GUSTARD

DAC-A22

High-performance Audio DAC
User Manual
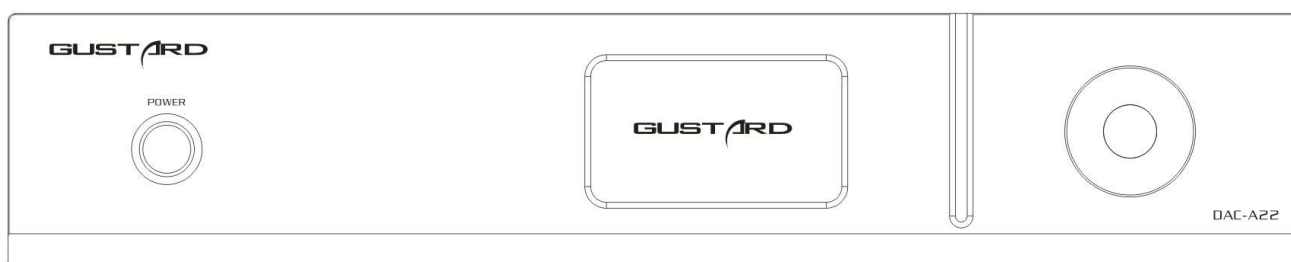
Table of Contents

Front panel
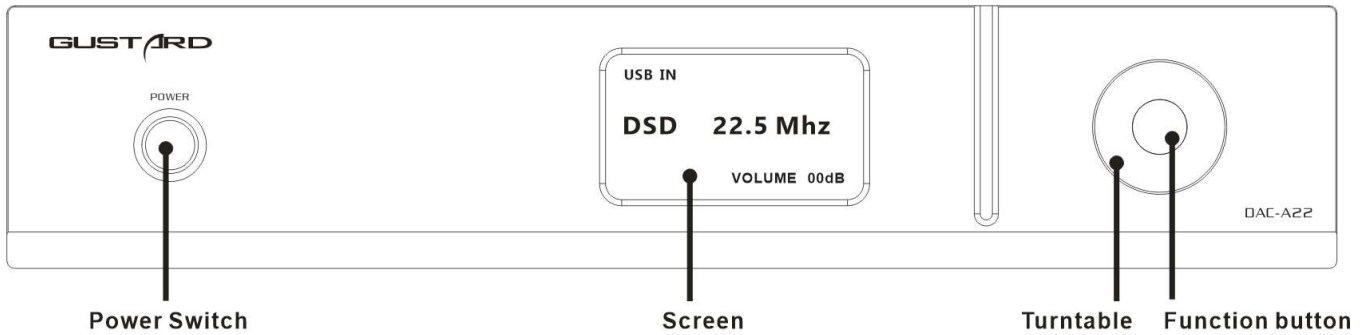
1. The power switch is a button. When the power is off, press the power switch to turn it on. Press again to power off.
2. The screen will display the current input channel, encoding format and sample rate, volume and other status.
3. Turntable can adjust digital volume attenuation; or adjust each menu option in the menu state.
4. Function button, short press to cycle through digital input channels, switch items in the menu; long press to enter or exit the menu.

Rear panel
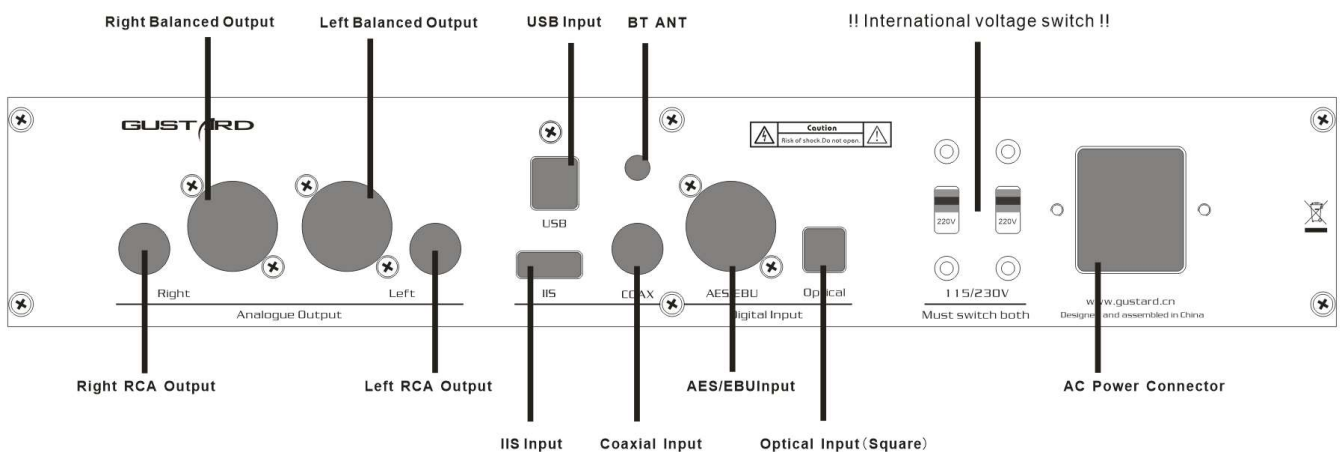
＊When operating the international voltage switch, please be sure to set both switches to the same voltage at the same time, otherwise the power transformers of the DAC-A22 will be damaged after power-on.

Display and menu

1. The DAC-A22 uses an OLED screen for real-time status display and functional operation. The following graphic shows the status of the main page of the screen.
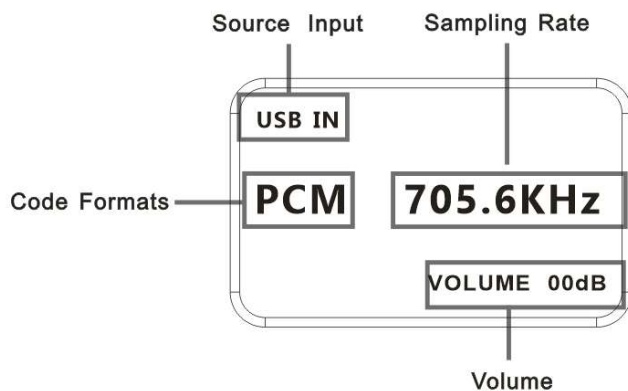
2. Digital input channel selection:
   The DAC-A22 has a total of 6 input channels. In the display state of the main page, short press the function button, you can select the current input channel in the order of COAX——AES——USB——IIS——OPT——BT. Bluetooth device name: GUSTARD BT
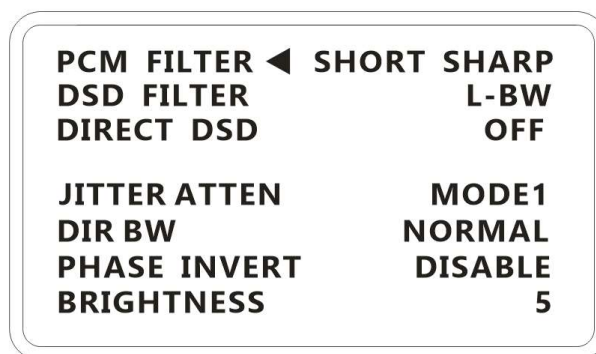
3. VOLUME:
   When the screen is the main page, you can directly adjust the digital volume attenuation function of the DAC-A22 by operating Turntable. Rotate counterclockwise to attenuate the volume and clockwise to increase the volume. The volume can be attenuated from 00dB to -90dB for a total of 90 digital volume positions.

4. Settings menu:
   In the home screen state, press and hold the function button to enter the setting menu. In this state, short-press the function button to cycle through the menu items to be modified. Turntable is used to adjust the currently selected menu option. When the screen is in the setting menu, long-press the menu key again to return to the main page. The menu is switched by the movement of the arrow, in order:

   —PCM Filter
   —DSD Filter
   —DIRECT DSD Mode

   —JITTER ATTEN MODE
   —DIR Digital receive bandwidth
   —Phase invert
   —Brightness

```
PCM FILTER ◄ SHORT SHARP
DSD FILTER          L-BW
DIRECT DSD           OFF

JITTER ATTEN       MODE1
DIR BW            NORMAL
PHASE INVERT     DISABLE
BRIGHTNESS             5
```

5. Menu items' functions:
   The following is a detailed introduction of each menu item:

a. PCM FILTER:
   DAC-A22 has a total of 6 PCM digital filter types. Turning Turntable clockwise will sequentially select in the order of SHARP——SLOW——SUPER SLOW——SHORT SHARP——LOW-d SHOT——SHORT SLOW. Turn Turntable counterclockwise The cycle is reversed. SHARP is a fast roll-off digital filter, which is the most common type of digital filtering. It is the most accurate and neutral in the sense of hearing. SLOW is a slow roll-off. It has smooth out-of-band attenuation characteristics of the signal, but also because of its in-band attenuation. The attenuation characteristic will make the sound soften; SHORT SHARP / SHORT SLOW is a short delay version of SHARP / SLOW.
   SUPER SLOW is similar to the effect of NOS. The extension at both ends is reduced, and the intermediate frequency is naturally suitable for human voice. LOW-d SHOT is a new filter of AKM Company, which adopts the asymmetrical pattern of front and rear ringing, and then produces a new sense of hearing.
   A22 recommends the use of SHORT SHARP digital filtering.

b. DSD Filter:
   The DAC-A22 DSD filter has two different bandwidths that can be adjusted, L-BW is low bandwidth; H-BW is high bandwidth. The AK4499 does not use a fixed frequency as the cutoff frequency of the filter, but automatically switches according to the DSD sampling rate. Please see the table below for the cut-off frequency:

DSD rate	DSDFilter	Internal DSD Filter Cut Off Frequency @fs = 44.1 kHz
DSD64	L-BW	37 kHz
DSD64	H-BW	65 kHz
DSD128	L-BW	74 kHz
DSD128	H-BW	131 kHz
DSD256	×	238 kHz
DSD512	×	476 kHz

   ＊ The bandwidth of DSD256 and DSD512 are fixed and are not affected by the options.

c. DIRECT DSD (DSD pass-through mode)

A22 uses this option to select whether the AK4499 chip bypasses the internal digital processing when decoding DSD.

ON means open through. At this time, AK4499 does not process the DSD signal and sends it directly to the output.

OFF means to close the pass-through. DSD is handled by AK4499 internal default.

*When this option is ON, the playback DSD format will output the maximum volume designed by the machine and cannot be reduced. Please adjust the back-end volume appropriately

d. JITTER ATTEN MODE

JITTER ATTEN MODE is available in MODE1 and MODE2.

JITTER ATTEN, what actually adjusts is also the filter bandwidth.

MODE1 and MODE2 use different frequencies respectively, which results in different bandwidths for processing jitter. The bandwidth of MODE2 is higher, and the performance of the two is similar, but the sense of hearing is different, so two modes are retained. A22 recommends using MODE1.

e. DIR Digital receive bandwidth:

With the expansion of the traditional audio interface (SPDIF coaxial / AES) transmission bandwidth, it is no longer limited to the 192k sampling limit. The traditional interface can also transmit PCM 24BIT 384K and DOP128 hi-res mode. But now it is still in the stage where the new machine is in hand and the old machine is still in service. In order to better match the signals from different front ends, the DAC-A22 can adjust the bandwidth of the digital receiving interface and precisely lock the digital signals from the front end.

NORMAL—Standard bandwidth, receiving range 44.1-192k, DOP64. Suitable for CD player, LD and other front-end equipment.

HIGH—High bandwidth, receiving range 44.1-384k, DOP64 / DOP128, suitable for new front-ends such as digital players, network players, digital interfaces.

f. PHASE INVERT (Analog output phase inverting switch):

This function has two options: DISABLE (RCA positive phase output - XLR American standard) and ENABLE (RCA inverted output - XLR Japanese / European standard) optional.

When this function is DISABLE, the RCA output of the DAC-A22 is positive phase, and the XLR balanced output is the American standard polarity output, which is 1 ground, 2 hot, and 3 cold.

When this function is ENABLE, not only the RCA output is the inverting output, but the XLR balanced output will be the Japanese/European standard polarity output, which is 1 ground, 2 cold, and 3 hot.

g. BRIGHTNESS (Screen brightness):

This menu item adjusts the brightness of the OLED screen, and a total of 8 screen brightness levels can be adjusted.

IR Remote control
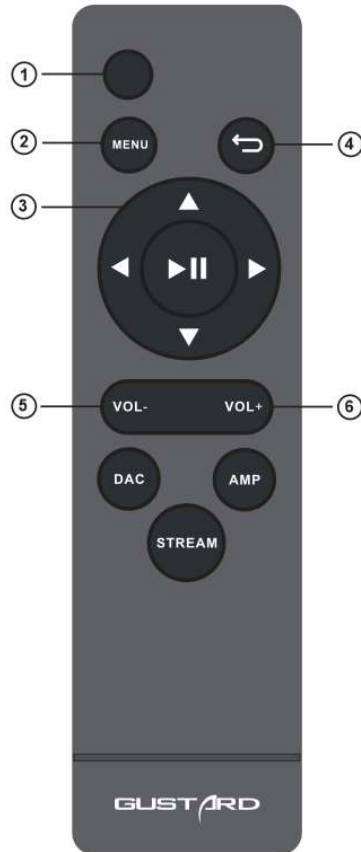
* DAC-A22 uses the new remote control, please press and hold the DAC key for more than 3 seconds to enter the DAC operation mode. AMP and STREAM modes are used to control other types of GUSTARD products

① Mute button: In the non-mute state, press this button once, the DAC-A22 will be muted; press this button again to unmute.

② Menu button: Press this button once to enter the setup menu of the DAC-A22, press this button again to exit the setting menu.

③ D-pad and OK button: After entering the setting menu of the DAC-A22, use the up/down of the D-pad to switch the function to be adjusted, and adjust the options by left/right. Press OK to confirm the result and return to the main page.

④ Back button: Returns to the main page state.

⑤ Volume minus button: When the DAC-A22 is in the main page state, press this button to decrease the volume.

⑥ Volume plus button: When the DAC-A22 is in the main page state, press this button to increase the volume.

Note: ● The operating distance varies depending on the angle. ● If there is something between the remote control and the IR sensor, it may not operate normally. ● If the remote control will not be used for a long time (one month or longer), remove the battery. ● If the battery Leaking, please thoroughly clean all the residues in the battery compartment and install new batteries. ● When using other devices controlled by infrared rays, using this remote control may operate these devices by mistake.

Windows driver installation

* The unit's accessories contain a CD containing the GUSTARD USB Audio driver.
This driver can also be downloaded from our official website http://www.gustard.cn

* This driver supports Windows 7 (SP1 and newer); Windows 8; Windows 10

1. For users who use a desktop PC to connect to the DAC-A22, it is recommended to use the native USB2.0 interface. It is also highly recommended to use the USB port on the back of the chassis. Because the USB port on the rear panel of the chassis is directly connected to the motherboard. The USB port on the front of the chassis is connected to the motherboard with an extension cable, which has a certain negative effect on high-speed signals.

2. Please connect the DAC-A22 to the computer with the USB cable, then turn on the power of the DAC-A22. The computer will prompt you to find new hardware and try to set the device. If you don't see this prompt, please try to replace other USB ports or manually restart DAC-A22.

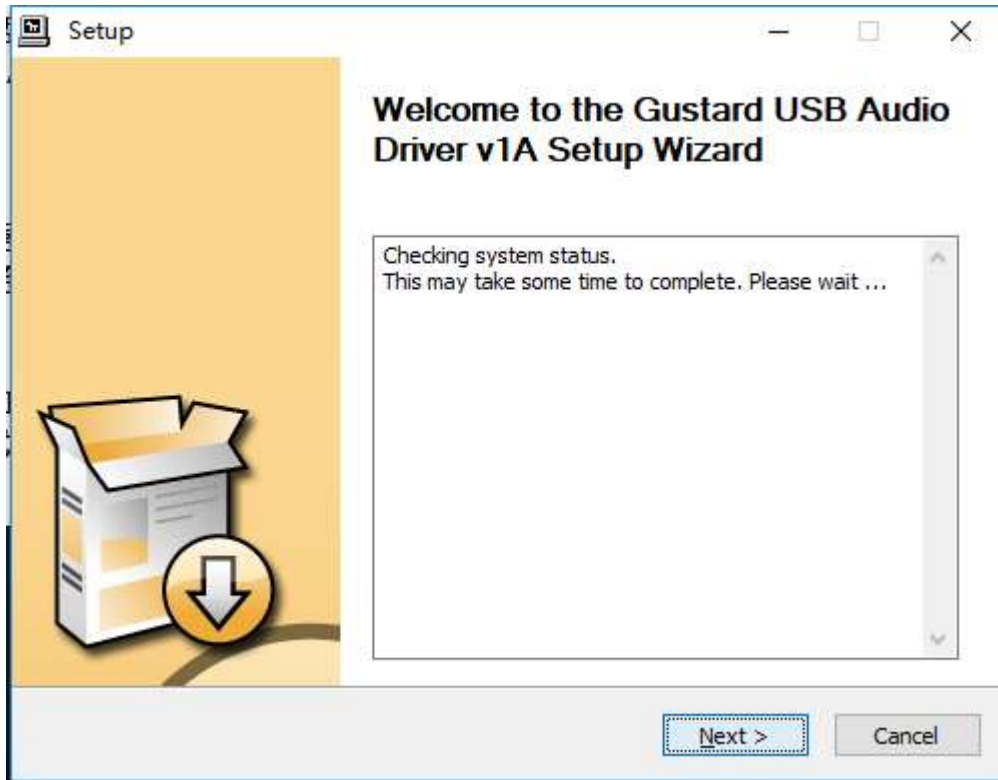3. Open the CD and double-click to run the Gustard_USBAudio_v1A_2018-10-15_setup.exe program.
   If the "User Account Control" window appears, click "Yes".
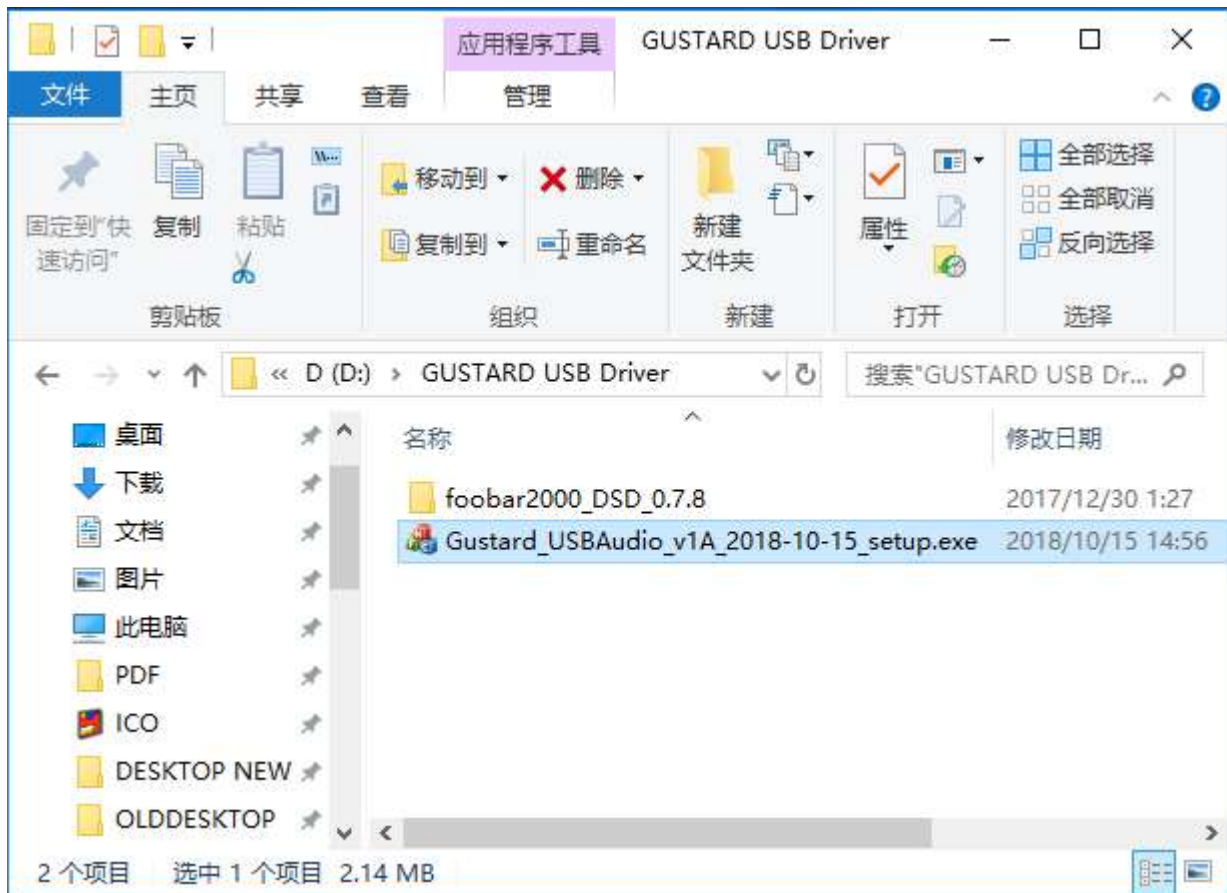
4. Click the next or install button as prompted.
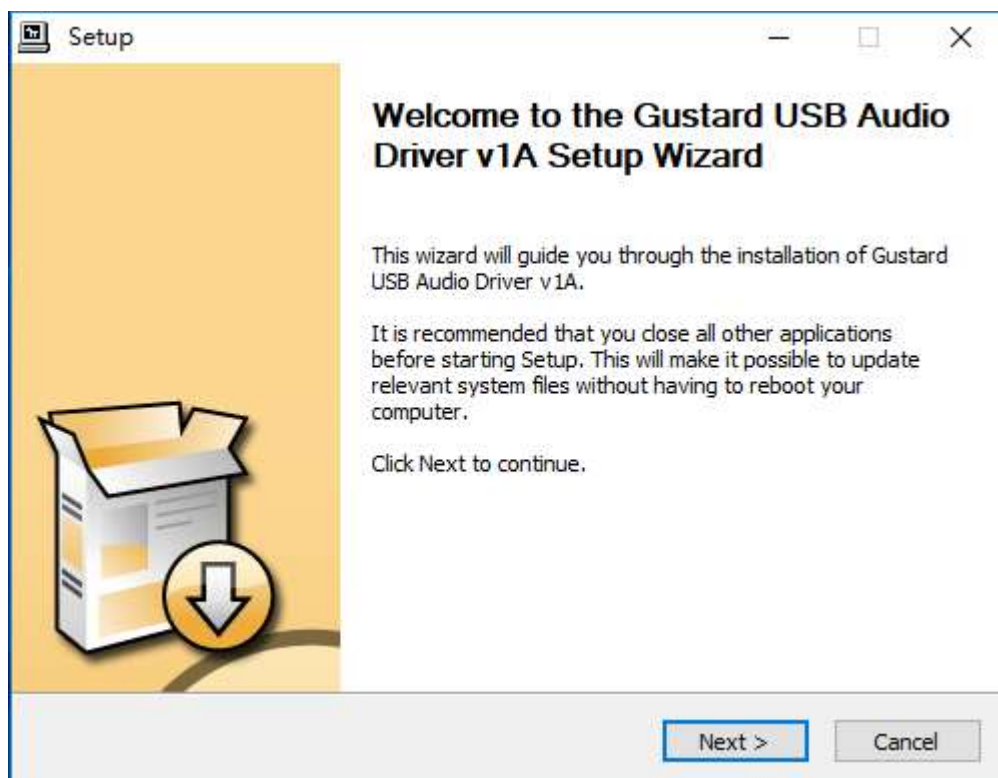
5. When the installer checks the device, if there is a red text prompt: Setup requires that the device is..., please restart the GUSTARD DAC-A22 or re-plug the USB cable.
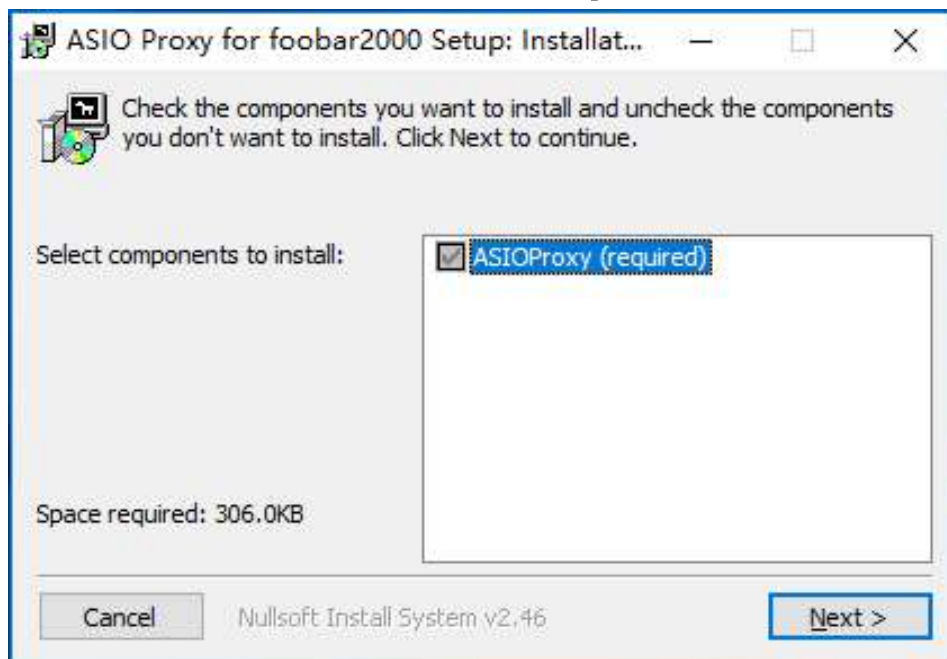

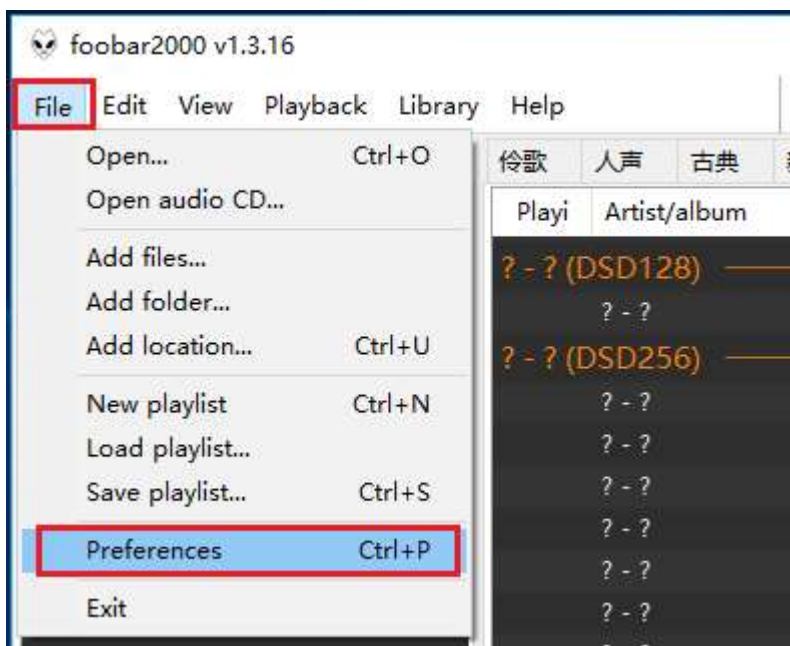6. The figure below shows the screen for successfully installing the driver. Click Finish to complete the installation.
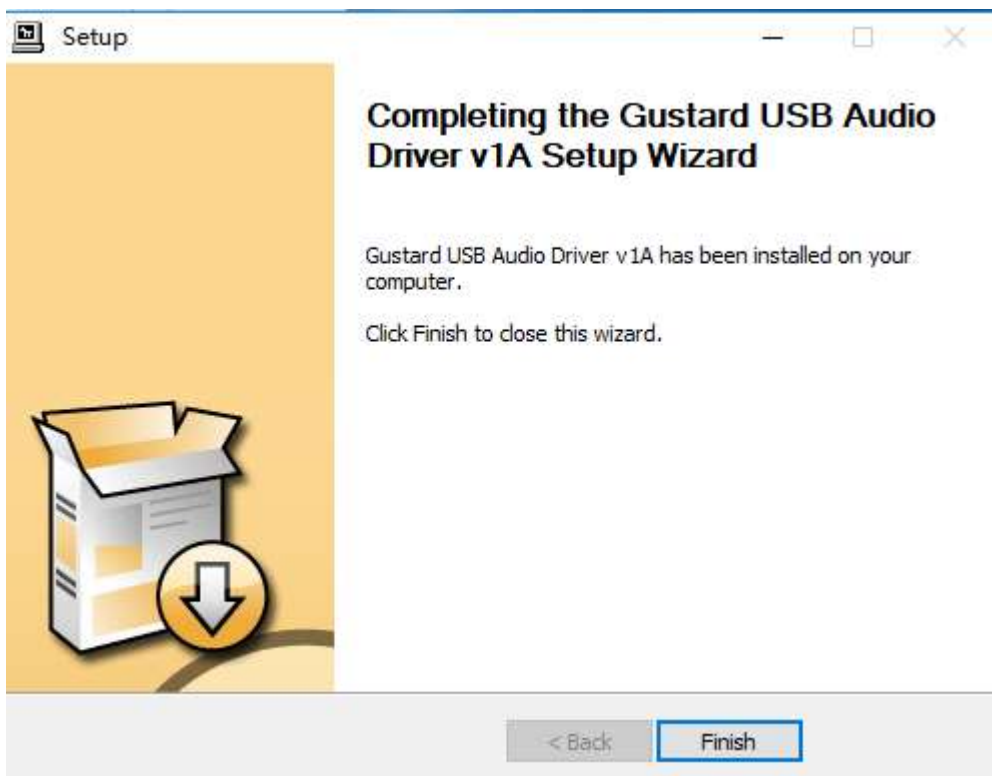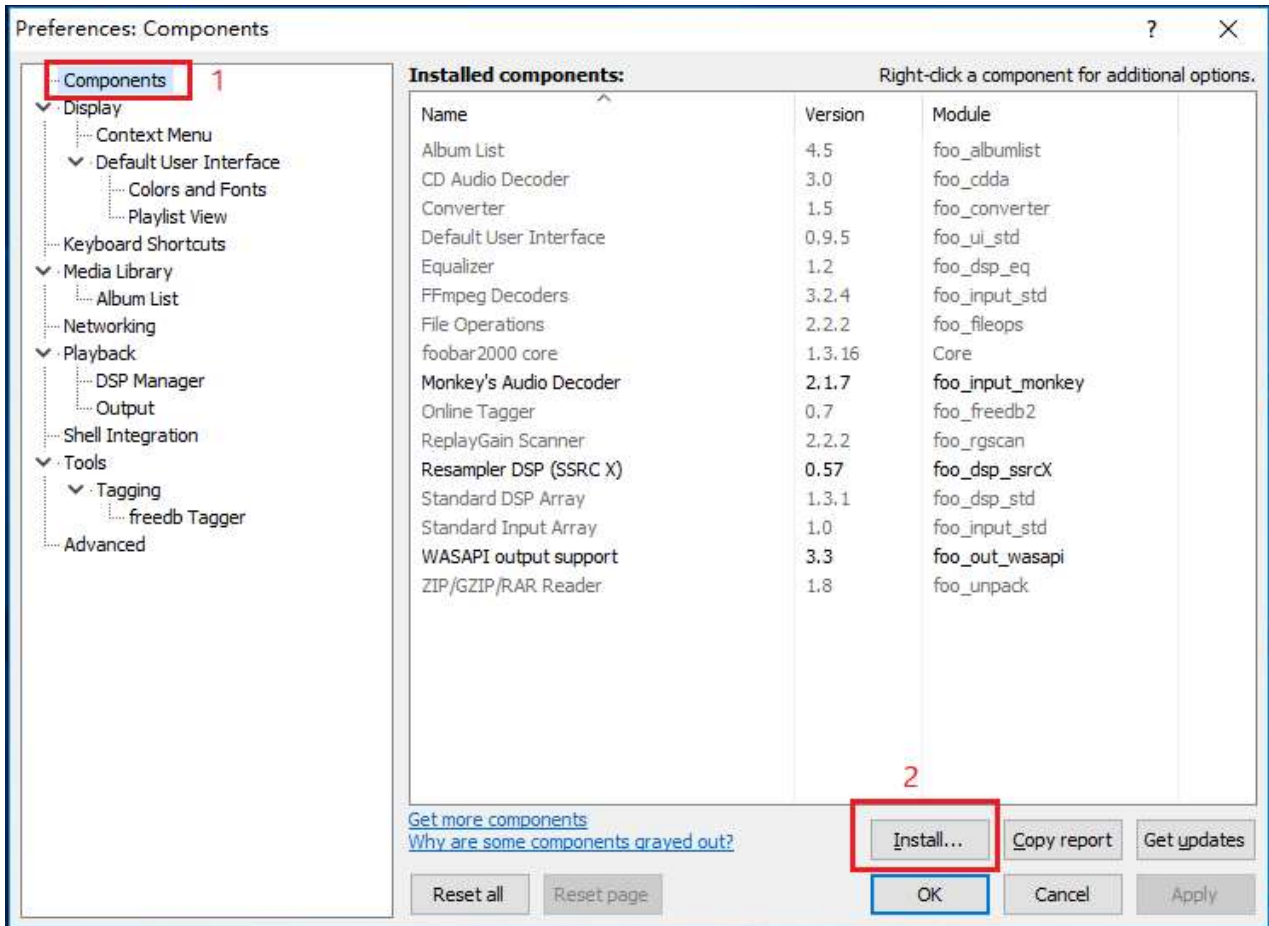
DSD playback settings using foobar2000

1. Open the folder foobar2000_DSD_0.7.X, double-click to run ASIOProxyInstall-0.7.2.exe, and then click next or install to complete the installation.
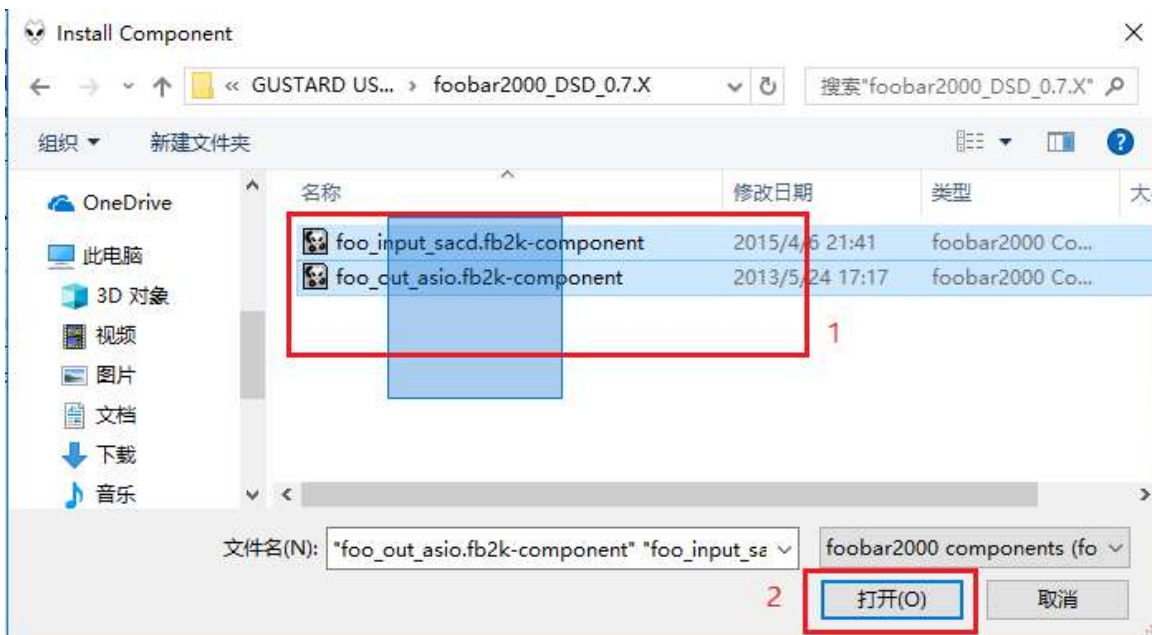

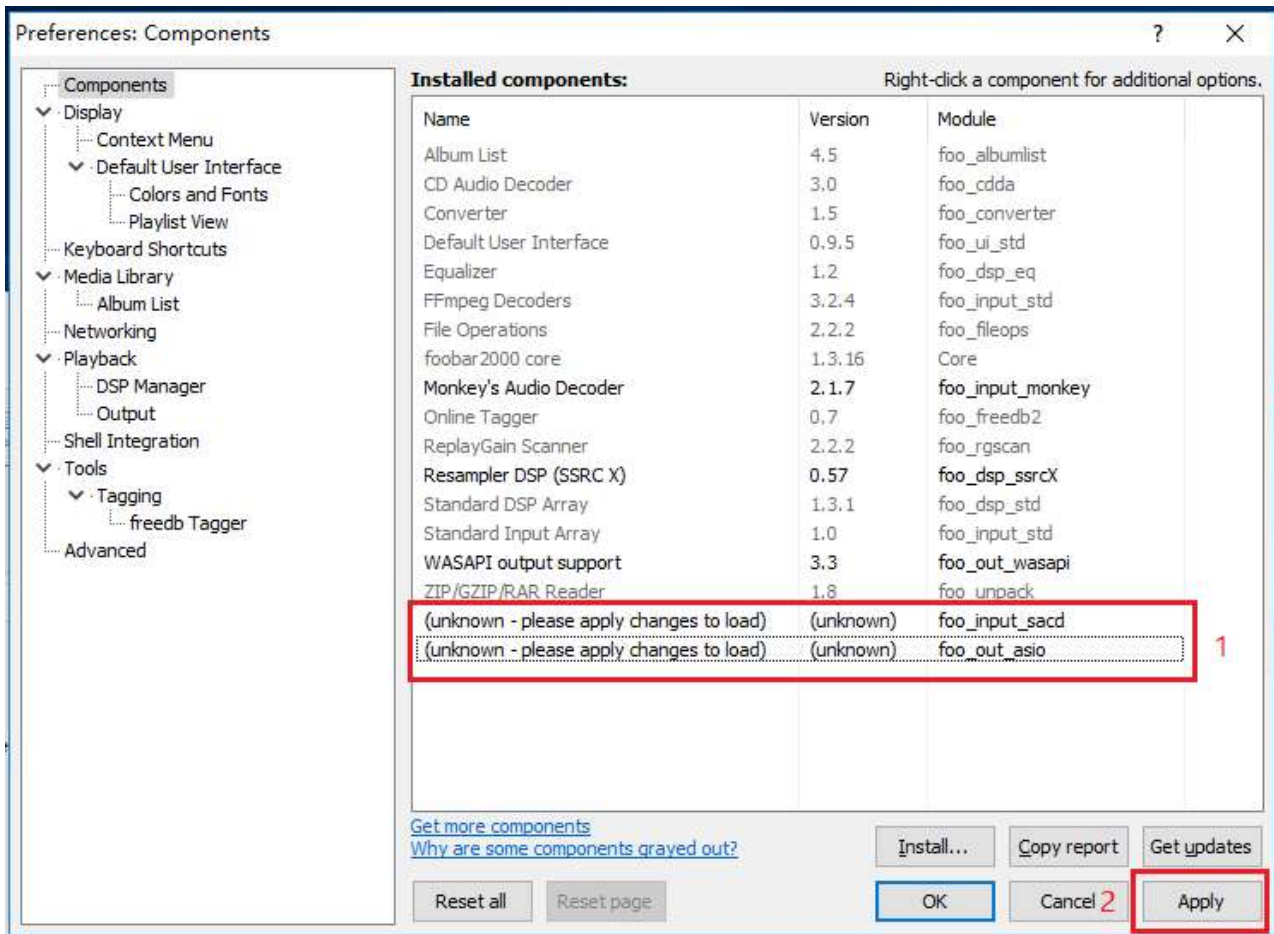2. Run Foobar2000. Click File -> Preferences.

3. Click on "Components" on the left and click on "Install" on the bottom right.
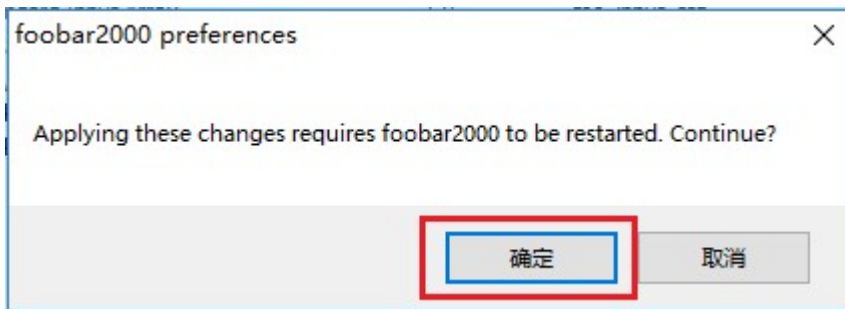

Use the mouse to select two files at the same time, or press Ctrl to select two files at the same time. Then click "Open".
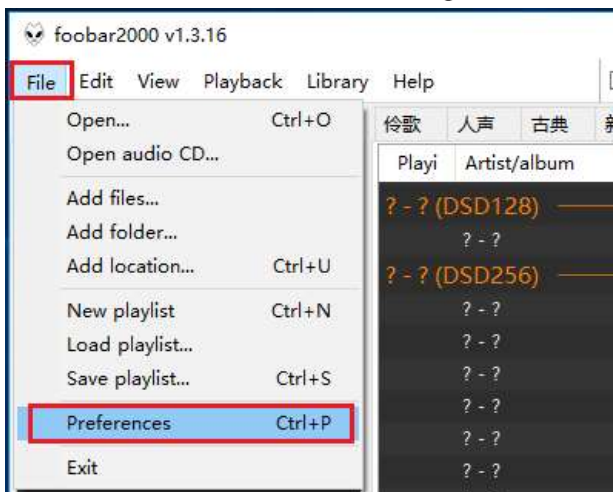
Two rows of component information will be added to the component list, followed by
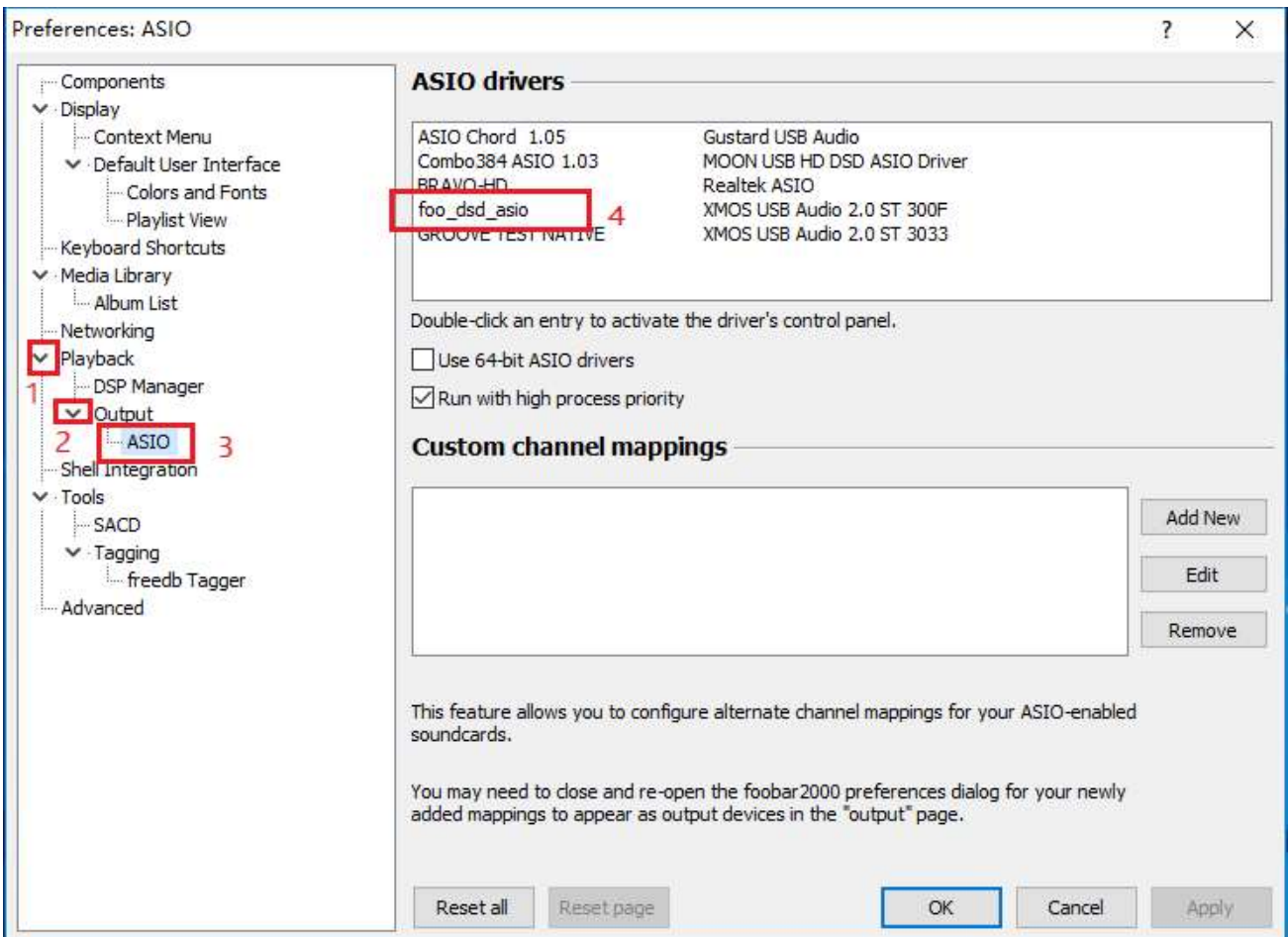"Apply".

The window shown below will pop up and click "OK". Then Foobar2000 will restart.



4. Click File -> Preferences again.

5. Expand Playback - Output - ASIO, and double-click foo_dsd_asio.

6. In the "foo_dsd_asio v0.7.2" window. Select "Gustard USB Audio" from the drop-down menu of the first line ASIO Driver.
   Select "ASIO Native" from the drop-down menu in the second line of the DSD Playback Method.
   For other settings, please make the same selection according to the red box in the figure. Then click the X in the upper right corner to exit.
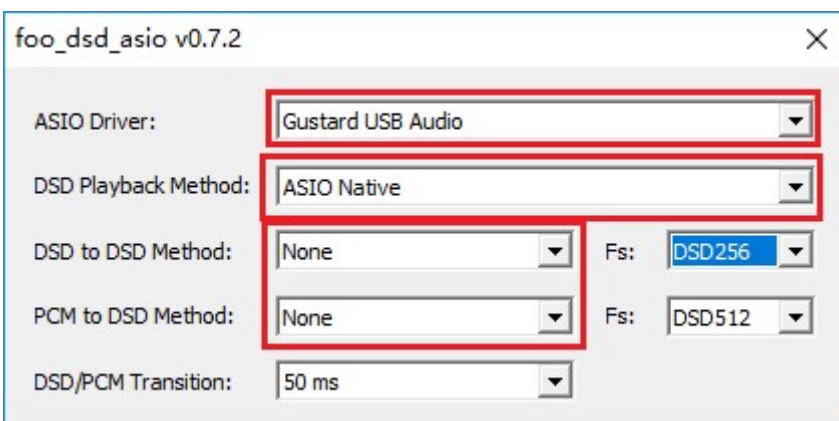
7. Click "Output" on the left, then select "ASIO:foo_dsd_asio" from the drop-down menu for "Device" on the right.
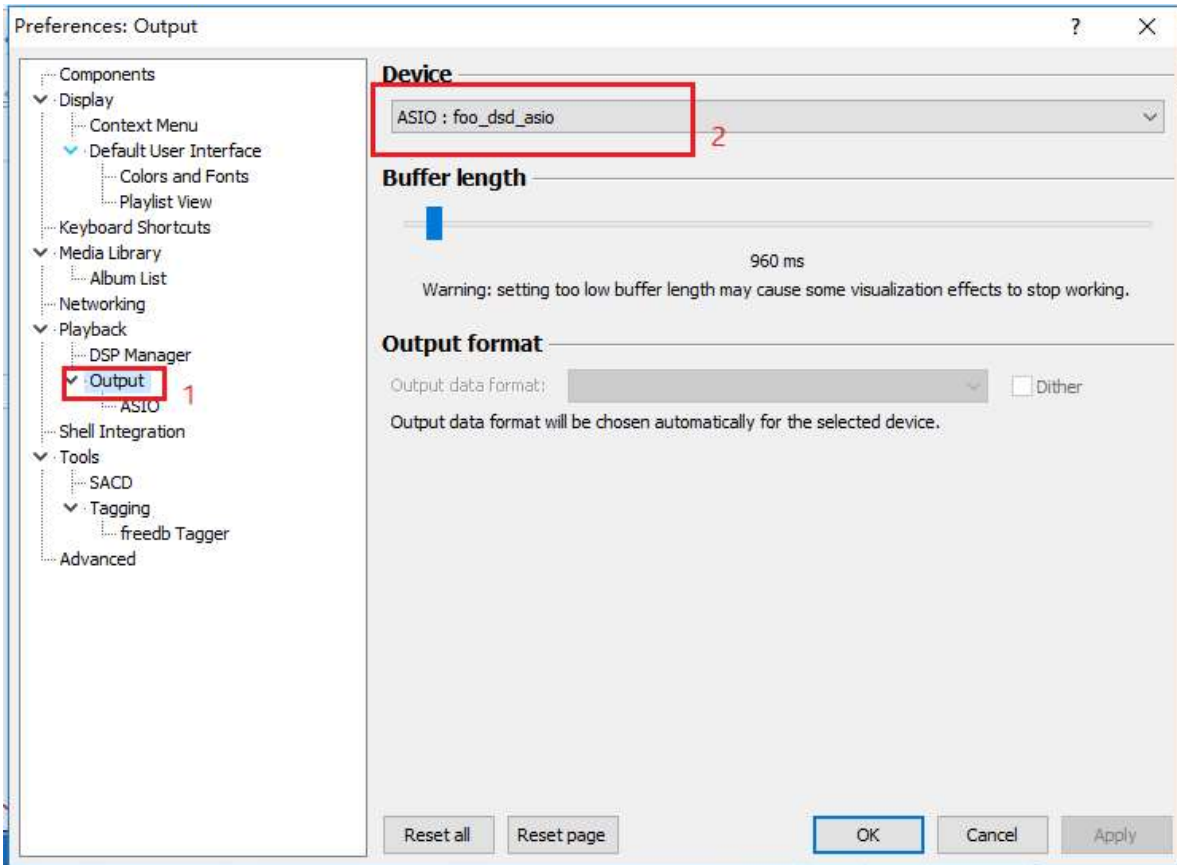

8. Then click on Tools -> SACD and select "DSD" from the drop-down menu in the Output Mode on the right. Finally click "OK" below to complete the setup.
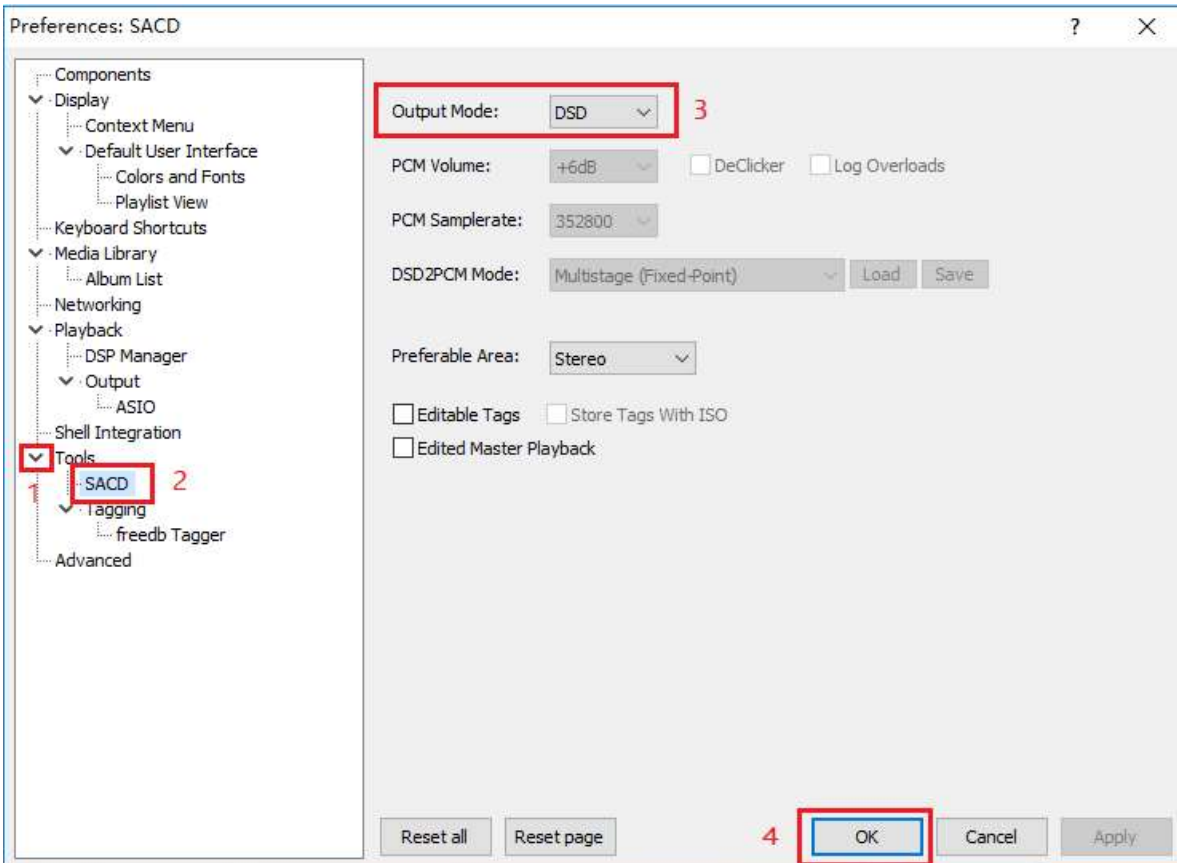
DSD playback troubleshooting for Foobar2000

1. Q: Why does my foobar2000 preference window play (Playback) -> Output (Output) does not show ASIO?

    A: Because you don't have the ASIO component installed. Drag the foo_out_asio.fb2k-component file from the foobar2000_DSD_0.7.X folder to the space in the box to the right of the component option in the preference window of foobar2000, then click the "Apply" button in the lower right corner. Click OK in the Restart foobar2000 dialog that pops up at this time. After restarting foobar2000, you can find the ASIO option.
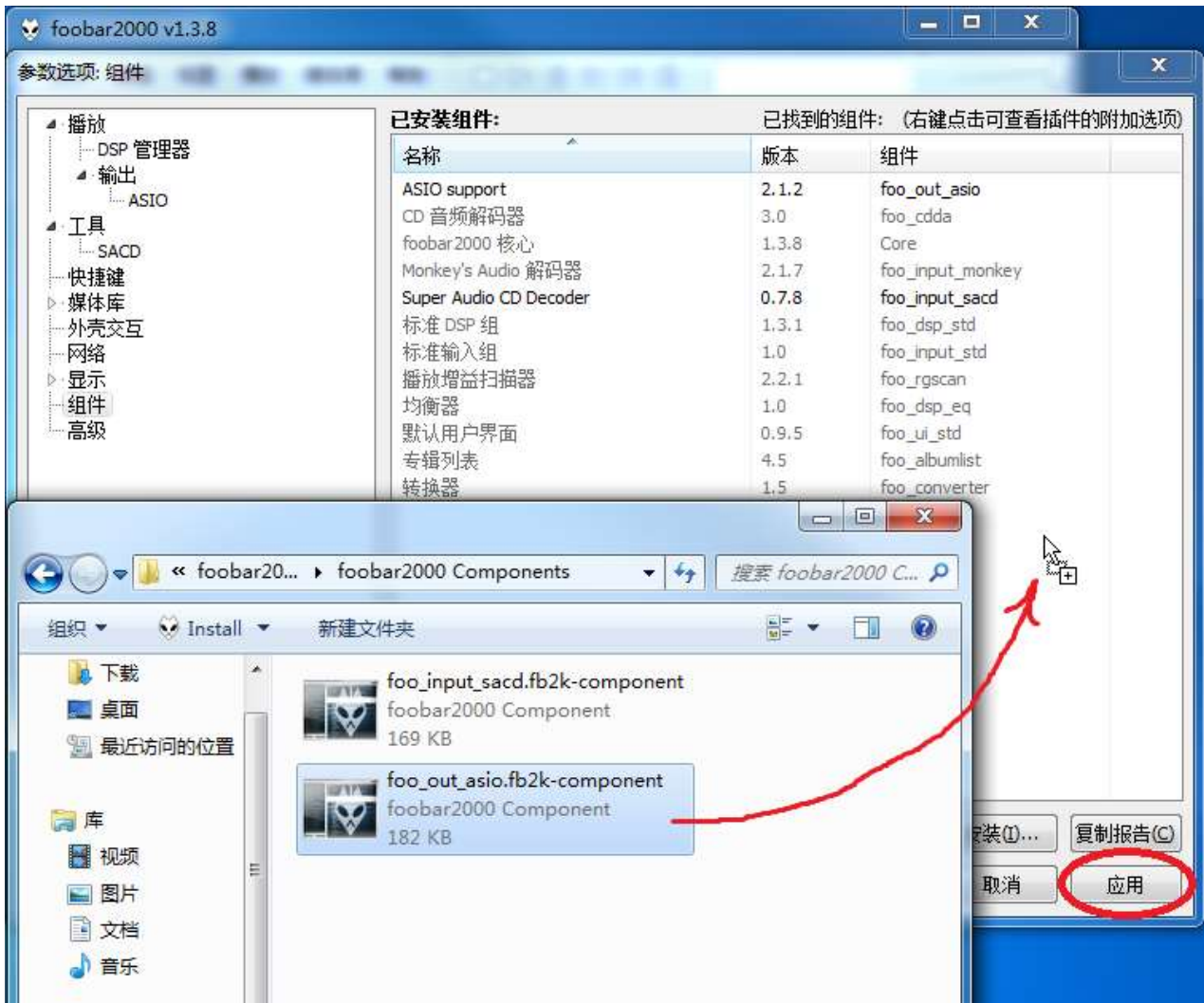
2. Q: Why is there no SACD in the tool options in my foobar2000's preference window?

A: Because you don't have the SACD component installed. Drag the foo_input_sacd.fb2k-component file from the foobar2000_DSD_0.7.X folder to the space in the box to the right of the component option in the preference window of foobar2000, then click the "Apply" button in the lower right corner. Click OK in the Restart foobar2000 dialog that pops up at this time. After restarting foobar2000, you can find the ASIO option.
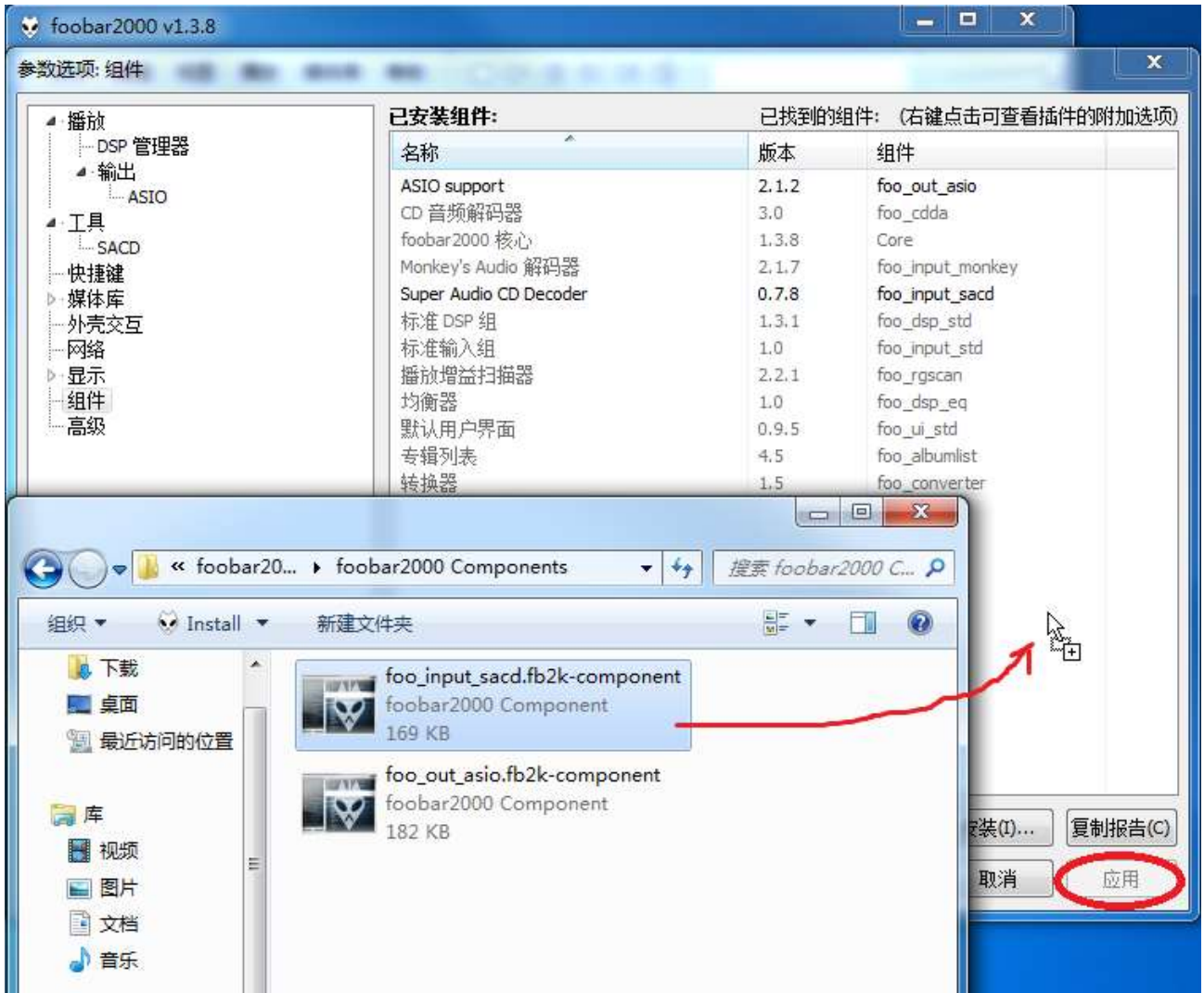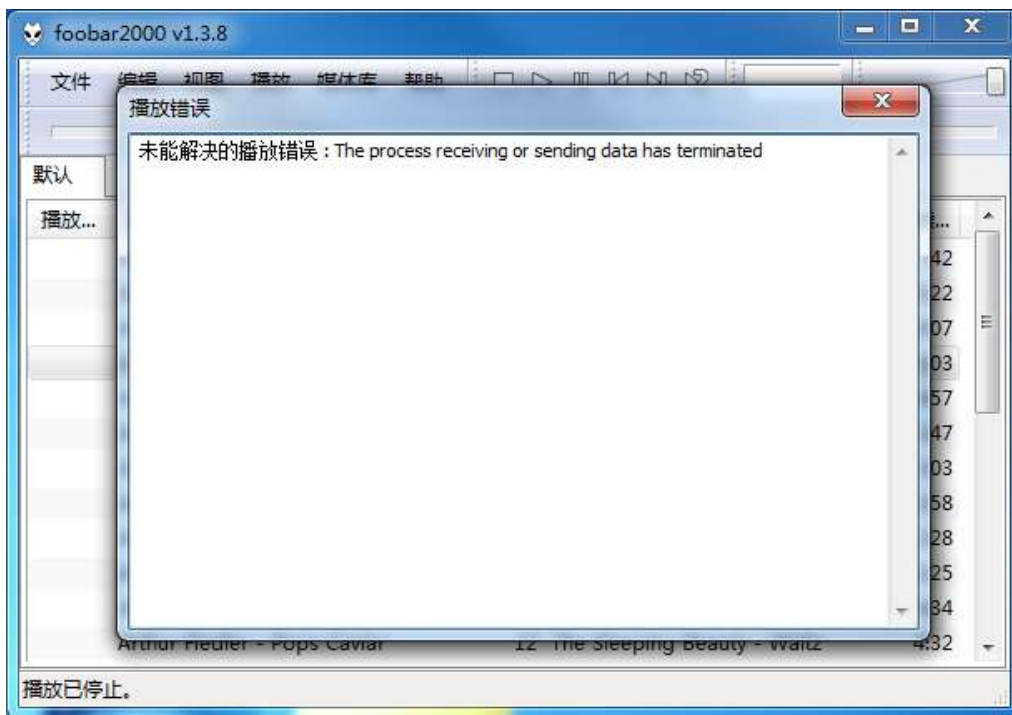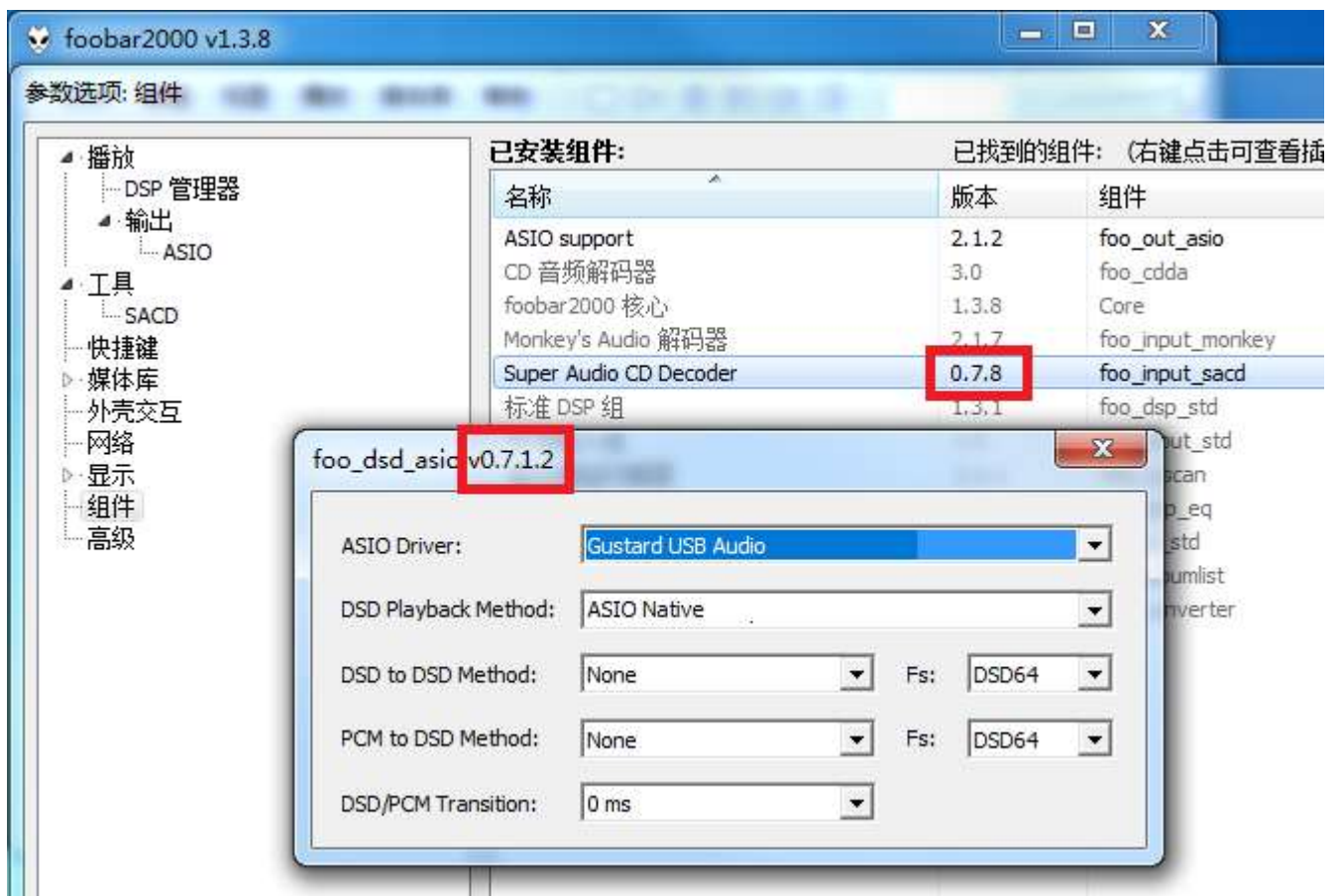
3. Q: I have installed the above two Foobar2000 components. Why do I see an error window like the one below when I play the DSD file?

A: Because the version of your ASIOProxy conflicts with the version of the SACD decoding component. The correct version is shown below, all of which are 0.7.X.

Some users use the old version of foobar2000, and its SACD decoding component stays in the 0.6.X version. If the ASIOProxyInstall-0.7.2.exe program is installed, the version of the foo_dsd_asio window is 0.7.2. This creates a conflict with the SACD decoding component.

There are two solutions.
One is to update the version of the SACD component, and the installation method is consistent with the solution to the second problem. However, some versions of the foobar2000 component are locked and cannot be replaced. Please reinstall the new version of the official original Foobar2000 to solve the problem.
Second, if you are not willing to reinstall foobar2000, you can install the old version of ASIOProxy, such as ASIOProxyInstall-0.6.5.exe. Google search ASIOProxyInstall-0.6.5.exe to find the download link, which can also solve the problem.
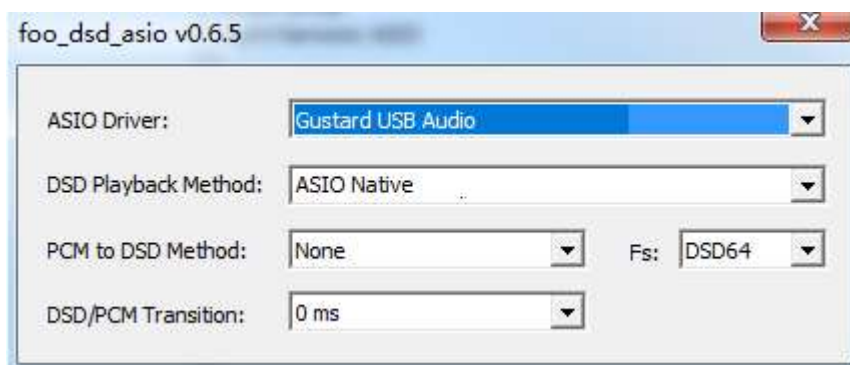
Product specifications

Sample rate supported by digital input channels:

```
COAX : PCM 16-24bit/44.1-384kHz; DSD DOP64-DOP128
AES  : PCM 16-24bit/44.1-384kHz; DSD DOP64-DOP128
OPT  : PCM 16-24bit/44.1-192kHz; DSD DOP64
USB  : PCM 16-32bit/44.1-768kHz; DSD DOP64-DOP256; NATIVE DSD: DSD64-DSD512
IIS  : PCM 16-32bit/44.1-768kHz; DSD DOP64-DOP256; NATIVE DSD: DSD64-DSD512
```

＊USB input supported operating system: WIN7 SP1/WIN8/WIN10 32-64bit; macOS; Linux

Analog output performance:

Amplitude frequency response: 20-20kHz /+-0.1dB
DNR: 128dB
Crosstalk: -137dB @ 1kHz
THD+N: <0.0004% 20-20kHz
IMD: <0.0008%@-3dBFs
RCA Output level: 3Vrms (VOLUME 00dB)
Output impedance 100 ohms

XLR Output level: 6.0Vrms (VOLUME 00dB)
Output impedance 100 ohms

Other specifications:

AC Power supply: AC 115V/230V 50/60Hz
Power consumption: <30W
Dimensions: Width 330mm * Height 65mm * Depth 260mm (Excluding protrusions)
Weight: 7Kg (including packaging)

Product Warranty:

You will enjoy the 2-year free warranty and lifetime maintenance after the date purchasing GUSTARD's DAC-A22 product.

* The manufacturer bears only the freights from Chinese mainland. Part of the freight and tax generated from overseas will be solved by the user with the dealer negotiation.

Free Warranty Service

GUSTARD DAC-A22 from the purchasing date in the free warranty period, the user uses the product in normal, and the product fails due to component quality or manufacturing problems.

Beyond the Warranty Service

Belonging to one of the following circumstances, products are no longer provided warranty service.
a. Products from the date of purchase has exceeded a predetermined warranty period.
b. Model, barcodes and purchase date do not match the actual product and warranty card.
c. Without GUSTARD technician permission, unauthorized modifications to the circuit, components or self-repaired product.
d. Damaging caused by irresistible natural forces.
e. Beyond the permitted use of environmental damage.
f. Damaging due to incorrect use or improper storage. Including but not limited to: the voltage is too high to burn the circuits or components; Bumping and resulting in damaging the shell or internal; damaging due to water, oil, liquid and excessive dust; product oxidation or corrosion, etc.
g. Beyond the warranty period, such as an individual component damage, appearance due to human damage, firmware modifications lead to unable to work by unauthorized users. GUSTARD commits to take reasonable maintenance fees (except large area components or circuit board burned beyond repair). Freight and maintenance costs, material costs are required the user to bear.