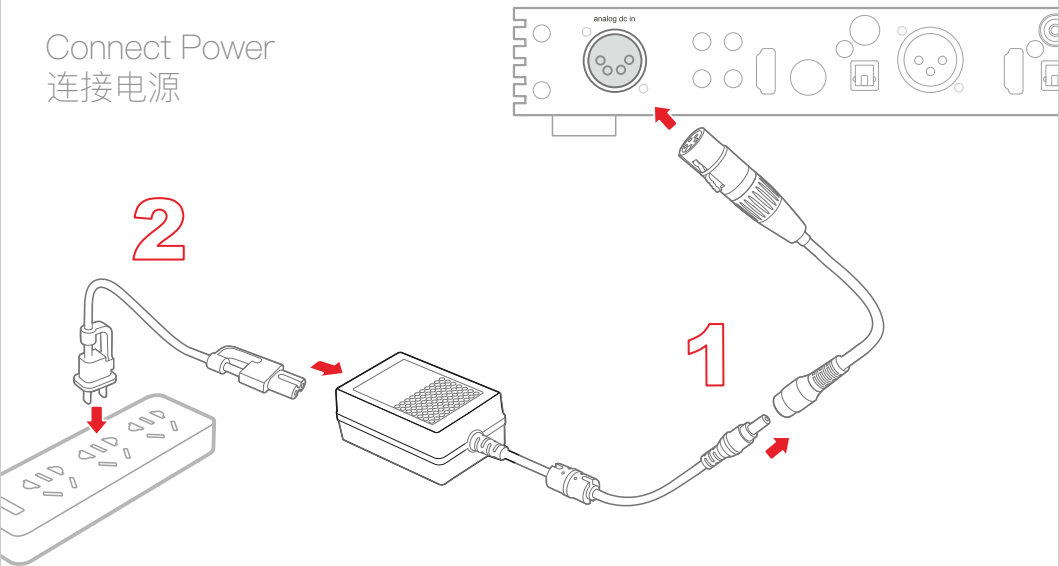


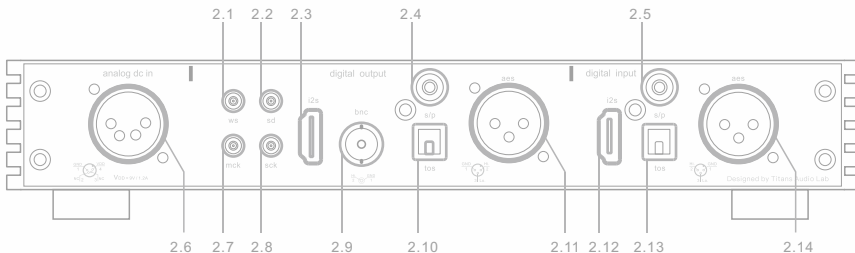
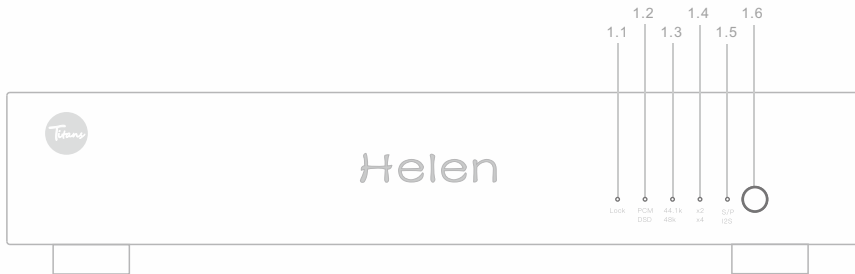


使用手册 / Manual

Connect Power  
连接电源



接通电源，自动开机 Power On automatically





# 产品手册附件

## SUPPLEMENT TO PRODUCT MANUAL

这个文件涉及的是其在中华人民共和国境内进口或者销售的电子信息产品  
Include this document with all Electronic Information Products imported or sold in the People's Republic of China

Helen		有毒有害物质 Toxic and Hazardous Substances and Elements					
部件名称 Part Name	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavale Chromium (Cr(VI))	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)	
电路模块 Circuit Modules	○	○	○	○	○	○	
电缆及电缆组件 Cables & Cable Assemblies	○	○	○	○	○	○	
金属部件 Metal Parts	✕	○	○	○	○	○	
塑料和聚合物部件 Plastic and Polymeric parts	○	○	○	○	○	○	

- O:** 表示该有毒有害物质在该部件所有物质材料中的含量均在SJ/T11363-2006标准规定的限量要求以下  
Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.
- X:** 表示该有毒有害物质至少在该部件的某一物质材料中的含量超出SJ/T11363-2006标准规定的限量要求  
Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006

All parts named in this table with an X are in compliance with the European Union's RoHS Legislation "Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment."

除非另外特别的标准，此标准为针对所涉及产品的环保使用期标志。某些零部件会有一个不同的环保使用期（例如，电池单元模块）贴在其产品上。  
此环保使用期只适用于产品是在产品手册中所规定的条件下工作。

The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain parts may have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.





## 前言

亲爱的用户：

感谢您购买Titans Helen，并恭喜您慧眼独具选择了这台与众不同的超低抖动数字处理器。

衷心期望这台崭新的Titans Helen，能给您带来更多高保真音乐的体验和乐趣。

我们建议您先阅读本手册，以便正确使用此台数字处理器的所有功能。



## 进出口管制

- 若需将此产品手册描述的产品（包含但不限于产品中的软件及技术数据等）出口、再出口或者进口，您应遵守适用的进出口管制法律法规。

## 法律提示

- 请遵守著作权法。未经授权自行转载或公开播放转录媒体，例如经由录影带、CD、他人发行或寄送的内容，皆有可能违反著作权法。
- 此点对于所有附赠的软体亦然。
- 其他在本说明里提到的商标、公司及产品名称皆为相关公司的商标及注册商标。

## 警告提示

- 仅能使用建议的配件，以避免干扰、短路或电击。请勿让器材暴露在湿气或雨水中。
- 请勿尝试拆除机身零件(外盖)：专业修理工作仅能由
- 获得授权的维修单位执行。

## 无担保声明

- 本手册中的内容均“如是”提供，除非适用法要求，泰坦音频实验室对本手册中的所有内容不提供任何明示或暗示的保证，包括但不限于适用性或者适用于某一特定目的的保证。
- 在法律允许的范围内，泰坦音频实验室在任何情况下，都不对因使用手册相关内容而产生的任何特殊的、附带的、间接的、继发性的损害进行赔偿，也不对任何利润、数据、商誉或预期节约的损失进行赔偿。



## 电子装置的 废弃处置

(适用于欧盟以及其他有独立回收系统的欧洲国家)

本装置包含电子组件，因此不得弃置于一般的家庭垃圾内！必须送到由地方政府设置的资源回收点所提供的免费的服务。

其他和本主题相同的资讯，可从当地政府、废弃物处理公司或在购买产品的商店处得知。

泰坦音频实验室保留随时修改本手册中任何信息的权利，无需进行任何提前通知且不承担任何责任。



## 各部名称

### 前视图

- 1.1 标准模式锁定\*1 标准模式失锁 精密模式锁定 精密模式失锁
- 1.2 PCM模式 Native DSD模式 DoP DSD模式
- 1.3 采样率44.1k或者DSD64 采样率48k
- 1.4 采样率为1.3显示的2倍 采样率为1.3显示的4倍 采样率为1.3显示的8倍 采样率为1.3显示的16倍
- 1.5 AES输入 光纤输入 同轴输入 HDMI (I2S) 输入
- 1.6 输入通道选择键（开机状态下短按）  
标准模式长按3秒，进入精密模式\*3  
精密模式长按3秒，回到标准模式\*4

### 后视图

- |                             |                          |
|-----------------------------|--------------------------|
| 2.1 I2S输出SMA-WS*7           | 2.8 I2S输出SMA-SCK*7       |
| 2.2 I2S输出SMA-SD*7           | 2.9 同轴输出BNC, 75Ω阻抗       |
| 2.3 I2S输出HDMI*2             | 2.10 光纤输出                |
| 2.4 同轴输出RCA, 隔离设计, 75Ω阻抗    | 2.11 AES输出, 隔离设计, 110Ω阻抗 |
| 2.5 同轴输入RCA, 75Ω阻抗          | 2.12 I2S输入HDMI*2         |
| 2.6 直流电源输入(1地4正极),9V/1.2A*5 | 2.13 光纤输入                |
| 2.7 I2S输出SMA-MCK*7          | 2.14 AES输入, 隔离设计, 110Ω阻抗 |

<sup>1\*</sup>如果源设备的信号品质较差，建议使用标准模式

<sup>2\*</sup>I2S over HDMI为Titans audio标准定义

<sup>3\*</sup>标准模式，锁定指示灯为红色，锁定时间典型2秒\*5

<sup>4\*</sup>精密模式，锁定指示灯为绿色，锁定时间典型12秒\*5

<sup>5\*</sup>实际锁定时间取决于源信号品质

<sup>6\*</sup>外部直流供电支持9V到15V，并且支持12V缠绕电池

<sup>7\*</sup>I2S输出SMA信号均为3.3V CMOS



## 介绍

海伦是一款超低抖动混合锁相环技术的数字处理器，设计为数字音频源进行抖动抑制，并且达到Bit-Perfect。<sup>\*1</sup>

最高支持量化深度为32bit，最大支持采样率为768kHz，并且最大支持DSD512。<sup>\*2</sup>

<sup>\*1</sup> 由于没有对信号做任何有损处理，不同采样率切换瞬间会有轻微爆音属于正常现象

<sup>\*2</sup> S/PDIF下需要DAC支持DoP 352.8~768k的S/PDIF格式基于IEC60958和AES3协议延伸设计 DSD256 over 705.6k基于DoP1.1协议延伸设计 延伸协议并非标准协议，不保证兼容性

## 参数

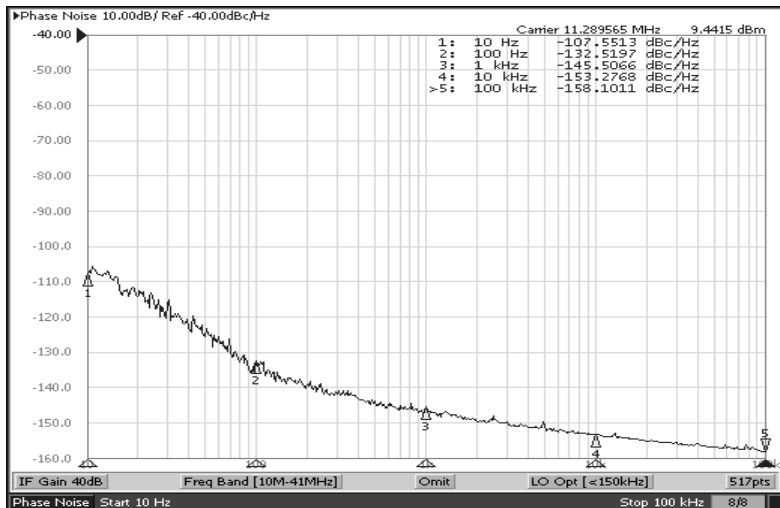
输入/输出	AES 最高可达 24bit/768k 或 dop256 同轴 最高可达 24bit/768k 或 dop256 光纤 最高可达 24bit/192k 或 dop64 *HDMI 最高可达 32bit/768k 或 dsd512 *Native PCM and DSD Over HDMI(LVDS Transceiver)
抖动抑制	典型值 200:1 高于 100Hz & 30000:1 高于 700Hz (标准模式) 典型值 8000:1 高于 100Hz & 1000000:1 高于 700Hz(精密模式)
残留抖动	典型值 2pS (标准模式 10Hz - 100k 带宽分析) 典型值 600fS (精密模式 10Hz - 100k 带宽分析)
抖动转折频率	20Hz 以内 (标准模式) 1Hz 以内 (精密模式)
采样率偏差	小于 ±1000ppm (标准模式) 小于 ±50ppm (精密模式)
同步误差	0ppm
音频信号路径	无损处理
环境温度	正常工作 0°C - 50°C 推荐环境 15°C - 35°C
尺寸	277mm 宽度    181mm 深度    58mm 高度
净重	1.9kg
电源	正常工作 直流 9V - 15V, 典型值 1A 推荐供电 直流 9V - 15V, 典型值 2A 可使用卷绕电池或者胶体电池





## 残留相位噪声测试(DSD256 CLK):

10Hz - 100kHz 带宽(5 ft SMA测试线缆)





## 补充说明

### 标准模式

前端信号源本地时钟品质一般（普通温补晶振，普通有源晶振，谐振器或电容振荡器）。此模式具有超高抖动容忍度和较高抖动抑制比，锁定时间短。普通用户推荐此模式。

### 精密模式

前端信号源本地时钟优秀（恒温晶振，优质温补晶振或优质有源晶振）。此模式具有一般的抖动容忍度和超高抖动抑制比，锁定时间长。建议对系统比较熟悉的用户根据实际情况选择此模式。如果选择后出现无法锁定或者锁定时间过长或者频繁失锁，说明前端信号品质不足以满足精密模式工作条件，建议切换回标准模式。因为精密模式对环境要求苛刻，电源浪涌或静电以及磁场变化都可能导致失锁，请注意使用环境。

### 时钟输出

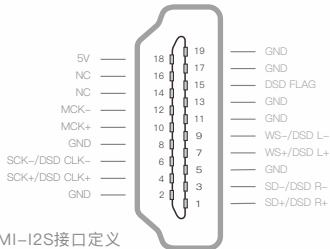
44.1k ~ 384k	SCK is WS x 64	MCK is WS x 256
705.6k ~ 768k	SCK is WS x 64	MCK is WS x 128
DSD64 ~ DSD512	MCK is DSD SCK x 4	

### 预热说明

标准模式无需预热，开机即可工作。  
精密模式建议预热至少15分钟\*，否则可能出现锁定不稳定状况。  
\*15分钟测试是基于室温25°C下测量获得平均值。  
根据室温的高低,预热的时间也需要做相应的调整。

### 静电注意

静电干扰可能导致工作异常，请排除干扰后断电重启。



### 泰坦音频HDMI-I2S接口定义

HDMI & SMA 输出是泰坦音频标准格式，用于接驳未来产品预留。



## Foreword

Dear customers,

Thanks for purchasing the Titans Helen, and congratulations on choosing this unique ultra-low-jitter digital processing unit!

We sincerely hope this brand new Titans Helen will bring you great HiFi experience and lots of joy.

Please read the entire manual carefully before starting to use the device.



## IMPORT AND EXPORT CONTROL

- In order to export, reexport or import the products described in this manual (including, but not limited to, software and technical data in the product), you should comply with applicable import and export control laws and regulations.

## LEGAL NOTES

- Please ensure that you observe copyright laws. The recording and publication of prerecorded media such as tapes, CDs or other published or broadcast material may contravene copyright laws.
- This also applies to all of the software supplied.
- Other names, company or product names referred to in this manual are trademarks or registered trademarks of the relevant companies.

## WARNING MESSAGES

- Use exclusively recommended accessories to prevent faults, short circuits or electric shock.
- Do not expose the unit to moisture or rain.
- Do not attempt to remove parts of the body (covers); specialist repairs can be carried out only at authorized service centers

Titans Audio Lab reserves the right, at its sole discretion, to change, modify, add or remove portions of the content of this manual, at any time, without prior notice or liability.

## UNSECURED STATEMENT

- This manual provided "as is" and without any express or implied warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose, unless required by applicable law .
- To the extent permitted by law, in no event shall Titans Audio Lab be liable for any special, incidental, indirect or consequential damages, including but not limited to loss or corruption of data, loss of profits, goodwill, bargain or opportunity or loss of anticipated savings resulting from your access to, or use of, or inability to use the manual.



## DISPOSAL ELECTRONIC EQUIPMENT

(Applies within the eU, and for other European countries with separated waste collection systems)

This device contains electronic components and therefore may not be disposed of as general household waste. Instead it should be disposed of at a recycling collection point provided by the local authority. This costs you nothing. Your local authority or waste disposal authority, or the shop where you bought this device, can provide you with further information on this issue.



# Name and Function of Each Part

## Front View

- 1.1 Standard mode lock \* <sup>1</sup> Standard mode unlock Precision mode lock Precision mode unlock
- 1.2 PCM mode Native DSD mode DoP DSD mode
- 1.3 Sample rate 44.1k or DSD64 Sample rate 48k
- 1.4 Twice the sample rate of 1.3 4 times the sample rate of 1.3 8 times the sample rate of 1.3 16 times the sample rate of 1.3
- 1.5 AES input Optical input Coaxial input HDMI (I2S) Input
- 1.6 Input selector (short press)

Press 3 seconds in standard mode to enter precision mode \*<sup>3</sup>

Press 3 seconds in precision mode to enter standard mode \*<sup>4</sup>

## Back View

- 2.1 I2S output SMA-WS\*<sup>7</sup>
- 2.2 I2S output SMA-SD\*<sup>7</sup>
- 2.3 I2S output HDMI\*<sup>2</sup>
- 2.4 Coaxial output RCA, isolation design, impedance 75Ω
- 2.5 Coaxial input RCA, impedance 75Ω
- 2.6 DC input (1 ground, 4 positives), 9V/1.2A\*<sup>6</sup>
- 2.7 I2S output SMA-MCK\*<sup>7</sup>
- 2.8 I2S output SMA-SCK\*<sup>7</sup>
- 2.9 Coaxial output BNC, impedance 75Ω
- 2.10 Optical output
- 2.11 AES output, isolation design, impedance 110Ω
- 2.12 I2S input HDMI\*<sup>2</sup>
- 2.13 Optical input
- 2.14 AES input, isolation design, impedance 110Ω

<sup>1\*</sup> If the signal from the source is not high quality, please use standard mode

<sup>2\*</sup> I2S over HDMI is Titans Audio's standard definition

<sup>3\*</sup> In standard mode, locking indicator is red, locking time (typ) is 2 seconds \*<sup>5</sup>

<sup>4\*</sup> In precision mode, locking indicator is green, locking time (typ) is 12 seconds \*<sup>5</sup>

<sup>5\*</sup> The actual locking time depends on source signal quality

<sup>6\*</sup> External DC supply supports 9V-15V, and supports 12V wound-cell battery

<sup>7\*</sup> I2S output SMA, signals are all 3.3V CMOS



## Introduction

Helen is an ultra-low hybrid PLL digital processing unit, designed for digital source jitter rejection, and it achieves Bit-Perfect.\*<sup>1</sup>

Supports up to 32bit, 768kHz/DSD512.\*<sup>2</sup>

\*<sup>1</sup> Since Helen doesn't have any lossy process of signal, switching sample rates may lead to slight popping sound, which is a normal phenomenon.

\*<sup>2</sup> When using S/PDIF, the DAC needs to support DoP. 352.8k ~ 768k S/PDIF is extensional design based on IEC60958 and AES3 protocol. DSD256 over 705.6k is extensional design based on DoP1.1 protocol. Extension protocols are not standard protocols and do not guarantee the compatibility.

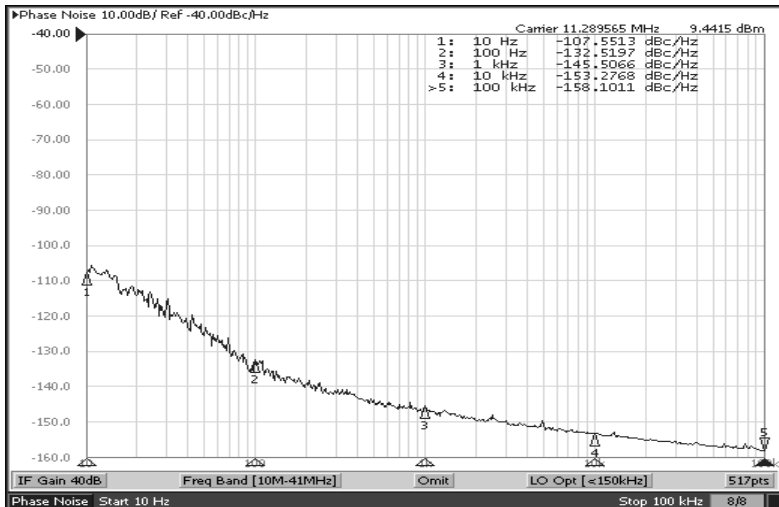
## Specifications

Input/Output	AES	up to to 24bit/768k or dop256
	Coaxial	up to to 24bit/768k or dop256
	Toslink	up to to 24bit/192k or dop64
	*HDMI	up to to 32bit/768k or dsd512
	*Native PCM and DSD Over HDMI(LVDS Transceiver)	
Jitter rejection gain	Typical 200:1 above 100Hz & 3000:1 above 700Hz (Normal) Typical 8000:1 above 100Hz & 1000000:1 above 700Hz (Precision)	
Residual phase jitter	Typical 2pS (Normal Mode 10Hz – 100k analysis bandwidth) Typical 600fS (Precision Mode 10Hz – 100k analysis bandwidth)	
Jitter rejection corner	Below 20Hz (Normal Mode) Below 1Hz (Precision Mode)	
Sample rate deviation	Less than $\pm 1000$ ppm (Normal Mode) Less than $\pm 50$ ppm (Precision Mode)	
Synchronization error	0ppm	
Operating temperature	Lossless processing	
Ambient temperature	Usable 0°C – 50°C Recommend 15°C – 35°C	
Dimensions	277mm Width	181mm Depth 58mm Height
Weight	1.9kg	
Power supply	Usable	DC 9V – 15V, Typical 1A
	Recommend	DC 9V – 15V, Typical 2A
	Acceptable	12V wound-cell battery or OPzV battery



## Residual Phase noise measurement ( DSD256 CLK ) :

10Hz – 100kHz bandwidth (5 ft SMA cable)





# Instructions

## Standard mode

Recommended when the front-end signal local clock is average quality (average TCXO/XO/XTAL/RC oscillator). This mode has super high jitter tolerance and comparatively high jitter rejection. Short locking time.

## Precision mode

Recommended when the front-end signal local clock is high quality (OCXO/HQ TCXO/HQXO).

This mode has average jitter tolerance and super high jitter rejection. Long locking time.

You are recommended to use precision mode if you are familiar with the whole system.

If the mode leads to failing to lock, over time locking or frequent losing lock, then it means the front-end signal quality is not good enough for precision mode.

Please switch back to standard mode.

## Clock output

44.1k ~ 384k	SCK is WS x 64	MCK is WS x 256
705.6k ~ 768k	SCK is WS x 64	MCK is WS x 128
DSD64 ~ DSD512	MCK is DSD SCK x 4	

## Warming up

In standard mode, no need for warming up.

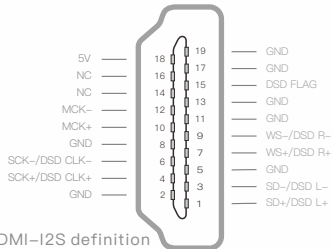
In precision mode, at least 15 min warming up, otherwise locking might be unstable.

\*The value "15 minutes" is the average of measurement at the ambient temperature of 25°C.

Warming up time should be adjusted according to the actual ambient temperature.

## ESD

ESD may cause abnormal operation. Please suppress the interference, plug off and restart the device.



## Titans Audio HDMI-I2S definition

HDMI & SMA Output Titans audio standard format.

Used to connect future products to do reserve.





# 保修证

此保修证仅适用于大中华区

This warranty card is only available in Greater China

---

## 一、保修条款：

1、保修有效期内，如用户在正常使用情况下发生故障，请携带保修证和购货发票前往指定的维修站，按本证规定进行免费修理（包括零部件更换和人工费），但不负担修理品的上门费、运费、安装及拆卸等与实际维修无关的费用。各地指定的维修地址请向泰坦音频实验室咨询。

2、以下情况即使在保修有效期内概不提供免费修理：

- 1) 无法同时出示购货发票或保修证（购买产品时须完整填写用户信息并加盖销售商店印章）；
- 2) 商品的型号和制造编号被涂改、撕毁或无法辨认；
- 3) 本公司指定维修站以外及使用非本公司零件进行修理或改装引起的故障或损坏；
- 4) 由于火灾、地震、水灾、风灾、雷击、等自然灾害及异常电压、公害、化学物质的侵蚀而造成的故障和损坏；
- 5) 恶劣条件（油烟、灰尘、受潮、直射阳光等）使用、或未按使用说明书的使用要求使用、维护而造成的故障和损坏；
- 6) 由于感染病毒、跌落、移动、运输、异物进入或非本公司所制造的产品等原因引起的故障和损坏；
- 7) 由于正常的磨损引起的周期性检查、维护、维修、或周期性更换零部件；
- 8) 外壳、面板、按键等外观零件和驱动软件、电源线及附属数据连接线等附件的更换；

二、保修有效期：自购机之日起一年（以正式购货发票为准，若无正式发票，以出厂日期顺延3个月为准）。

三、本保修证只作为符合本证所列期限条件下用户享受保修的凭证，因而不限制用户在法律上的权利。有关维修事宜如有不明之处，请向泰坦音频实验室咨询。



## my point of view

TITANS AUDIO LAB

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