# DS-DAC-100
# DS-DAC-100m
# DS-DAC-10

KORG

## Owner's Manual
### Advanced Guide

Ⓔ ②

## Before you connect this device

**You must select driver settings in order to use the DS-DAC-100, DS-DAC-100m, or DS-DAC-10.**

To ensure that you can select these settings smoothly, do not connect the DS-DAC-100/100m/10 to your computer before you have installed the driver.

Carefully read the section entitled "Installing the driver," and download and install the driver before you connect the DS-DAC-100/100m/10 to your computer.

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# Introduction

## Features

The **DS-DAC-100**, **DS-DAC-100m**, and **DS-DAC-10** are USB DAC units that support 1-bit DSD native playback* on Windows (ASIO) or Mac (Core Audio).
By using it in conjunction with the "AudioGate" audio format conversion application, you can enjoy native playback of high-quality 1-bit DSD sound.

* For both Windows (ASIO) and Mac, 1-bit DSD native playback is supported only when using the Korg USB Audio Device Driver.

**Supported input sample rates**
PCM 44.1 kHz–192 kHz, 1-bit DSD 2.8224 MHz, 5.6448 MHz

**Supported device drivers**
DirectSound, ASIO, WASAPI, CoreAudio

## Operating requirements

**Windows**

Operating system:
Microsoft Windows 7 (32 bit, 64 bit), Microsoft Windows 8 (32 bit, 64 bit)

CPU: Intel Pentium III 1 GHz or better (Core 2 Duo 2.66 GHz or better is recommended if using AudioGate for DSD output)

RAM: 256 MB or more (512 MB or more is recommended)

**Mac OS**

Operating system: Mac OS X version 10.6 or later

CPU: Intel Mac

RAM: 1 GB or more

# Installing the driver

**Use the KORG AudioGate and DS-DAC Setup program to install the driver and AudioGate.**

## Downloading the driver

The DS-DAC-10 driver software is common to the DS-DAC-100, DS-DAC-100m, and the DS-DAC-10.

1. Access the following AudioGate 3 download page.
   http://www.korg.com/products/audio/audiogate3/page_6.php/
2. Choose the KORG AudioGate and DS-DAC driver Setup, and press either the Windows or Mac version of download button to download the setup program.
3. If you're using Windows, decompress the downloaded .zip file. If you're using Mac OS, open the .dmg file. In the "KORG AudioGate and DS-DAC Setup" folder, run Setup. The KORG AudioGate and DS-DAC Setup panel appears.
4. Click "Install DS-DAC Driver" to install the driver (refer to "Driver installation procedure" on page 4).
5. If you want to install AudioGate, click "Install AudioGate" in the KORG AudioGate and DS-DAC Setup panel.
   Carefully read the "About activating AudioGate" message that is displayed during installation, and complete the installation.
6. Click "Finish" to exit the setup program.

## Driver installation procedure

Do not connect the DS-DAC-100/100m/10 to your computer before you've finished installing the driver. If you've already connected it, disconnect it; then reconnect it after you've finished installing the driver.

### Windows 7/8 users

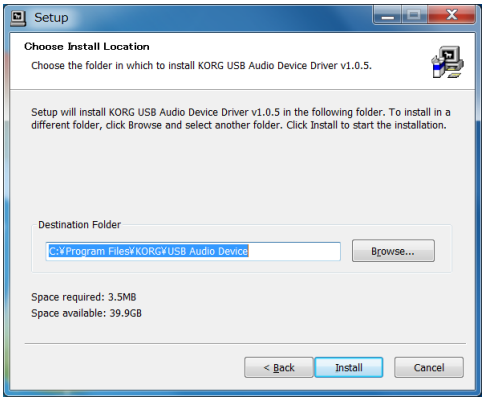
The installation screens shown on your computer may differ somewhat depending on your Windows version and system, but the procedure is the same. The explanation that follows will show typical screens in Windows 7.

If, during installation, a message appeared to confirm whether or not to continue the installation, click [Install].

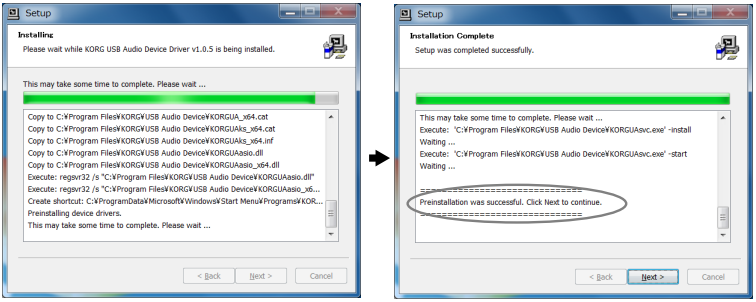
***1*** In the KORG AudioGate and DS-DAC Setup panel that you downloaded, click "Install DS-DAC Driver" to start the installer. In the language selection menu, choose English; click [OK].

***2*** The following dialog box will appear; click [Next >].

***3*** Note the location of the installation and the required space needed, and then click [Install]. Installation will begin.

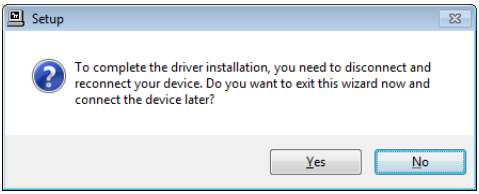



***4*** When installation has completed and the screen indicates “Preinstallation was successful. Click Next to continue,” click [Next >].




***5*** Preparations for installation are now complete. Click [Finish] to exit the installer.

*6* The following message will appear; click [Yes].

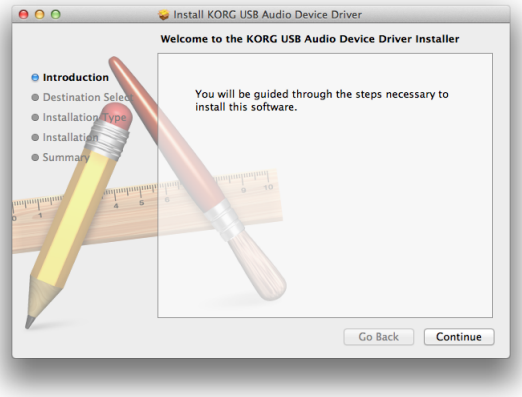



*7* Connect the DS-DAC-100/100m/10 to your computer.

**Wait until Windows displays the message "The device driver software was installed correctly" twice.**

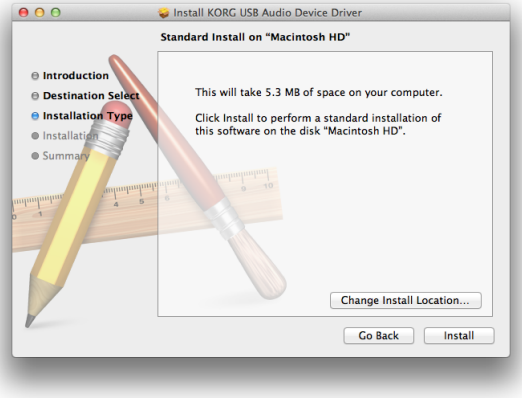
## Mac OS users

1. In the KORG AudioGate and DS-DAC Setup panel that you downloaded, click “Install DS-DAC Driver” to start the installer. The following dialog box will appear; click [Continue].




2. Depending on the version of the operating system, a screen allowing you to select the “Installation Destination” may appear at this point; if so, leave the default installation destination unchanged, and simply click [Continue].

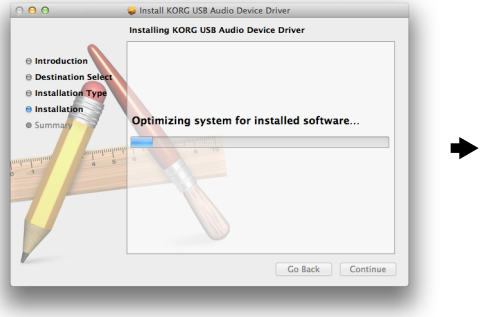
3. When the following dialog box appears, click [Install].

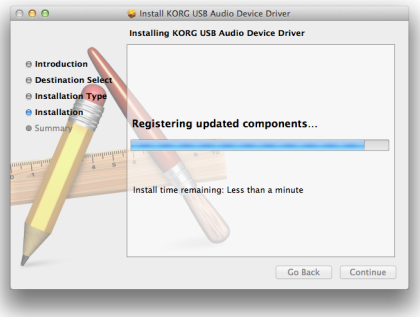



4. A dialog box saying “To allow ‘Installer’ to make changes, enter your password.” will appear. Enter the password and click [OK].

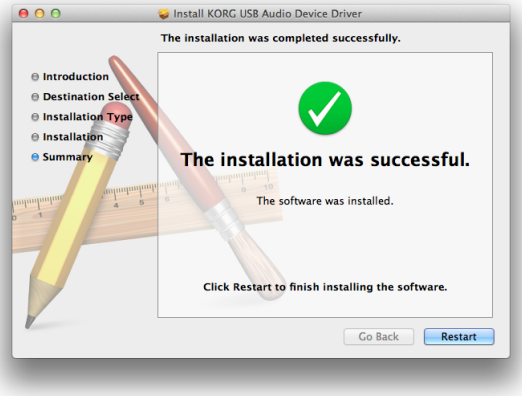
5 A dialog box will indicate “After this software has been installed, it will be necessary to restart your computer. OK to install now?” Click [Continue Installation].

6 Installation will begin, and a progress bar will appear.




7 When the screen indicates “Installation has completed successfully,” click [Restart] to close the installer.



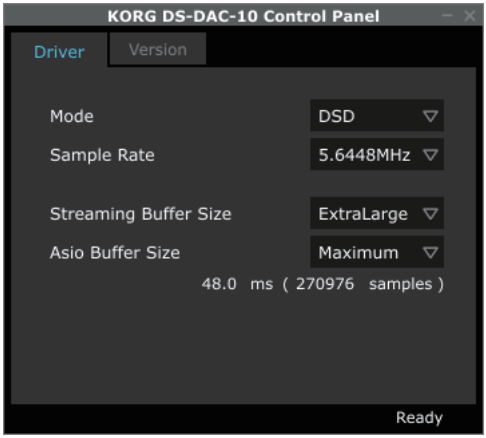

8 Your computer will restart. After it has restarted, connect the DS-DAC-100/100m/10 to your computer.

# Control panel settings

The Mac version of the control panel does not allow you to directly change the Mode or the Sample Rate. You can make these changes via AudioGate or from the audio settings of your Mac.

The Control panel is common to the DS-DAC-100, DS-DAC-100m, and the DS-DAC-10.

Click the following: Windows start menu → All Programs → Korg → USB Audio Device → USB Audio Device Control Panel. The control panel shown below will appear.




**In the Driver tab, set the Mode, Sample Rate, Streaming Buffer Size, and ASIO Buffer Size.**

note If you frequently experience clicks or noise during playback, you may be able to improve the situation by lowering the output sample rate or increasing the buffer size. Increasing the buffer size will increase the latency*, and decreasing the buffer size will decrease the latency.

* The delay that is involved in processing the data.

**Mode**

This switches between PCM and DSD modes.

Use DSD mode with software such as AudioGate that supports DSD output in ASIO. For details on DSD playback, see the manual of the software that you're using.

**Sample Rate**

This specifies the sample rate.

**When Mode is DSD:** Choose 2.8224 MHz or 5.6448 MHz.

**When Mode is PCM:** Choose 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, or 192 kHz.

**Streaming Buffer Size**

This selects the size of the streaming buffer.

Choose Minimum, Extra Small, Small, Large, Extra Large, or Safe. Minimum is the smallest size, and Safe is the largest. Normally you should leave this set to the maximum (Safe).

**ASIO Buffer Size**

This selects the size of the ASIO buffer.

Choose Minimum, Small, Large, or Maximum. Minimum is the smallest size, and Maximum is the largest. Normally you should leave this set to Maximum.

**In the Version tab, you can check the driver version and update the firmware**

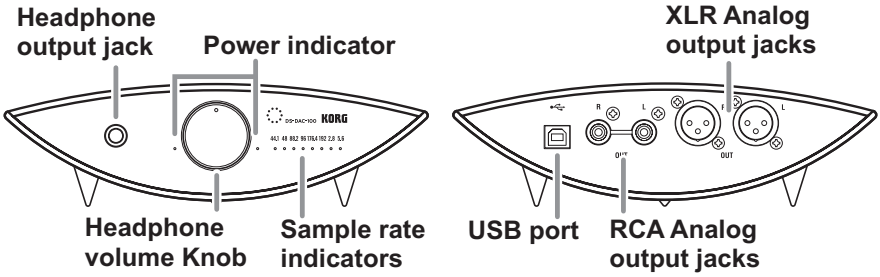
Firmware updating is done using a dedicated application. The most recent system file for firmware updating can be downloaded to your computer from http://www.korg.com/products/audio/audiogate3/.

For the update procedure, refer to the release notes which are bundled together with the firmware.

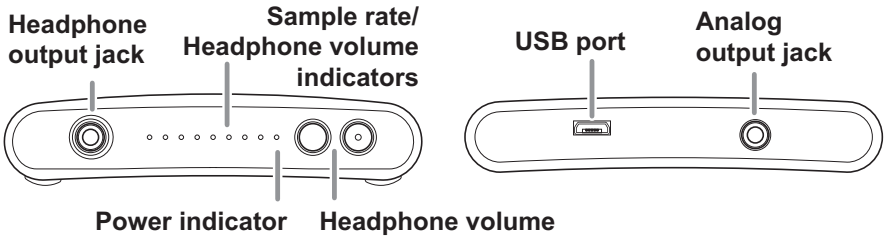
# Operation

## Front and rear panels

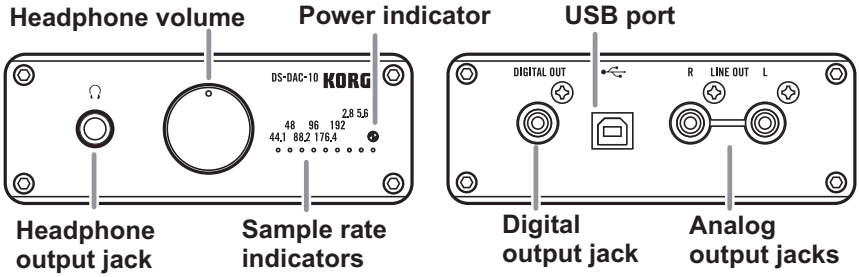
### DS-DAC-100




### DS-DAC-100m




### DS-DAC-10



## Preparations

When the driver installation process has been completed, connect the DS-DAC-100/100m/10 to your computer and prepare to listen to audio files on your computer.

Use the included USB cable to connect the unit to your computer and to verify that it's working.

**The DS-DAC-100/100m/10 operates on bus power supplied via the USB port; it does not need an AC adaptor or any other external power supply.**

Whenever possible, connect this unit directly to a USB port on your computer. If you cannot avoid using a USB hub, you should use a USB hub that has its own power supply. A bus-powered USB hub may be unable to supply enough electrical power.

***1*** If you want to listen through headphones, connect your headphones to the headphone output jack.

***2*** If you want to connect an amp and speakers for listening, connect the analog output jacks of the DS-DAC-100/100m/10 to your system using the appropriate cables.

- DS-DAC-100: RCA or XLR
- DS-DAC-100m: 3.5 mm stereo-mini
- DS-DAC-10: RCA

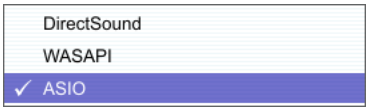
The DS-DAC-10 does have a digital output jack, but the output from that jack is only available for PCM playback; there will be no output from this jack during DSD playback.

***3*** Check the USB connection. If there is a valid connection between your computer and the DS-DAC-100 (or the DS-DAC-100m or DS-DAC-10), the power indicator and one of the sample rate indicators will light up.

## Playback using AudioGate (Windows)

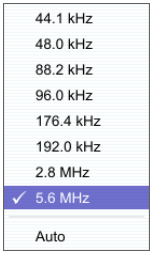
### DSD native playback via ASIO

1. Use the AudioGate and DS-DAC Setup program to install AudioGate (refer to "Installing the driver" on page 3).
2. Connect the DS-DAC-100/100m/10 to your computer, and then start AudioGate.
   If you start AudioGate without the DS-DAC-100/100m/10 connected, license verification will be completed when you connect the DS-DAC-100/100m/10.
3. From the menu, choose [Edit]-[Preferences...], and click the [Audio Devices] tab.
4. In [Driver Type], choose "ASIO."




5. In [Driver Name], choose "Korg USB Audio Device Driver."

6. Set [Sample Rate] to "Auto" or to "5.6 MHz" or "2.8 MHz."

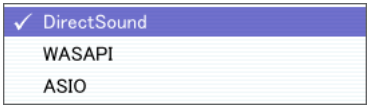



7. Add DSDIFF, DSF, or WSD files to the song list by dragging them in.
8. Click the play button in AudioGate to play the audio.
9. If you're listening through headphones, you can adjust the volume by turning the headphone volume knob (or by pressing the buttons) of the DS-DAC-100 (or the DS-DAC-100m or DS-DAC-10).

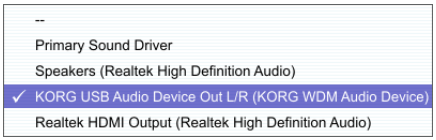
If you added WAV or FLAC files to the song list in step 7, they will be converted for playback to the sample rate that you selected in step 6.

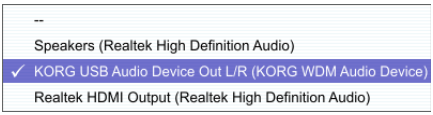
## Playback via DirectSound or WASAPI

1. Use the AudioGate and DS-DAC Setup program to install AudioGate (refer to "Installing the driver" on page 3).
2. Connect the DS-DAC-100/100m/10 to your computer, and then start AudioGate.
   If you start AudioGate without the DS-DAC-100/100m/10 connected, license verification will be completed when you connect the DS-DAC-100/100m/10.
3. From the menu, choose [Edit]-[Preferences...], and click the [Audio Devices] tab.
4. In [Driver Type], choose "DirectSound" or "WASAPI."

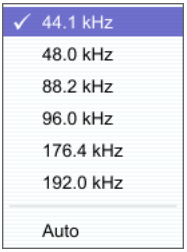


5. In [Driver Name], choose "KORG USB Audio Device Output L/R (KORG WDM Audio Device)."




6. Choose the [Sample Rate].



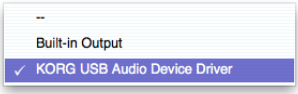
7. Click the play button in AudioGate to play the audio.
8. If you're listening through headphones, you can adjust the volume by turning the headphone volume knob (or by pressing the buttons) of the DS-DAC-100 (or the DS-DAC-100m or DS-DAC-10).

## Playback using AudioGate (Mac OS)

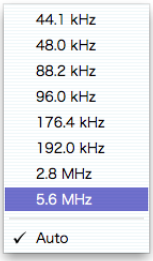
### DSD native playback via Core Audio

1. Use the AudioGate and DS-DAC Setup program to install AudioGate (refer to “Installing the driver” on page 3).
2. Connect the DS-DAC-100/100m/10 to your computer, and then start AudioGate.
   If you start AudioGate without the DS-DAC-100/100m/10 connected, license verification will be completed when you connect the DS-DAC-100/100m/10.
3. From the menu, choose Mac, [AudioGate]-[Preferences...], and click the [Audio Devices] tab.
4. In [Driver Type], make sure that “Core Audio” is selected.

5. In [Driver Name], choose “Korg USB Audio Device Driver.”




6. Set [Sample Rate] to “Auto” or to “5.6 MHz” or “2.8 MHz.”




7. Add DSDIFF, DSF, or WSD files to the song list by dragging them in.
8. Click the play button in AudioGate to play the audio.
9. If you’re listening through headphones, you can adjust the volume by turning the headphone volume knob (or by pressing the buttons) of the DS-DAC-100 (or the DS-DAC-100m or DS-DAC-10).

If you added WAV or FLAC files to the song list in step 7, they will be converted for playback to the sample rate that you selected in step 6.

# Troubleshooting

**The latest information is provided on the Web.**
**Please refer to** http://www.korg.com/products/audio/audiogate3/**.**

## The power won't turn on, the device is not recognized by computer, or the operation is unstable

- Which USB cable are you using?
  Use the included USB cable.
  Some commercially available USB cables only support Full Speed. If you provide your own cable, be sure that it supports USB 2.0 High Speed.
- Are you using a USB hub?
  If the DS-DAC-100/100m/10 is connected via a bus-powered USB hub, there might be insufficient power for the DS-DAC-100/100m/10 to power-on, or operation might be unstable.
  In this case, connect the DS-DAC-100/100m/10 directly to a USB port on the computer itself without going through a USB hub, or use a self-powered hub that supports USB 2.0 High Speed.
- Could the USB cable be broken?
- Is your computer's USB port working correctly?

## No sound is coming from the DS-DAC-100/100m/10

- Check whether the DS-DAC-100/100m/10 is correctly recognized in the Korg DS-DAC-10 Control Panel.

  **Windows users**
  Open the Windows Start menu → All Programs → Korg → USB Audio Device → USB Audio Device Control Panel.
  If the Driver and Firmware versions are displayed as -.-.- in the Version tab, the DS-DAC-100/100m/10 has not been correctly recognized. Disconnect the USB cable, then reconnect it and check this indication again.

  **Mac OS X users**
  In the Applications → Korg → USB Audio Device folder, open KorgDSDAC10ControlPanel.app.
  If the Driver and Firmware versions are displayed as -.-.- in the Version tab, the DS-DAC-100/100m/10 has not been correctly recognized. Disconnect the USB cable, then reconnect it and check this indication again.
- In some cases, the sample rate indicators of the DS-DAC-100 (or the DS-DAC-100m or DS-DAC-10) will indicate an error.
  → Refer to the section "Multiple sample rate indicators are lit."

### Multiple sample rate indicators are lit

- Three indicators are lit (48 kHz, 96 kHz, 192 kHz)
  The unit is requesting a firmware update. From the download page, download the "DS-DAC-10 firmware," and perform the update as described in the PDF within the folder.
- Other
  A system error has occurred. Disconnect the USB cable, and then reconnect it to turn the power on again. If doing this several times does not solve the problem, contact your local Korg distributor.

### Can't select DSD mode

- Is the installed version of AudioGate 2.3 or later for Windows, or 2.3.2 or later for Mac?
  AudioGate v2.2 and earlier do not support 1-bit DSD direct output.
  Update AudioGate to v2.3 (Mac: 2.3.2) or later.
- In some cases, the sample rate indicators of the DS-DAC-100 (or the DS-DAC-100m or DS-DAC-10) will indicate an error.
  → Refer to the section "Multiple sample rate indicators are lit."

### Switching the sample rate takes time, or is not possible

Such problems may occur depending on your Windows system.
Try the following.

- Click Start menu → All Programs → Korg → USB Audio Device → USB Audio Device Control Panel to open the Korg DS-DAC-10 Control Panel. In the Driver tab, try decreasing the Streaming Buffer size or ASIO Buffer Size one step at a time until performance improves.
- As the Windows "default device," specify something other than "Korg USB Audio Device Driver."

### Sound is interrupted/Noise is heard

- During realtime conversion playback using AudioGate
  In order to perform all realtime conversion processing at "high quality," the system performance must be equivalent to a Core 2 Duo 2.66 GHz or better. The CPU processing load will be particularly high for conversion playback to 5.6 MHz. In such cases, you can export the data beforehand to create a DSD file for playback, or use the "low load" setting.
- When using a laptop computer
  Even if the CPU performance is high, noise may occur if power-saving settings are enabled. Change the power plan in "Power Options" of the "Control Panel," and also turn off any other power saving plan that is specific to your computer.

- When using ASIO playback on Windows
  Click Start menu → All Programs → Korg → USB Audio Device → USB Audio Device Control Panel to open the Korg DS-DAC-10 Control Panel. In the Driver tab, adjust the Streaming Buffer size and ASIO Buffer Size to make them larger.
- When using the DS-DAC-100/100m/10 as the system default sound device in Windows
  Click Start menu → All Programs → Korg → USB Audio Device → USB Audio Device Control Panel to open the Korg DS-DAC-10 Control Panel. In the Driver tab, set the Mode to PCM.
- The sample rate of the audio device is set to Auto.
  You may hear a slight click if the sample rate of the audio device is set to Auto, or when you change the sample rate manually, but this is not a malfunction.
- The DS-DAC-100/100m/10 is connected to a USB 3.0 port.
  We recommend that you connect the DS-DAC-100/100m/10 to a USB 2.0 port.
- Could you be using or running a large number of software programs simultaneously?
- Hiss is heard from the headphone output.
  Are you using headphones whose output impedance is 16 ohms or greater?
  You might hear a faint hiss when using some high-efficiency low-impedance earphones.

# Specifications

## DS-DAC-100

| | | |
|---|---|---|
| Audio interface | Number of channels | 2 channels |
| | Input formats (USB) | DSD: 2.8224 MHz/5.6448 MHz, 1 bit<br>PCM: 44.1 kHz/48 kHz/88.2 kHz/96 kHz/176.4 kHz/192 kHz, 16 bit/24 bit |
| | Host interface | USB2.0 (High Speed) |
| | Audio drivers | ASIO2.1, WDM, Core Audio |
| General | Indicators | Power indicator x 2 (LED), sample rate indicators x 8 (LED) |
| | Power supply/ Power consumption | USB bus power (5 V 500 mA)/2.5 W |
| | Dimensions (W x D x H) | 207 x 160 x 60 mm/8.15 x 6.30 x 2.36 inches<br>(including protrusions) |
| | Weight | 862 g/1.90 lbs. |
| Main spec. | Frequency response | 10 Hz–20 kHz ±1 dB (fs=44.1 kHz/48 kHz)<br>10 Hz–40 kHz ±1 dB |
| | S/N | 105 dB (TYP.) 20 Hz–20 kHz, IHF-A |
| | THD+N | 0.005% (TYP.) 20 Hz–20 kHz |
| Connectors | LINE OUT L/R | |
| | Form | RCA (Unbalanced)/XLR-3-32 type (Balanced) |
| | Load impedance | 10 k ohms or greater |
| | Rated/Maximum level | -6 dBV/+6 dBV |
| | PHONES | |
| | Form | 6.3 mm stereo phone jack |
| | Load impedance | 16 ohms or greater |
| | Maximum output | 85 mW + 85 mW @32 Ω |
| | USB (device) | |
| | Form/Format | Type B/USB 2.0 compliant High Speed |
| | Supported OS | Windows 7 or later, Mac OS X 10.6 or later |
| Included items | | USB cable, spike mount x 3 |

• Specifications and appearance are subject to change without notice for improvement.

## DS-DAC-100m

| | | |
|---|---|---|
| Audio interface | Number of channels | 2 channels |
| | Input formats (USB) | DSD: 2.8224 MHz/5.6448 MHz, 1 bit<br>PCM: 44.1 kHz/48 kHz/88.2 kHz/96 kHz/176.4 kHz/192 kHz, 16 bit/24 bit |
| | Host interface | USB2.0 (High Speed) |
| | Audio drivers | ASIO2.1, WDM, Core Audio |
| General | Indicators | Power indicator (LED),<br>sample rate/headphone volume indicators x 8 (LED) |
| | Power supply/ Power consumption | USB bus power (5 V 500 mA)/2.5 W |
| | Dimensions (W x D x H) | 92 x 129 x 20 mm/3.62 x 5.08 x 0.79 inches<br>(including protrusions) |
| | Weight | 175 g/6.17 oz. |
| Main spec. | Frequency response | 10 Hz–20 kHz ±1 dB (fs=44.1 kHz/48 kHz)<br>10 Hz–40 kHz ±1 dB |
| | S/N | 105 dB (TYP.) 20 Hz–20 kHz, IHF-A |
| | THD+N | 0.005% (TYP.) 20 Hz–20 kHz |
| Connectors | LINE OUT L/R | |
| | Form | 3.5 mm stereo mini phone jack |
| | Load impedance | 10 k-ohms or greater |
| | Rated/maximum level | -6 dBV/+6 dBV |
| | PHONES | |
| | Form | 3.5 mm stereo mini phone jack |
| | Load impedance | 16 ohms or greater |
| | Maximum output | 85 mW + 85 mW @32 Ω |
| | USB (device) | |
| | Form/Format | Type mini B/USB 2.0 compliant High Speed |
| | Supported OS | Windows 7 or later, Mac OS X 10.6 or later |
| Included items | | USB cable |

• Specifications and appearance are subject to change without notice for improvement

## DS-DAC-10

| | | |
|---|---|---|
| Audio interface | Number of channels | 2 channels |
| | Input formats (USB) | DSD: 2.8224 MHz/5.6448 MHz, 1 bit<br>PCM: 44.1 kHz/48 kHz/88.2 kHz/96 kHz/176.4 kHz/192 kHz, 16 bit/24 bit |
| | Output formats (S/P DIF) | PCM: 44.1 kHz/48 kHz/88.2 kHz/96 kHz/176.4 kHz/192 kHz, 16 bit/24 bit |
| | Host interface | USB2.0 (High Speed) |
| | Audio drivers | ASIO2.1, WDM, Core Audio |
| General | Indicators | Power indicator (LED), sample rate indicators x 8 (LED) |
| | Power supply/ Power consumption | USB bus power (5 V 500 mA)/2.5 W |
| | Dimensions (W x D x H) | 120 x 150 x 48 mm/4.72 x 5.91 x 1.89 inches<br>(including protrusions) |
| | Weight | 530 g/1.17 lbs. |
| Main spec. | Frequency response | 10 Hz–20 kHz ±1 dB (fs=44.1 kHz/48 kHz)<br>10 Hz–40 kHz ±1 dB |
| | S/N | 105 dB (TYP.) 20 Hz–20 kHz, IHF-A |
| | THD+N | 0.005% (TYP.) 20 Hz–20 kHz |
| Connectors | LINE OUT L/R | |
| | Form | RCA phone jacks |
| | Load impedance | 10 k-ohms or greater |
| | Rated/maximum level | -6 dBV/+6 dBV |
| | PHONES | |
| | Form | 6.3 mm stereo phone jack |
| | Load impedance | 16 ohms or greater |
| | Maximum output | 85 mW + 85 mW @32 Ω |
| | DIGITAL OUT (coaxial) | |
| | Form/Format | RCA phone jack/IEC60958 *Valid only for PCM |
| | USB (device) | |
| | Form/Format | Type B/USB 2.0 compliant High Speed |
| | Supported OS | Windows 7 or later, Mac OS X 10.6 or later |
| Included items | | USB cable |

• Specifications and appearance are subject to change without notice for improvement.