

## USER GUIDE v1.3

# Berkeley Audio Design® Alpha USB®

The Alpha USB is a noise isolating digital audio interface with an asynchronous USB 2.0 High Speed audio standard input and selectable coaxial SPDIF or balanced AES/EBU digital audio output. The USB input is galvanically (DC), capacitively and inductively isolated from the low phase noise re-clocked digital audio output which greatly reduces noise and significantly improves audio quality.

Please take a few minutes to familiarize yourself with this User Guide before connecting power to the Alpha USB. Doing so will help ensure the best possible performance.

## INSTALLATION

The Alpha USB should be installed in a space with several inches of clearance above, behind and on both sides of the chassis to provide adequate ventilation. Avoid placement directly above other equipment that produces significant heat. The Alpha USB should also not be placed on top of the D to A converter. It should be positioned at least a foot or so away to physically isolate any noise radiated by the USB input cable.

### Power Connection

The Alpha USB is designed to run continuously when connected to AC mains power. It has no power switch and as soon as AC power is connected the unit is powered on. Units for sale in the United States are set internally for 120VAC operation. An Alpha USB dealer can select 240VAC operation for use outside of the United States by setting an internal switch and adding a 240V label to the rear panel. 100VAC operation requires a specific power transformer. The AC power fuse used for all mains voltages is a 5X20mm Cartridge, .05A Time Lag (Slow-Blow) Littelfuse 0218.050MXP or 0218.050HXP.

Powering the Alpha USB from the same power source as the D to A converter and other analog components is recommended. Its low noise linear power supply has several layers of isolation between the power cord and the digital circuitry, and it performs best when treated as an analog component. The computer or music server should be powered from a separate circuit whenever possible to minimize radiation and conduction of power line noise.

## Signal Connections



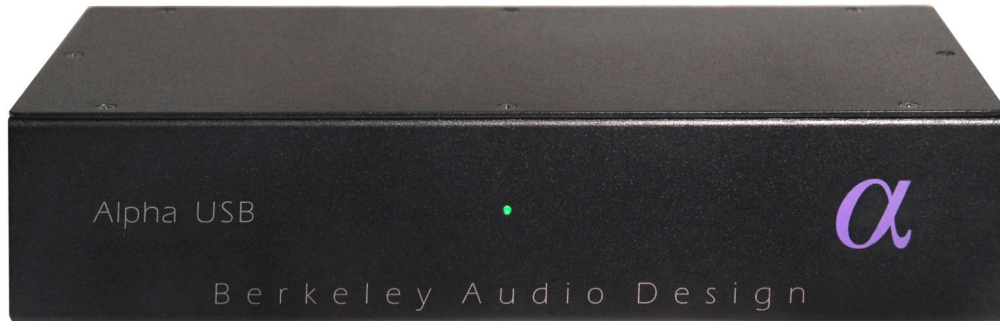
Alpha USB Rear Panel

The Alpha USB has a USB 2.0 High Speed audio input data connection and switch selectable output signal type – either coaxial SPDIF using a BNC connector or balanced AES using an XLR connector. Sampling rates up to 192 kHz and word lengths up to 24 bit are supported.

## Lead Dress

It is good practice to keep various types of signal and power cables physically separated from each other. This is especially important for the USB cable to the computer. It should be routed away from the chassis of the Alpha USB and any other component or cable that is part of the audio system. 1.5 meters is an optimum default length for USB, SPDIF and AES digital cables.

## OPERATION



**Alpha USB Front Panel**

### Controls & Indicators

- Output Select: switch selects coaxial SPDIF or balanced AES type output
- Status LED: Green indicates USB Lock, Amber indicates Standby

The Alpha USB has one control and one bi-color indicator LED. The digital audio output is available as either a 75 ohm SPDIF signal on a BNC connector or as a 110 ohm balanced AES type signal on an XLR connector. A switch on the rear panel selects which output is active. Only one output is active at a time in order to minimize jitter. Whenever possible, use of the balanced AES signal output is recommended because of its greater voltage.

The indicator LED on the front panel is amber when AC line power is on but the USB connection is not active. As soon as the USB connection to the computer is established and the computer and the Alpha USB are talking to each other, the LED turns green.

In normal use, AC power to the Alpha USB should be applied first. Then the computer should be powered up or the USB cable connected. Nothing catastrophic happens if the computer side is powered up first, but since the Alpha USB audio master oscillators are not powered, the USB driver in the computer may become confused. If this happens, unplug the USB cable and then plug it back in.

The Alpha USB has no AC power switch and is designed to be left powered on. It draws only 3 watts of power and when the USB input is not active, the unit goes into a standby mode.

## Computer Configuration

The Alpha USB is designed to work with Apple Macintosh, Windows PC computers and Linux based music servers. For Linux based music servers, the operating system must be ALSA 1.0.23 or above. It must also have the ability to select the output device.

## Apple Macintosh Computers

The Alpha USB interface conforms to the USB 2.0 High Speed audio interface standard that supports sample rates up to 192 kHz/24-bit. This means that for Apple Macintosh computers using the Snow Leopard or later operating system, the USB Audio Driver from Apple interfaces correctly with the Alpha USB. It is not necessary to install our driver. This is also true for newer versions of Linux, and newer versions of Windows 10. For optimum audio quality with a Mac, use of high resolution music server software such as Audirvana, Amarra, Pure Music or JRiver Media Center set up for bit-perfect operation is highly recommended.

The Pure Music application uses iTunes to manage files and as a user interface, but the audio data is played through its own engine, bypassing core audio in the Mac for bit-perfect output. It also has the ability to switch sample rates on the fly in full coordination with the Alpha USB and Alpha DAC, while maintaining bit accurate transparency.

NOTE: not all USB connections on a computer are equal. USB does not have a guaranteed latency mode, so for a real time task like audio stream delivery, it is important to connect the Alpha USB interface to a lightly loaded hub. All USB devices and where they are connected can be seen under “About This Mac” under the Apple Menu. Click on it, and then on “More Info”, which launches the system profiler. Click on “USB” under Hardware to see the full list.

## Windows PC Computers

NOTE: PC’s using Microsoft Windows 10 release 1703 and above do not require installation of the Alpha USB Windows driver and the driver provided with Windows should be used. Only Microsoft Windows PC’s using Windows XP, Vista, 7, 8, 8.1 and earlier versions of 10 require the Alpha USB Windows driver. Windows 7, 8 and 10 function well as an audio server and are preferred over XP. Vista is not recommended.

To obtain the Windows driver, go to <http://www.berkeleyaudiodesign.com/downloads>. Under **Alpha USB Windows Driver and Instructions**, click on **Download** →. The **Alpha\_USB\_Windows\_Driver\_and\_V1.1.3\_Instructions.zip** folder will download.

Unzip the **Alpha USB Driver Installation Instructions V1.1.3.pdf** file and the **Alpha\_USB\_Windows\_Driver\_v126b** folder from the .zip folder.

Open the **Alpha\_USB\_Windows\_Driver\_v126b** folder, and run **setup.exe**.

**NOTE: For Windows 8, 8.1 and older versions of 10, the 1v26b version of the Alpha USB Windows driver will install and operate but Windows 7 compatibility mode must be used for the installation.**

Using Windows 7 compatibility installation mode:

Right click on the driver’s **setup.exe** icon, select **Properties** from the contextual menu then click on the **Compatibility** tab. In the Compatibility section, select the **Run this program in compatibility mode for:** check box and select **Windows 7** from the drop-down list. Click on the **OK** button and then run **setup.exe**.

Follow the onscreen instructions, which include connecting the Alpha USB to a USB port, and, usually, exiting any Microsoft Wizard that tries to do things automatically. During the installation two dialog boxes may appear warning that Microsoft has not blessed the software. Click on the **Install Anyway** button in both cases.

Windows compatible music players such as JRiver Media Center, Media Monkey and Foobar should be used to provide bit-perfect output. Windows Media Player is not recommended.

For Windows 7, 8 and 10 the preferred connection is WASAPI. It provides low-overhead, bit-perfect data output with automatic sample rate switching, and works very well.

For Windows XP, ASIO must be used to connect the music player to the USB output to get bit perfect data. The Alpha USB ASIO driver identifies itself as "TUSBaudio ASIO driver" in the music player's output select setup dialog. JRiver Media Center, Media Monkey and Foobar all support ASIO for Windows XP. A "Kernel Streaming" output may also appear. Do not select it.

## SPECIFICATIONS

- Input: High Speed USB 2.0/USB 3.0 connection - type B receptacle
- Output: switch selected, coaxial SPDIF - BNC, 75Ω or balanced AES/EBU - XLR, 110Ω
- Supported sampling rates: 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz
- Supported word lengths: up to 24 bit
- Supported operating systems: Apple Macintosh, Microsoft Windows and Linux
- Enclosure dimensions: 2.3"H X 10.5"W x 5"D, 2.55"H including feet
- Mains power: 100 or 120 or 240 VAC, 50/60 Hz, IEC power input connector
- Power consumption: 3 Watts line, 1.5 Watts USB, designed for continuous operation

For further information on the Alpha USB, please contact Berkeley Audio Design, LLC at: [info@berkeleyaudiodesign.com](mailto:info@berkeleyaudiodesign.com) or call 1-510-277-0512

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