit output level display informs you about signal level of each individual channel and displays it in the range between -30 and 0dB. When the clip LED lights up, lower the amount of gain applied to the individual channels to avoid distortion.
4. SELECT: each channel features a button selector which allows you to select any of the 4 stereo input source signals to monitor. When select the related channel (the related channel LED lits up), when press the button and LED not lit, it indicating all channels are closed and headphones are in mute situation. When next time running it keeps the last situation you used (Power off memory function), it is very convenient.
5. VOLUME: each channel features a rotary volume pot for variable adjustment of the desired output level.
6. ON/OFF: to turn the unit on or off, press the upper or lower portion of this button as indicated. The LED in ON/OFF switch will lit when turn on the unit. Before turning on this unit, verify connection to proper voltage AC source, check all connections and turn down the level equipment connected to the outputs.

### REAR PANEL



7. INPUTS: four stereo-pair balanced, line level 1/4" TRS jack for 4 stereo (L & R) input signals. If only the LEFT (MONO) channel input is used, the mono signal will be provided automatically at both the left and right sides of the PHONE (1) and LINE (2) outputs.
8. POWER INPUT: Standard IEC power cord receptacle used to connect the AC power to your unit. It features a built-in fuse holder for a 5x20mm, 0.5A/250V slow-blow fuse. If the fuse continuously blows, shut off the unit and have it serviced by qualified service personnel.
9. AC 115V-AC230V: before plugging in the power cord, check to see that the unit is set for the proper voltage for your area: 115v(60hz) ot 230V (50hz).



# INSTALLATION

To ensure years of enjoyment from your H4n, please read and understand this manual thoroughly before using the unit.

## **INSPECTION**

Your H4n was carefully packed at the factory in packaging designed to protect the units in shipment. Before installing and using your unit, carefully examine the packaging and all contents for any signs of physical damage that may have occurred in transit.

*(Note: Systems is not responsible for shipping damage. If the unit is damaged, do not return to us, but notify your dealer and the shipping company immediately to make a claim. Such claims must be made by the consignee in a timely manner.)*

## **RACK MOUNTING**

The H4n fits into one standard 19" rack unit of space. Parts of the unit can become very warm during use. This is normal during operation. Care should be taken to ensure that there is enough space around the unit for cooling (at least 12" or 30cm). Do not place the H4n on high temperature devices such as power amplifiers, etc., or the unit may overheat in operation. Also, do not place the unit on speakers as this may cause them to move and/or fall due to speaker vibrations.

Although the unit's chassis is shielded against radio frequency (RF) and electromagnetic interference (EMI), extremely high fields of RF and EMI should be avoided.

## **POWER CONNECTION**

The H4n has an internal power supply and is designed to operate from an external AC source. Power requirements for electrical equipment differ from area to area. Be sure to confirm that the voltage selected by the voltage selector switch on the back panel is proper for your area (120VAC/60 Hz or 230VAC/50Hz) per the information below:

Europe (except UK): 230V, 50Hz

UK and Australia: 240V, 50Hz

USA and Canada: 120V, 60 Hz

For other areas, please check with local authorities.

When ready to operate, plug the AC cord into the power source. Make sure that the unit is turned off before connecting to the AC power source to avoid possible loud transients which can damage your speakers or your ears, especially when monitoring with headphones.

# APPLICATIONS

## USING THE H4n AS A HEADPHONE AMPLIFIER

Connect a stereo (L & R) program source (2 x 1/4" plugs) to the rear of the H4 using one of the available 4 x stereo **INPUT (7)** pairs on the rear panel.

Connect a set of headphones using a stereo 1/4" cable to any of the **HEADPHONE OUTPUTS (1)** on the front panel of the H4. Select the source signal from the rotary **SELECTOR (4)** switch for the channel in use. Set to an appropriate level for monitoring.

*(Note: If only the LEFT (MONO) channel input is used, the mono signal will be provided automatically at both the Left and Right sides of the **PHONE (1)** and **LINE (2)** outputs.)*

Since the H4n offers four independent channels, you can have four individual mixes for four musicians with a single unit. In studio recording applications, you can configure sub-groups, aux sends or single outputs of your audio mixer to feed signals independently to the H4n. This enables each musician to receive a specific configuration of instruments of their choice in their headphones.

*[Note - If four headphone outputs are not enough, you can interface and link any number of H4n's for additional outputs (see below).]*

## USING THE H4n AS A LINE DISTRIBUTION UNIT

To use the H4n as a line distribution unit all you have to do is use the line output instead of the headphone output on the front of the unit for the line distribution signal feed. All other operation is identical as using the unit as a headphone amplifier.

Daisy chaining multiple H4n's together for additional headphone/line distribution requirements.

It is very easy to chain multiple H4n's together. Use appropriate single stereo 1/4" TRS to two 1/4" TS (2 x mono) adapter cables and make connections from the **LINE DISTRIBUTION OUTPUT (2)** channels on the front of your first H4n unit to the stereo (L&R) **AUDIO INPUTS (3)** on the rear of your second H4n.

This effectively allows an additional (fully selectable) 4 headphone outputs and an additional 4 line outputs! You can continue to chain up to four H4n units together using this same procedure.

### Disposal

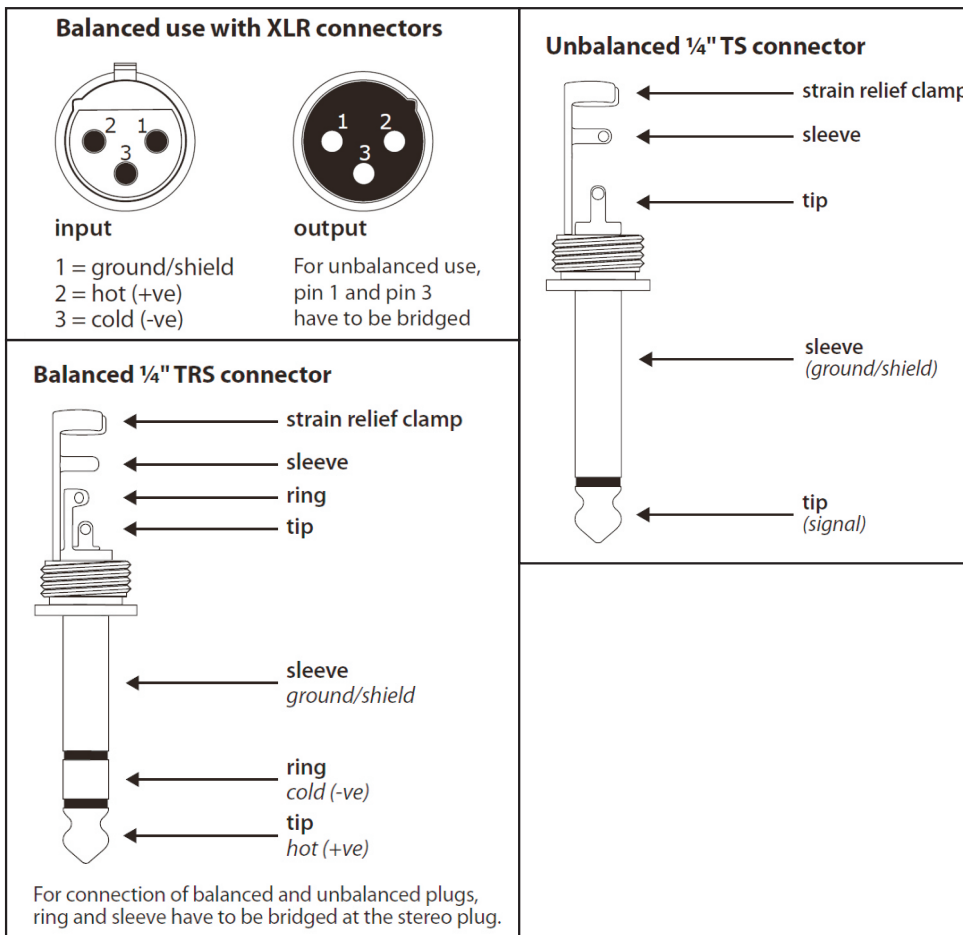
Do not dispose of the device at the end of his operating life in your normal domestic waste. This device is subject to the European Guidelines 2002/96/EC.



Have the product disposed of by a professional disposal company or by your communal disposal facility. Observe the currently applicable regulations. In case of doubt contact your disposal facility. Dispose of packaging materials in an environmentally responsible manner.



# AUDIO CONNECTION



# SPECIFICATIONS

## Audio inputs

Connectors: 1/4"TS

Type: unbalanced Impedance: 47K $\Omega$

Max output: 12dB

## Headphone power amplifier outputs

Max output level: 350mV@47 $\Omega$

Output impedance: 22 $\Omega$

Gain: 12.5dB

## Distortion, frequency response, S/N ratio & crosstalk

Distortion: 0,02%

Frequency response: 20hz-20khz

S/N ratio: >80dB

Crosstalk rejection: >68dB@1khz; 20dB input

## Function control

Volume: per channel, variable

Signal selector: per channel, variable

## Power supply

AC requirements: selectable, 100-120V AC, 200-240V AC, 50-60HZ

Fuse: 100-120V AC : 1000mA ; 200-240V AC : 500mA

Power cord connector: standard IEC receptacle with built-in fuse holder

## Physical

Size: 44,5mm \* 482,6mm \* 217mm

# SERVICE

**If your H4n 4 Channel Headphone Amplifier needs servicing, follow these instructions.**

1. Ensure the problem is not related to operation error or external system devices.
2. Keep this owner's manual. We don't need it to repair the unit.
3. Pack the unit in its original packaging including end card and box. This is very important. If you have lost the packaging, please make sure you have packed the unit properly. ALCTRON is not responsible for any damage that occurs due to non-factory packing.
4. Ship to the ALCTRON tech support center or the local return authorization.

请在操作试用前，首先仔细阅读下述内容

\*请将本说明书存放在安全的地方，以便将来随时参阅



为了避免因触电、短路、损伤、火灾或其它危险可能导致的严重受伤甚至死亡，请务必遵守下列基本注意事项。这些注意事项包括但不限于下列情况：

#### 电源/电源线

- 只能使用本设备所规定的额定电压。所要求的电压被印在本设备的铭牌上。
- 只能使用附带的电源线。
- 请勿将电源线放在热源如加热器或散热器附近，不要过分弯折或损伤电源线，不要在其上加压重物，不要将其放在可能被踩踏引起绊倒或可能被碾压的地方。

#### 当意识到任何异常情况时

- 若电源线出现磨损或损坏，使用设备过程中声音突然中断或因此而发出异常气味或冒烟，请立即关闭电源开关，从电源插座中拔出电源线插头，并请有资格的爱克创维修人员对设备进行检修。
- 若本设备发生摔落或损坏，请立即关闭电源开关，从电源插座中拔出电源线插头，并请有资格的爱克创维修人员对设备进行检修。

#### 关于潮湿的警告

- 请勿让本设备淋雨或在水附近及潮湿环境中使用，或将盛有液体的容器放在其上，否则可能会导致液体溅入任何开口。如果任何液体如水渗入本设备，请立即切断电源并从AC电源插座拔下电源线。然后请有资格的爱克创维修人员对设备进行检修。
- 切勿用湿手插拔电源线插头口

#### 请勿打开

- 请勿打开本设备并试图拆卸其内部零件或进行任何方式的改造。本设备不含任何用户可自行修理的零件。若出现异常，请立即停止使用，并请有资格的爱克创维修人员进行检修。



为了避免您或周围他人可能发生的人身伤害、设备或财产损失，请务必遵守下列基本注意事项。这些注意事项包括但不限于下列情况：

#### 电源/电源线

- 当准备长期不使用本设备或发生雷电时，请从电源插座中拔出电源线插头。
- 当从本设备或电源插座中拔出电源线插头时，请务必抓住插头而不是电源线。直接拽拉电源线可能会导致损坏。

#### 安放位置

- 移动本设备之前，请先拔出所有连接的电缆。
- 为了避免操作面板发生变形或损坏内部组件，请勿将本设备放在有大量灰尘、震动、极端寒冷或炎热(如阳光直射，靠近加热器或烈日下的汽车里)的环境中。
- 请勿将本设备放在不稳定的地方，否则可能会导致突然翻倒。
- 请勿在电视机、收音机，立体声设备，手机或其他电子设备附近使用本设备。否则，本设备、电视机或收音机可能会产生噪音。

#### 连接

- 将本设备连接到其它设备之前，请关闭所有设备的电源开关。在打开或关闭所有设备的电源开关之前，请将所有音量都调到最小。

#### 小心操作

- 请勿将手指或手插入本设备的任何间隙或开口。
- 请避免在设备上的任何间隙或开口插入或落进异物(纸张、塑料、金属等)。万一发生这种情况，请立即关闭电源开关，从AC电源插座中拔出电源插头。然后请有资格的爱克创维修人员进行检修。
- 请勿将身体压在本设备上或在其上放置重物，操作按钮，开关或插口时要避免过分用力。

经常动态接触的零部件，如开关、控制旋钮、接口等，随着时间的推移，其性能会逐渐下降。请让有资格的爱克创维修服务人员为您更换有缺陷的零部件。

当不使用本设备时，请务必关闭其电源。

XLR型插口应按下图所示进行布线(IEC60268标准)：针1：地线，针2：热线(+)和针3：冷线(-)。

对于由于不正常使用或擅自改造本设备所造成的损失、数据丢失或破坏，爱克创 不负任何责任。

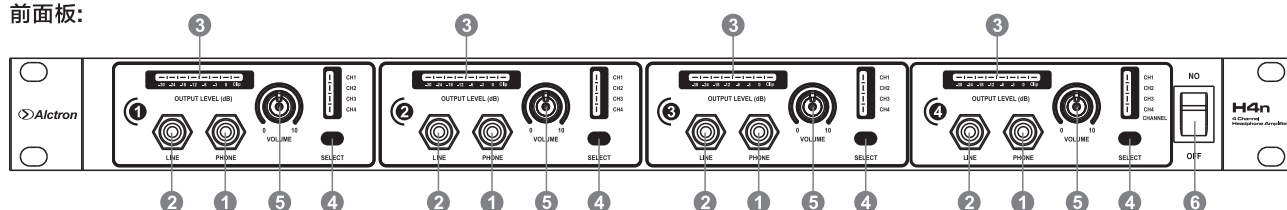
## 特征

H4n是一款高效，多功能，拥有着高品质音质的通用4通道耳机放大器，同时也是一个线路分配系统。适用于绝大多数专业的舞台和音频工作室。

- \* 拥有四个独立的高功率立体声耳机输出/线路输出，放大器为标准1U机架的体积。易于操作的界面能够使监听或线路分配的任务变得十分简单高效。
- \* 每个通道都有输入源选择开关和耳机/线路输出。四组独立的立体声输入（每组都有两个非平衡的1/4英寸TS接口）能够方便的通过输入信号源开关分配到每个耳机输出或是线路输出中。线路分配功能为音频监听系统提供实用、简单的路由方案。
- \* 每个通道都有独立的音量控制耳机输出电平。
- \* 在任何的应用中，H4n能够进行扩展。最多4台H4n能通过菊花链的形式进行连接。
- \* 采用精密的电路设计和精良的电子元件，使H4n具有低底噪声和高稳定性等特点，线性输出能够使声音在极大的环境下保持不失真。
- \* 高品质，坚固的结构保证了最大的可靠性。
- \* 内置双重标准的电源与选择开关的电源接口。使用标准的IEC电源线连接电源与您的耳机放大器

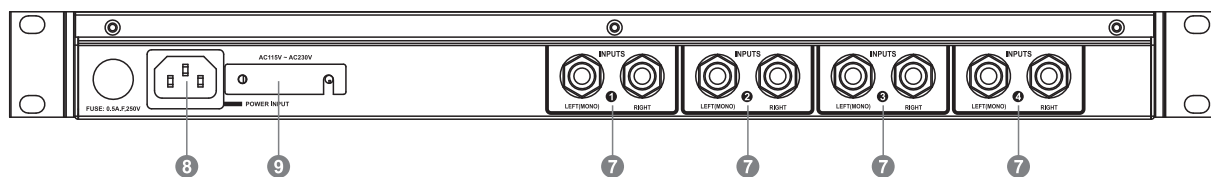
## 前后面板连接

前面板:



1. PHONE: 前面板上拥有四个立体声耳机输出接口。
2. LINE: 前面板上拥有四个立体声的线路输出接口。
3. OUTPUT LEVEL: 八段式电平表能够让您知道每个通道的输出电平，电平表的范围从-30-0dB。在信号过载的情况下，通过相应的调节能避免信号失真。
4. SELECT: 每个输出通道的选择按键都允许您在输入1-4之中选择任意一路信号来进行监听。使用时只需要按下按键选择相应通道（相应通道指示灯会被点亮），当按键按下并且所有通道指示灯都熄灭时，此时所有通道都被关闭耳机处于静音状态。在下次启动时会保持您最后一次使用的状态（即断电记忆功能），十分便利。
5. VOLUME: 每一个通道都有一个可调的输出音量旋钮，通过这个旋钮，您可以控制耳机输出的音量，但不能控制线路输出的音量。
6. ON/OFF: 要开关本产品，只需要将电源开关拨至靠上或靠下位置。并且开关里的指示灯会被点亮/灯灭。在打开电源之前，请务必检查与电源的连接，并且把所有的音量旋钮调至最小。

后面板:



7. INPUTS: 后面板拥有四组（八个）单声道输入接口，每组接口分别是此通道的左右两个声道。如果输入只有左声道，那么单声道信号将会被分配到耳机输出与线路输出的左右声道。
8. POWER INPUT: 使用标准的IEC电源线连接电源与您的耳机放大器。内置缓动式熔断器的规格为5\*20mm, 0.5A/250V。如熔断器熔断，请关闭设备，询问当地专业的维修服务商。
9. 在通电之前，请确认电源电压选择开关上显示的数字是您当前地区的电压：~115V（60Hz）或者~230V（50HZ）。

## 安装手册

H4n刚好适合一个标准的19英寸的机架空间。这款产品在使用过程中部分产品零件会变得很热，这是正常现象。请确保有足够的散热空间（起码12英寸或者30厘米）。不要把H4n放在高温物件上比如功率放大器，或者那些能让产品升温的。也请不要把这个产品放在演讲机上，这可能会引起物体移位或者振动

## 开关连接

H4n有一个内部开关，用于操作外部交流电源。开关对于不同区域的电子设备的要求不同。请确保后挡板电压选择开关选择的电压是适合你所在的区域的(120VAC/60 Hz or 230VAC/50Hz)每个区域的信息如下：

欧洲（除了英国）：230V, 50Hz

英国和澳大利亚：240V, 50Hz

美国和加拿大：120V, 60Hz

关于其他那些区域，请根据当地实际的来。

当您准备好去操作的时候，请将设备连上电源。在您接通电源前请确保这个设备是关掉的，避免这些噪音可能会对您的扬声器或者耳朵造成伤害，尤其是您带着耳机的时候。

将立体声设备连接到后挡板上的1/4英寸接口。

在H4n的前挡板上用一个立体1/4英寸的耳机线来连接耳机和任意一路的耳机输出电平(1)。输入信号源选择开关，可以选择收听自己想要的声音。（如果输入只有左声道，那么单声道信号将会被分配到耳机输出与线路输出的左右声道）。

由于H4n有4个独立的通道，可以同时供4个人使用。在工作室录音的时候，混音器将唱歌的声音和背景音乐混在一起，H4n的4个独立信号通道将声音分离出来，每个人通过耳机就可以得到他们想要的声音。

### 将H4n作为一个线路分布单元

将H4n作为一个线路分布单元来使用，首先您使用线路输出代替耳机输出。所有其他耳放操作于第一台耳机放大器相同。

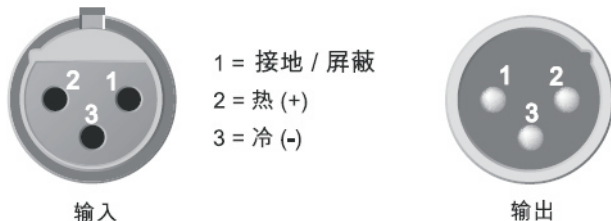
H4n能通过串联的形式与其他的耳机和线路进行连接。

H4n的连接很简单。用立体声1/4英寸的TRS到两个1/4英寸TR（2个单声道）音频线将前挡板上的LINE DISTRIBUTION OUTPUT(2)和后挡板上的立体（L & R）AUDIO INPUTS (7)连接起来。

您也可以连接额外的4路耳机输出和4路线路输出。您可以继续将H4n跟别的设备连接起来。

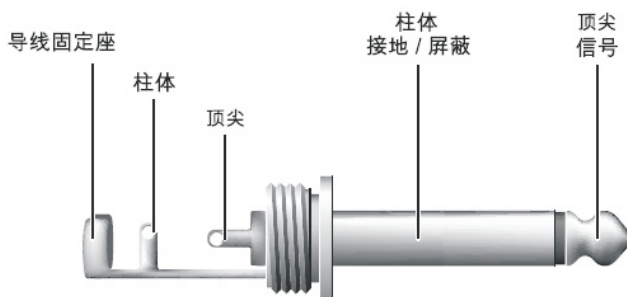
## 音频连接

### 卡依插头的平衡式连接

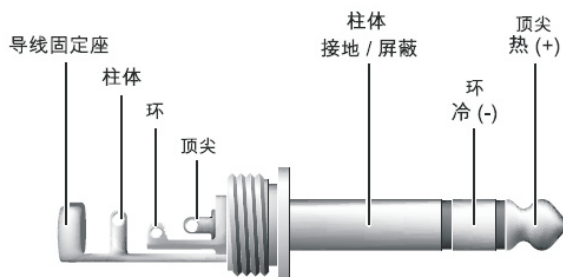


不平衡运行时极1和极3必须接通。

### 不平衡式6.3 mm 单声道接驳插头



### 平衡式6.3 mm 立体声接驳插头



从平衡运行到不平衡运行时立体声接驳插头的环和柱体必须接通。



## 技术参数

### 音频输入

接口: 1/4"TS  
形式: 非平衡  
阻抗: 47K $\Omega$   
最大输出: 12dB

### 耳机放大器输出

最大输出功率: 350mV@47 $\Omega$   
输出阻抗: 22 $\Omega$   
增益: 12.5dB

### 失真度, 频率响应, 信号比和信号串扰

失真: 0.02%  
频率响应: 20hz-20khz  
信噪比: >80dB  
串扰屏蔽: >68dB@1khz; 20dB 输入

### 控制旋钮

音量: 每个通道, 可调  
信号选择: 每个通道, 可调

### 电源

交流电规格: 可选, 100-120V AC, 200-240V AC, 50-60HZ  
熔断保护器: 100-120V AC: 1000mA; 200-240V AC: 500mA  
电源接口: 带有熔断器的标准IEC接口

### 物品规格

尺寸: 44.5mm \* 482.6mm \* 217mm

## 保修

如果您的H4n 四路耳机放大器需要维修, 请按照以下说明操作。

1. 请确保不是因为操作不当或外部设备所造成。
2. 请保存好我们的说明书, 返修的时候不必把说明书寄回给我们。
3. 返修的时候请用产品原来的包装箱来包装, 这是非常重要的。如果你已丢失原包装, 请确保您正确包装和保护好本机爱克创将不负责由于非原厂包装造成任何损害。
4. 运送到爱克创技术支持中心或当地的授权经销商。

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宁波奥创电子科技有限公司  
地址：浙江省宁波市海曙区秀丰工业区三成路76号  
电话：+86 574 87150673  
传真：0574-87157176  
邮箱：sales@alctron-audio.com  
网址：<http://www.alctron-audio.com>  
全国统一服务热线：4000-160-112