



XINGCORE

Asynchronous USB audio interface USB Hi-Resolution Audio U30 Instruction manual

Thank you for choosing this product.

Before using the product, please read this instruction manual carefully and keep it for future reference.

In all text descriptions below, "Asynchronous USB Digital Audio Interface" is referred to simply as "Audio Interface".

Safety Precautions

To reduce the risk of breakdown, electric shock, injury, fire, and damage to equipment or property, it is important to observe the following safety precautions.

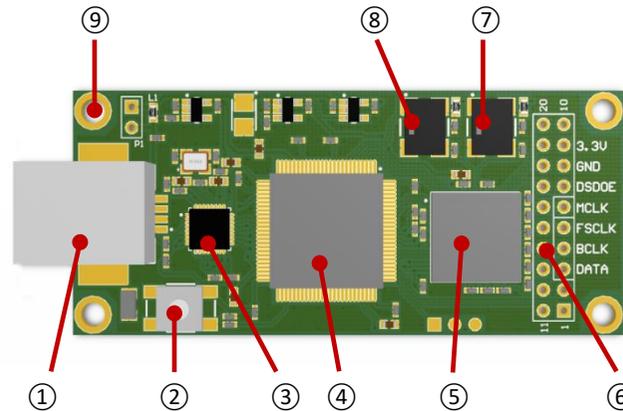
Warning

- Do not damage or bend the circuit board forcefully, otherwise it may cause short circuit and cause fire.
- Do not spill, dump or splash the liquid on the board, otherwise it may cause a short circuit and cause fire.
- When it is working, do not touch the circuit part with metal or any conductive objects, otherwise it may cause short circuit and cause fire.
- Do not keep within the reach of children and infants, do not allow children and infants to play, otherwise it may cause electric shock and injury.
- Do not repair, disassemble or modify the chip yourself without relevant electronic knowledge, otherwise it may cause fire or injury.

Note

- The audio interface is electrostatic sensitive device, please take and install it with electrostatic protection to avoid damage caused by electrostatic discharge (ESD). Before picking up the audio interface, you must first touch an unpainted grounded metal object or use a grounded antistatic wristband to prevent electrostatic discharge (ESD). Never apply pressure on or around the integrated circuit, or hold the integrated circuit of the audio interface or its surrounding parts. When picking it up, you must pinch the edge of the printed circuit board or the USB socket part with your hand.

Components



- ①USB Slot ②Configuration Mode Entry Button ③USB Physical IC ④Central Processor IC ⑤Audio Port IC ⑥Output Port ⑦49.152 MHz Oscillator ⑧45.1584 MHz Oscillator⑨M3 Screw Fixing Holes x4

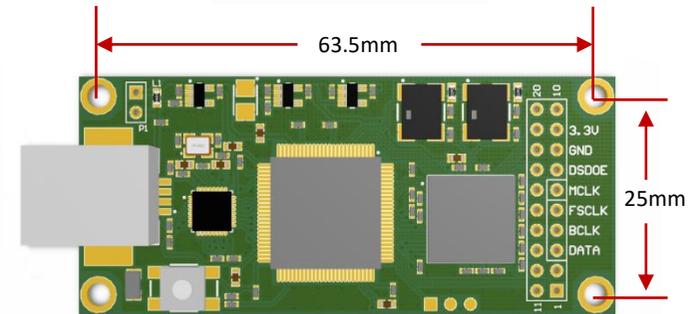
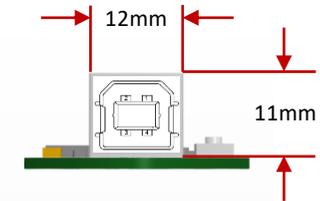
Installation

Please read this manual and the relevant sections in the DAC host user manual carefully in advance to ensure that the following operations are not dangerous.

Chassis Cut-outs and Fixations

Before installing the audio interface into the DAC host, ensure that the DAC host is powered off. If the DAC host is running on battery power, remove the battery. When installing, do not plug the USB cable into the USB socket of the audio interface.

Please use 4 sets of M3 Series copper posts, screws or nuts to fix the audio interface.



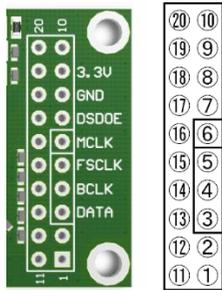
First, please refer to the above diagram for the location of the audio interface fixing holes and USB socket, and punch the M3 screw holes on the base plate of the DAC host and the USB socket holes on the back plate of the DAC host. Please refer to the manual of the DAC main unit to confirm the installation location of the audio interface and to determine the wiring plan.

Then screw the four copper posts (please confirm the height of the copper posts and purchase the copper posts) into the M3 holes on the base plate of the DAC main unit. Then place the audio interface on the copper posts so that the 4 fixing holes are aligned with the screw holes on the copper posts. Carefully place and tighten the 4 screws, do not over torque them, just tighten them to avoid damaging the components near the fixing holes. Please refer to the next section to complete the signal cable connection.

Connection of Output Signals

The signal outputs of the audio interface are compatible with the signal inputs of most DAC hosts. Please refer to the user's manual of the DAC host to confirm which signal output jacks of the audio interface need to be connected to the corresponding input jacks of the DAC host. Make sure the connections are correct. The output interface uses a 3.3V digital logic level. Please make sure that this level is compatible with the interface level of the DAC host, and use a level conversion device if necessary.

This audio interface is powered through the USB port of the audio source device (e.g., personal computer, digital set-top box, and smartphone). Therefore, the signal port of the audio interface is connected to the USB port of the audio source device using a common ground. When the power quality of the USB port of the audio source device is poor (poor power quality means unstable voltage, burrs, excessive high frequency noise, poor isolation from the utility grid, etc.), it can affect the audio signal quality. Although the audio interface has been designed to avoid this impact, but in the case of poor power quality of the audio source device, this impact cannot be avoided. Please evaluate the power quality of the USB port of the audio device before connecting the signal output cable. If necessary, improve the power quality or use a digital signal isolation device between the audio interface and the interface of the DAC.



The pins of the signal output interface are defined as follows.

①PLUG: USB connection indication output. It is "high" level when USB connection is successful.

②NC: Reserved. No connection.

③DATA: I2S data or DSD left channel output. This pin is usually connected to the DATA input pin of the DAC host. Some manufacturers also call this pin "SD", "SDATA" or "SDA", etc. Please pay attention to the identification. When playing PCM audio, if the sample rate is 1411.2 kHz or 1536 kHz, this pin only outputs the I2S left channel data, the right channel data is output through the SP pin.

④CLK: I2S data clock output. This pin is generally connected to the CLK input pin of the DAC host. Some manufacturers also call this pin "BCK" or "BCLK" and so on, please pay attention to identify.

⑤ FSCLK: I2S frame clock or DSD right channel output. This pin is generally connected to the FSCLK input pin of the DAC host. Some manufacturers also call this pin "WS", "CHSL" or "LRCK", etc., please pay attention to identify.

⑥MCK: Master clock output. This pin is generally connected to the MCK input pin of the DAC host. Some manufacturers also call this pin "SCK" or "MCLK", etc. Please pay attention to identify it. Please refer to the section "Configuring the Audio Interface" for more information.

(7) DSDOE: Audio data format indication output. When the level is "Low", pins ③, ④ and ⑤ will output I2S signal; when the level is "High", pins ③, ④ and ⑤ will output DSD signal. Please refer to chapter "Format and Sample Rate Identification".

⑧⑬⑭ GND: Ground. Provide zero level for signal output and anti-interference shield for pins ③, ④ and ⑤. This pin is usually connected to the ground of DAC host.

⑨⑩3.3V: 3.3V output, 40mA. Can be used as the power supply for digital signal isolators.

⑪MUTE: Mute indication output. When the level is "high", the state is mute. This pin is controlled by the audio driver, and is also "high" when DSD mode is switched.

⑫SP: When playing PCM audio, if the sample rate is 1411.2 kHz or 1536 kHz, this pin only outputs the I2S right channel data, and the left channel data is output through the DATA pin.

DSD64/128: When the data is DSD64, it is "low", and when DSD128, it is "high".

⑰F0: Sample rate indication output, please refer to the chapter "Format and Sample Rate Identification".

⑱F1: Sample rate indication output, please refer to the chapter "Format and Sample Rate Identification".

⑲F2: Sample rate indication output, please refer to the chapter "Format and Sample Rate Identification".

⑳F3: Sample rate indication output, please refer to the chapter "Format and Sample Rate Identification".

Format and Sample Rate Identification

The DAC or display component can identify the current sample rate of the audio signal by identifying the level of DSDOE with the F0~F3 pins. Please refer to the data in the following table.

Format	Sample Rate	DSDOE	F3	F2	F1	F0
PCM	44.1KHz	L	L	L	L	H
PCM	48KHz	L	L	L	H	L
PCM	88.2KHz	L	L	L	H	H
PCM	96KHz	L	L	H	L	L
PCM	176.4KHz	L	L	H	L	H
PCM	192KHz	L	L	H	H	L
PCM	352.8KHz	L	L	H	H	H
PCM	384KHz	L	H	L	L	L
PCM	705.6KHz	L	H	L	L	H
PCM	768KHz	L	H	L	H	L
PCM	1411.2KHz	L	H	L	H	H
PCM	1536KHz	L	H	H	L	L
DSD64	2.8224MHz	H	H	L	L	H
DSD128	5.6448MHz	H	H	L	H	L
DSD256	11.2896MHz	H	H	L	H	H
DSD512	22.5792MHz	H	H	H	L	L
DSD1024	45.1584MHz	H	H	H	L	H

Configuration Mode

This USB audio interface has an engineering configuration mode. Users can modify the parameters in it as needed.

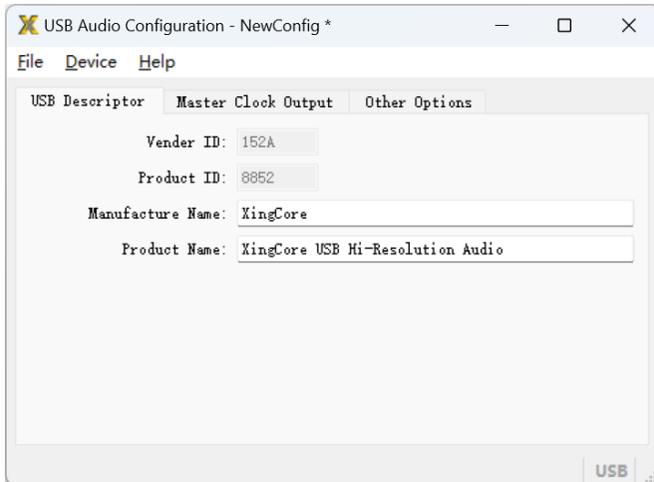
Entering Configuration Mode

Please prepare a Windows system host, which can support Windows 11 and Windows 10 in engineering configuration mode.

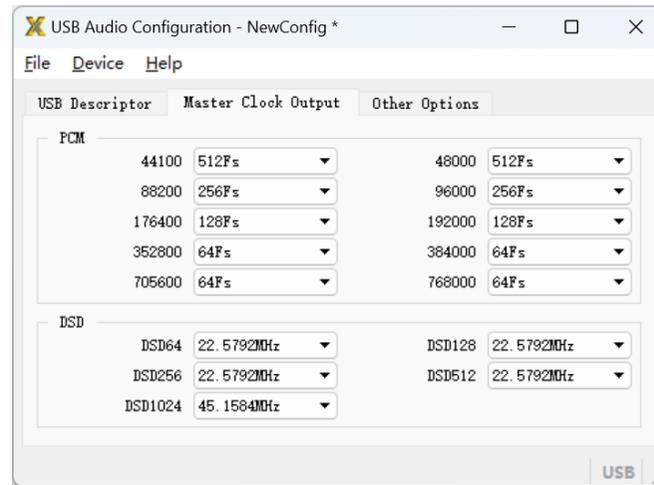
Please boot the Windows host into Windows system first. Unplug the USB plug of the audio interface from the host computer. Press and hold the Engineering Configuration Mode button without releasing it and plug the audio interface USB back in. Then release the Engineering Configuration Mode button. At this point, the audio interface is in engineering configuration mode.

Parameter Modifying

Open the folder where the project configuration mode tool is stored, double-click to open the HiResAudioConfig.exe program. First need to create a new configuration file. Click on the "File" menu, and then click on the "New" command.

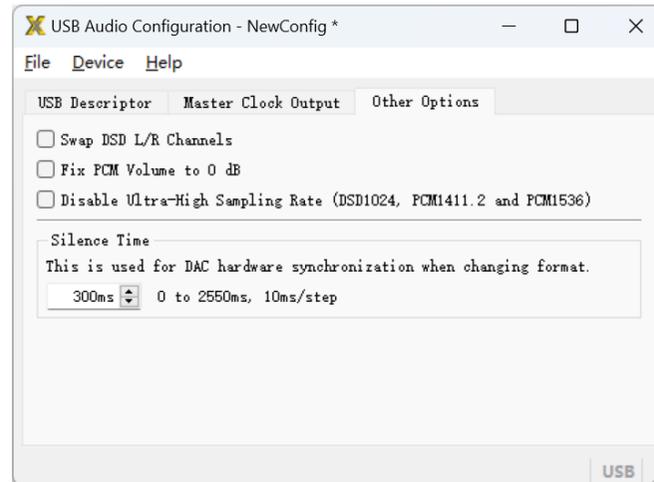


On the "Master Clock Output" tab, there are two areas, PCM format and DSD format. The master clock frequency can be configured separately for each sample rate in both formats. Please refer to the user manual of the DAC or the data sheet of the DAC chip for the specific values.



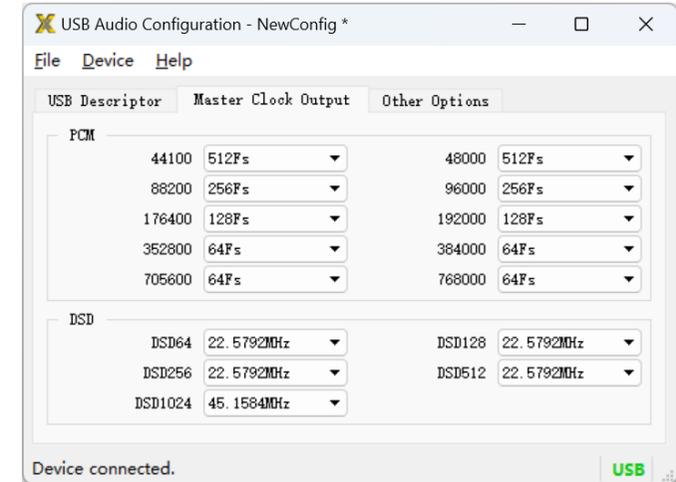
In the "Other Options" tab, you can change the following configurations:

- Swap DSD L/R Channels: If your decoder has normal channel direction when playing PCM signal, but the DSD channel direction is reversed, please select this option.
- Fix PCM volume to 0dB: Select this option if your decoder is playing a low volume when playing the PCM signal, but the audio source playback cannot adjust the volume.

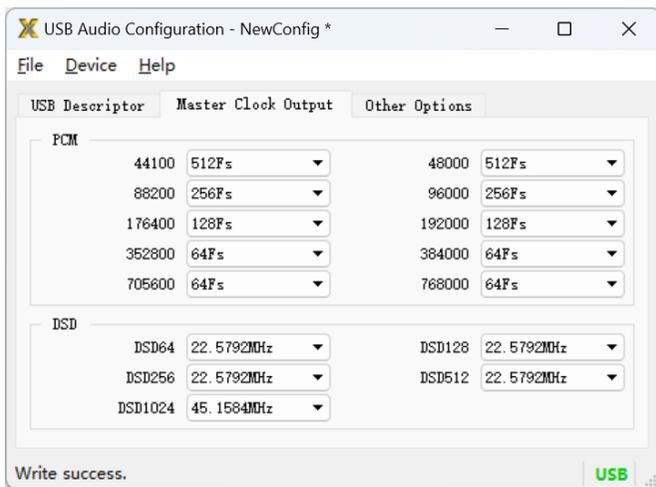


After all the parameters are configured, you need to write the configuration information to the audio interface. At this point, click on the "Device" menu, and then click on the "Connect" command.

The program can be connected to the audio interface. At this point, you can notice that the "USB" character at the bottom right of the program turns from gray to green, indicating that it has been successfully connected. At the same time, the status bar at the bottom left of the program will also indicate that the "device is connected".



If the connection is not successful, please make sure that your audio interface is in project configuration mode. If not, please refer to the section "Entering Configuration Mode" to first put the audio interface into engineering configuration mode. Click on the "Device" menu again, then click on the "Write" command to write data to the audio interface. The writing process is very fast and you will see the status bar at the bottom left of the program saying "Writing completed".



After writing, you need to disconnect the audio interface from the program. Please click on the "Device" menu and then click on the "Disconnect" command. At this point, the "USB" character at the bottom right of the program turns from green to gray. This indicates a successful disconnection.

Exiting Configuration Mode

After configuring the parameters, please unplug the USB plug of the audio interface and plug it back in (do not press the "Project Configuration Mode button"), then the audio interface will return to normal playback mode.

Audio Format and Device Driver

This audio interface fully complies with the standard USB 2.0 communication protocol, USB Audio Class 2 device protocol, and DoP, Native DSD audio protocol. Please refer to the user manual of the audio device to confirm whether the audio device supports this audio interface.

The formats and sampling rates that can be supported by this digital interface are as follows: 32-bit PCM (backward compatible with 24-bit and 16-bit) formats support 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz, 352.8 kHz, 384 kHz, 705.6 kHz, 768 kHz, 1411.2 kHz and The DSD format supports DSD64, DSD128, DSD256, DSD512 and DSD1024 for lossless transmission in DoP (DSD64 -

DSD512) or Native (DSD64 - DSD1024) protocols.

In general, the following operating systems can support this audio interface.

- Windows XP, Windows Vista, Windows 7 and Windows 8 require an audio driver installation that supports all audio formats and sample rates.
- Windows 10 and Windows 11 systems come with a USB Audio 2.0 driver that supports the DSD format for PCM and DoP protocols. With the audio driver installed, all audio formats and sample rates are supported.
- Mac OS comes with a USB audio driver that supports PCM and DoP protocols in DSD format.
- iOS 7 and subsequent versions come with USB audio drivers that support PCM and DoP protocols in DSD format.
- Android 5.0 and later comes with a USB audio driver that supports all audio formats and sample rates.
- Most Linux systems (including Ubuntu, Debian and other distributions, as well as Volumio, Moode, Daphile and other audio playback systems) have their own UAC2 kernel driver module mounted by default, which supports all audio formats and sample rates.

Specification

Storage environment temperature: -40°C to 85°C

Operating ambient temperature: 0°C to 55°C

USB port power supply voltage: 5V (minimum 4.5V, maximum 5.2V)

Rated current: 140mA

Rated power consumption: 0.7W

Output interface logic voltage: 3.3V

Output interface frequency: < 50 MHz

Audio and clock signal output impedance: 47Ω

Control signal pin drive capability: 17mA

Digital audio output protocol: I2S (PHILIPS format), DSD

USB data protocol: USB 2.0 protocol

USB Audio Class 2 protocol

Data input audio protocol: PCM, DoP (token FA05), Native DSD