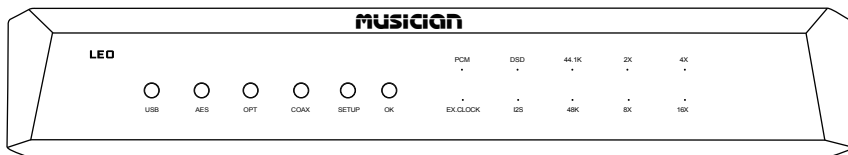




LEO 高性能数字界面



User's Manual

使用说明书

联系邮箱: info@musician-audio.com

官网: <http://www.musician-audio.com>

前言

感谢您选择 MUSICIAN 产品!

广州乐之佳科技有限公司(MUSICIAN Audio)正式成立于2020年,研发团队由一群拥有二十多年音响研发经验的爱好者组建而成,致力于:R2R分立平衡解码器,平衡耳机放大器,平衡功放,平衡前级放大器,耳机,无源音箱等多种音频产品的研发与生产。

*温馨提示

- 不要在本机上面覆盖报纸,台布,窗帘等,以免妨碍散热。如果本机内部温度过高,则有可能导致火灾,损坏本机 或造成人身伤害。
在使用开关,旋钮或缆线时,不要用力过猛。
- 只能使用本机指定的电压。使用高于指定数值的电压很危险,而且可能导致火灾,损坏本机或造成人身伤害。
- 不要试图自行改造或修理本机。如果需要任何服务,请通过官网联系 MUSICIAN售后团队。
- 如果打算长时间不使用本机,请从墙壁交流电源插座上断开电源线的连接。为了加强对于本产品的保护,在雷电期间,或无人管理时以及长时间不使用时,请将电源线从墙壁上的电源插座上拔下。这样将防止该产品在闪电和电网出现电涌时受到损害。

技术亮点

LEO

- 专有 FPGA DSP 处理架构
- 内部晶振的 FIFO 缓冲器和时钟恢复
- AT切恒温晶振
- O型单晶铜变压器
- 光隔离全数字输入接口
- 基于 STM32F446 高级 AMR 的 MCU 的专有 USB 音频解决方案
- 适用于 Windows 平台的许可 Thesycon USB 驱动程序
- Mac 和 Linux 上的无需驱动程序
- 支持双 AES/EBU 输出
- 支持外部时钟输入 (45.1548MHz/49.152MHz)

DSD

同轴/AES/OPT 输入和输出支持DSD64(DoP)。
USB 输入和 I²S 输出上支持DSD512

PCM

所有输入/输出支持24bits / 44.1, 48, 88.2, 96, 176.4, 192KHz。

USB输入支持768KHz, I²S 输出支持384KHz。

数字输入

同轴、光纤、AES/EBU、USB、外部时钟 (45.1548MHz / 49.152MHz)

外部时钟输入

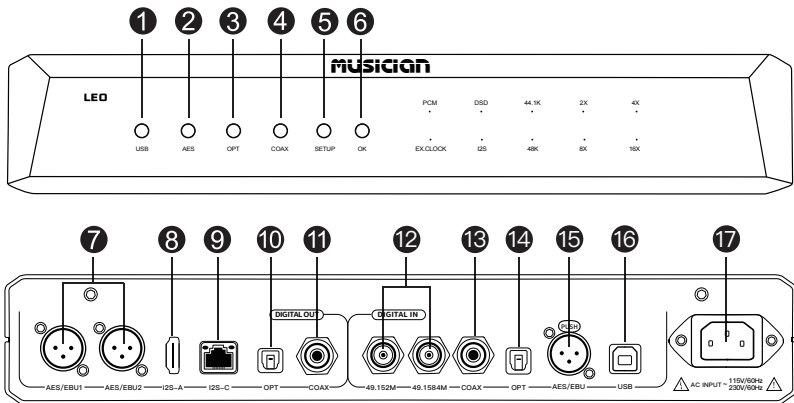
45.1548MHz , 49.152MHz

数字输出

AES/EBU x2 输出、I²S HDMI LVDS / I²S RJ45 LVCMOS、光纤、同轴

请注意，狮子座的 RJ45/HDMI 端口不是典型的网络/多媒体 RJ45/HDMI 端口。它们是专门构建的 I²S 端口。请不要将其连接到典型的多媒体 HDMI 端口 (即蓝光播放器/电视等)/以太网网络。

面板信息



- | | | |
|------------------|--------------------|---------------------|
| 1 USB按钮 | 7 AES/EBU输出 | 13 同轴输入 |
| 2 AES按钮 | 8 HDMI输出 | 14 光纤输入 |
| 3 光纤按钮 | 9 网口输出 | 15 AES/EBU输入 |
| 4 同轴按钮 | 10 光纤输出 | 16 USB输入 |
| 5 SETUP按钮 | 11 同轴输出 | 17 电源接口 |
| 6 确认按钮 | 12 时钟输入 | |

狮子座配备了由STM32F446驱动的专有USB音频解决方案，支持24bit/768KHz PCM数据流和本级处理的DSD到DSD512.

- **Windows 平台的许可 Thesycon USB 驱动程序**

下载并安装适用于 Windows 的 Thesycon USB 驱动程序

1. 将标准USB电缆从PC USB端口连接到USB输入
2. 选择 USB 输入。USB 输入 LED 应亮起
3. 检查PC音频设备面板，检测是否连接到机器

- **Mac 和 Linux 上的无需安装驱动程序**

无需安装驱动，连接即可使用

连接后在声音设置，检测是否连接到机器



LED灯指示

USB/AES/OPT/COAX

根据音源按键变化而变化

灯灭：未选中该音源

灯亮：已选中该音源，其中开启单AES模式灯亮，开启双AES模式灯闪

灯闪：只在开启双AES模式时选中AES灯闪

SETUP

灯灭：为主页模式 / 灯闪：为菜单模式

OK

OK按键被按下则亮 / OK按键已松开则灭

EX.CLOCK

灯灭：内部时钟 / 灯亮：外部时钟

I2S

灯灭：DSD左右声道为L/R

灯亮：DSD左右声道为R/L

DSD

灯灭：不是DSD音频

灯亮：为DSD音频

PCM

灯灭：不是PCM音频

灯亮：为PCM音频

44K1 / 48K

根据输入信号的采样率变化而变化

灯灭：输入信号不是该采样率

灯亮：输入信号是该采样率

2x / 4x / 8x / 16x

根据输入信号的采样率n倍频率变化而变化

灯灭：输入信号不是该采样率的n倍频率

灯亮：输入信号是该采样率的n倍频率

按键说明

USB 按键	在主页模式：按下选择USB音源并且USB灯亮 在菜单模式：按下进入USB升级功能设置 在功能设置：按下按键无反应
AES 按键	在主页模式：按下选择AES音源并且AES灯亮 在菜单模式：按下进入单/双AES功能设置 在功能设置：按下按键无反应
OPT 按键	在主页模式：按下选择OPT音源并且OPT灯亮 在菜单模式：按下进入外部时钟功能设置 在I2S引脚与DSD左右声道功能设置中：按下切换DSD左右声道 在其他功能设置中：按下按键无反应
COAX 按键	在主页模式：按下选择COAX音源并且COAX灯亮 在菜单模式：按下进入外部时钟功能设置 在功能设置：按下按键无反应
SETUP 按键	按下按键并且SETUP灯闪进入菜单模式 按下按键并且SETUP灯灭返回主页模式
OK 按键	在主页模式：按下按键无反应并且OK灯亮, 松开灭 在菜单模式：按下按键无反应并且OK灯亮, 松开灭 在功能设置：按下按键切换功能设置并且OK灯亮, 松开灭

功能设置说明

	功能设置	按键操作	LED灯指示
USB升级功能设置	按下SETUP按键进入菜单模式再按下USB按键进入USB升级功能设置	先按SETUP按键+USB按键	SETUP灯闪+USB灯闪
	在USB升级功能设置中按下OK按键进行USB升级	再按OK按键进行升级	44K1灯灭+48K灯灭：未开始升级
			44K1灯亮+48K灯亮：可开始升级
单/双AES功能设置	按下SETUP按键进入菜单模式再按下AES按键进入单/双AES功能设置	先按SETUP按键+AES按键	SETUP灯闪+AES灯闪
	在单/双AES功能设置中按下OK按键进行单AES、双AES功能切换	再按OK按键进行切换	44K1灯亮：单AES模式
			48K灯亮：双AES模式
外部时钟功能设置	按下SETUP按键进入菜单模式再按下OPT按键进入外部时钟功能设置	先按SETUP按键+OPT按键	SETUP灯闪+EX.CLOCK灯闪
	在外部时钟功能设置中按下OK按键进行外部时钟功能的关闭和开启	再按OK按键进行切换	44K1灯灭或48K灯灭：关闭外部时钟
			44K1灯亮或48K灯亮：开启外部时钟
I2S引脚与DSD左右声道功能设置	按下SETUP按键进入菜单模式再按下COAX按键进入I2S引脚与DSD左右声道功能设置	先按SETUP按键+COAX按键	SETUP灯闪+I2S灯闪
	在I2S引脚与DSD左右声道功能设置中按下OK按键进行I2S引脚切换	再按OK按键进行切换	44K1(DATA), 2X(BCK), 4X(LRCK)灯灭为正 44K1(DATA), 2X(BCK), 4X(LRCK)灯亮为负
	在I2S引脚与DSD左右声道功能设置中按下OPT按键进行DSD左右声道切换	再按OPT按键进行切换	16X灯灭：L/R
			16X灯亮：R/L

I2S引脚

*对应LED指示灯

I2S引脚 ▶	2X(DATA)	4X(BCK)	8X(LRCK)
8种模式 ▼			
1	灭:DATA+	灭:BCK+	灭:LRCK+
2	亮:DATA-	灭:BCK+	灭:LRCK+
3	灭:DATA+	亮:BCK-	灭:LRCK+
4	亮:DATA-	亮:BCK-	灭:LRCK+
5	灭:DATA+	灭:BCK+	亮:LRCK-
6	亮:DATA-	灭:BCK+	亮:LRCK-
7	灭:DATA+	亮:BCK-	亮:LRCK-
8	亮:DATA-	亮:BCK-	亮:LRCK-

狮子座I2S引脚

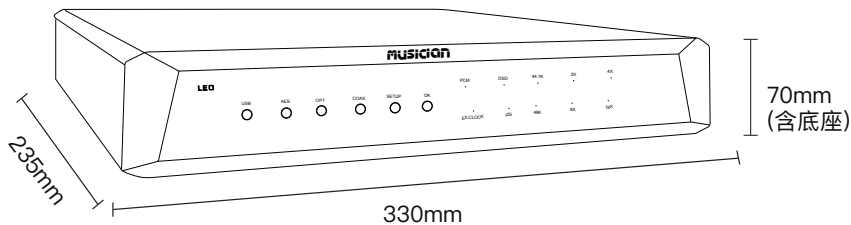
请注意：I2S连接没有行业标准。不同的品牌/产品有不同的I2S线序。

如果您想使用 I²S 连接，必须正确配置与 DAC 匹配的 I²S 引脚。I²S 引脚分配不匹配可能导致静态/噪声输出。过高的噪音输出电平可能会损坏扬声器/耳机驱动器。

I²S与DAC匹配的建议

1. 连接 I2S 电缆（优质HDMI电缆 <3ft/1m）
2. 调低音量（能听见的最小音量）
3. 播放音乐（首先是PCM，然后是DSD）
4. 运行 DAC 的 I²S 设置（详情请咨询DAC制造商）
5. 播放PCM和DSD时，其中一种模式应与播放的源相匹配

建议进行音频音调测试，以确保L/R通道，同相/异相的正确。



基本参数

功能按键：USB、AES、光纤、同轴输入按钮，SETUP，OK按键

输入方式：同轴、光纤、AES/EBU、USB2.0 Type B、

外部时钟 (45.1548MHz / 49.152MHz)

输出方式: AES/EBU x2 输出、I²S HDMI LVDS / I²S RJ45 LVCMOS、

光纤、同轴

电源输入：100-240VAC, 50/60Hz (全球电压)

裸机尺寸: 330mm*235mm*70mm(高度包含底座)

裸机重量：4.35KG

包装重量: 5.5KG

保修条款

我们以严格的质量控制检查为我们的产品质量感到自豪。为了让您更加放心，我们所有产品均提供三年保修。在满足以下条件的情况下，在购买之日起的前30天内，大多数物品可以被退还，我们提供退款或更换。希望您能享受到美好的购物体验！

可退回物品

收到后30天内可以退货/退款或换货的物品必须遵循以下标准

- 1.退回的任何物品都必须随附所有附件，硬件，手册或说明，并且在与运送给您时相同的“新”状态下。
- 2.任何退回的物品将在收到后进行评估。当然，对于因处理不当，使用不当，篡改或使用不当造成的有缺陷的商品，我们不予退款。
- 3.如果退货时没有完整的原始包装（原始包装盒，泡沫填充物等），将收取25%的补货费。

小贴士：物品应安全运送，因为在我们收到之前，您将自行承担全部责任。如果您选择更换，我们将免费运送您的替换物品。

退货运费及地址

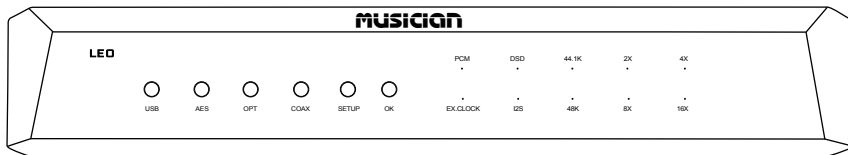
我们旨在提供使我们所有忠实客户受益的服务。全球客户都可以把产品返回我们的中国仓库。在退回带有相关地址的物品之前，请始终与我们联系。

- 1.所有运输费用均由客户承担。这包括退货或换货的运费。运费是不可退还的。
- 2.请与您当地的邮局联系，以确认实际的退货运费。我们建议您使用可用的最便宜的邮政挂号。



LEO

High Performance Digital Interface



User's Manual

Email: info@musician-audio.com

Official website: <http://www.musician-audio.com>

Introduction

Thank you for choosing MUSICIAN products!

Guangzhou LEZHIJIA Technology Co.,Ltd.(MUSICIAN Audio) was formally established in 2020. The R & D team is formed by a group of enthusiasts with more than 20 years of audio research and development experience. It is committed to the following product: R2R discrete balanced decoders, balanced headphone amplifiers, balanced amplifiers, balanced pre-amplifiers, headphones, passive speakers, and other audio products.

***Tips**

- Do not cover newspapers, tablecloths, curtains, etc. on the machine, as this may prevent heat dissipation. If the temperature inside the machine is too high, it may cause a fire, damage the machine, or cause personal injury. When using switches, knobs or cables, do not use excessive force.
- Only use the voltage specified by this machine. Using a voltage higher than the specified value is dangerous and may cause fire, damage to the unit, or personal injury.
- Do not attempt to modify or repair this unit by yourself. If you need any service, please contact the MUSICIAN after-sales team through the official website.
- If you plan not to use the machine for a long time, disconnect the power cord from the AC wall outlet. To strengthen the protection of this product, unplug the power cord from the wall outlet during lightning, or when no one is managing it, and when not using it for a long time. This will prevent the product from being damaged during lightning and power grid surges.

Product information

Technical Highlights | LEO

- Proprietary FPGA DSP Processing Architecture
- FIFO Buffer and Reclock with Internal Crystal
- AT-Cut constant temperature crystal oscillator
- O-type single crystal copper transformer
- Optical Isolated All Digital Input Interfaces
- Proprietary USB Audio Solution via STM32F446 Advanced AMR Based MCU
- Licensed Thesycon USB Driver For Windows Platform
- Driverless On Mac & Linux
- Dual AES/EBU Output Supported
- External Clocks Input Supported (45.1548MHz, 49.152Mhz)

DSD

DSD64(DoP) on Coax/AES/Opt Input & Output
Up to DSD512 On USB Input & I²S Output

PCM

24bits / 44.1, 48, 88.2, 96, 176.4, 192KHz On All Input & Output
Up to 768KHz On USB Input & Up to 384KHz on I²S Output

Digital Input

Coaxial, Optical , AES/EBU, USB, External Clock Input (45.1548MHz, 49.152Mhz)

External Clock Input

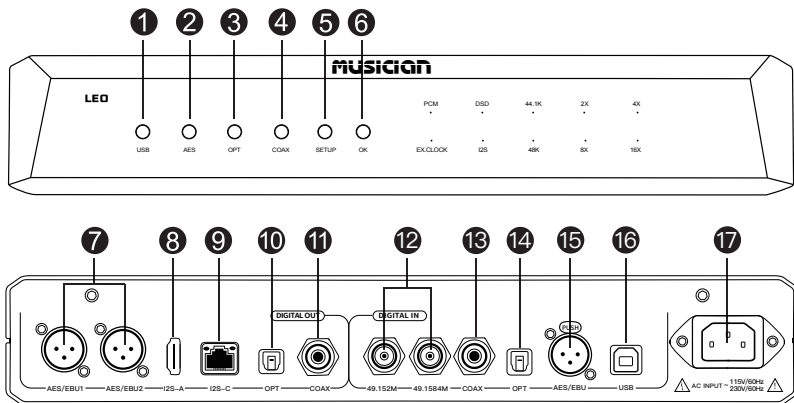
45.1548MHz, 49.152Mhz

Digital Output

AES/EBU x2 output, I²S HDMI LVDS/I²S RJ45 lvcmos,
Optical , Coaxial

Please note that the RJ45/HDMI ports of LEO are not typical network /multimedia RJ45/HDMI ports. They are purpose-built I²S ports. Please do not connect it to the typical multimedia HDMI port (i.e. Bluray player/TV etc) / Ethernet network.

Panel information



1 USB input button

2 AES input button

3 OPT input button

4 COAX input button

5 SETUP button

6 OK button

7 AES/EBU output

8 I²S HDMI LVDS Standard

9 I²S RJ45 LVCMOS Standard

10 Optical output

11 Coaxial output

12 Clock input

13 Coaxial input

14 Optical input

15 AES/EBU input

16 USB input

17 Power input

Driver

LEO is equipped with a proprietary USB audio solution driven by STM32F446, which supports 24bit/768khz PCM data stream and DSD to DSD512 processed at this level.

- **Licensed Thesycon USB Driver For Windows Platform**

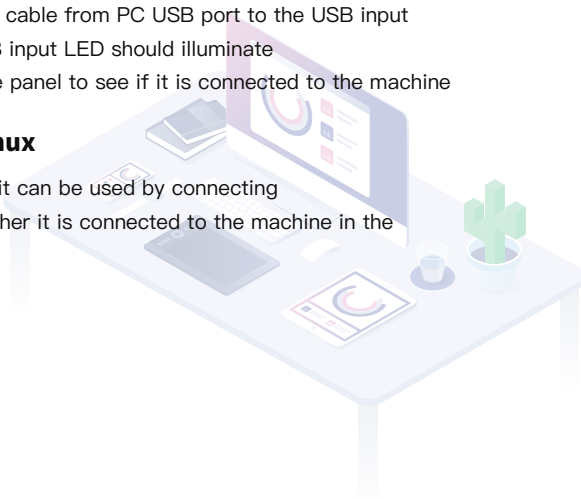
Download and install Thesycon USB Driver for Windows.

1. Connect the standard USB cable from PC USB port to the USB input
2. Select USB input. The USB input LED should illuminate
3. Check the PC audio device panel to see if it is connected to the machine

- **Driverless On Mac & Linux**

No need to install the driver, it can be used by connecting

After connection, check whether it is connected to the machine in the sound setting



LED indicator

USB/AES/OPT/COAX

Change according to the sound source key

Light off: the sound source is not selected

Light on: the sound source has been selected, in which the single AES mode light is on, and the dual AES mode light flashes

Light flashing: select AES light flashing only when dual AES mode is enabled

SETUP

Light off: home mode

Light flashing: menu mode

OK

ON when the OK button is pressed

OFF when the OK button is released

EX.CLOCK

Light off: internal clock

Light on: external clock

I2S

Light off: left and right channels of DSD are L/R

Light on: right and left channels of DSD are R/L

DSD

Light off: Not DSD audio

Light on: Audio for DSD

PCM

Light off: Not PCM audio

Light on: Audio for PCM

44K1/48K

Varies according to the sampling rate of the input signal

Light off: the input signal is not the sampling rate

Light on: the input signal is the sampling rate

2x / 4x / 8x / 16x

Change according to the sampling rate n times the frequency of the input signal

Light off: the input signal is not n times the frequency of the sampling rate

Light flashing: the input signal is n times the frequency of the sampling rate

Button description

USB button	<p>In home mode: Press to select USB sound source and USB light is On</p> <p>In menu mode: Press to enter USB upgrade function setting</p> <p>In function setting: No response when pressing the button</p>
AES button	<p>In home mode: Press to select the AES sound source and the AES light is On</p> <p>In menu mode: Press to enter single / dual AES function setting</p> <p>In function setting: No response when pressing the button</p>
OPT button	<p>In home mode: Press to select the opt sound source and the opt light is On</p> <p>In menu mode: Press to enter the external clock function setting</p> <p>In I2S pin and DSD left and right channel function settings: Press to switch DSD left and right channels</p> <p>In other function settings: No response when pressing the button</p>
COAX button	<p>In home mode: Press to select coax sound source and coax light is On</p> <p>In menu mode: Press to enter the external clock function setting</p> <p>In function setting: No response when pressing the button</p>
SETUP button	<p>Press the button and the setup light flashes to enter the menu mode</p> <p>Press the button and the setup light is off to return to the home mode</p>
OK button	<p>In home mode: Press the button without response and the OK light is on. Release the button and the light is off</p> <p>In menu mode: Press the button without response and the OK light is On, then release it and it is Off</p> <p>In function setting: In function setting: press the button to switch the function setting and the OK light is On, then release the button to turn Off</p>

Function setting description

	Function Settings	Button Operation	LED indicator
USB Upgrade Function settings	Press the setup button to enter the menu mode, and then press the USB button to enter the USB upgrade function setting	First press the Setup button + usb button	Setup light flashes + USB light flashes
	In the USB upgrade function setting, press the OK button to upgrade the USB	Press the OK button again to upgrade	44k1 light off + 48k light off: Upgrade has not started
			44k1 light on +48k light on: Upgrade can be started
Single / Dual AES Function setting	Press the setup button to enter the menu mode, and then press the AES button to enter the Single/Dual AES function setting	First press the Setup button + AES button	Setup light flashes + AES light flashes
	In single / dual AES function setting, press the OK button to switch between Single AES and Dual AES functions	Press the OK button again to switch	44k1 light on: Single AES mode
			48K light on: Dual AES mode
External Clock Function setting	Press the setup button to enter the menu mode, and then press the opt button to enter the external clock function setting	First press the Setup button + OPT button	Setup light flashes + EX.clock light flashes
	In the external clock function setting, press the OK button to turn off and turn on the external clock function	Press the OK button again to switch	44k1 light off or 48K light off: Turn off the external clock
			44k1 light on or 48K light on: start the external clock
I2S Pin and DSD left and right channel function settings	Press the setup button to enter the menu mode, and then press the coax button to enter the I2S pin and DSD left and right channel function settings	First press the Setup button + COAX button	Setup light flashes + I2S light flashes
	In the I2S pin and DSD left and right channel function settings, press the OK button to switch the I2S pin	Press the OK button again to switch	44K1(DATA), 2X(BCK), 4X(LRCK) lights are off to be positive
			44K1(DATA), 2X(BCK), 4X(LRCK) lights are on, it is negative
	In the I2S pin and DSD left and right channel function settings, press the opt button to switch DSD left and right channels	Press the OPT button again to switch	16X light off: L/R
			16X light on: R/L

I2S PIN

*Corresponding LED indicator

I2S PIN ▶	2X(DATA)	4X(BCK)	8X(LRCK)
8 Modes ▼			
1	Light Off : DATA+	Light Off: BCK+	Light Off: LRCK+
2	Light On: DATA-	Light Off: BCK+	Light Off: LRCK+
3	Light Off: DATA+	Light On: BCK-	Light Off: LRCK+
4	Light On: DATA-	Light On: BCK-	Light Off: LRCK+
5	Light Off: DATA+	Light Off: BCK+	Light On: LRCK-
6	Light On: DATA-	Light Off: BCK+	Light On: LRCK-
7	Light Off: DATA+	Light On: BCK-	Light On: LRCK-
8	Light On: DATA-	Light On: BCK-	Light On: LRCK-

LEO I2S Pin

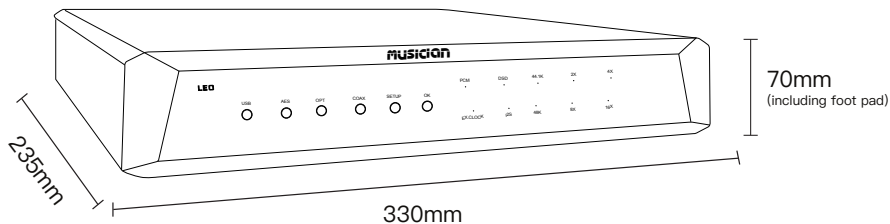
There is no industry standard of I2S connection. Different brand/product has different I2S line order.

If you would like to use the I²S connection, the I²S pinout matching with the DAC has to be configured correctly. Mismatch of I²S pinout may result in static/noise output. The excessive noise output level may damage the loudspeakers/headphone drivers.

I²S Suggestions for matching DAC

1. Connect I2S cable (high quality HDMI cable <3ft/1m)
2. Turn down the volume (minimum audible volume)
3. Play music (first PCM, then DSD)
4. I2S setting for running DAC(consult DAC manufacturer for details)
5. When playing PCM and DSD, one of the modes should match the playing source

It is recommended to conduct an audio tone test to ensure that the L/R channel is correct in phase/out of phase.



Basic parameters

Function keys: USB, AES, Optical fiber, Coaxial input buttons,
Setup, OK Button

Input mode: Coaxial, Optical , AES/EBU, USB2.0 Type B

External clock (45.1548mhz / 49.152mhz)

Output mode: AES/EBU x2 output, I²S HDMI LVDS / I²S RJ45 lvcmos,
Optical , Coaxial

Power input: 100–240V AC, 50/60hz (Global voltage)

Machine size: 330mm*235mm*70mm (Height includes foot pad)

Machine weight: 4.35kg

Package weight: 5.5kg

Warranty

We take pride in the quality of our products with strict quality control checks. To give you more confidence, all of our products are provided with a three-years warranty. Within the first 30 days from the date of purchase, most items can be returned for refund or exchange if meet the following conditions. Wish you enjoy a wonderful shopping experience!

RETURNABLE ITEMS

Items that can be returned/refunded or exchanged with in 30 days of receipt must comply with the following standards

1. Any returned items must be accompanied by all accessories, hardware, manuals or instructions, and in the same "new" state as when shipped to you.
2. Any returned items will be evaluated after receipt. Of course, we will not refund any defective products caused by improper handling, improper use, tampering or improper use.
3. If there is no complete original packaging (original packing box, foam filling, etc.) at the time of return, 25% replenishment fee will be charged.

Tips: The items should be transported back safely. Before we received, You will take full responsibility. If you choose to replace, we will ship your replacement items free of charge.

RETURN FEE AND ADDRESS

We aim to provide services that benefit all our loyal customers. Global customers can return products to our Chinese warehouse. Please always contact us before returning items to relevant addresses.

1. All transportation costs are borne by the customer. This includes shipping costs for returns or exchanges. Shipping costs are non-refundable.
2. Please contact your local post office to confirm the actual return shipping fee before shipping back. We recommend that you use the cheapest postal service if available.