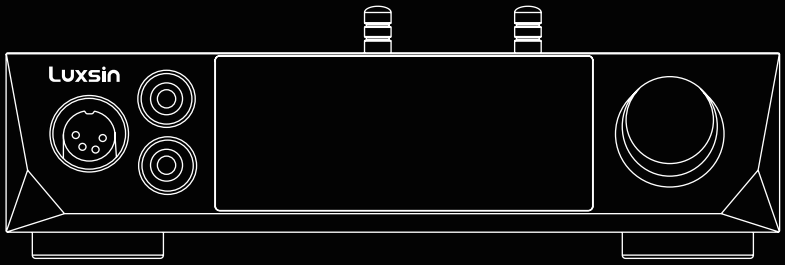
Luxsin®
audio

# PRODUCT MANUAL
# 产品说明书手册

X8 DAC & Headphone Amplifier
X8 音频解码耳放一体机




Shenzhen Lesheng Acoustic Technology Co., Ltd.
深圳市乐笙声学技术有限公司

# Product Introduction

Thank you for purchasing the Luxsin X8 Desktop DAC / Headphone / Power Amplifier All-in-One.

The Luxsin X8 is a high-performance desktop DAC, headphone, and power amplifier. It features 8 CS43198 decoding chips, with built-in support for over 2,500 headphone models. At its core is a new-generation high-performance DSP module, integrating a HiFi-5 DSP + ARM STAR dual-core architecture, equipped with large-capacity SRAM. The DSP operates at a frequency exceeding 500 MHz and includes hardware-level HP-EQ and Crossfeed, enabling automatic headphone frequency response correction to ensure precise and stable audio processing. The headphone amplifier section adopts a fully balanced design, with an output capability of L+R ⩾ 4800 mV + 4800 mV. It automatically recognizes headphone impedance, ensuring stable driving performance for various headphone types. The unit also supports multiple input interfaces and offers Wi-Fi remote control and OTA online upgrade functionality.

The X8's decoding solution utilizes 8 CS43198 DAC chips, forming a high-specification parallel decoding system. Each channel employs four CS43198 chips working in parallel, constituting a true dual-mono parallel DAC architecture. The left and right channels are completely independent in terms of power supply, circuit layout, and signal path, and are physically isolated to minimize crosstalk and mutual interference from the source. The X8 is equipped with custom independent shielding covers for all eight CS43198 chips. This shielding structure effectively isolates digital circuitry and surrounding high-frequency interference while aiding heat conduction and ensuring even thermal distribution, significantly enhancing overall operational stability.

The X8's HP-EQ system performs fully automatic correction of headphone frequency response. Users simply select the corresponding headphone model in the app, and the system automatically loads the EQ parameters, eliminating the need for manual adjustment of complex PEQ settings and enabling a fully automated tuning process. The system features AI-assisted tuning, allowing intelligent optimization of overall sound or specific details through voice commands. This makes the tuning process more intuitive and efficient, lowering the technical barrier for users. When connected to the internet, the headphone model database receives continuous updates, and users can also share custom EQ curves with others.

The Luxsin X8 supports a wide range of digital inputs, including USBB, USBC, coaxial, optical, Bluetooth, and IIS, catering to various equipment setups for audiophiles. With its exceptional preamplifier performance and outstanding sound quality, the X8 delivers an unparalleled, authentic high-fidelity music experience and enjoyment.

It is recommended that you read this manual before using the device to ensure proper utilization of all its features.

FCC Statement

Changes or modifications ot expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1)this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

# Table of Contents

# Product Specifications

| Basic Parameters | |
|---|---|
| Model | Luxsin X8 |
| Color | Black |
| Size | 236mm (L) × 236.8mm (W) × 64mm (H) |
| Weight | 2750g |
| Display | 4' LCD （480*960）Touchscreen |
| Input Power | AC 100-120V/220-240V~50/60Hz |
| DAC | Cirrus Logic CS43198 × 8 |
| Power Supply | Ultra-low-noise, voltage-adjustable Linear Power Supply |
| WiFi | Wi-Fi 2.4GHz / 5GHz |
| Bluetooth | Qualcomm SXW5125 (BT 5.1) |
| Firmware | OTA Online Upgrade / Local Upgrade |
| Control Methods | Touchscreen, Mobile APP (Android/iOS), Web Browser, IR Remote(Optional) |
| Rated Power | 25W |
| Packing List | Power Cable ×1, USB-B cable ×1, 3.5mm to 6.35mm adapter ×1 |

| Input / Output | |
|---|---|
| USB-A Input | For Local Upgrade |
| USB- B Input | Support PCM 768kHz/32bit； DSD512(Native) |
| USB -C Input | Support PCM 768kHz/32bit； DSD512(Native) |
| IIS Input | Support PCM 768kHz/32bit； DSD512(Native) |
| Coaxial Input | Support PCM 192kHz/24bit |
| Optical Input | Support PCM 192kHz/24bit |
| TRIGGER IN | Standard 3.5mm Connector |
| TRIGGER OUT | Standard 3.5mm Connector |
| Analog Output | RCA |
| Digital Output | XLR |
| Headphone Output | 6.35mm (Unbalanced), 4.4mm (Balanced), 4 pin XLR (Balanced) |

| XLR Output Audio Characteristics | |
|---|---|
| SNR | ≥ 129.5dB |
| THD+N | < -121.8dB @unweighted |
| Crosstalk | ≥ 133dB (1kHz@200kΩ) |
| Noise Floor | < 1.1uVrms |
| Output Level | 4.2Vrms（1kHz@200kΩ) |

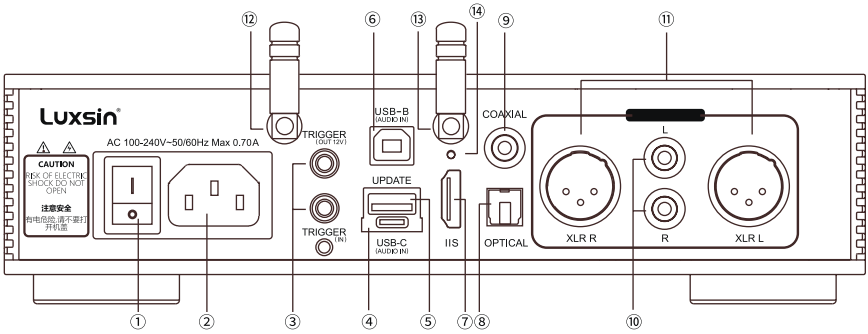
| RCA Output Audio Characteristics | |
|---|---|
| SNR | ≥ 124.5dB |
| THD+N | < -120dB @unweighted |
| Crosstalk | ≥ 125dB (1kHz@100kΩ) |
| Noise Floor | < 1.3uVrms |
| Output Level | 2.1Vrms（1kHz@100kΩ) |

| Performance and Parameters of Balanced Headphone Output（4.4mm/XLR4） | | |
|---|---|---|
| Low Gain | L+R ≥ 4840mW+4840mW（16Ω，THD+N < 1%) | 8.8Vrms |
| | L+R ≥ 2500mW+2500mW（32Ω，THD+N < 1%) | 8.9Vrms |
| | L+R ≥ 270mW+270mW（300Ω，THD+N < 1%) | 9Vrms |
| Medium Gain | L+R ≥ 4840mW+4840mW（16Ω，THD+N < 1%) | 8.8Vrms |
| | L+R ≥ 3900mW+3900mW（32Ω，THD+N < 1%) | 11.2Vrms |
| | L+R ≥ 430mW+430mW（300Ω，THD+N < 1%) | 11.4Vrms |
| High Gain | L+R ≥ 4840mW+4840mW（16Ω，THD+N < 1%) | 8.8Vrms |
| | L+R ≥ 4300mW+4300mW（32Ω，THD+N < 1%) | 11.8Vrms |
| | L+R ≥ 950mW+950mW（300Ω，THD+N < 1%) | 16.9Vrms |
| Output Impedance | < 1Ω | |
| THD+N | < -117dB(1kHz/0dB@32Ω) | |
| SNR | ≥ 123dB | |
| Crosstalk | ≥ 119dB (1kHz@32Ω) | |

| Performance and Parameters of Unbalanced Headphone Output（6.35mm） | | |
|---|---|---|
| Low Gain | L+R ≥ 1300mW+1300mW（16Ω，THD+N < 1%） | 4.5Vrms |
| | L+R ≥ 630mW+630mW（32Ω，THD+N < 1%） | 4.5Vrms |
| | L+R ≥ 70mW+70mW（300Ω，THD+N < 1%） | 4.5Vrms |
| Medium Gain | L+R ≥ 2000mW+2000mW（16Ω，THD+N < 1%） | 5.6Vrms |
| | L+R ≥ 1000mW+1000mW（32Ω，THD+N < 1%） | 5.6Vrms |
| | L+R ≥ 100mW+100mW（300Ω，THD+N < 1%） | 5.6Vrms |
| High Gain | L+R ≥ 2900mW+2900mW（16Ω，THD+N < 1%） | 6.8Vrms |
| | L+R ≥ 1750mW+1750mW（32Ω，THD+N < 1%） | 7.5Vrms |
| | L+R ≥ 230mW+230mW（300Ω，THD+N < 1%） | 8.4Vrms |
| Output Impedance | < 1Ω | |
| THD+N | < -115dB(1kHz/0dB@32Ω) | |
| SNR | ≥ 121dB | |

# Hardware Overview

## Rear Panel




## Interface Descriptions:

① Power Switch

② Power Socket 100–240V~ 50/60Hz, Max 0.35A

③ 12V Trigger Input Used to connect with a power amplifier to enable linked power-on/off control.
12V Trigger Output Outputs 0V when powered off. Used to connect to a streamers to enable linked power-on/off control.

④ USB Type-C OTG For connecting to mobile phones (requires OTG cable)

⑤ USB-A Port For firmware updates only

⑥ USB-B Audio Input Connects to a computer or digital streamer with USB audio output

⑦ The IIS port is used to connect devices with IIS capabilities.

⑧ Optical Input For connecting to CD players, set-top boxes, or turntable devices

⑨ Coaxial Input For connecting to decoders or preamps

⑩ Single-ended RCA Output

⑪ XLR Balanced Output

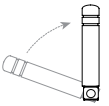
⑫ Bluetooth Antenna For Bluetooth connection

⑬ Wi-Fi Antenna For wireless network connection

⑭ Reset Insert a USB drive and press the reset button while powering on. When the Luxsin logo appears for 2 seconds, release the button to begin the upgrade process

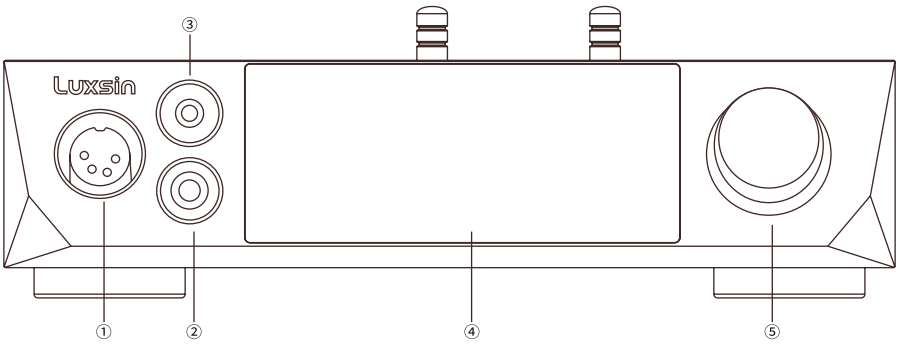
Notes:

*Before use, please rotate all antennas upward for optimal signal reception.



Antenna Orientation Diagram

## Front Panel

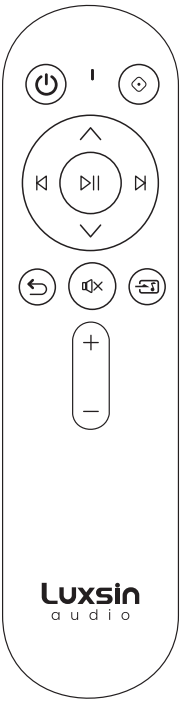



## Interface Descriptions:

① XLR4 Balanced Headphone Output
② 6.35mm Headphone Output
③ 4.4mm Balanced Headphone Output
④ LED Display Screen (Touch-sensitive buttons on screen)
⑤ Rotary Knob – Adjusts volume

## Remote Control Functions（Optional）:

⏻ Power On/Off
◈ Screen-off
⏮ Previous Track
⏯ Pause
⏭ Next Track
^ Up
v Down
⮌ Return
🔇 Mute
⇄ Input Source
\+ Volume +
— Volume –




* This remote control is compatible only with Luxsin series products.

* ⏻ The power key supports IR (Infrared) power control only.

# Basic Operation

## Main Interface Overview

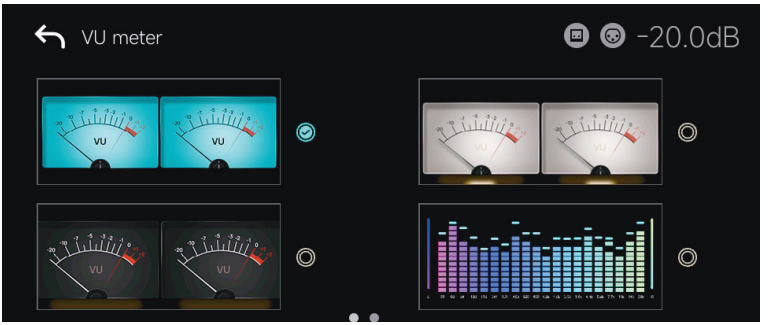

Top Right Status Bar: Displays input/output connection status, active device, and current volume level.

Top Left Status Bar: Displays the current audio playback format (e.g., PCM).

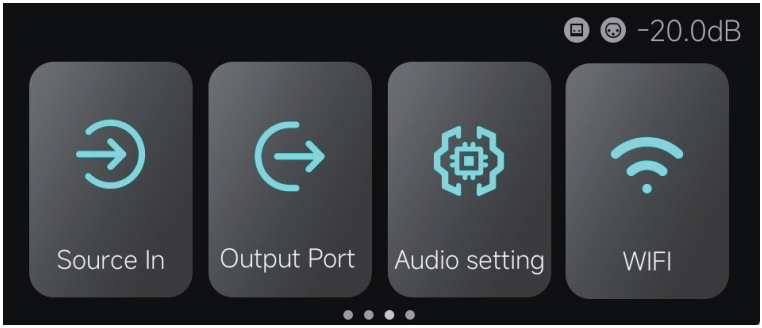
Swipe Up/Down: Swipe vertically on the screen to switch between different VU meter displays.

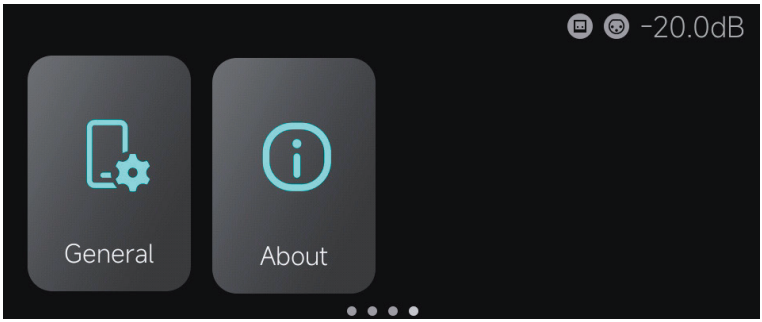
Swipe Left/Right: Swipe horizontally to navigate to other functional display areas.

Long Press (2 seconds): Long-press anywhere on the screen for 2 seconds to access additional VU meter styles and select your preferred main interface display. (See image below)

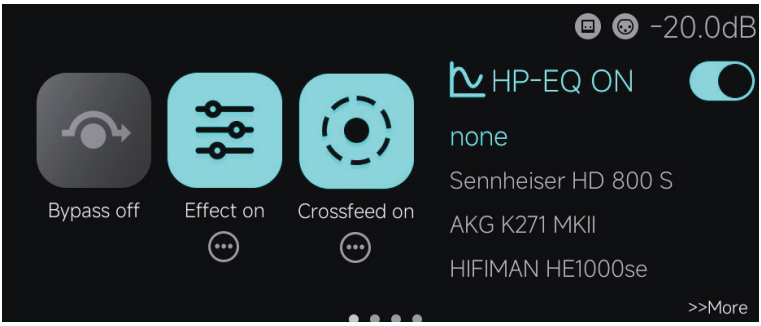



Main Function Area: Input Source,Output Port,Audio Settings,Wi-Fi,General Settings, About (navigate by swiping left or right)



## Sound Effects Control




The device is equipped with a DSP, allowing users to fine-tune the sound based on personal preferences. You can adjust the parametric EQ, sound effects (including soundstage width, various musical styles, subwoofer), and crossfeed.

It also displays input/output connections, network status, and volume level. You can directly select your headphone model listed under HP-EQ

Bypass On/Off: Master switch to enable or disable all audio effects.

Effects: Tap to enable/disable; click "..." to enter detailed settings for soundstage width, music style, and subwoofer options.

Crossfeed: Tap to enable/disable; click "..." to access advanced crossfeed settings.

HP-EQ On/Off: Toggle headphone-specific EQ on/off. Click to enter "More" options for headphone model and settings.

### Effects:

- Soundstage Width:

Adjusts the perceived spatial width when listening to music. The wider the field (0 to 100), the more immersive the experience.

• Style Presets:

Choose from a variety of EQ presets tailored to musical genres or moods:

Classical, Dance, Pop, Reggae, Live, Rock, Soft, Electronic, Club, All Bass, All Treble, Headphone, Hall, Party, Ska, Chill

• Tone:

The bass, midrange, and treble can be adjusted to match your listening preferences.

• Loudness:

Intelligently compensates for high and low-frequency details at low volume levels, with adjustable threshold, bass, and treble.

## HP-EQ Detail

HP-EQ only processes PCM signals up to 192kHz. PCM signals above 192kHz will be sent directly to the DAC.

For more detailed HP-EQ settings, please refer to the "HP-EQ Guide" by scanning the QR code below.

HP-EQ

## Input Sources



Luxsin X8 supports a variety of input options, including:

- USB-B
- USB-C
- Coaxial
- Optical
- Bluetooth
- IIS

Please select the corresponding input source based on your actual device connection.

**Note:**

- All digital inputs do not support digital signal passthrough via coaxial or optical outputs.
- Audio can only be output through analog RCA, XLR, or headphone outputs.

## Output Sources


Available output ports on the Luxsin X8 include:

- Balanced XLR
- Analog RCA
- XLR/RCA
- Headphone Outputs

Please select the corresponding output based on your actual device connection.

**Note:**

- All digital inputs do not support digital signal passthrough via coaxial or optical outputs.
- Audio can only be output through analog RCA, XLR, or headphone ports.

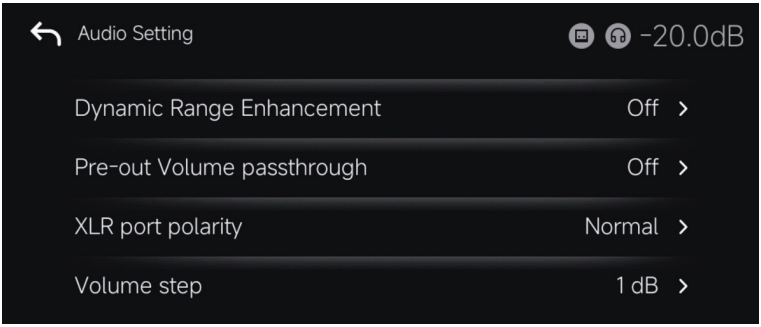
# Audio Settings

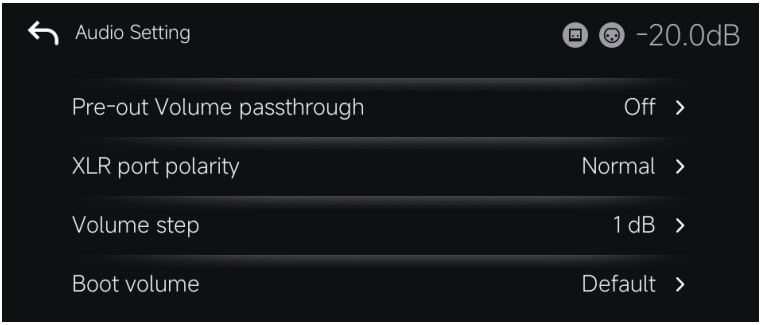
The audio settings menu includes:

- Headphone Gain
- Auto lmpedance Detection
- Filters
- Pre-output level
- Dynamic Range Enhancement
- Pre-out Volume passthrough
- XR port polarity
- Volume step
- Boot volume
- Left/Right Balance
- VU meter sensitivity
- llS setting

To access these options, go to:

Go to the Settings Menu > Audio Settings > Headphone Gain, and choose the appropriate gain level based on your headphones.



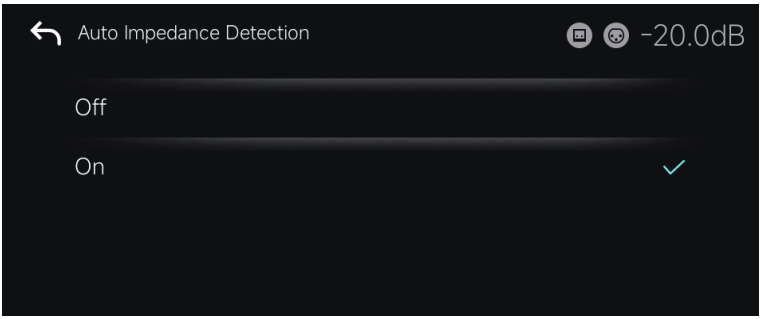


## Headphone Gain:

When you plug in your headphones for the first time after powering on the device, the system will automatically detect and apply the optimal gain setting for your headphone model.

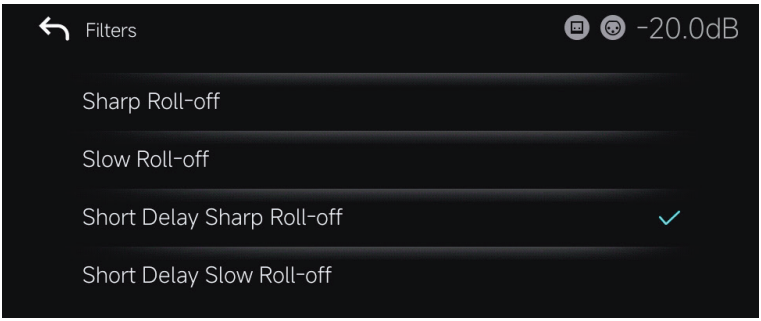

## Auto Impedance Detection:

Go to Settings > "Audio Settings" > "Auto Impedance Detection". You can turn this feature on or off depending on your personal headphone preferences.



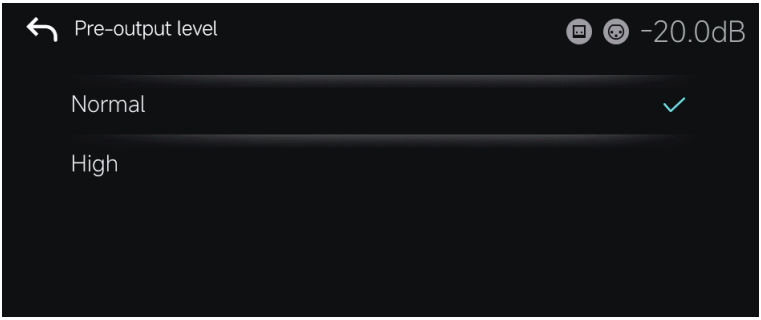

## Filter Characteristics Settings:

Go to Settings Menu > Audio Settings > Filter Characteristics.
You can adjust different filter types based on your personal preferences. Each filter corresponds to a unique sound output style, allowing you to tailor the listening experience to your taste.



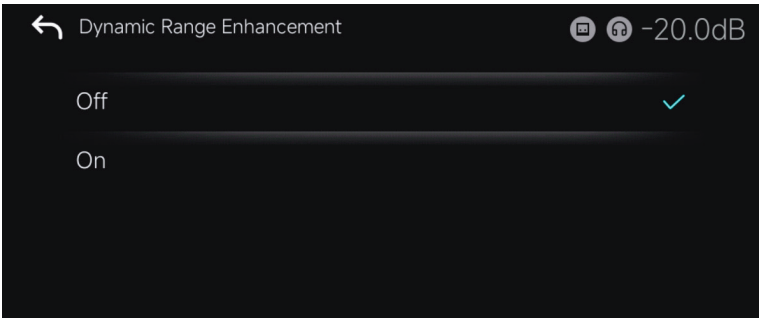

## Pre-output level:

Navigate to Settings > "Audio Settings" > "Pre-output level", where you can select Standard or High.



## Dynamic Range Enhancement:

Go to Settings Menu > "Audio Settings" > "Dynamic Range Enhancement", where Off or On can be selected ( After enabling this function, the system's dynamic range is increased by approximately 7 dB. Within certain volume ranges, distortion may be affected ).

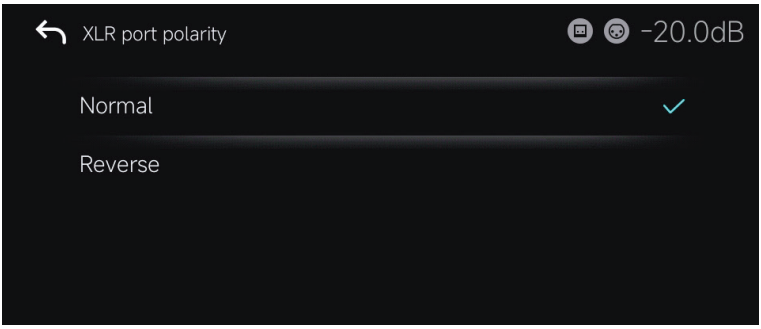



## Pre-out Volume passthrough:

Go to Settings Menu > "Audio Settings" > "Pre-out Volume passthrough", where Off or On can be selected.

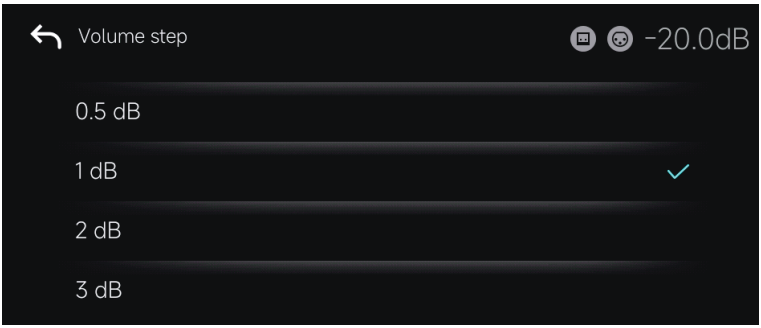

## XLR Port Polarity

Navigate to Settings Menu > Audio Settings > XLR Port Polarity.You can choose between Normal or Inverted polarity settings.




## Volume step

Go to Settings > "Audio Settings" > "Volume step", adjustable in the range from -0.5dB to +3dB.




## Boot volume

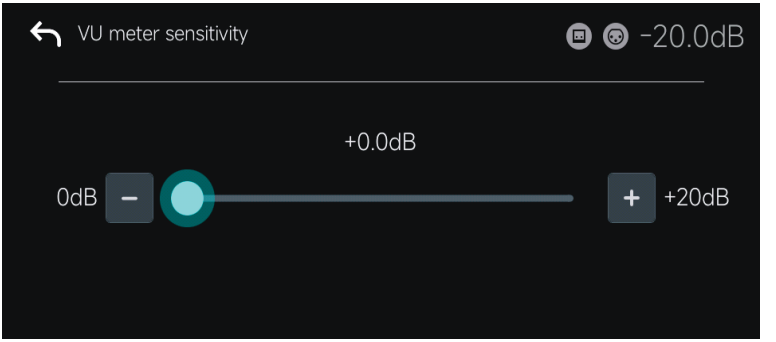
Navigate to Settings Menu > "Audio Settings" > "Boot volume". You can select the default setting or adjust it within the range of -5dB to -30dB.

## Left-right balance

Navigate to Setup Menu > Audio Settings > Left-right balance, adjustable within the range of -15dB to +15dB.

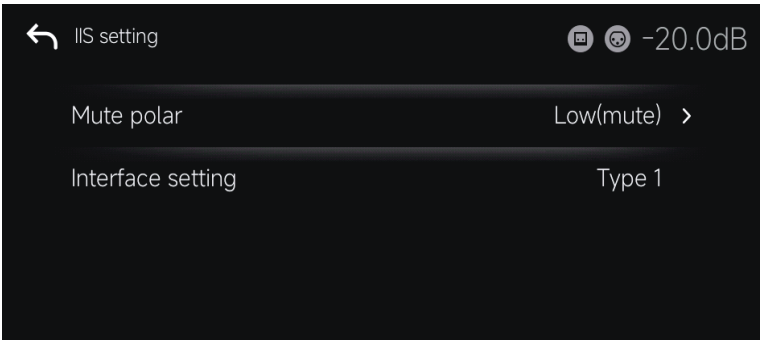

## VU meter sensitivity

Go to Settings menu > "Audio Settings" > "VU meter sensitivity", adjustable in the range of 0dB to +20dB.



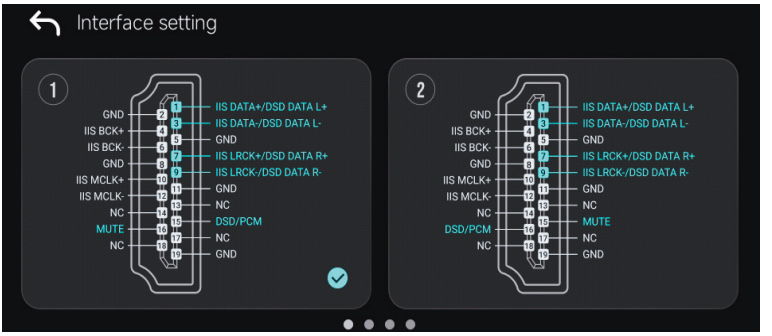

## lIS setting

Go to the Settings menu > "Audio Settings" > "IIS Setting" to adjust the Mute Level and IIS Mode.




Mute polar: Select low level or high level based on the interface mode.

Interface setting: Set to one of the 8 modes according to the IIS interface mode of the input source. (See mode chart below)



# WIFI

Before using the Luxsin X8, please ensure it is connected to a network. This device supports Wi-Fi only.

To connect: Go to the Home Screen > “Wi-Fi” to access the Wi-Fi settings.

# General Settings

The General Settings menu includes options for: Language, Display, Knob, Status Bar, Back to Home, and Key Settings.

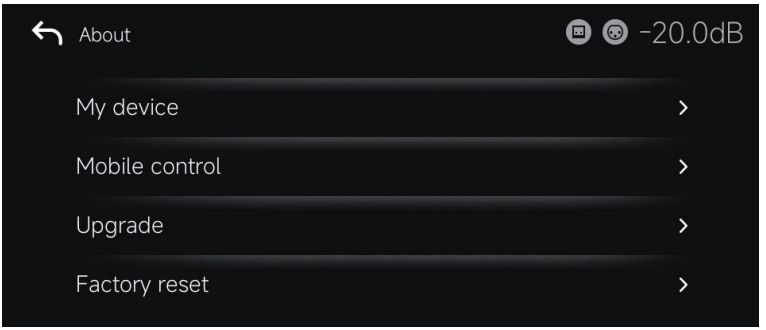


- Language: Choose your preferred interface language. Available options: English, Traditional Chinese, Simplified Chinese.
- Display: Screen Brightness (Bright, Medium, Dim); Turn Off Screen (Always On, No Operation 30 Seconds, 1 Minute, 3 Minutes, 5 Minutes).
- Knob: Select the interface brightness and standby breathing light according to your needs. (Brightness options include: Off, Brighter, Medium, Darker; Standby breathing light options: On or Off).
- Status Bar: The status bar in the upper right corner can be freely selected; options include Show, Hide, or Auto.
- Back to home: Automatically returns to the homepage after a period of inactivity (options include Off, 20 seconds of inactivity, 40 seconds of inactivity, 60 seconds of inactivity).
- Key Settings: Customize remote control menu keys and power button functions as needed (remote menu key options: switch input source, switch filter characteristics; power button options: mute, DIM).

# About

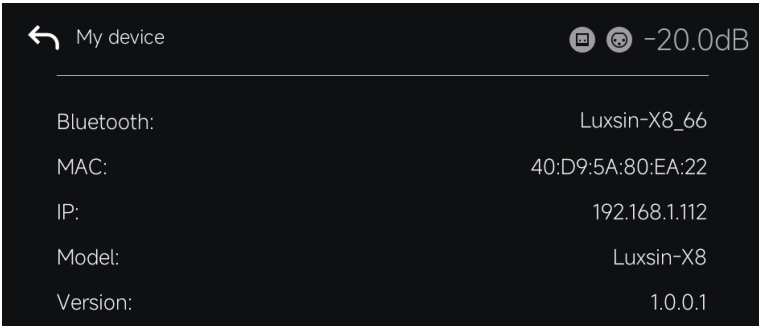
The About section includes the following settings:

- My Device:
- Mobile Control
- Upgrade:
- Factory Reset




## My Device

Go to About > My Device to view all relevant device information, including:Bluetooth， MAC Address， Model， Firmware Version.



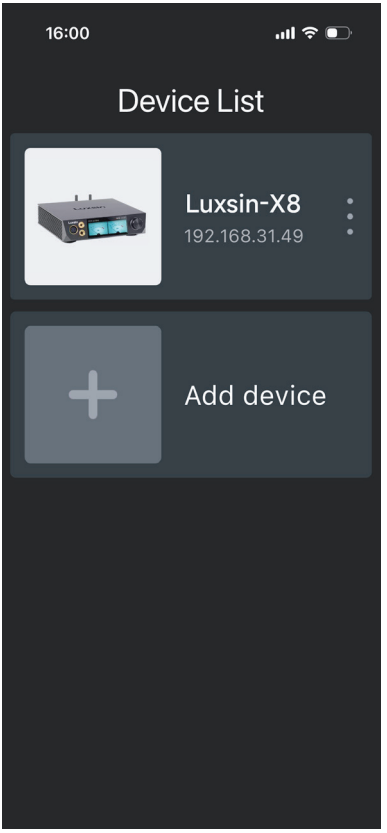
## Mobile Control

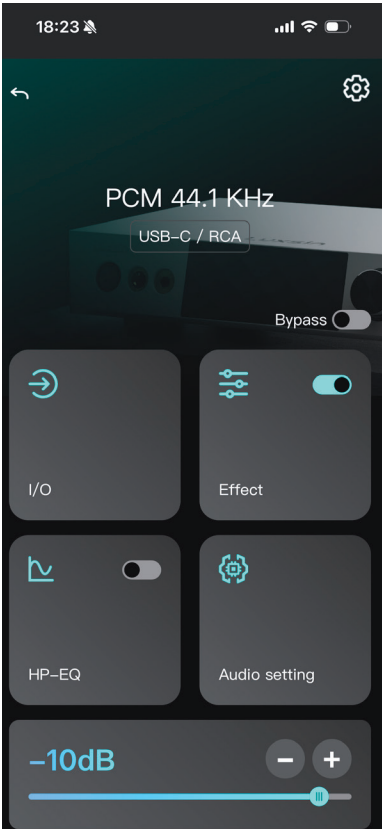
Go to About > Mobile Control. The Luxsin X8 supports control via mobile app, iPad, and PC.


You can scan the QR code to download and install the control app, or visit the official website or the resources download page in this manual to download and install it.
Important Note: The device and your phone/tablet/computer must be connected to the same local network (LAN).

## Mobile App Control

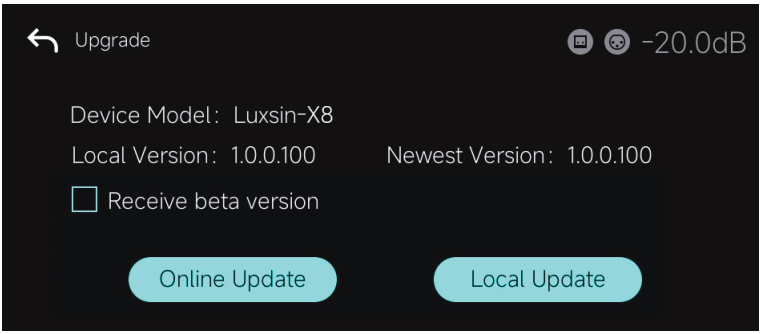
After installing the app, make sure your Luxsin X8 and mobile phone are connected to the same local network.
Then open the app, select Luxsin-X8, and proceed to Add Device.
Once connected successfully, you will be able to access the control interface.



## System Update

Go to About > System Upgrade to enter the upgrade interface. There are two upgrade methods available: Online Update，Local Upgrade.




### Online Update

After connecting to a Wi-Fi network, go to About > Upgrade > Online Update. Tap "Online Update" to fetch the latest firmware via the internet. Follow the on-screen instructions to complete the update. The device will automatically reboot once the upgrade is complete.

### Local Upgrade

Download the Luxsin X8 firmware upgrade package from the official website and copy it to the root directory of a USB flash drive.

Insert the USB drive into the USB-A port on the device.

Go to About > Upgrade, then select "Local Update" and choose the upgrade file.

Follow the on-screen instructions to complete the upgrade. The device will automatically reboot upon completion.

### Note:

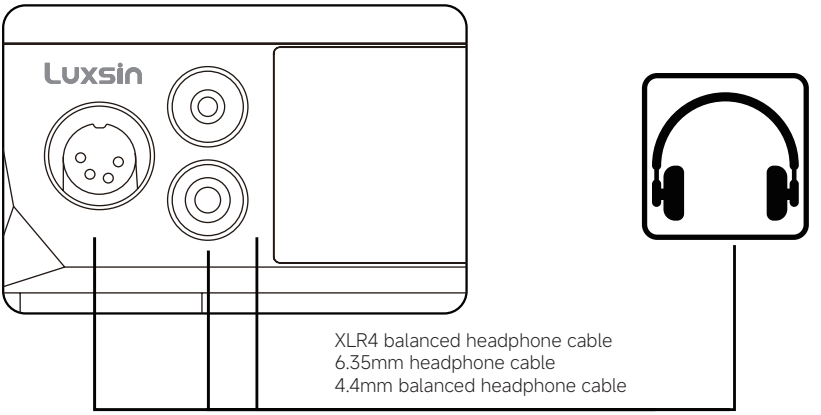
- Do not unplug the USB drive or power off the device during the upgrade process.
- It is recommended to use a FAT32-formatted USB drive.
- Do not unzip the downloaded upgrade file.
- It is only compliant with the USB 2.0 specification

# Output Signal Connection & Setup

The Luxsin X8 provides multiple audio output options, including XLR4 balanced headphone output, 6.35mm headphone output, 4.4mm balanced headphone output, as well as unbalanced RCA and balanced XLR analog outputs.

## Headphone Output Connection

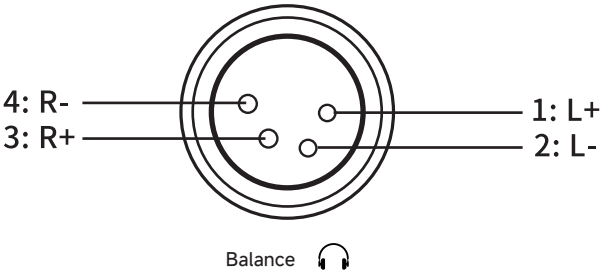
Connect your headphones to the corresponding output port using one of the following:




Notes:

- If your headphones use a 3.5mm TRS plug, you will need a 3.5mm to 1/4" adapter (included).
- When inserting or removing a 6.35mm (1/4") connector, do so quickly and smoothly to ensure a full connection or disconnection.

Due to the design of connector, a partial insertion may cause a short circuit between the left and right channels, potentially triggering a short-circuit protection mechanism.



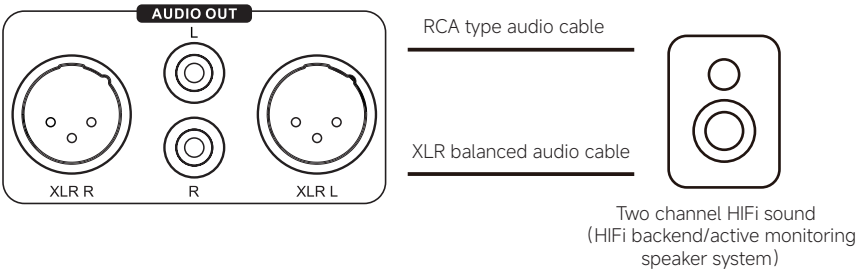
The diagram above shows the pin assignment for the XLR4 balanced headphone output.
Please note that Pin 2 (L-) and Pin 4 (R-) are independent signal pins and must not be connected together, unlike the ground pin on single-ended headphones. Never use an adapter to connect a balanced headphone output to a single-ended headphone.


**Important Notes:**

- Once one headphone output is in use, other headphone outputs will not be detected or activated.

## XLR/RCA Output Connection

Use a pair of RCA or balanced XLR (Canon) analog audio cables to connect the RCA or XLR output ports of the device to the corresponding input ports of your active speakers or HiFi power amplifier.

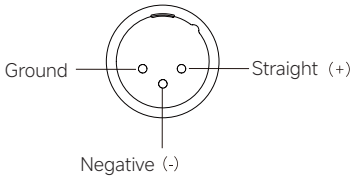



Then go to the Input/Output Settings and select "RCA/XLR" as the output port.

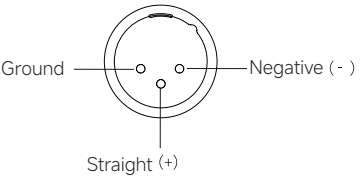
Note:

- The device is equipped with two independent stereo output ports: RCA and XLR balanced ports. You can choose to use them separately or select simultaneous output from both.
- It is recommended to prioritize the use of the XLR balanced port for connection, as it provides better noise suppression and signal integrity.

In certain audio systems, the XLR port's positive and negative polarity may be reversed. The Luxsin X8 system is set to normal polarity by default. The polarity for the corresponding ports is shown in the diagram below.




Schematic diagram of port polarity when setting forward direction




Set reverse port polarity diagram

If the connected audio equipment has reversed polarity, you can select "Audio Settings" > "XLR Port Polarity" to adjust the settings.

Note: This function only applies to digital signals. The RCA analog input does not support this feature.

To reduce potential signal interference when both RCA and XLR are outputting simultaneously, the Luxsin X8 allows you to select separate output for XLR and RCA. When using XLR output, it is recommended to set the output port to XLR only in the menu. Similarly, set the RCA output to RCA only when using RCA.

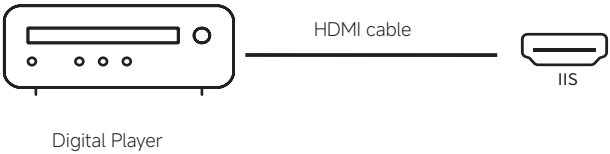
This separate output method ensures better audio performance and enhanced sound quality.

## IIS output connection for linking devices with IIS capability

Connect the IIS input port of this device to the digital player with IIS output port using an HDMI cable.

On the digital player, select "IIS" for the output port.

Access the input settings on the X8 and choose the IIS input.

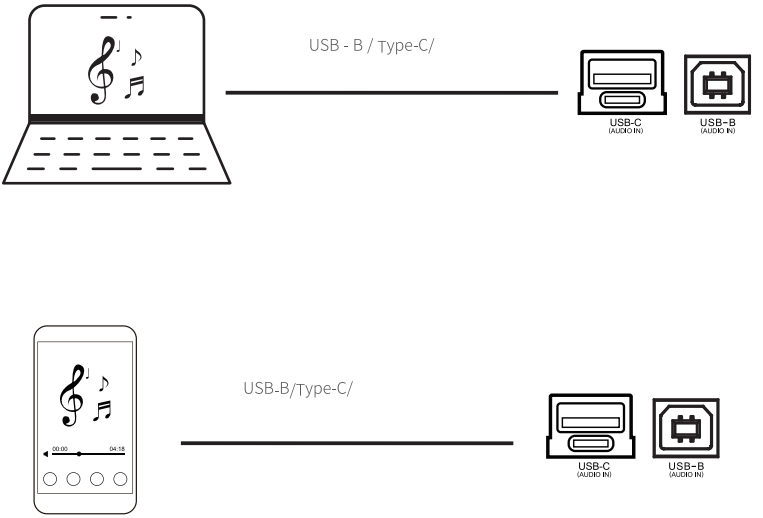



Note:

- This feature exclusively uses the HDMI interface to transmit IIS signals, rather than standard HDMI signals. Therefore, it cannot be directly connected to HDMI ports on devices such as computers, televisions, or set-top boxes.
- The MUTE levels and interface modes may vary across different brands of digital players. Please ensure proper configuration.
- The IIS audio output supports DSD512 Native and PCM up to 768kHz.

# Input Signal Connection and Settings

The Luxsin X8 supports multiple digital audio input connections, including Bluetooth, USB-B, USB-C, coaxial, optical, and HDMI-eARC. The corresponding audio output interface for these digital audio inputs is "RCA/XLR."




Analog audio inputs include RCA inputs, with corresponding audio output interfaces being RCA/XLR.

## USB Type B/C Input Connection

To connect the Luxsin X9 to a computer, device with USB audio output, or mobile phone, use a USB-A to Type-B data cable. In the input/output settings, select “USB-B” as the input port.

Note:

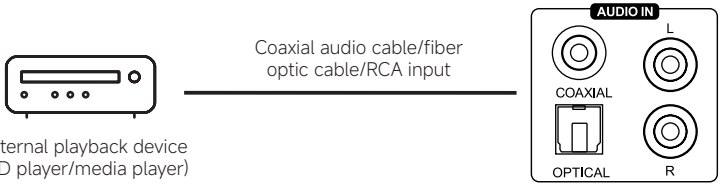
- For Windows systems, you need to install the corresponding driver for the Luxsin X9. Please refer to the resource section for driver download.
- After connecting to the computer, set “Luxsin X9” as the default audio output device:
- Windows: After downloading and installing the driver, go to Control Panel → Hardware and Sound → Sound → Playback, and select “Luxsin X9 DAC”.
- Mac: No driver installation is needed. After connection, go to System Preferences → Sound → Output, and select “Luxsin X9”.
- The USB input supports up to stereo DSD512, PCM 768KHz 32Bit formats. Actual specifications

may depend on the connected playback hardware and software support.

- For Apple devices, when using OTG Type-C cables, an MFi-certified data cable is required for playback.

## Optical / Coaxial / RCA Input Connection

To connect a front-end device such as a media player or CD player that has SPDIF signal output, use an optical or coaxial audio cable. Connect it to the corresponding Optical, Coaxial, or RCA input on the Luxsin X9 for decoding. In the input/output settings, select the appropriate input port: “Optical Input”, “Coaxial Input”, or “RCA Input”.




Note:

- For Coaxial connection, please use a 75-ohm coaxial audio professional signal cable.
- For Optical connection, please use a standard optical audio signal cable.
- Optical / Coaxial / RCA Inputs support up to PCM 192KHz 24Bit and DOP64.

## Bluetooth Audio Input Connection

This unit is equipped with Qualcomm’s flagship QCC5125 Bluetooth audio receiver module, supporting high-resolution audio protocols such as AAC/SBC/MAC OS. It functions as a high-quality Bluetooth decoder and can pair with various mobile devices for wireless audio playback.
To use Bluetooth input:
Go to Input/Output Settings and select “Bluetooth Input” as the input source.
Then, on your mobile device, enable Bluetooth and search for “Luxsin X9”. Tap to pair and connect.

Note:

- The actual Bluetooth audio format received depends on the output format of the transmitting device.
- On Android phones, you can typically change the Bluetooth output format in the Developer Options.

# Precautions

Resources & Downloads

For firmware updates, USB drivers, and the mobile control app, please visit our official website: www.luxsinaudio.com. Go to the Download Center to access the latest files.

After downloading the driver, extract the ZIP package, double-click the .exe installer, and follow the on-screen instructions to complete the installation.

Mobile App Control

WeChat Official

*Recommend using a mobile browser to scan the QR code

## Special Notice:

To enhance user experience, Luxsin Acoustic regularly updates the firmware for its products. The content of this manual may differ from the actual product used. If there are any changes to the device's functions or specifications, no further notice will be given.

For more usage information, please visit our official website: www.luxsinaudio.com.

## Safety Warnings:

1. This device should not be exposed to splashes or drops of water. Do not place items filled with liquids, such as vases, on the device.
2. The device's power disconnecting mechanism is the power input plug or the power switch at the back. For ease of operation, ensure that the power plug or power switch is not obstructed by any objects.
3. This device is a Class I product, and proper grounding measures must be ensured when using it.