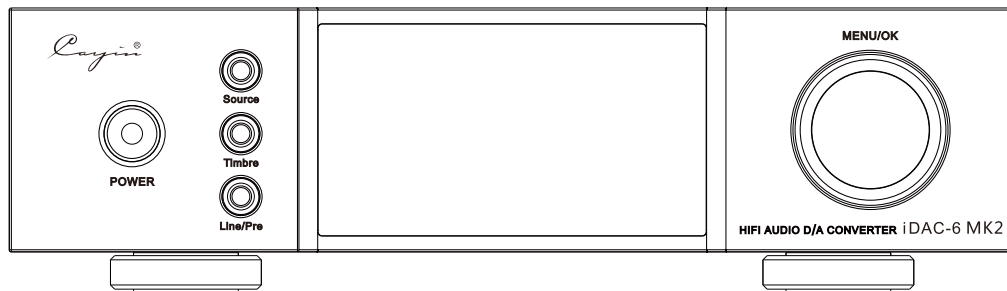# iDAC-6 MK2 | HIFI AUDIO D/A CONVERTER

User Manual

We want to sincerely thank you for choosing iDAC-6 MK2 HiFi Audio D/A Converter. We have prepared this user manual to help you understand the features and get familiar with the operation of the DAC. We suggest all customers read through this manual before they start to use the device.

A t t e n t i o n :

◆ Please make sure the serial number on the package, device chassis and warranty card are intact and identical. In case of damage, missing or tempered on warranty card or serial number, Cayin reserves the right to refuse warranty service for the device.

◆ All rights reserved. Reproduction, translation or adoption of any iDAC-6 MK2 related documentations and/or system firmware is prohibited without written approval from Cayin.

◆ The user manual is a documentation of the product based on the specification at the time of print. Cayin reserves the right to change product specification without prior notice.

Package Content :

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.iDAC-6 MK2 HiFi Audio D/A Converter	1	unit
2.User Manual	1	copy
3.Replacement Fuse	2	units
4.USB Cable	1	piece
5.Power Cord	1	piece

Design & Technical Features:

◆ Designed around the SABRE 32-bit, 8-channel PRO series ES9028 DAC chipset from ESS.

◆ To achieve the best audio performance, four channels were connected in parallel as left channel, and another four channels were connected in parallel as right channel.

◆ Three pieces of high precision, low noise, low jitter oscillators to serve as master clock of all digital audio instructions, including decoding of ES9028Pro.

◆ Support I²S digital audio input through HDMI-A connecter, compatible with Cayin iDAP-6 Digital Transport, N8 and N6 MK2 Digital Audio Player.

◆ Built-in high-resolution Asynchronous USB AUDIO transmission accepts and decodes Hi-Res digital audio bitstream from your computer via USB interface.

◆ Optical, AES/EBU and Coaxial interfaces all support DoP for DSD decoding. (Required the front-end playback device to support DoP)

◆ Deploy premium grade specialized op-amp in I/V converter circuit.

◆ Equipped with single-ended RCA and balanced XLR audio output, both support Vacuum Tubes and Solid-state timbre selection.

◆ Both RCA and XLR connecter supports LINE OUT and PRE OUT mode.

◆ Built-in 7 PCM filters and 4 DSD filters.

◆ Independent power supply to Digital and Analogue circuit.

◆ Used low leakage, high efficiency toroidal power transformer.

◆ Multiple sets of low noise LDO regulators optimize power supply to digital audio circuit, DAC circuit and analogue audio circuit, ensured all components will perform satisfactory and minimize interference among different components.

◆ Extensive mute protection circuit, minize impulse noise or noises generated at changing of operational stages.

◆ Finest sandblast aluminum alloy chassis and panel, shielding external interference with aesthetics.

◆ AMOLED Display Screen with GUI (Graphical User-Interface).
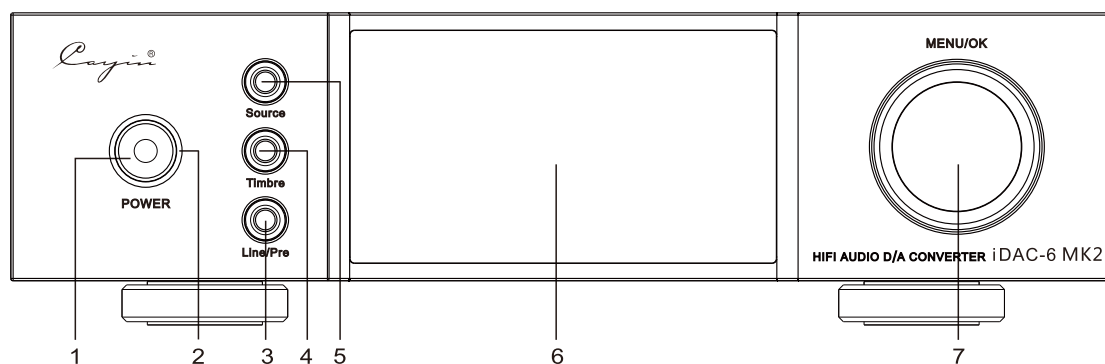
Front Panel Functional Description

Diagram 1: iDAC-6 MK2 Front Panel Illustration

1. POWER On/Off: Turn on and off. Press down the button to turn on the DAC, press again the button will resume to original position and the DAC will turn off.

2. Power Indicator: Indicates the working status of the DAC
   a. Indicator flashing: in the process of initialization.
   b. Indicator consistently on: device in regular operation.

3. Source: Select input source. Press repeatedly to cycle through the following options: USB AUDIO, I^2S, AES/EBU, COAXIAL BNC, COAXIAL RCA and OPTICAL.

4. Timbre Selection: Press repeatedly to cycle through Solid State or Vacuum Tube*.

5. Line Out/Pre Out: Select output status, press repeatedly to cycle through Line Out or Pre Out.

6. AMOLED Display: Display the current working status of the DAC.

7. MENU/ENTER/Volume

* It takes 15 seconds for the vacuum tubes to warm up to desirable working condition, the DAC will be muted during this period of time and there will not be any audio output from the DAC.

Supplementary Description:

1. PCM FIR (Finite Impulse Response) FILTERS :

APODIZ	Apodizing fast roll-off filter
BRICKWALL	Brick wall filter
FAST-L	Linear phase fast roll-off filter
FAST-M	Minimum phase fast roll-off filter
HYBRID	Corrected minimum phase fast roll-off filter
SLOW-L	Linear phase slow roll off filter
SLOW-M	Minimum phase slow roll-off filter

2. DSD IIR (Infinite Impulse Response) FILTERS

IIR47K	Adjust IIR bandwidth with cutoffs at 47K
IIR50K	Adjust IIR bandwidth with cutoffs at 50K
IIR60K	Adjust IIR bandwidth with cutoffs at 60K
IIR70K	Adjust IIR bandwidth with cutoffs at 70K

3. Output Mode

LINE OUT: When LINE OUT is selected, the output of the DAC will be at fixed level, and the volume control will be disabled. We suggest user to use this mode to connect the DAC to an integrated amplifier or a pre-amplifer.

PRE OUT: When PRE OUT is selected, the output of the DAC will be affected by the volume control. We suggest user to use this mode to connect the DAC to a power amplifer.

4. ABOUT DEVICE: Check model, firmware information of this product.

5. VOLUME Dial: Control the volume when output status is set to PRE OUT, turn clockwise to increase volume, turn anti-clockwise to decrease volume.
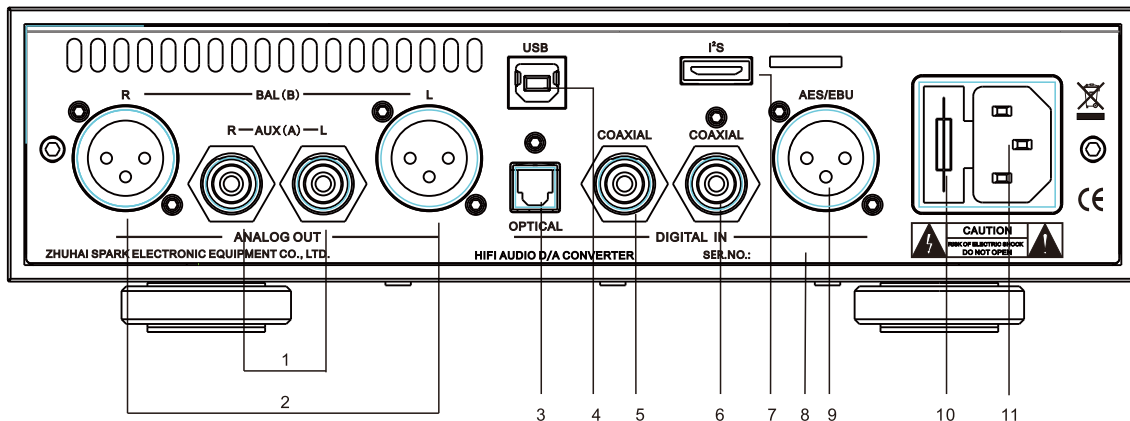
Rear Panel Functional Description

Diagram 2: iDAC-6 MK2 Rear Panel Illustration

1. Single-ended Connector (RCA): Connect the single-ended output of the DAC to the single-ended input of an amplifier with a pair of RCA audio signal cable. Please make sure the left and right channel is connected correctly.

2. Balanced Connector (XLR): Connect the balanced output of the DAC to a balanced input of an amplifier with a pair of XLR audio signal cable. Please make sure the left and right channel is connected correctly.

3. OPT (Optical): Connect the optical input digital audio signal of the DAC to the optical output digital audio signal of a player with a Toslink (optical) cable.

4. USB AUDIO: Connect the USB port of the DAC to the USB port of a computer with a USB cable (provided in the product package).

5. COAXIAL 2: Connect the RCA coaxial input digital audio signal of the DAC to the Coaxial output digital audio signal of a player with a standard 75ohm coaxial cable.

6. COAXIAL 1: Connect the BNC coaxial input digital audio signal of the DAC to the Coaxial output digital audio signal of a player with a standard 75ohm coaxial cable.

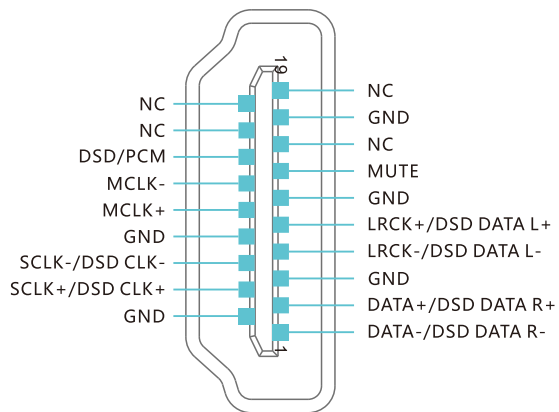7. I^2S: Use an HDMI cable to connect the HDMI-A port with the HDMI port of an audio device supports I^2S.

8. AES/EBU: Connect the AES/EBU input digital audio signal of the DAC to the AES/EBU output digitalaudio signal of a player with a standard 110ohm AES/EBU (XLR) cable.

9. Serial Number

10. FUSE: If you need to change the fuse, please resort to replacement fuse with same specification of the original fuse.

11. Power Input Connector: Connect to AC power supply.

I²S Interface Definition

The I²S of iDAC-6 MK2 employs uses the 19-pin HDMI-A interface. This is our proprietary implementation. The pin definition was defined in-housed and was designed to work with Cayin Digital Audio Player or Digital Transport with I²S output. It is incompatible with standard HDMI audio visual device, and we cannot guarantee compatibility with other DAC with I²S input.

Definition of HDMI pin of this product

Type-A

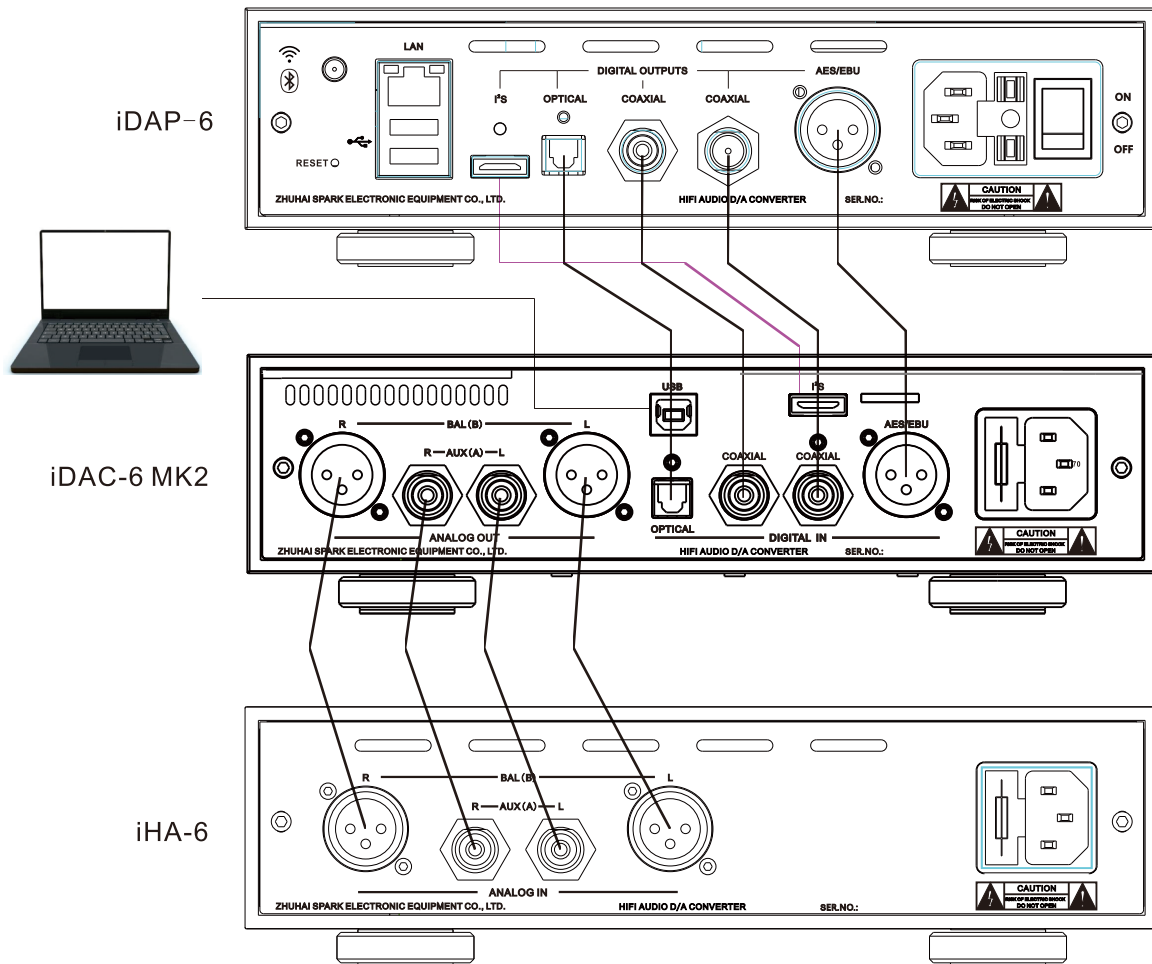| Pin (left)	Pin (right)
NC	NC
NC	GND
DSD/PCM	NC
MCLK-	MUTE
MCLK+	GND
GND	LRCK+/DSD DATA L+
SCLK-/DSD CLK-	LRCK-/DSD DATA L-
SCLK+/DSD CLK+	GND
GND	DATA+/DSD DATA R+
	DATA-/DSD DATA R-

Preparation

1.Connect power source

Verify that the AC voltage marked on the rear panel of the equipment matches with your local power supply voltage, then plug in a power cord and connect to an AC power outlet.

2. Connect to audio source

The connection diagram illustrates how to connect the DAC to the iDAP-6 digital audio player, a computer and the iHA-6 headphone amplifier as a complete system.

(1) Connect to audio player: connect the coaxial input digital audio signal of the DAC to the coaxial output digital audio signal of a player with a standard 75 ohm coaxial cable, or connect the optical input digital audio signal of the DAC to the optical output digital audio signal of a player with a Toslink (Optical) cable, or connect the AES/EBU input digital audio signal of the DAC to the AES/EBU output digital audio signal of a player with a standard 110 ohm AES/EBU (XLR) cable.

(2) Connect to a computer: connect the USB port of the DAC (Type-B) to the USB port (Type-A) of a computer with a USB cable (provided in the product package).

(3) Connect to headphone amplifier: use XLR audio cable to connect the balanced audio output of the DAC to the balanced audio input of the iHA-6, or use RCA audio cable to connect the single-ended audio output of the DAC to the single-ended audio input of the iHA-6, please make sure the left and right channel is connected correctly.

Attention:

◆ Please make sure that the AC voltage of the equipment matches with your local power supply voltage.

◆ Please turn off all equipment when you connect the audio signal cables, this will avoided pulse or high magnitude noise from the audio system and causing damage to associated equipment.

◆ It takes 15 seconds for the vacuum tubes to warm up to desirable working condition, the DAC will be muted during this period of time and there will not be any audio signal output from the DAC.

◆ Please make sure all cables in the audio system in correctly connected, before turning it on.

3. Install driver

If you plan to use iDAC-6 MK2 with a window-based computer, you need to install a USB Audio Driver in your computer before you can use the DAC as an outboard USB sound card for your system. You can install the driver from the following url:

https://en.cayin.cn/download

Please follow the procedure to install the driver:

(1) Double click the " 🖉 Cayin USB Audio Driver V4.47.0.exe " to activate the driver installation process, skip all warning until the installation process is completed.

(2) If the driver has installed successfully, you should be able to see the name "Cayin iDAC-6" at the Device Manager interface of your computer.

(3) Select "Cayin iDAC-6" as audio output device in your computer playback software.

(4) The USB audio driver is needed for Windows 7/8/8.1/10. No USB audio driver is needed for macOS.

Basic Operation

1. Turn on the device.

Please make sure the AC voltage of your local power supply match the voltage of the DAC.

 ◆ Turn on the DAC by pressing down the POWER button on the front panel, the power indicator
   will start to flash and the display screen will light up.
 ◆ The initialization process will take average 15 seconds, the power indicator will stop
   flashing and become always on, and the DAC is ready for playback.

Note:

Please do not remove any audio cable or USB cable when the DAC is in normal operation, this
might cause damage to the amplifier and/or other associated equipment.

2. Source Selection

 ◆ Select input source, press the SOURCE button repeatedly to cycle through the following
   options: USB AUDIO, I2S, AES/EBU, COAXIAL BNC, COAXIAL RCA, OPTICAL. The screen will
   display the current input source.
 ◆ The DAC will remember the previous setting when you turn it off, it will resume to the
   previous selected source when power up again.

3. Using Optical, Coaxial and AES/EBU input

 ◆ After the digital cables are connected, you can select among AES/EBU, COAXIAL BNC, COAXIAL
   RCA and OPTICAL by press the SOURCE button repeatedly to select your desirable connection.
 ◆ Once the DAC can lock into a digital connection, the screen will display the bit rate and
   sampling frequency for your reference.

4. Using USB decoding

 ◆ Before you proceed with USB decoding, please confirm again that appropriate drive has
   been installed in your computer (if needed), otherwise USB decoding will not be functional.
 ◆ Connect the USB port of the DAC (Type-B) to the USB port (USB-A) of a computer with a USB
   cable (provided in the product package), Press the SOURCE button repeatedly until USB
   AUDIO is selected.
 ◆ Once the DAC can lock into the USB connection, the screen will display the
   bit rate and sampling frequency for your reference.
 ◆ Please setup your playback software such as Foobar2000 in your computer correctly
   otherwise the system will not be able to output the original unaltered bitstream to the
   DAC for decoding, you might need to install plugin such as ASIO or WASAPI to achieve that.

5. Using I^{2}S Digital Input

 ◆ After the signal cable is connected, press the SOURCE button on the front panel to select I^{2}S
   audio input
 ◆ Once the DAC can lock into a digital connection, the screen will display the bit rate and
   sampling frequency for your reference.

6. PCM Filter

◆ At the Main Screen, press "MENU/OK" dial to enter the Main Menu.
◆ Turn the dial to "PCM FILTER", press MENU/OK button to enter the selection menu, turn the dial
  repeatedly to select filters among APODIZ, BRICKWALL, FAST-L, FAST-M, HYBRID, SLOW-L, SLOW-M.
  Select the filter by pressing MENU/OK button.
◆ Display will return to the main screen after 3 seconds, the filter character and filter curve
  will be shown on the display.
  Note: Factory default PCM filter: APODIZ.

7. DSD Filter

◆ At the Main Screen, press "MENU/OK" dial to enter the Main Menu.
◆ Turn the dial to "DSD FILTER", press MENU/OK button to enter the selection menu, turn
  the dial repeatedly to select filters among IIR47K, IIR50K, IIR60K and IIR70K. Select the
  filter by pressing MENU/OK button.
◆ Display will return to the main screen after 3 seconds, the output mode will be shown on
  the display.
Note: Factory default DSD filter: IIR50K.

8. Output Mode

◆ At the Main Screen, press "MENU/OK" dial to enter the Main Menu.
◆ Turn the dial to "OUTPUT MODE", press MENU/OK button to enter the "OUTPUT MODE"
  selection menu, turn the dial repeatedly to select between "LINE OUT" and "PRE OUT".
  Select the output mode pressing MENU/OK button.
◆ Display will return to the main screen after 3 seconds, the output mode will be shown on
  the top-right corner of the display.

Safety Precautions

1. Please make sure the AC voltage of your local power supply match the voltage of the DAC. Cayin will not be responsible for the damage or accidents such as fire caused byincorrect input voltage.
2. Unplug the power cord if you are not going to use the DAC for an extended period of time, and keep the machine in proper condition.
3. Please handle with care, avoid tempering to the machine.
4. The DAC will not functional appropriately if moistures has developed inside the DAC, please avoid operate the machine until internal moistures has cleared. Moistures can be caused by:
* Placing the DAC at a location when heater or steamer has just turned on.
* Moving the machine from a cold environment to a warm location.
* Moving the machine from a chilled (e.g., air-conditioned room) to a hot and humidity environment.
5. Opening the cover may expose you to electric shock or other hazards.
6. The DAC 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.
7. Do not attempt to service this product yourself, all service and maintenance must be conducted by authorized service technician. Do not attempt to disassemble this productby yourself if you are not a professional technician, it may cause damage to the product.
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 cleaning product.
9. Place the DAC at a flat surface, make sure all four supporting tips are evenly loaded.
10. Do not place any flammable material on the DAC
11. Do not operate the DAC under direct sunlight or high temperature, will cause serious deviation or even damage to the electronic components.
12. The machine will become hot during operation, please keep the DAC at a well-ventilated environment and do not cover the DAC with anything.
13. Please Contact your Cayin dealer or retail shop, or authorized after-sales service if the machine is not working properly.

This product is designed to work at 2000m altitude or below and non-tropical climate. Please make sure there are ample space around so that the power cord can be disconnected when needed.

Specification

Line Out Level	Solid State	RCA: 2.2V RMS XLR: 4.4V RMS
	Vacuum Tube	RCA: 2.2V RMS XLR: 4.4V RMS
Pre Out Level	Solid State	RCA: 7V RMS (Max.) XLR: 13V RMS (Max.)
	Vacuum Tube	RCA: 6V RMS (Max.) XLR: 10V RMS (Max.)
THD+N	Solid State	≤0.003% (1kHz)
	Vacuum Tube	≤0.8% (1kHz)
S/N	Solid State	RCA: ≥115dB (A-weighted) XLR: ≥121dB (A-weighted)
	Vacuum Tube	RCA: ≥110dB (A-weighted) XLR: ≥120dB (A-weighted)
Frequency Respond		20Hz~50kHz (±0.5dB , Fs=192kHz)
USB capability		DSD: upto DSD 512 (Native mode), upto DSD 256 (DoP mode) PCM: upto 768kHz
I²S		DSD: upto DSD 512 PCM: upto 768kHz
AES/EBU, Coaxial capability		DSD: DSD 64 (DoP mode) PCM: upto 24Bit/192kHz
Optical capability		DSD: DSD 64 (DoP mode) PCM: upto 24Bit/176.4kHz
Max. Power Consumption		30W
Dimension		240mm x 252mm x 69mm (WxDxH)
Weight		Approx. 3.6kg

Trouble Shooting

To ensure the DAC will function at premium condition, please follow the basic operation and safety precaution as advice. Improper operation might lead to malfunction, if you run into trouble as stated below, please check before you panic. Sometime the problem are related to associated equipment or cables, please also check and make sure everything is in proper condition. Please contact your Cayin agent or retail shop, or our after-sales service if the problem cannot be rectified.

Problem		Cause	Remedy
No sound after power on	Power Indicator is OFF	Power is not connected	Make sure power cable is properly connected to a power outlet and there is proper power supply from the outlet.
		Main fuse is out	Replace fuse with same specification with the original.
	Power Indicator is ON	No signal input	Make sure you have selected the correct source from the front panel, Check if the source equipment is functioned properly.
		Audio cable has not connected properly	Connect audio cable properly
Computer cannot recognise the device		USB cable does not conform to standard	Replace a proper USB2.0 cable
		USB driver has not been installed correctly	Install USB driver
		USB driver error	Restart computer
Abnormal audio output when USB Audio is used		USB Interface error	Use another USB interface
		Computer is busy	Optimise computer for audio playback, reduce the number of concurrent process in the computer
		Processing Power and/or peripherals cannot catch-up with audio playback requirements	Upgrade computer facilities to meet processing requirements

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