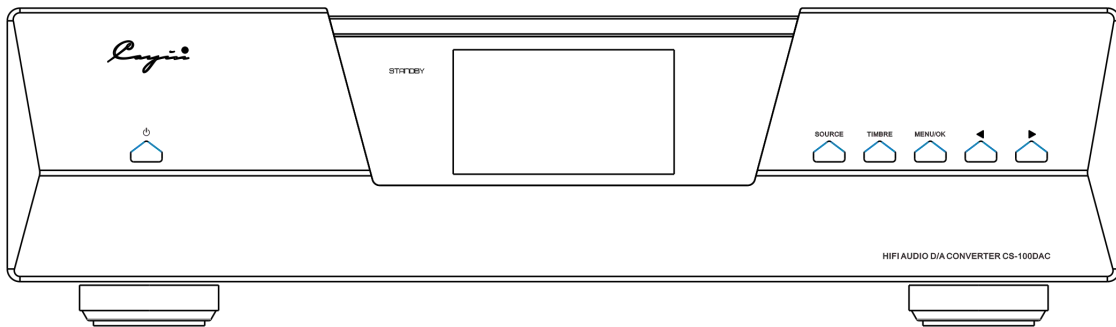# CS-100DAC
HiFi Audio D/A Converter

User Manual

We want to thank you sincerely for choosing CS-100DAC 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.

Attention

- Please make sure the serial number on the package, 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 machine.
- 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 Contents

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. CS-100DAC HiFi Audio D/A Converter (1 unit)
2. SP-13N Remote Control (1 piece)
3. User Manual (1 copy)
4. Replacement Fuse (2 units)
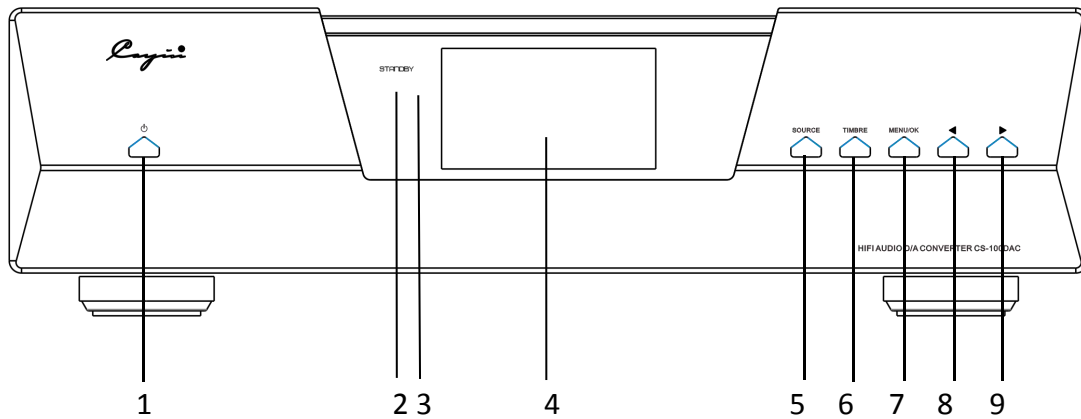5. USB Cable (1 piece)
6. Power Cord (1 piece)

Attention: The product package should include only the items in the list.

Please fill in the warranty card and mail to your local agent or Cayin's Sales Department, we shall provide comprehensive after sales service in the future.　We recommend you to keep the package and protection material, this will be most convenient if you need to re-package the product in the future.

Design & Technical Features

♦ Designed with ES9038PRO DAC chipset from ESS. Dual DAC used and each DAC chip works in MONO mode that four channels of I/V Conversion circuit combined the true Balance Output Circuitry to achieve the best audio performance of the DAC Chipset.

♦ Deploy discrete components and premium grade specialized op-amp in I/V converter circuit.

♦ Two pieces of high precision, low noise, low jitter oscillators from American Accusillicon to serve as master clock of ES9038Pro.

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

♦ Two separate power transformers for separate power supply to Digital Circuit and Analog Circuit. Digital circuit, DAC part, and Analogue circuit are powered by separtate winding and multi-winding of low noise LDO Regulation power supply.

♦ Support I²S digital audio input through HDMI-A connecter, compatible with Cayin iDAP-6 Digital Transport, N8 and N6ii Digital Audio Player.

♦ Optical, AES/EBU and Coaxial interfaces all support DoP for DSD decoding.

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

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

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

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

♦ Special designed low leakage, high efficiency toroidal power transformer are used.

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

♦ AMOLED Display Screen with GUI (Graphical User-Interface).

♦ Equipped with full fuction Remote Control.

Front Panel Functional Description

CS-100DAC Front Panel illustration

1. **Standby Button**

   Switch between "Standby" and "Operation".

2. **Standby indicator, indicate the working status of the DAC**

   a. Indicator always on: standing by

   b. Indicator flashing: in the process of initialization

   c. Indicator off: machine in regular operation

3. **Remote sensor window**

4. **AMOLED Display**

5. **Source**

   Select input source, click repeatedly to cycle through the following options: USB AUDIO, I²S/DSD, AES/EBU, COAXIAL BNC, COAXIAL RCA , and OPTICAL；

6. **Timbre**

   Select output timbre, click repeatedly to cycle through SOLID STATE or VACUUM TUBE

7. **Menu/OK**

   PCM Filter:

   APODIZ, BRICKWALL, FAST-L, FAST-M, HYBRID, SLOW-L, SLOW-M

   DSD Filter:

   IIR47K, IIR50K, IIR60K, IIR70K

   Output Mode:

   LINE OUT: Please select LINE OUT if you are connecting to Integrated Amplifiers. Volume of the DAC will not take effective.
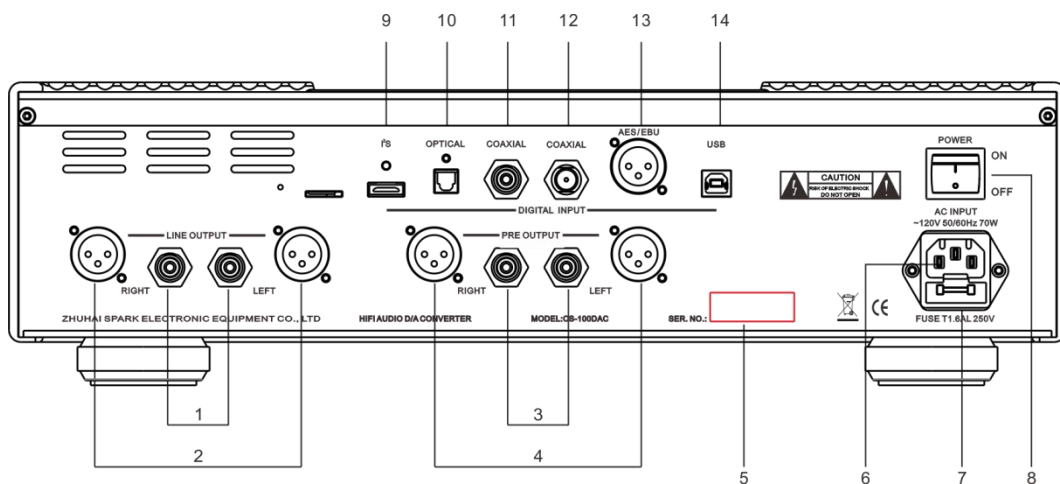
   PRE OUT: Please select PRE OUT if you are connecting to Power Amplifiers. Volume of the DAC will take effective.

   About Device:

You can check the model number, Firmware version etc of the DAC.

8. " ◁ ": In Menu interface, you can press the button to move to the left option. If it is Pre Out Mode you can press the button to lower the volume level.
9. " ▷ ": In Menu interface, you can press the button to move to the right option. If it is Pre Out Mode you can press the button to raise the volume level.

Rear Panel Functional Description

CS-100DAC Rear Panel illustration

1. **Single-ended connector for Line Out (RCA)**
   Connect the single-ended Line output of the DAC to the single-ended input of an Integrated amplifier with a pair of RCA audio signal cable, please make sure the left and right channel is connected correctly.
2. **Balanced connector for Line Out (XLR)**
   Connect the balanced Line output of the DAC to the balanced input of an Integrated amplifier with a pair of XLR audio signal cable, please make sure the left and right channel is connected correctly.
3. **Single-ended connector for Pre Out (RCA)**
   Connect the single-ended Pre output of the DAC to the single-ended input of a Power amplifier with a pair of RCA audio signal cable, please make sure the left and right

channel is connected correctly.

4. **Balanced connector for Pre Out (XLR)**

   Connect the balanced Pre output of the DAC to the balanced input of a Power amplifier with a pair of XLR audio signal cable, please make sure the left and right channel is connected correctly.

5. **Serial No.**

6. **Power input connector**

   Connect to AC Power supply

7. **FUSE**

   If in case you need to change the fuse, please resort to replacement fuse with same specification with the original.

8. **Power Switch**

   Switching the power switch to "On" position will turn on the Player.

9. **I²S/DSD**

   Connect the HDMI-A of the DAC to the HDMI of a player like iDAP-6 with a HDMI cable.

10. **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.

11. **COAXIAL RCA**

    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.

12. **COAXIAL BNC**

    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.

13. **AES/EBU**

    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 110ohm AES/EBU (XLR) cable.
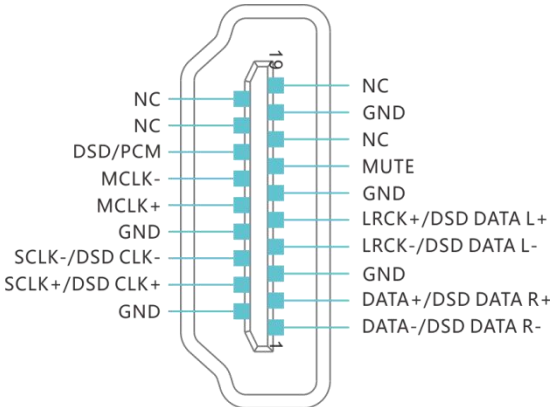
14. **USB**

    Connect the USB port of the DAC to the USB port of a computer with a USB cable (provided in the product package)
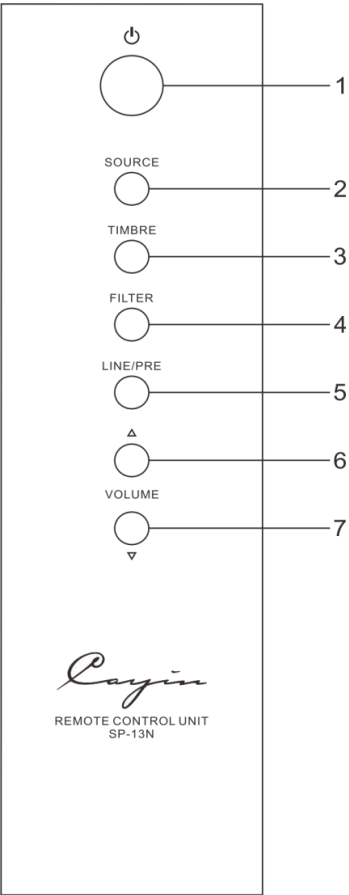
I²S/DSD Port

The I²S of CS-100DAC employs 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

REMOTE CONTROL UNIT
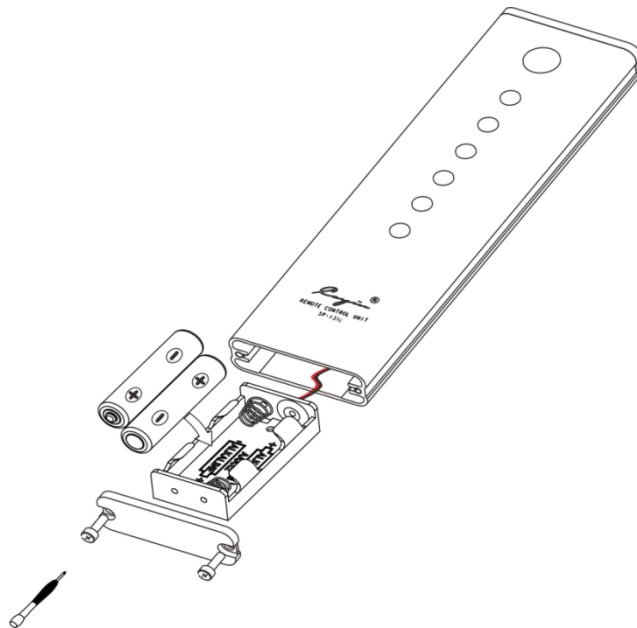

1. " ⏻ ": Standby button

2. "SOURCE": Source Input Selection

3. TIMBRE: Timbre Selection

4. FILTER: Filter Selection

5. LINE/PRE: Output Mode Selection.

6. Volume Up. Only for Pre Output.

7. Volume Down. Only for Pre Output.

※NOTE

◆Point the Remote Control Unit at the Remote Sensor on the front panel within about 8 m and within about 30.

◆Don't drop the remote control. Keep the remote control dry.

◆Replace the batteries timely.

◆Don't mix new and old batteries together and use the batteries with the same specification

◆Take out the batteries if you don't use the remote control for an extended period of time.

◆Batteries with high quality are recommended.

Installation

1. Place the remote control upside up. Screw the rear cover open with the screwdriver.

2. Pull out the battery case carefully (do not break the wires connected).

3. Put in the batteries with correct polarity.

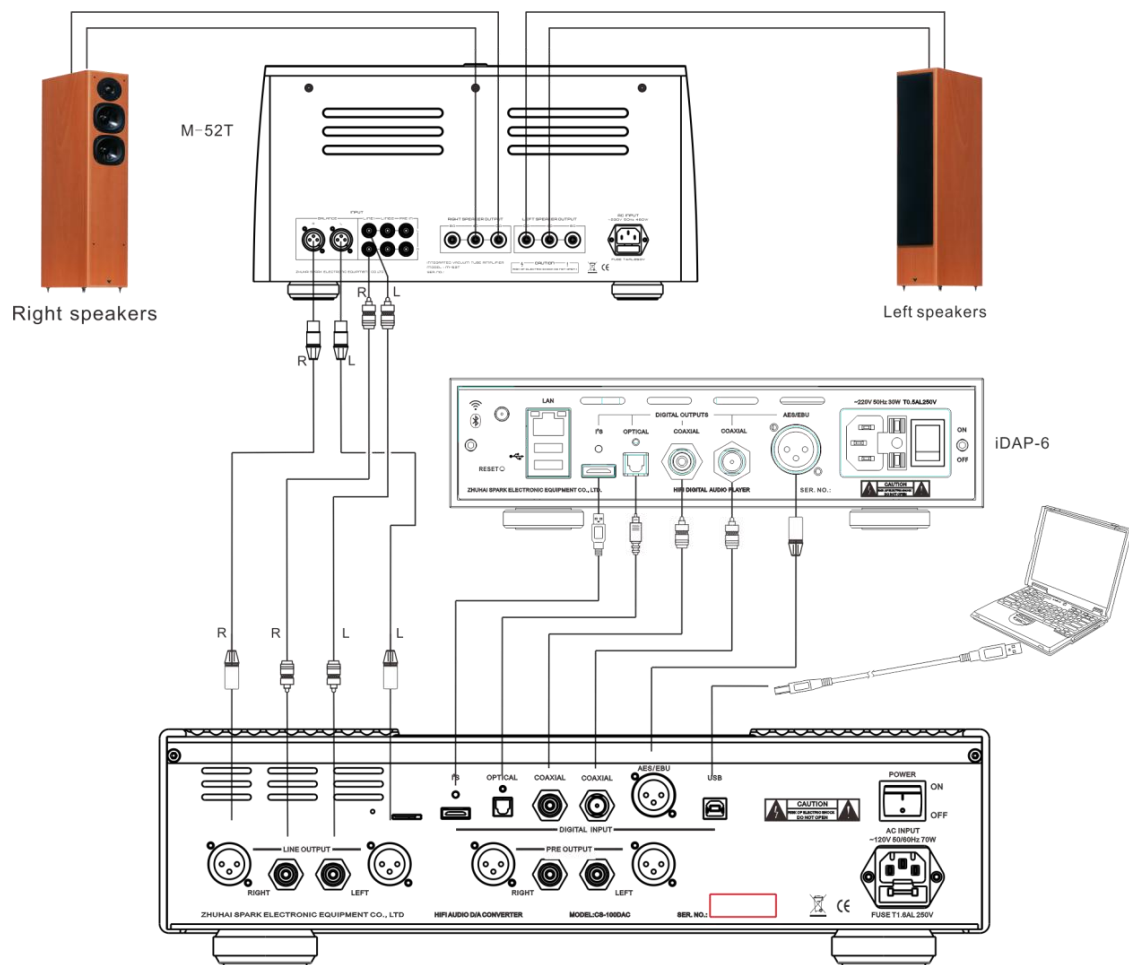4. Push in the battery case and screw the rear cover.

Preparation

1. Connect Power source

Please make sure the AC voltage of your local power supply matches the voltage information printed on the back panel before you plug in a power cord and connect to a AC power outlet.

2. Connect to Audio Source

The connection diagram illustrates how to connect the DAC to the iDAP-6 HiFi digital audio player, a computer and the M-52T vacuum tube integrated amplifier as a complete system.

a. 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 75ohm 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 110ohm AES/EBU (XLR) cable; or connect the HDMI-A of the DAC to the HDMI of a player with a HDMI cable.

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

c. Connect to integrated amplifier: Use XLR audio cable to connect the balanced audio output of the DAC to the balanced audio input of the M-52T, or use RCA audio cable to connect the single-ended audio output of the DAC to the single-ended audio input of the M-52T, please make sure the left and right channel is connected correctly.

Attention:

◆ Please make sure that the AC Voltage Selector has been set correctly for your local power supply voltage

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

◆ The vacuum tubes takes 15 seconds 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.

3. Install Driver

If you plan to use CS-100DAC 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:
http://en.cayin.cn
The steps to install the drivers are as follows:

(1)Double click the " " icon 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 CS-100DAC at the Device Manager interface of your computer.

(3)Select "Cayin CS-100DAC" as audio output device in your computer playback software

(4)Windows 7/8/8.8/10 need to install the driver, and Mac OS X 10.6.3 do not need to install the driver.

Basic Operation

1. Please make sure the AC Voltage Selector is setup correctly for your local power supply voltage.
   - ◆ Turn on the DAC by press down the Power ON/OFF button on the rear panel, the Standby Indicator will always on. Press the Standby button on the front panel or on the remote control, indicator will flash and the display screen will enter the interface.
   - ◆ The initialization process will take around 15 second, the standby indicator will be off, and the DAC is ready for playback.

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

2. **Source Selection**
   - ◆ Select input source, click the SOURCE button on the Front or Remote repeatedly to cycle through the following options: USB AUDIO, I²S/DSD, AES/EUB, COAXIAL BNC, COAXIAL RCA , and OPTICAL；
   - ◆ The DAC will remember the previous setting even when the device is power off, and will resume to the previous selected source when power up again.

3. **Using AES/EBU, coaxial and Optical input**
   - ◆ After the digital cables are connected, you can select AES/EBU, COAXIAL and OPTICAL by click 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 to the USB port of a computer with a USB cable (provided in the product package), Click 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/DSD input

◆ After the digital cables are connected, you can select I^{2}S/DSD by click 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.

6. PCM Filter

Selection with buttons on the Front

- At the Main Screen, press "MENU/OK" Button to enter the Main Menu.

- Press the Triangle to Select "PCM FILTER", press MENU/OK button to enter the selection menu, Press the Triangle buttons 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.

Selection with Remote

- Using the Filter Key on the remote can switch between different filters once PCM format music files are recognized and playbacked.

7. DSD Filter

Selection with buttons on the Front

- At the Main Screen, press "MENU/OK" dial to enter the Main Menu.

- Press the Triangle to Select "DSD FILTER", press MENU/OK button to enter the selection menu, Press the Triangle buttons 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.

Selection with Remote

- Using the Filter Key on the remote can switch between different filters once DSD format music files are recognized and playbacked.

8. Output Mode

Selection with buttons on the Front

- At the Main Screen, press "MENU/OK" button to enter the Main Menu.
- Press the Triangle to Select "OUTPUT MODE", press MENU/OK button to enter the "OUTPUT MODE" selection menu, Press the Triangle buttons 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.

Selection with Remote

Using the LINE/PRE Key on the remote can switch between LINE OUT and PRE OUT output modes.

Safety Precautions

1. Please make sure local voltage level is matched with the input level of the amplifier, which indicates on the rear panel.
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 function 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. Do not attempt to service this product yourself. 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 disassembly the machine, all service and maintenance must be conducted by authorized service technician.
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 agent or retail shop, or our 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 amper space around so that the power cord can be disconnected when needed.

Specification

Line Out Level	Solid State	RCA：2.3V RMS XLR:4.6V RMS
	Vacuum Tube	RCA：2.2V RMS XLR:4.2V RMS
Pre Out Level	Solid State	RCA：8.8V RMS (Max.) XLR:17V RMS (Max.)
	Vacuum Tube	RCA：8V RMS (Max.) XLR:11.5V RMS (Max.)
Frequency Response	20Hz~50kHz (±0.5dB，Fs=192kHz) (RCA) 20Hz~35kHz (±0.5dB，Fs=192kHz) (XLR)	
THD+N	Solid State: ≤0.0008% (20~20kHz, A-weighting, Fs=192kHz) Vaccum Tube: ≤1.8% (20~20kHz, A-weighting, Fs=192kHz)	
S/N (Line Out)	Solid State:RCA ≥115dB (20~20kHz,A-weighted) XLR ≥119dB (20~20kHz,A-weighted)	
	Vaccum Tube:RCA ≥99dB (20~20kHz,A-weighted) XLR ≥119dB (20~20kHz,A-weighted)	
USB capability	PCM: support 16Bit-32Bit, 44.1kHz~768kHz DSD: support DSD64-DSD512(Native Mod), DSD64-DSD256(DoP Mod)	
I²S/DSD capability	PCM: support 16Bit-32Bit, 44.1kHz~768kHz DSD: support DSD64-DSD512	
AES/EBU, Coaxial, capability	PCM: support 16Bit-24Bit, 44.1kHz~384kHz DSD: support DSD64-DSD128(DoP Mod)	
Optical capability	PCM: support 16Bit-24Bit, 44.1kHz~192kHz DSD: support DSD64(DoP Mod)	
Max. Power Consumption	70W	

Dimension	440mm x 392mm x 126mm (WxDxH)
Weight	Approx. 12kg

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	Standby 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.
	Standy Indicator is ON.	DAC is in Standby Mode.	Press Standby button on the remote or the front panel to wake up the DAC.
No display once pressed Standby.		Internal Problem.	Please contact local agent for service.
Display works but no Sound		No Signal Input	Please make sure you select the correct source input and the source works normally.
		Audio Connection is wrong.	Please make sure all interconnectors are connected correctly.
No Output for Coaxial Input		Coaxial cable connection problem.	Please check the coaxial cable and re-connect.
		No coaxial Signal input.	Please check the coaxial output of the source.
No Output for AES/EBU Input		Digital cable connection problem.	Please check the AES/EBU Digital cable and re-connect.
		No Signal input.	Please check the AES/EBU Digital output of the source.
No Output for Optical Input		Optical cable connection problem.	Please check the optical cable and re-connect.
		No optical Signal input.	Please check the optical output of the source.

Computer cannot recognize the device	USB Cable does not conform to the standard.	Replace a proper USB 2.0 cable.
	USB driver has not been installed correctly.	Install the USD Driver.
	USB driver error	Restart the computer.
Abnormal Audio output when USB Audio is used.	Computer is busy.	Optimise computer for audio playback.
	Computer hardware cannot catch up with audio playback requirements.	Upgrade the computer hardware.
	USB Interface Problem.	Please switch to another USB Interface.