

SOUND DEVICES



USBPre 2

Portable High-Resolution Audio Interface

User Guide

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FCC Notice

This device complies with part 15, class B of the FCC Rules.

Manual Conventions

Symbol	Description
>	This symbol is used to show the order in which you select menu commands and sub-options, such as: Main Menu > Audio indicates you press the Menu button for the Main Menu, then scroll to and select Audio by pushing the Control Knob.
+	A plus sign is used to show button or keystroke combinations. For instance, Ctrl+V means to hold the Control key down and press the V key simultaneously. This also applies to other controls, such as switches and encoders. For instance, MIC+HP turn means to slide and hold the MIC/TONE switch left while turning the Headphone (HP) encoder. METERS+SELECT means to hold the METERS button down as you press the SELECT encoder.
ⓘ	A note provides information and important related recommendations. The text for notes also appears italicized in a different color.
⚠	A cautionary warning about a specific action that could cause harm to you, the device, or cause you to lose data. Follow the guidelines in this document or on the unit itself when handling electrical equipment. The text for cautionary notes also appears in a different color, bold and italicized.

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Revision History

This table provides the revision history of this guide.

Rev#	Date	Firmware Version	Description
1-A	August 2016	v1.03	<p>Initial reformatted & updated, online only publication; replaces original, old print user guides.</p> <ul style="list-style-type: none">• Updated installation procedure for new v1.20 ASIO driver.• Updated uninstall procedure for ASIO drivers. <p>Quick Start Guide section pulled & published in separate printed QSG document.</p> <ul style="list-style-type: none">• Updated Warranty information in QSG.• Updated Declaration of Conformity in QSG.



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USBPre 2 Audio Interface

The USBPre 2 is a high-resolution, portable, hardware interface for Mac- and Windows-based digital audio.

It connects professional microphones, line-level sources, consumer audio electronics, and S/PDIF digital sources, with Mac OS and Windows-based computers via USB.

With Sound Devices' renowned pre-amplifiers, the USBPre 2 provides the highest performance in any portable interface.

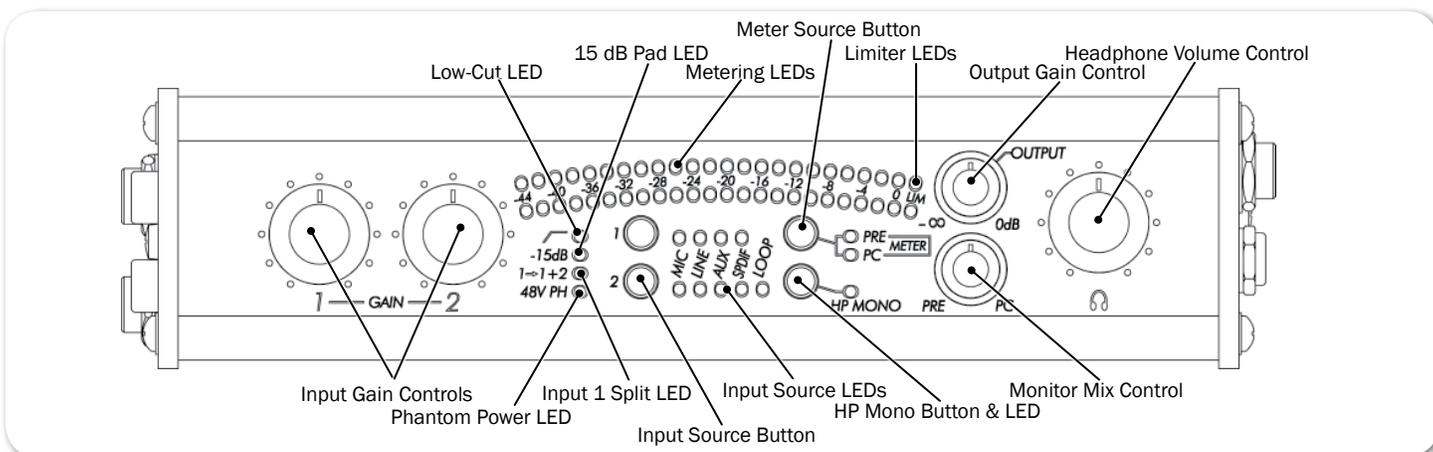
① *Instructions for quick setup is provided in the [USBPre 2 Quick Start Guide](#), shipped with the product and offered as a free PDF download from the [Sound Devices website](#).*

Topics in this section include:

- ▶ **Front Panel**
- ▶ **Back Panel**
- ▶ **Left Panel**
- ▶ **Right Panel**
- ▶ **Computer Setup**
 - ▶ System Requirements
 - ▶ Setting up Mac OS X
 - ▶ Setting up Windows OS
 - ▶ Installing the ASIO Driver
 - ▶ Uninstalling the ASIO Driver
 - ▶ Updating USBPre 2 Firmware
- ▶ **DIP Switch Options**
- ▶ **Inputs**
- ▶ **Outputs**
- ▶ **Meters**
- ▶ **Stand-alone Mode**
- ▶ **Sample Rate**

Front Panel

The front panel of the USBPre 2 has the following features:

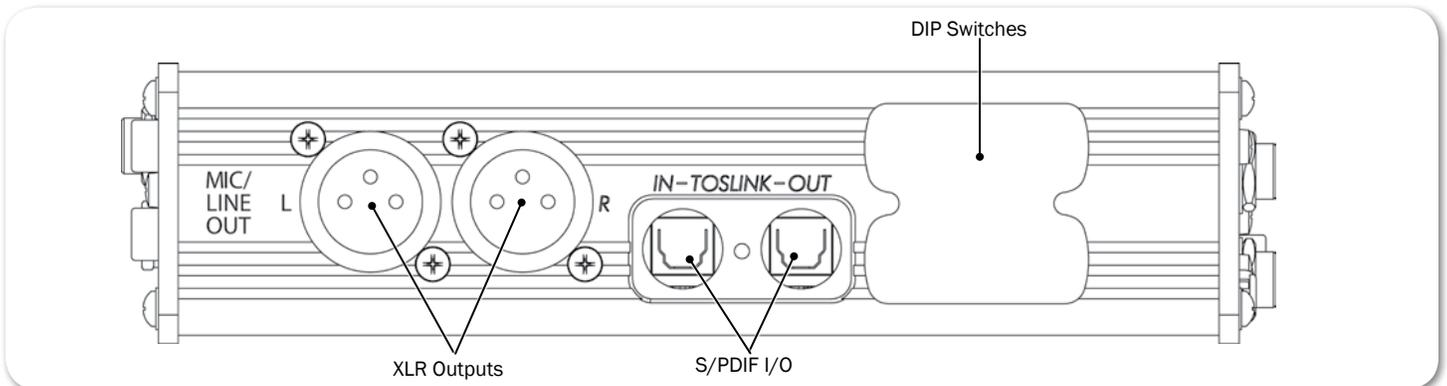


FEATURE	DESCRIPTION
Input Gain Controls	Adjusts input gain. Gain is minimized (not turned off) at full counter-clockwise setting. Gain control only affects analog input sources.
Phantom Power LED	Illuminates when 48 V phantom power is engaged on either mic input.
Input 1 Split LED	Illuminates when Input 1 Split is active.
Input Source Button & Input Source LEDs	Use the buttons to select between the available input types. The LEDs to the right will illuminate to indicate which source is currently active for each input.

FEATURE	DESCRIPTION
HP Mono Button & LED	Toggles between mono and stereo monitoring of analog input audio in headphones. This is especially useful when multi-track recording and recording from one input. LED illuminates when mono is active. This function can be configured to affect PC audio as well.
Monitor Mix Control	Selects the signal source to be monitored in the headphones between analog source audio (PRE) and computer audio (PC). Listening to PRE audio allows zero latency monitoring of analog input sources. The center position mixes monitoring of both source and computer audio. The signal at the AUX Output and balanced XLR Output is unaffected by this control. <i>① S/PDIF digital inputs cannot be monitored in the headphones. S/PDIF signal can only be monitored after being processed by the computer.</i>
Low-Cut LED	Illuminates when low-cut filter is engaged on either mic input.
15 dB Pad LED	Illuminates when 15 dB pad is engaged on either mic input.
Metering LEDs	23-segment LED meter. Calibrated in dBFS, with peak + VU ballistics.
Meter Source Button and LEDs	Switches meter source between input or output signal. PRE or PC Meter LEDs illuminate to indicate current selection.
Limiter LEDs	Illuminates amber when limiting is occurring.
Output Gain Control	Adjusts gain of AUX output and balanced XLR output. <i>① May be configured—via a DIP switch setting—to adjust headphone gain instead of output.</i>
Headphone Volume Control	Adjusts headphone gain. <i>① May be configured—via a DIP switch setting—to adjust XLR and AUX output levels instead of headphone gain.</i>

Back Panel

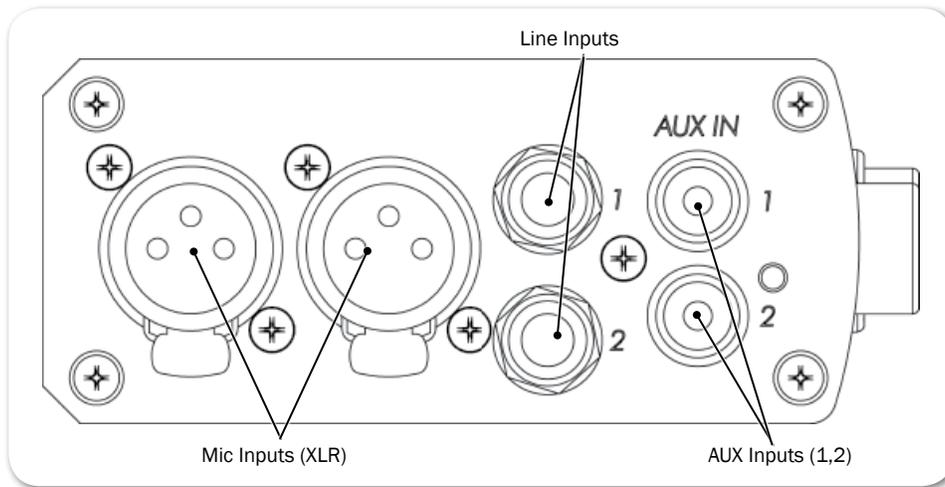
The back panel of the USBPre 2 has the following features:



FEATURE	DESCRIPTION
XLR Outputs (L/R)	Active-balanced XLR analog outputs. Mic/Line switchable.
S/PDIF Input & Output	Optical digital (TOSLINK) input and output connectors.
DIP Switches	Use DIP switches to configure various aspects of the USBPre 2.

Left Panel

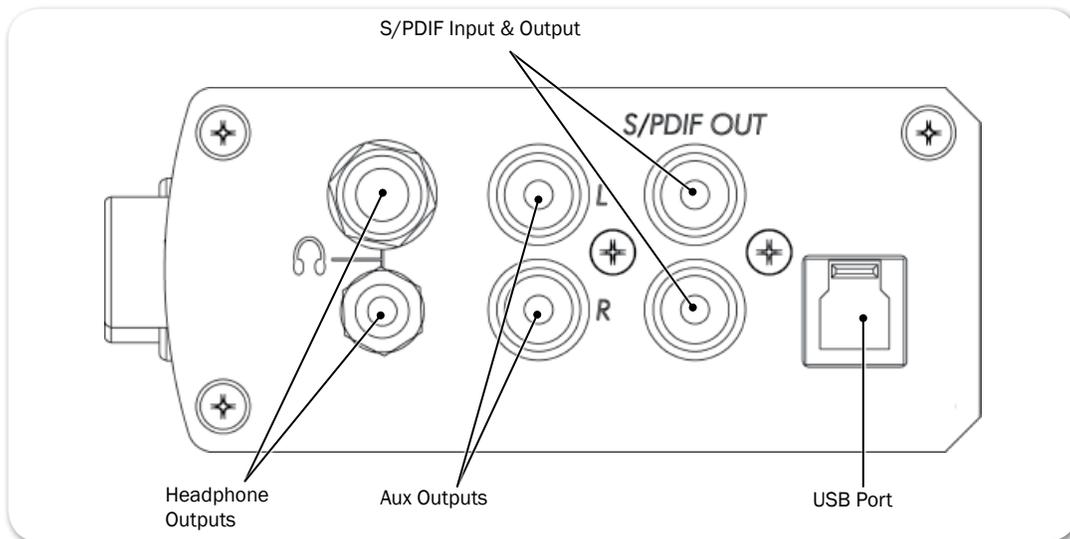
The left panel of the USBPre 2 has the following features:



FEATURE	DESCRIPTION
Mic Inputs	Active-balanced XLR inputs accept low-impedance microphone-level signals.
Line Inputs	Accepts balanced line-level signals.
AUX Inputs	Accepts consumer-level inputs such as CD players, camcorders, portable DVD players, and mini-jack from computers via RCA connectors.

Right Panel

The right panel of the USBPre 2 has the following features:



FEATURE	DESCRIPTION
Headphone Outputs	3.5 mm and 1/4-inch TRS stereo headphone outputs can drive low-impedance headphones.
AUX Outputs	Audio output to feed powered loud speakers, CD recorders, camcorders, or portable DVD recorders. RCA connectors; computer audio only.

FEATURE	DESCRIPTION
S/PDIF I/O	Coaxial digital input and output connectors. Input is selected via the front panel's Input Source button.
USB Port	Standard USB B-type connector for interconnection with the computer; provides all data and power to the USBPre 2 via USB bus powering. USB 1.1 and 2.0 compliant.

Computer Setup

Initial connection and setup procedures for the USBPre 2 are provided in the product's Quick Start Guide. The following sections provide system requirements and firmware update procedures. They also have more information on adjusting sample rates as well as how to ensure that the USBPre 2 is recognized as the default recording and playback device on computers with various operating systems.

System Requirements

The requirements below outline the minimum configurations for systems using the USBPre 2. Software applications used with the USBPre 2 have their own requirements that may be in addition to the requirements of the USBPre 2. Consult your software's documentation.

FEATURE	DESCRIPTION
Operating Systems	<ul style="list-style-type: none"> Windows XP (SP3), Windows Vista, Windows 7 (both 32 and 64 bit) Macintosh OS 10.4 or later Linux Kernel 2.6.0 or later (Requires standard ALSA snd-usb-audio module)
USB Audio Device Class	<ul style="list-style-type: none"> Windows, Linux and Mac OS versions below 10.5.8 utilize USB Audio Device Class 1.0 drivers that will limit the USBPre 2 to sampling rates of 48 kHz and lower. Mac OS 10.5.8 and greater utilizes USB Audio Device Class 2.0 drivers that will allow the full range of sample rates that the USBPre 2 is capable of.
USB Connection	<ul style="list-style-type: none"> Full USB 1.1 or 2.0 compliance

① *For Notebook Computer users: For proper operation of the USBPre 2, turn off all power management when using the USBPre 2 for audio recording. Power management reduces processor speed, system bus speed, spins down hard disks, shuts down displays, or a combination of the above to reduce current consumption and extend battery run time. The change in state from active to power-saving mode can disrupt data on the USB bus and cause unintended dropouts.*

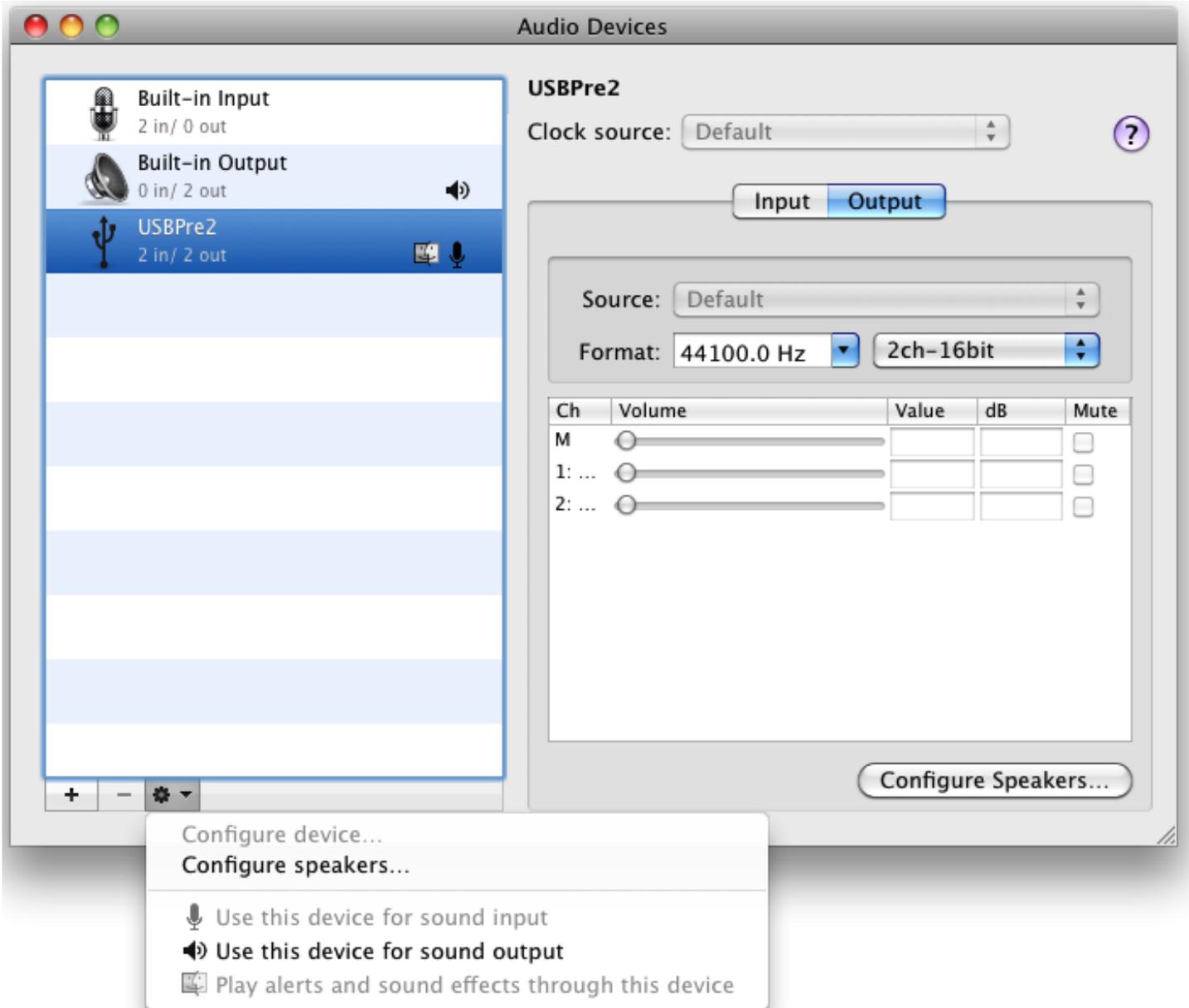
Sound Devices cannot guarantee that a given computer can be used satisfactorily with the USBPre 2 based exclusively on the fact that it meets the above requirements.

Setting up Mac OS X

The following procedure and images depict steps for version 10.6 of OS X; steps for earlier versions will vary.

To set audio defaults and sample rate in OS X:

1. Select Applications > Utilities > Audio MIDI Setup. The Audio MIDI Setup dialog box appears.
2. Click USBPre 2 to highlight it in the list.
3. Click the Gear icon (as shown) and select Use this device for sound output.



4. Click the Gear icon again and select Use this device for sound input.
 - ① *For OS X 10.5 and earlier, check the System Settings section to ensure that USBPre 2 is selected for both the Default Input and Default Output drop-down menus.*
5. With USBPre 2 still highlighted in the Audio MIDI Setup dialog box, click the Format drop-down menu options to adjust the sample rate and bit depth.

- ① *For OS X 10.5 and earlier, select USBPre 2 from the Properties For drop-down menu, then in the Audio Input and Audio Output sections, set the sample rate, channel count, and bit depth.*

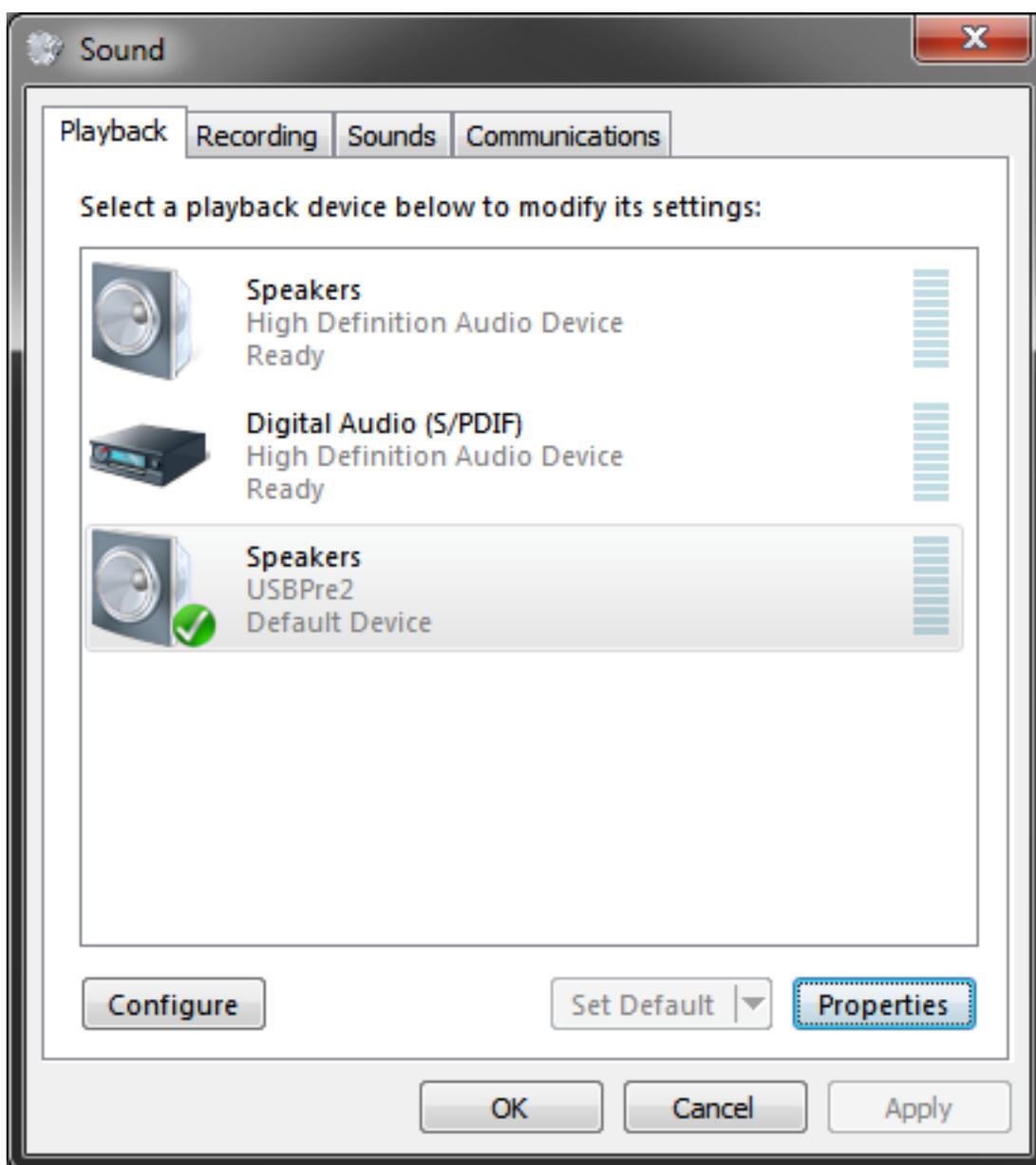
Setting up Windows OS

This section provides procedures for checking audio defaults and setting sample rates on various Windows operating systems, including Windows 7, Vista and XP.

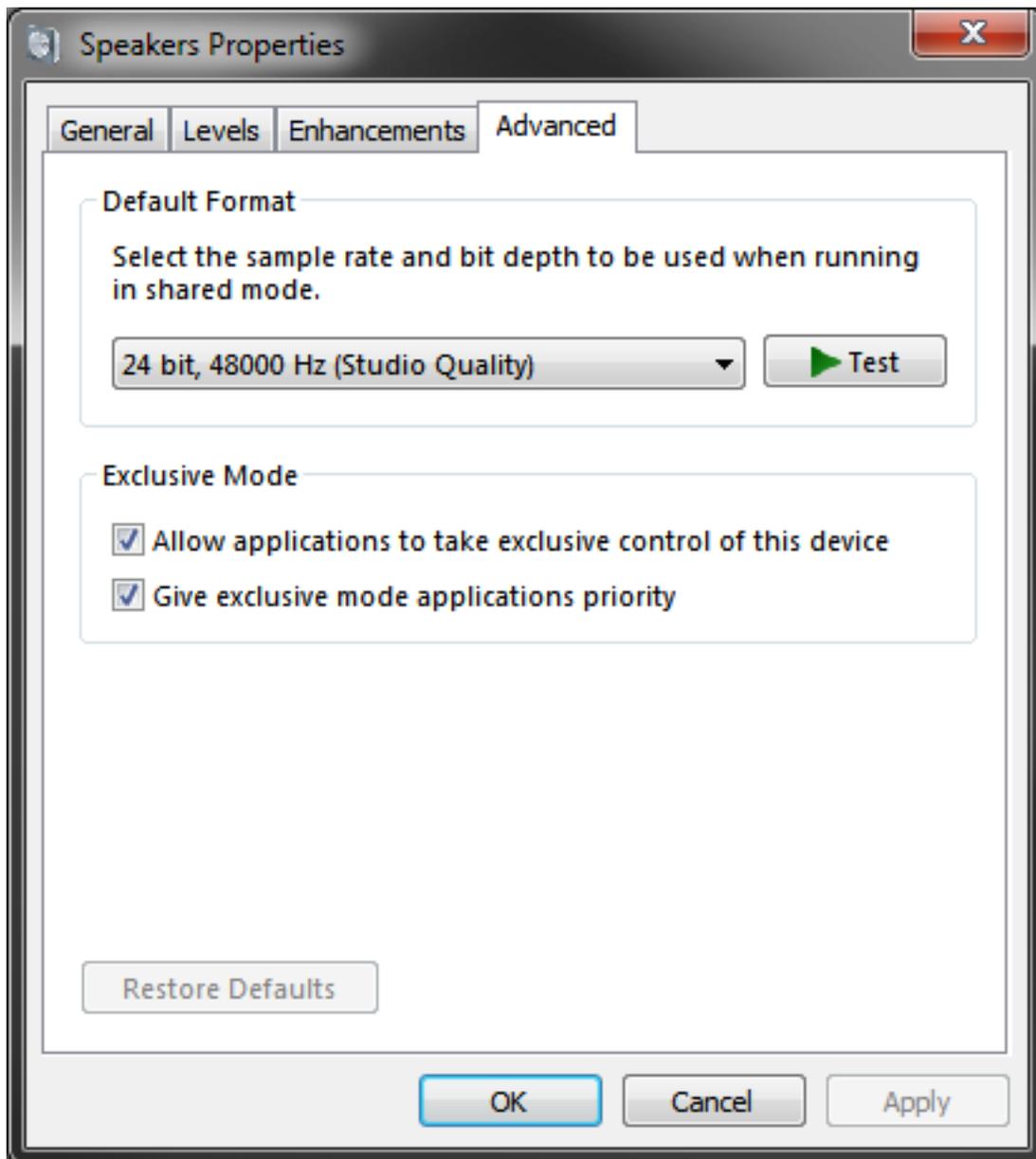
The following procedure and images depict steps for Windows 7 and Vista.

To set audio defaults and sample rate in Windows 7 & Vista:

1. Select Start > Control Panel > Sound. The Sound dialog box appears.



2. Click the Playback tab.
3. Select (single click) the device labeled USBPre 2 in the list.
4. Click Set Default. A green Checkmark icon and the words "Default Device" will appear in the list, indicating that the USBPre 2 is now the default playback device.
5. Click the Properties button. The Speakers Properties dialog box appears.

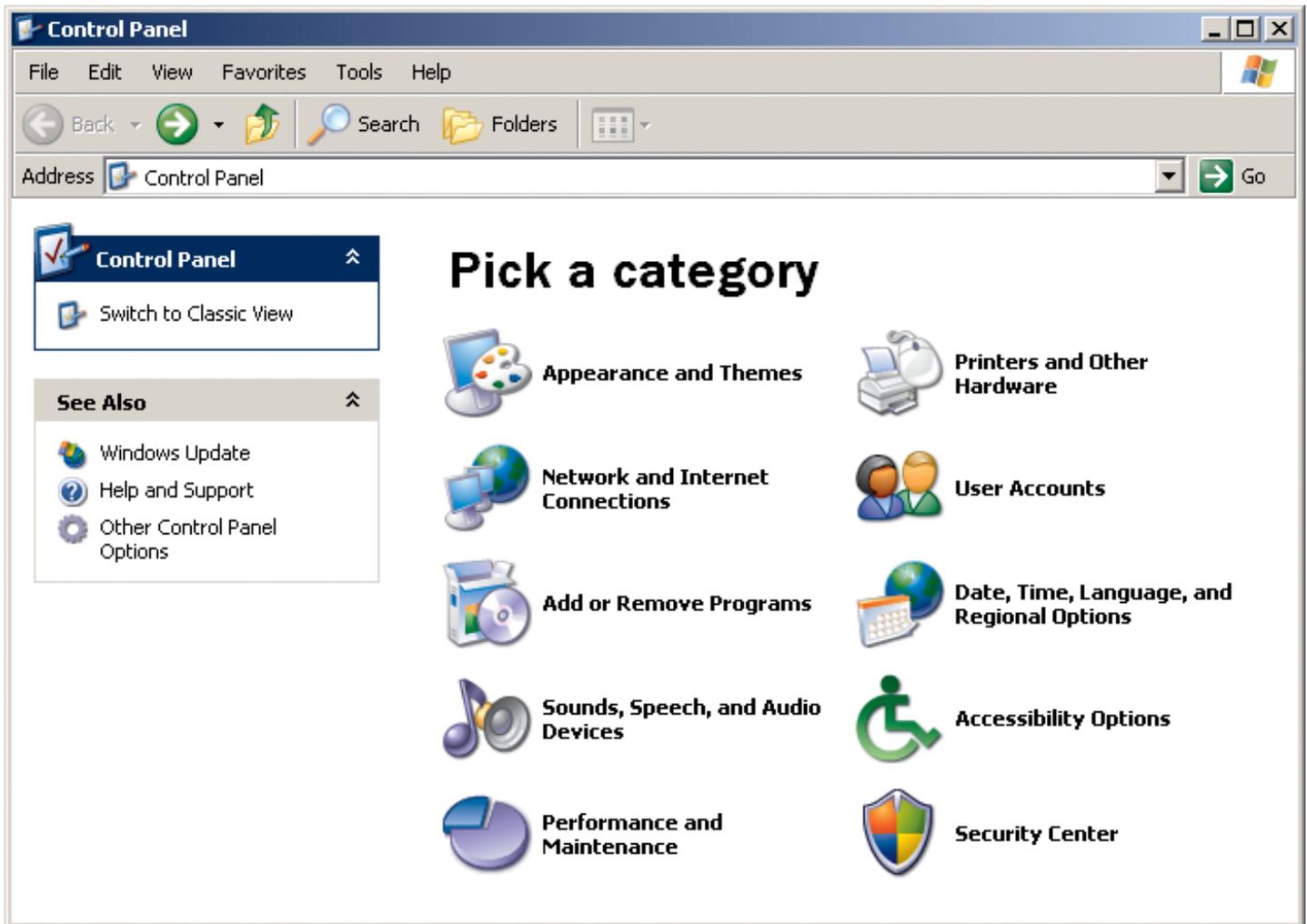


6. Click the Advanced tab.
7. In the Default Formate section, select the sample rate and bit depth to use from the drop-down menu.
8. Click OK. The Speakers Properties dialog box closes.
9. From the Sound dialog box, click the Recording tab and repeat the above steps 3 and 4.

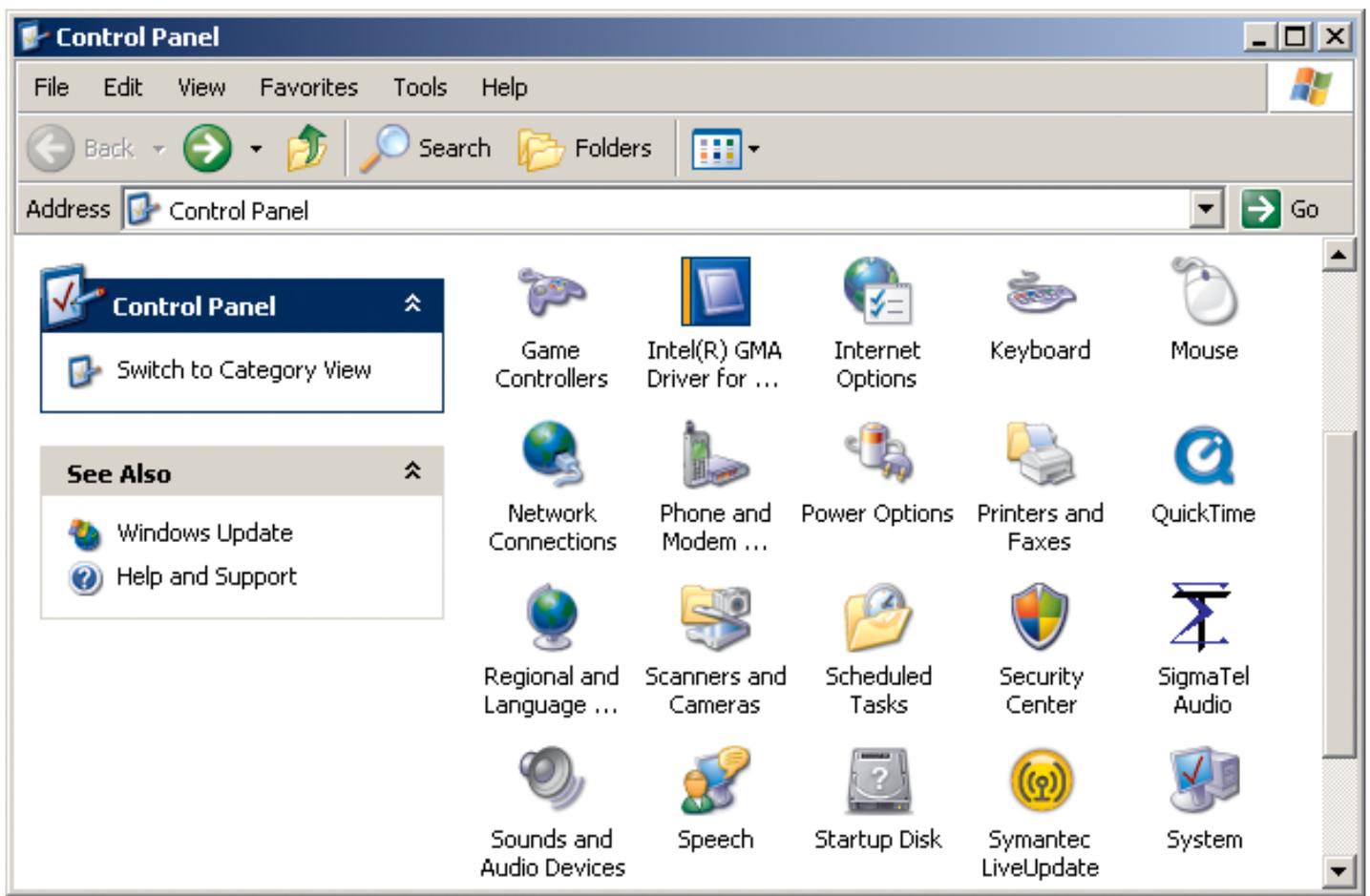
The following procedure and images depict steps for Windows XP.

To set audio defaults in Windows XP:

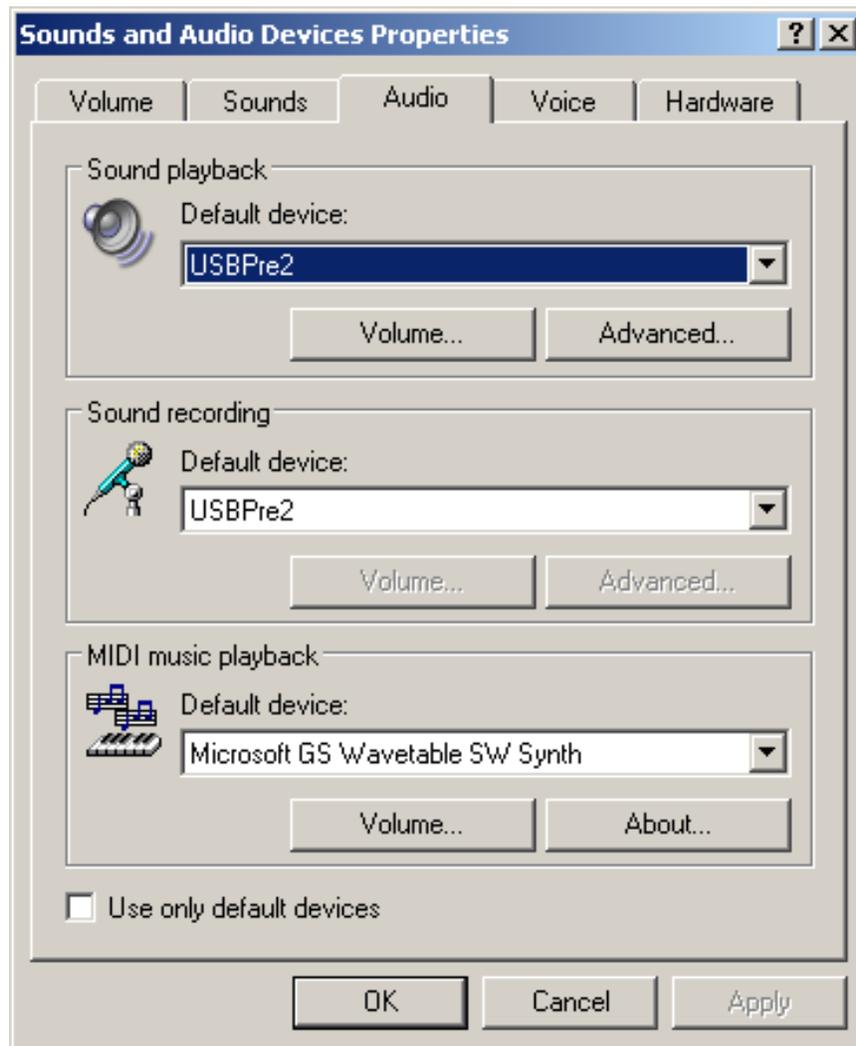
1. Select Start > Control Panel. The Control Panel view will either be in “Classic view”—skip to step 3—or “Category view”—proceed to step 2.
2. Click Sounds, Speech, and Audio Devices. Proceed to step 4.



3. Click Sounds and Audio Devices.



4. In the Sounds and Audio Devices Properties dialog box, click the Audio tab.



5. In the Sound playback section, select USBPre 2.
6. In the Sound recording section, select USBPre 2.
7. Click OK.

Installing the ASIO Driver

As a class-compliant audio device, the USBPre 2 is limited to a maximum data rate of 24-bit, 48 kHz in Windows, Linux, and Mac OS versions 10.4 to 10.5.7. Mac OS 10.5.8 and later support the audio class 2.0 device and can address the USBPre 2 up to 24-bit, 192 kHz. To enable higher sampling rates in Windows OS, the ASIO driver is needed.

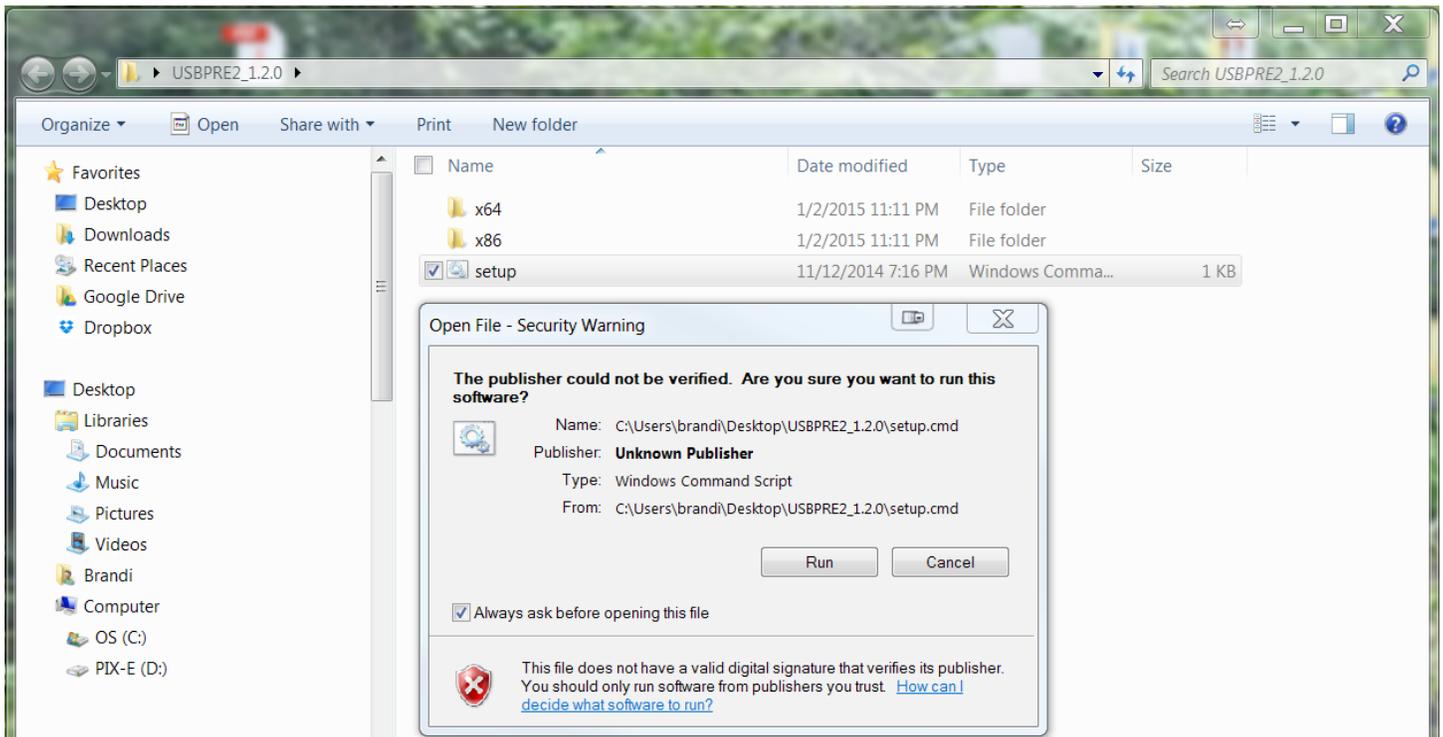
The ASIO driver for the USBPre 2 allows for low-latency operation and sample rates up to 192 KHz on Windows computers. The ASIO drivers include a WDM counterpart, so applications that use standard WDM for playback and recording will still operate as normal after installation. After installation, the USBPre 2 will be available as an ASIO device in applications that utilize ASIO.

- ① *If a previous version of the USBPre 2 ASIO driver is installed on the Windows-based computer, it should be uninstalled prior to installing a newer version. The*

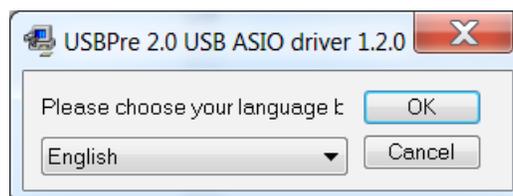
latest version of driver serves as a driver for both 64-bit and 32-bit systems. For uninstall instructions, see [Uninstalling the ASIO Driver](#).

To install the ASIO driver:

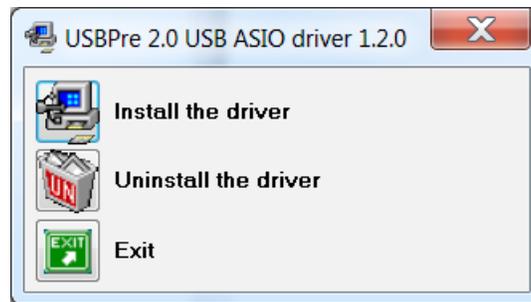
1. Go to the USBPre 2 Download page on the Sound Devices website at: www.sounddevices.com/support/downloads/usbpre2-firmware and download the latest USBPre 2 ASIO driver, which is a zipped file.
2. Right-click on the downloaded ZIP file and select Extract All. Then, select a destination and click Extract.
3. Locate and open the extracted folder.
4. Connect the USBPre 2 using a standard USB A-to-B cable.
5. Double click on the setup.cmd file in the extracted folder to begin the installation process.
6. Click Run, when prompted, to run the installer program.



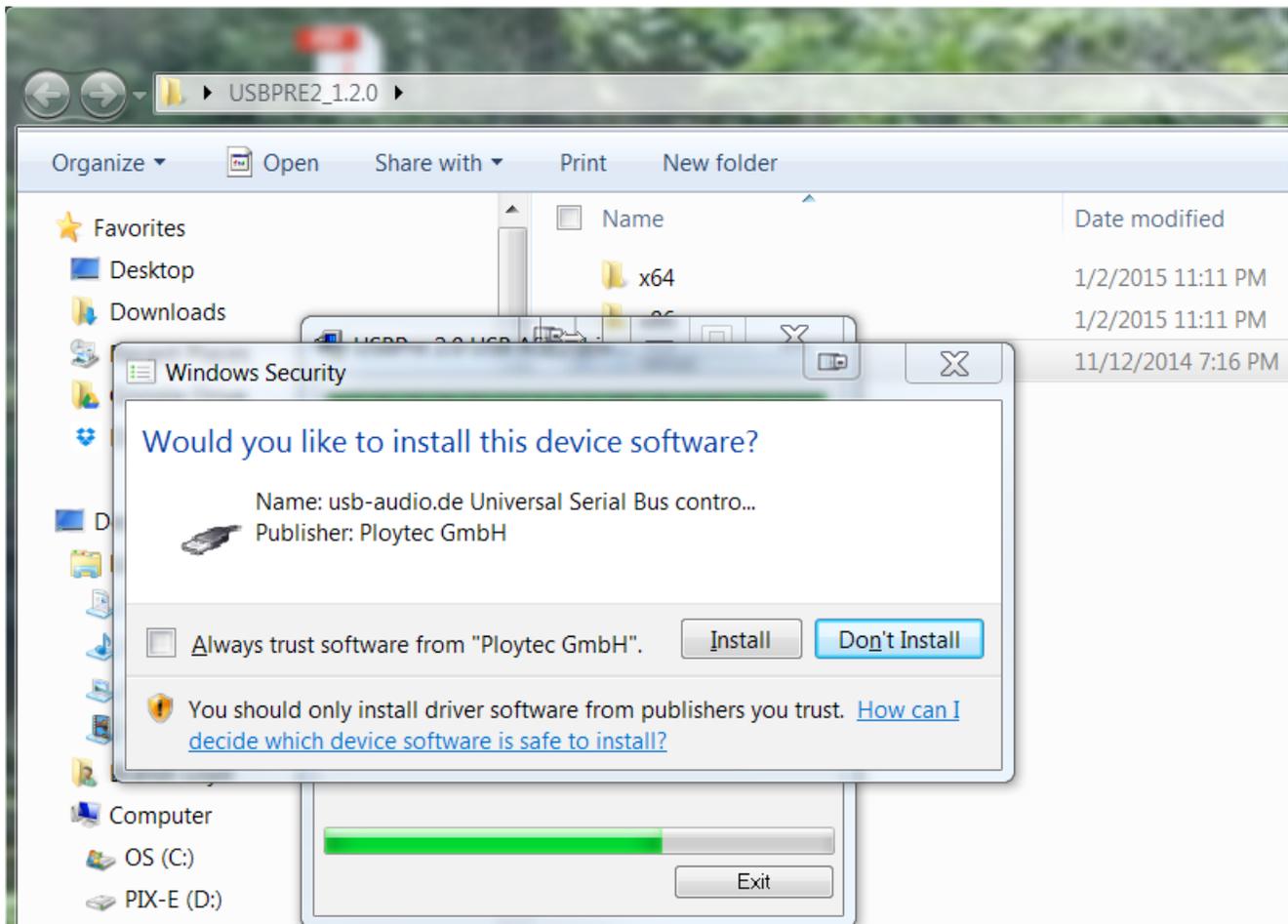
7. Follow the on-screen instructions to run the installation.
 - A. When prompted to select a language, do so and click OK.



B. When offered options to install, uninstall, or exit, click Install the Driver.



C. A dialog with a status bar appears to show progress. Each time a prompt for confirmation appears, click Install to continue.



4. After the installation completes successfully, disconnect, and then reconnect the USBPre 2 prior to use.

Uninstalling the ASIO Driver

Before installing a new version of the ASIO driver, any existing version on the computer must be uninstalled.

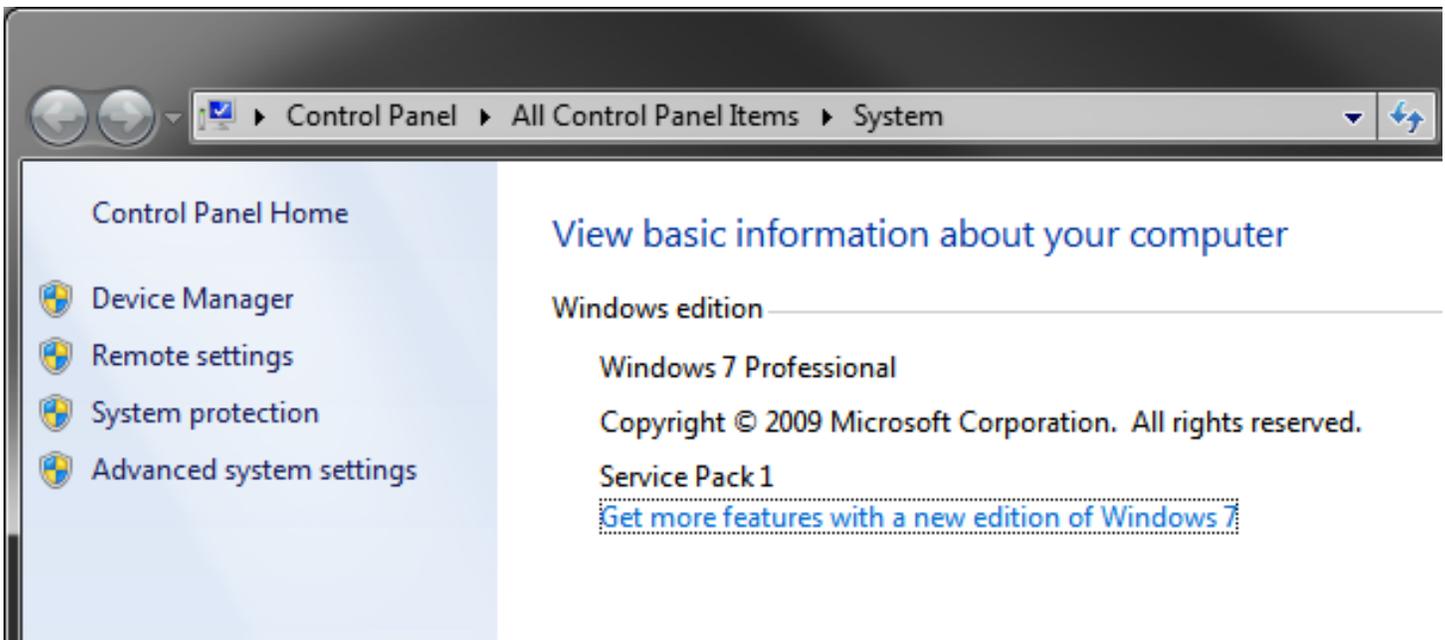
To uninstall the ASIO driver:

1. Do one of the following:
 - ▶ Windows 7 & Vista: Click Start > Control Panel and select Programs and Features.
 - ▶ Windows XP: Click Start > Control Panel and select Add/Remove Programs.
2. Locate the USBPre 2 USB ASIO driver in the list, highlight it, and click Uninstall.

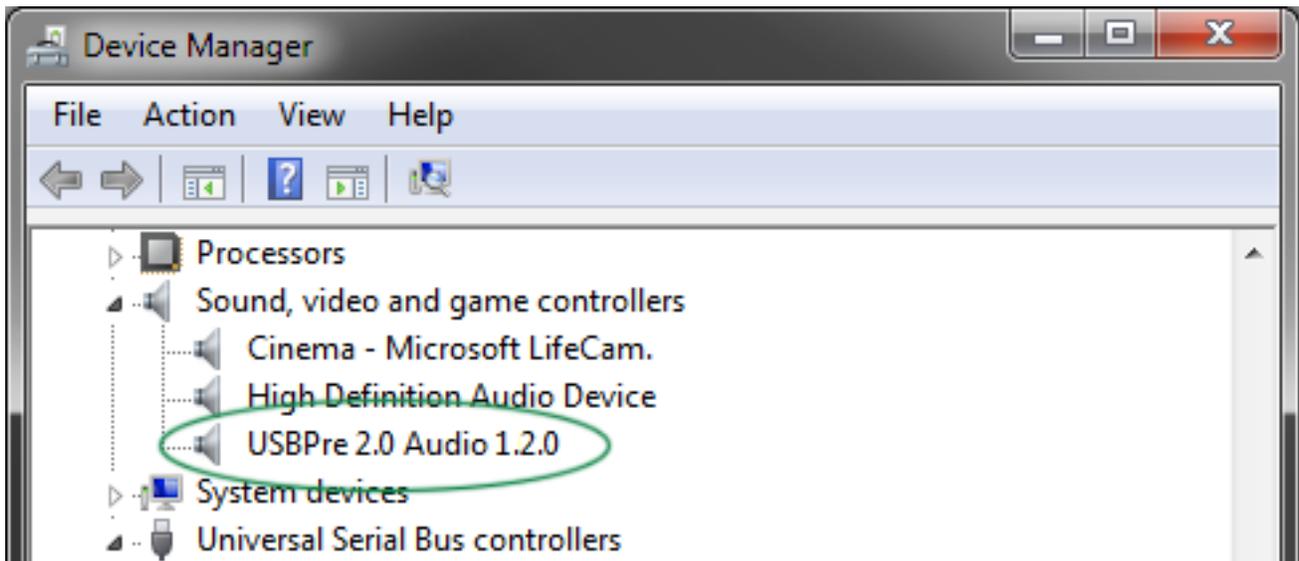
Step 2 completes the procedure on Windows XP and Vista computers. For Windows 7 computers, further steps are required.

① *The remaining steps in this procedure are for removing ASIO drivers from computers running Windows 7 only.*

3. Restart the computer.
4. Right-click Computer and select Properties.
5. On the left sidebar of the System window, click Device Manager to open the Device Manager window.



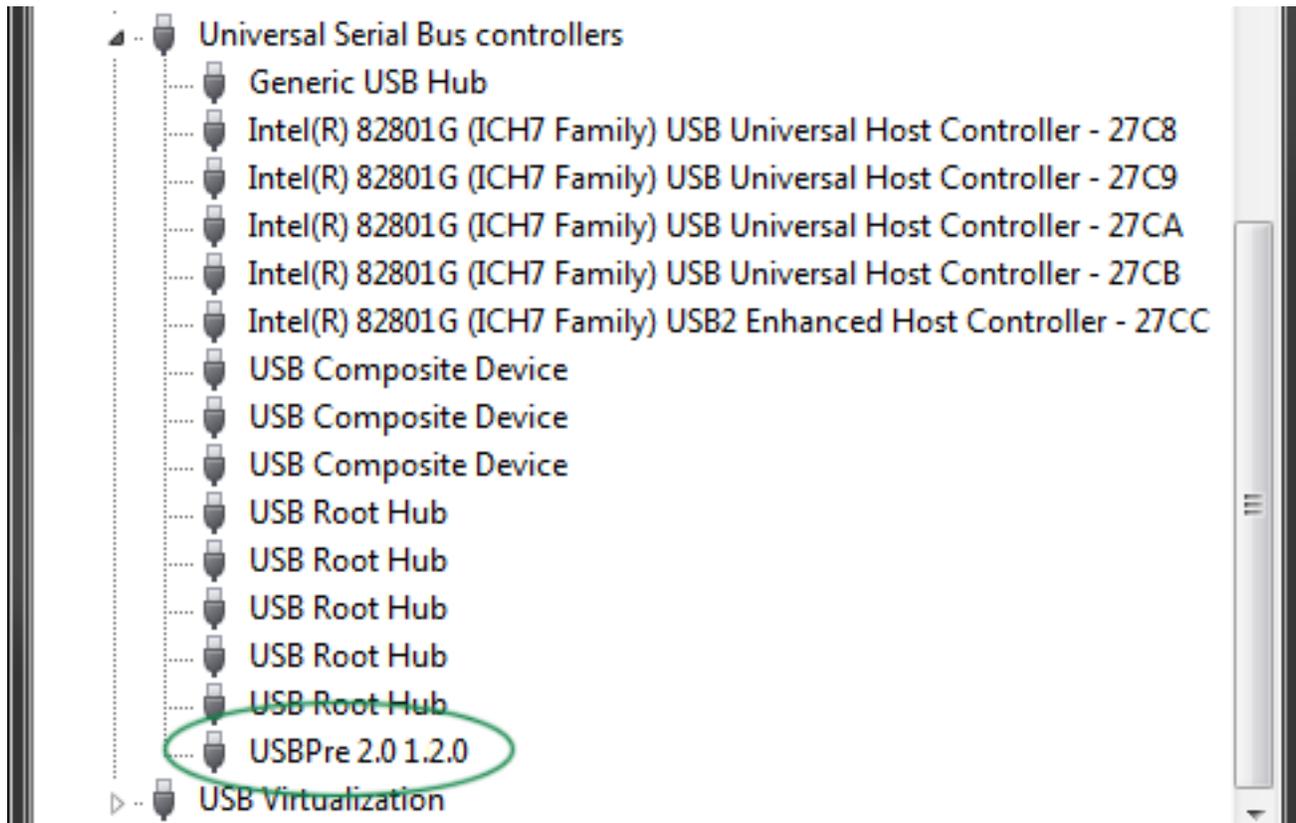
6. Expand the Sound, video, and game controllers section.



7. Right-click the USBPre 2 entry and select Uninstall.
8. When the confirmation dialog appears, ensure that the check box titled "Delete the driver software for this device" is selected, and click OK.



9. In the Device Manager window, expand the Universal Serial Bus controllers section and repeat steps 7 & 8.



Updating USBPre 2 Firmware

To ensure optimum performance, Sound Devices recommends you update firmware to the latest version as soon as possible.

To install the latest firmware:

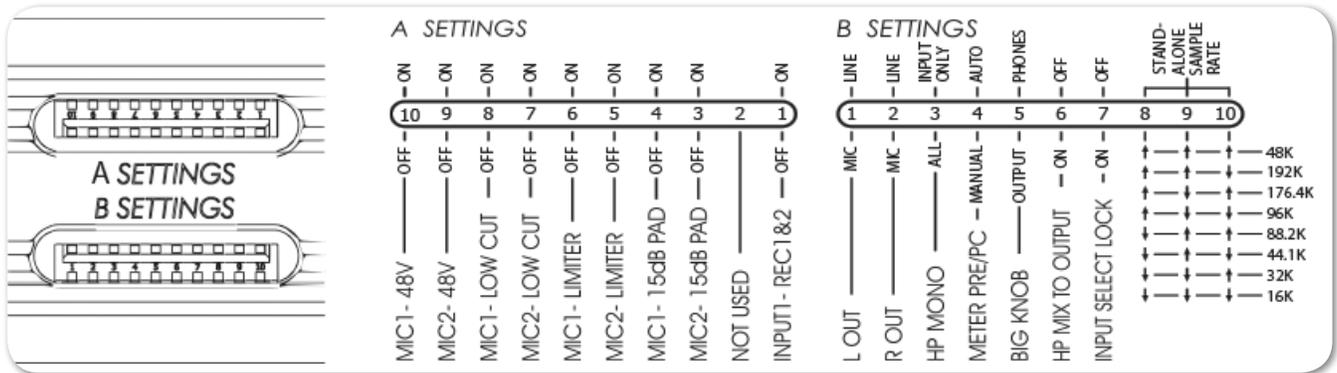
1. Download the latest firmware from Sound Devices. New versions of firmware are provided as free downloads from the Sound Devices website at: <http://www.sounddevices.com/support/downloads/usbpre2-firmware>. Ensure that you select the file that corresponds to your operating system.
2. Connect the USBPre 2 to the computer with the supplied USB cable and make certain it is recognized by the computer as a standard sound card.
3. Do one of the following:
 - ▶ Macintosh users: Double-click on the downloaded DMG file. A disk labeled USBPre2-# (where # represents the version number) appears on the desktop. Open this disk and run the application bearing the same name.
 - ▶ Windows users: If the ASIO driver for the USBPre 2 is installed, it must be removed in order to successfully update the USBPre 2 firmware. The ASIO driver can be reinstalled after successfully updating the firmware. Double-click the downloaded USBPre 2 executable file to run it. Next, click the Update button to update the firmware, and then, when directed, disconnect and reconnect the USB cable of the USBPre 2.

DIP Switch Options

The DIP switches on the back panel of the USBPre 2 may be used to control various features. The settings are divided into two groups: A and B.

To adjust an individual switch:

- Carefully move the switch with a slender tool.



In the following descriptions, “up” refers to the direction opposite the numerical labels on the switch casings.

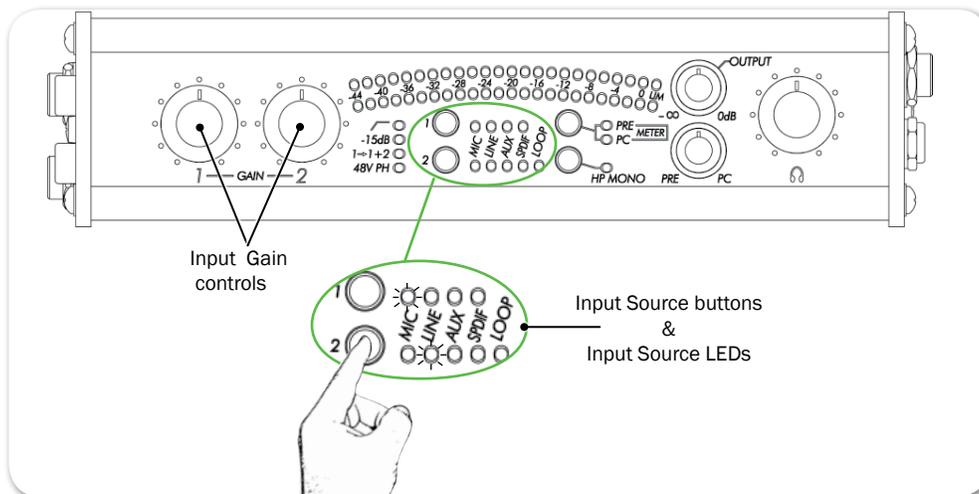
A SETTINGS	SWITCH	DESCRIPTION
48 V Phantom Power	9 & 10	Up position engages 48 Volt phantom power on balanced microphone inputs, which is required for condenser microphones.
Low-Cut Filter	7 & 8	Up position engages low-cut filter on balanced microphone inputs: -3 dB at 80 Hz. 12 dB per octave.
Limiter	5 & 6	Up position engages limiters on balanced microphone inputs. The signal is attenuated above -4 dBFS.
15 dB Pad	3 & 4	Up position reduces gain by 15 dB on balanced microphone inputs. This is useful for sensitive microphones or very loud program material.
N/A	2	This switch is not used at present.
Dual Mono	1	Up position disables input 2 and routes input 1 signal to both tracks.

B SETTINGS	SWITCH	DESCRIPTION
Balanced Output Level	1 & 2	Determines level of balanced XLR outputs. Up position sets level to Line level (0 dBu). Down position sets it to Mic level (-40 dBu).
Headphone Mono	3	Adjusts what signals are summed when Headphone Mono mode is active. Up position is for input signals only. Down position is for input signals and output audio from the computer.
Meter PRE/PC	4	Adjusts whether or not the meter source switches automatically to PC metering when computer audio is present. Up position sets it to Automatic. Down position sets it to Manual.

B SETTINGS	SWITCH	DESCRIPTION
HP/Output	5	Determines which controls on the front panel adjusts headphone gain and main output gain. The up position is the default, which sets the larger control to adjust headphone gain, while the smaller one controls the main output gain. When in down position, the functionality of the controls are reversed so that the larger one controls main output gain and the smaller one controls headphone gain.
Headphone Signal to Outputs	6	When in up position, only computer audio is sent to outputs. When in down position, main (analog) output source is the same as headphone signal source and affected by Monitor Mix control. <i>① In Stand-alone mode, input signal is always routed to the outputs, and this setting has no effect.</i>
Input Select Lock	7	When in up position, Input Source buttons function normally. When in down position, Input Source buttons are disabled, and the Input Source selection is locked.
Stand-Alone Sample Rate	8, 9 & 10	Sets the operating sample rate when in Stand-Alone mode according to the associated diagram. In Soundcard Mode, sample rate is determined by the computer.

Inputs

The USBPre 2 has two available input channels. The source for each input is independently selected using the Input Source buttons on the front panel, and the selected source is indicated by an illuminated LED next to the respective Input Source button.



① *The Input Source buttons may be locked—via a DIP switch setting—to prevent accidental switching of the input sources.*

INPUTS	DESCRIPTION
Microphone	<ul style="list-style-type: none"> • Phantom Power - The USBPre 2 provides 48-volt phantom power for condenser microphones connected to the XLR inputs. Phantom power can be engaged independently for each input. See DIP Switch Options. Condenser microphones that can operate on phantom voltages from 11-52 volts will function properly with 48-volt phantom. ① <i>Dynamic microphones typically do not require phantom power. A properly connected balanced, dynamic microphone is not affected by the presence of phantom power nor will it draw any current. However, it is good practice to turn phantom power off when not needed. Poor or incorrectly wired microphone cable can cause audible artifacts in microphone signals. Some wireless receivers outputs are adversely affected by the presence of phantom power; therefore, consult the wireless receiver's documentation.</i> • Low-Cut Filter - This filter attenuates low frequency signals, and is useful in conditions where low frequency signal is causing overload before the desired gain is reached, such as windy environments or hand-held microphones. • Input Pad - With some combinations of microphone sensitivity and sound pressure levels, the microphone input of the USBPre 2 can become overloaded even when the input gain is at its lowest level. A 15 dB pad may be engaged—via a DIP switch setting—on the microphone input to reduce its sensitivity. • Input Limiters - In environments where high sound pressure levels may occur unexpectedly, input limiting prevents distortion by attenuating signals that surpass the input threshold level. In normal operation with properly set input levels, the threshold of an input limiter is rarely reached. Signals below the threshold are not affected by the limiter. Limiters may be engaged independently on each microphone input—via a DIP switch setting. The amber LIM LED's on the right side of the meters will illuminate to indicate when limiting is occurring.
Line	<p>The Line Inputs use balanced, quarter-inch connectors and accept +4 dBu analog signal (sometimes referred to as "Professional" line level). Wiring is tip: signal (+), ring: signal (-), and sleeve: ground.</p>
Aux	<p>The Aux inputs use unbalanced, RCA connectors and accept -10 dBu analog signal, which is sometimes referred to as "Consumer" line level. This input is designed for signal from CD players, camcorders, portable DVD players, and other similar devices.</p> <p>① <i>Signal output from turntables without built-in phono preamplifiers is too weak for the USBPre 2's auxiliary inputs. A separate phono preamplifier may be required depending on the design of the turntable.</i></p>
Digital	<p>Digital signal in the S/PDIF format can be input to either the coaxial RCA connector or the optical TOSLINK connector. If signal is present at both the optical and coaxial input, the signal from the optical input takes precedence.</p> <p>① <i>Sample rates below 32 kHz are not supported on the digital connections. The optical connections do not support the 192 kHz sampling rate.</i></p>

Input 2 Loop Source

Input 2 has an additional source labeled LOOP. This input source does not correspond to any physical connections on the USBPre 2. When LOOP is selected, input 2's source is derived from the left channel of the computer audio signal (post digital-to-analog conversion). The Input 2 Gain control affects signal. The Output Gain control does not affect the level of the signal going into input 2.

The LOOP source is useful for test and measurement applications where a reference signal is required to be routed back to an input.

Outputs

Output connections are located on the right and back panels of the USBPre 2.

OUTPUTS	DESCRIPTION
Main	<p>Signal level at the balanced XLR outputs and unbalanced AUX outputs is adjusted with the Output Gain control. The signal source for the outputs is the output audio from the computer. This source may be changed to the same source as the headphone output, by using the back panel DIP switches. The balanced XLR outputs are set to line level by default, but may be set to mic level via a DIP switch setting.</p> <p>① <i>The Windows Volume (controlled with the "speaker" icon in the system tray) and the Mac Volume control affect the level of the computer's output audio before it reaches the USBPre 2. It is generally best practice to set the volume control to 100% and make adjustments to the output level with the USBPre 2's Output Gain control.</i></p>
Digital	<p>When the USBPre 2 is used as a computer audio interface, the sample rate of the digital outputs (coaxial S/PDIF and optical TOSLINK) is determined by the application settings on the computer. In Stand-alone mode, the sample rate is determined by the positions of the back panel DIP switches.</p> <p>① <i>Optical (TOSLINK) outputs are inoperable at 192 kHz sample rate.</i></p>
Headphone	<p>The USBPre 2 has two headphone output connections and a high current headphone amplifier for monitoring analog input audio, computer audio, or a mix of both.</p> <p>⚠ The USBPre 2 is capable of driving headphones to dangerously high levels. Be aware of headphone level controls at all times.</p>

Adjusting Headphone Monitoring

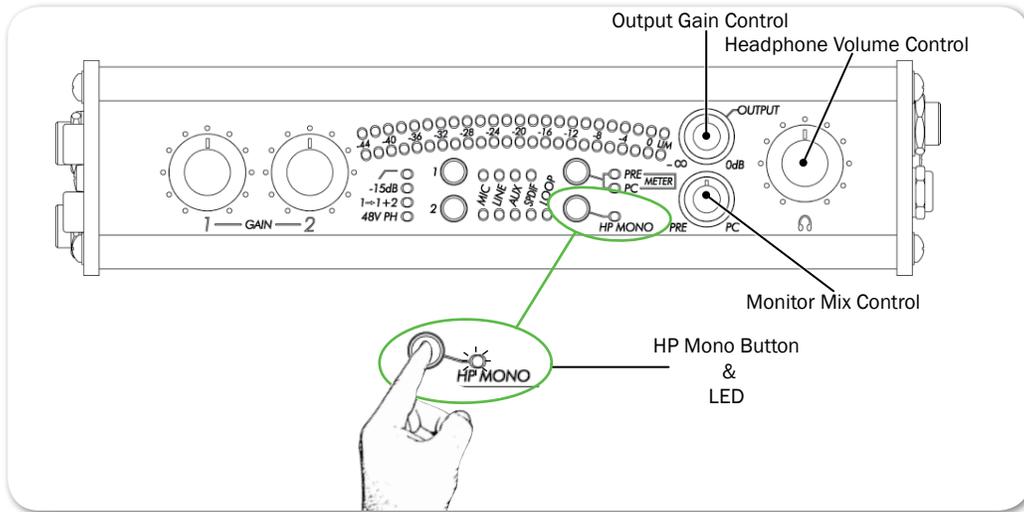
Use the Headphone Volume control to adjust the level of the signal going to the headphones.

Use the Monitor Mix Control on the front panel to adjust the mix between direct audio from the inputs (fully counter-clockwise) and output audio from the computer (fully clockwise). The signal for input audio is derived from the inputs before analog-to-digital conversion.

Headphone Mono mode sums the input signals from both inputs into a mono mix for the headphones.

To toggle Headphone Mono mode:

- ▶ Push the HP MONO button on the front panel. The Headphone Mono LED will illuminate when Headphone Mono mode is active.



- ① *Optionally—via a DIP switch setting—the stereo signal from the computer may also be summed when Headphone Mono mode is engaged.*

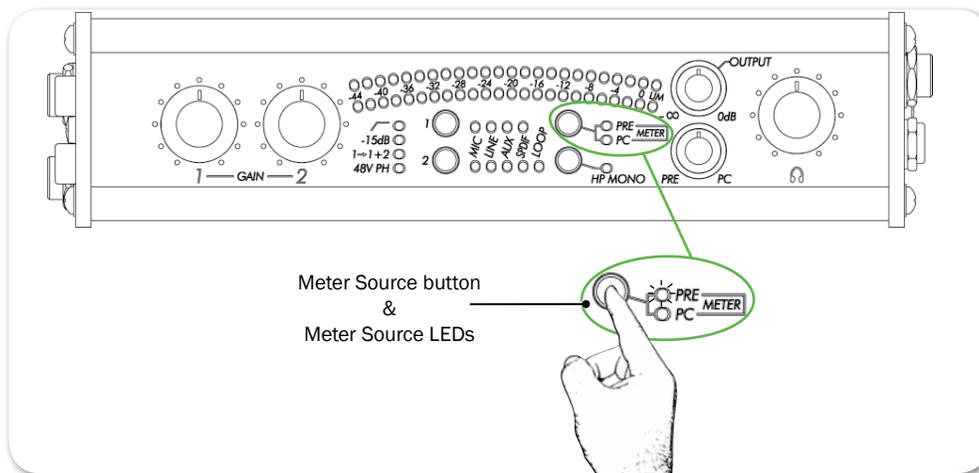
Meters

The USBPre 2 features a 23-segment, 2 channel LED meter. The meter displays both the peak level of source audio and average (VU) levels simultaneously. Zero (0) dB on the meter is calibrated to 0 dBFS signal coming from the computer.

The current source signal for the meter is indicated by an illuminated LED—PRE or PC—next the Meter Source button.

To toggle the meter source:

- ▶ Push the Meter Source button.



When the meter source is set to PC the meter displays the audio level for signal

coming from the computer. In this mode, the top row of the meter displays the left channel level, and the bottom row displays the right channel level.

When the meter source is set to PRE, the meter displays the audio level for signal at the active inputs. In this mode, the top row of the meter displays the level for the selected input source on channel one, and the bottom row displays the level for the selected input source on channel 2.

When signal is output from the computer, the meter source switches from PRE to PC automatically. However, this behavior can be modified—via a DIP switch setting—so that the source is switched manually.

Stand-alone Mode

In Stand-Alone mode, the USBPre 2 operates as a microphone preamplifier with both digital and analog outputs. It can also accept digital signals and output analog audio. The USBPre 2 will automatically enter stand-alone mode when connected to a USB jack supplying USB power but is not associated with a running operating system—a powered USB hub that is not attached to a computer, for instance.

① *The USBPre 2 can also be forced into Stand-alone mode when connected to a computer supplying USB power by holding down the Meter Source button when attaching the USB cable.*

In Stand-Alone mode, all front panel controls perform the same functions as when the USBPre 2 is in Interface mode, except that the Meter Source button is disabled and the meter source signal is locked to PRE. Since there is no reference clock from the computer, the operating sample rate is set using the back panel DIP switches.

Sample Rate

In Interface mode, the USBPre 2 operates at the sample rate set from the host operating system, and the DIP switches related to sample rate are ignored. It is further possible to change the sampling rate of the USBPre 2 within some applications' audio preferences.

① *In Windows XP there is no global sample setting, and the sample rate must be set by the application in use.*

In Stand-alone mode, the sample clock is generated by the USBPre 2's internal sample clock generator, and the Sample rate is set by adjusting the DIP switches on the back panel of the USBPre 2. This affects the internal sample rate of the USBPre 2 as well as the sample rate output from the digital outputs.

① *Sample rates below 32 kHz are not supported on the coaxial or optical (TOSLINK) digital interconnections. The sampling rate of 192 kHz is not supported on TOSLINK interconnections.*

Locked Sample Rates to External Sources

The sample rate of the USBPre 2 may be locked to the sample rate of an external S/PDIF signal. When a digital signal is connected to either the coaxial or optical input, the S/PDIF Input Source LED will illuminate to indicate that the USBPre 2 is locked to the sample rate of the incoming digital signal. Also, when the signal is removed or turned off, the S/PDIF Input Source LEDs will flash for 30 seconds.

To make a digital recording with the computer at a locked sample rate, be certain that the incoming digital signal is valid (solid illumination of S/PDIF Input Source LEDs) and that the software driver is set to the same sample rate as that of the incoming digital signal.

If the USBPre 2 senses a discrepancy in the incoming digital signal such as a clocking error, the Meter Source LEDs will flash until the Meter Source button is pushed.



Diagrams and Examples

This section provides a block diagram related to USBPre 2 modes—Interface and Stand-alone—as well as a couple of setup examples for the audio interface.

Topics in this section include:

- ▶ **Setup Examples**
 - ▶ Test and Measurement
 - ▶ High-Performance Playback
- ▶ **Block Diagram**

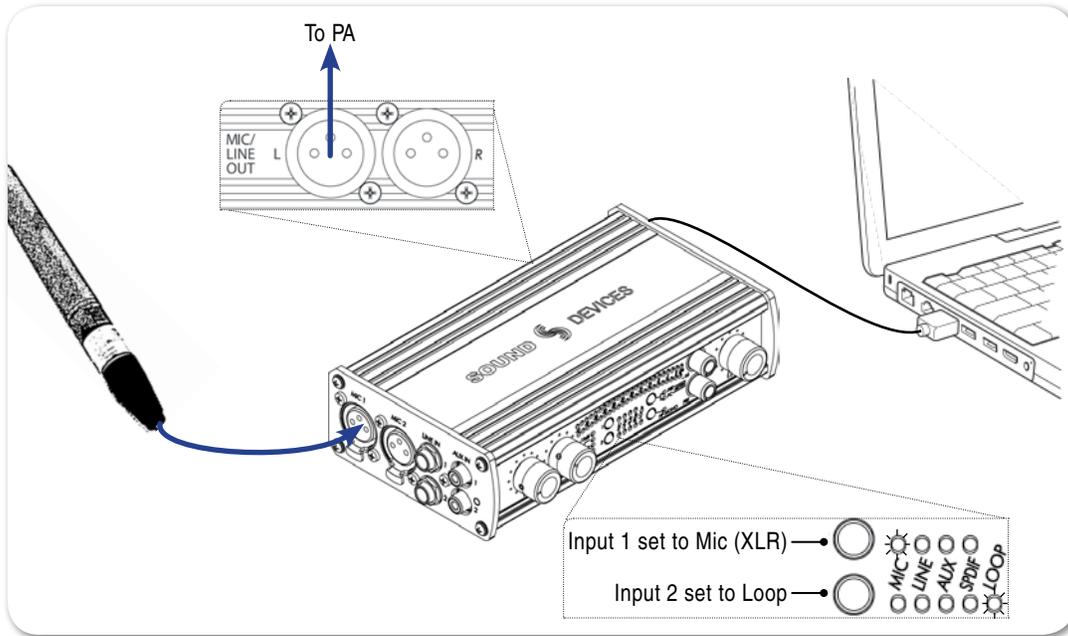
Setup Examples

This section provides examples of two possible setups: one best used for test and measurement, and another aimed more for high-performance playback.

Test and Measurement

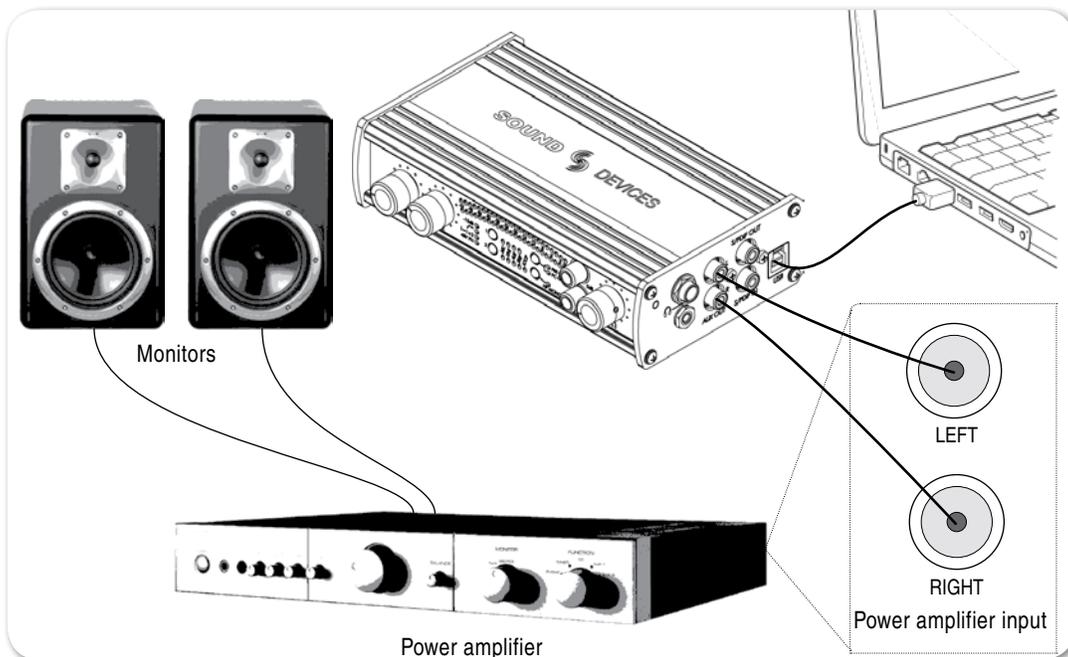
The high quality preamplifiers and portability of the USBPre 2 make it a perfect interface for test and measurement applications. A requirement for measuring a transfer function is the ability to monitor the output reference signal from the computer. The LOOP source of input 2 enables a copy of the computer audio left channel to be internally routed to input 2. This allows reference signal to be sent back into the measurement application without additional cabling.

The USBPre 2 supports native sample rates below 44.1 kHz to provide better FFT resolution for low-frequency audio measurements

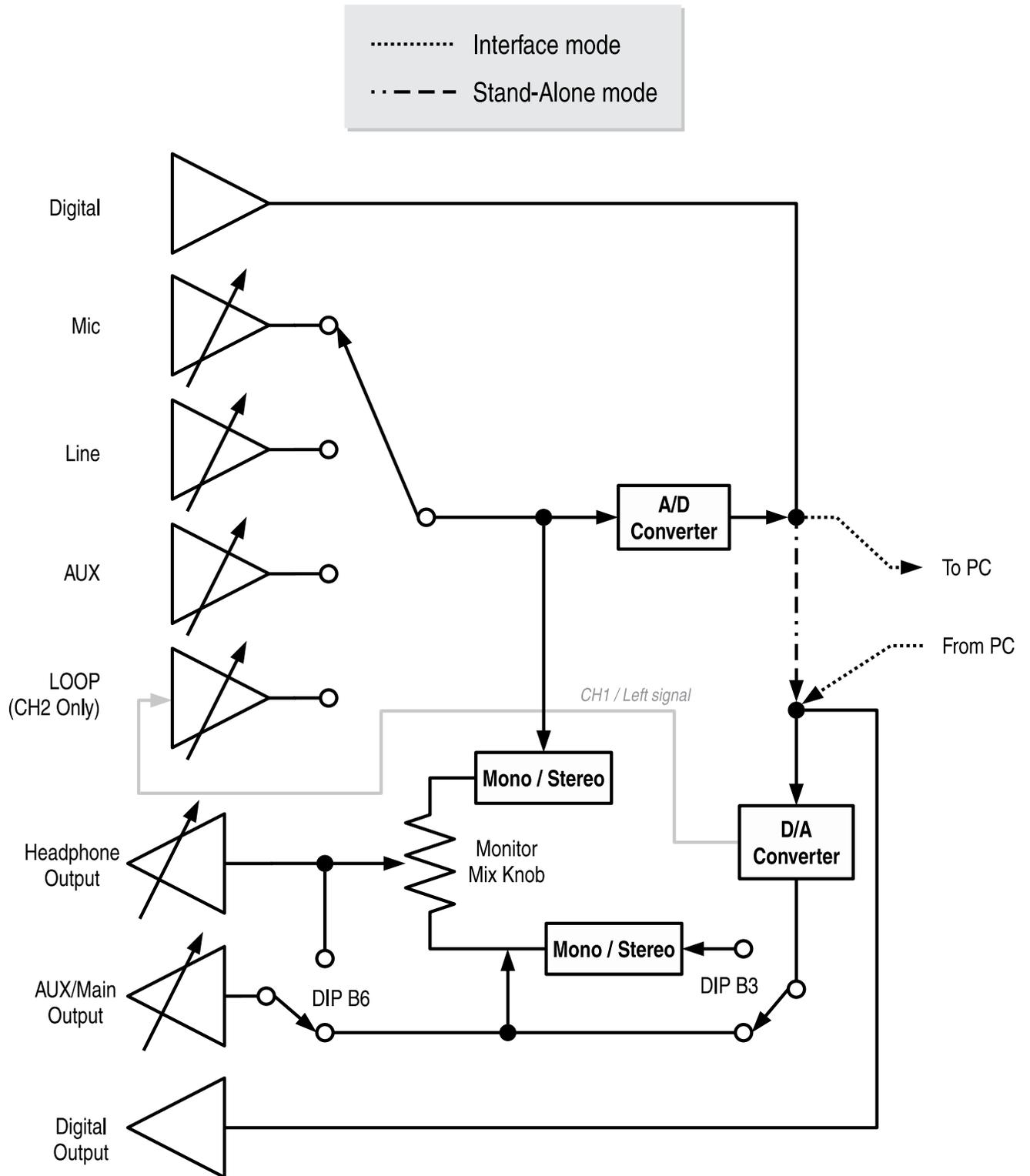


High-Performance Playback

The USBPre 2 can provide high-quality audio output from a computer to reference monitors in a studio control room or a home stereo system. Depending on the connectivity of the monitors, the balanced XLR outputs, unbalanced RCA outputs, or digital S/PDIF outputs can be used to send computer audio to the monitors.



Block Diagram



Specifications

This section provides specifications for the USBPre 2.

Features and specifications are subject to change without prior written notice. Visit the [Sound Devices website](#) for the latest product information.

Topics in this section include:

- ▶ Powering
- ▶ Inputs
- ▶ Outputs
- ▶ Recorder
- ▶ Physical

Powering

NAME	DESCRIPTION
External Power Supply	<ul style="list-style-type: none">• USB bus powered.• 5 V (+/- 10%)• 500 mA max current from USB port (USBPre 2 will not function if connected through a passive USB connection or hub)
Phantom Power	<ul style="list-style-type: none">• 48 V through 6.8k ohm resistors. Each mic input supplies 10 mA

Inputs

NAME	DESCRIPTION		
Frequency Response (reference 1 kHz tone/ 192 kHz sample rate)	<table border="1"><tr><td>Any input to PC recording:<ul style="list-style-type: none">• 10 Hz - 40 Hz, +/-0.5 dB• -3 dB at 65 kHz</td><td>PC source to AUX or XLR output:<ul style="list-style-type: none">• 10 Hz - 40 Hz, +/-0.5 dB• -3 dB at 65 kHz</td></tr></table>	Any input to PC recording: <ul style="list-style-type: none">• 10 Hz - 40 Hz, +/-0.5 dB• -3 dB at 65 kHz	PC source to AUX or XLR output: <ul style="list-style-type: none">• 10 Hz - 40 Hz, +/-0.5 dB• -3 dB at 65 kHz
Any input to PC recording: <ul style="list-style-type: none">• 10 Hz - 40 Hz, +/-0.5 dB• -3 dB at 65 kHz	PC source to AUX or XLR output: <ul style="list-style-type: none">• 10 Hz - 40 Hz, +/-0.5 dB• -3 dB at 65 kHz		
THD + Noise	<ul style="list-style-type: none">• 0.05% max (any input to PC recording, gain control at min, input driven to -6 dBFS)• 0.009% max (AUX output, 0 dB V output, 100k ohm load)• 0.05% max (Headphones output, 2 V rms output, 600 ohm load)		
Equivalent Input Noise (MIC inputs)	<ul style="list-style-type: none">• 127 dBu min (22 Hz - 22 kHz bandwidth, 150 ohm source, gain control fully clockwise, 15 dB pad out)		

NAME	DESCRIPTION	
Input Clipping Level (1% THD)	<ul style="list-style-type: none"> Mic: -10 dBu (0.25 V rms) Mic: (15 dB pad) +4 dBu (0.78 V rms) 	<ul style="list-style-type: none"> Line: +28 dBu (19.45 V rms) Aux: +9 dBu (2.18 V rms)
Input Sensitivity (typical, for 0 dBFS)	<ul style="list-style-type: none"> Mic: -10 dB min, -60 dBu max Mic: (15 dB pad) +4 dBu min, -45 dBu max 	<ul style="list-style-type: none"> Line: +29 dBu min, +10 dBu max Aux: +12 dBu min, -7 dBu max
Input Impedance (actual)	<ul style="list-style-type: none"> Mic: 4k ohm, active-balanced 	<ul style="list-style-type: none"> Line: 60k ohm, active-balanced Aux: 80k ohm
Input Limiter Threshold	<ul style="list-style-type: none"> Mic: -4 dBFS 	
Low Cut	<ul style="list-style-type: none"> Mic: -3 dB at 80 Hz, 12 dB per octave 	
S/PDIF Digital	<ul style="list-style-type: none"> 24 or 16 bit input 	

Outputs

NAME	DESCRIPTION	
Output Clipping Level (1% THD, PC-controlled output levels at max)	<ul style="list-style-type: none"> Balanced XLR: +18 dBu with 100k ohm load Aux: +8 dBu (2.0 V rms) with 100k ohm load 	<ul style="list-style-type: none"> Headphones: +11 dBu (2.75 V rms) with 600 ohm load
Output Impedance	<ul style="list-style-type: none"> Headphone (actual): 22 ohms Balanced XLR (Line level): 500 ohms 	<ul style="list-style-type: none"> Balanced XLR (Mic-level): 5 ohms Aux: 660 ohms
Low Cut	<ul style="list-style-type: none"> Mic: -3 dB at 80 Hz, 12 dB per octave 	

Recorder

NAME	DESCRIPTION	
A/D Converter	<ul style="list-style-type: none"> 24-bit resolution. 114 dB typical dynamic range (22 Hz - 22 kHz bandwidth, A-weighted) 	
D/A Converter	<ul style="list-style-type: none"> 24-bit resolution. 112 dB typical dynamic range (22 Hz - 22 kHz bandwidth, A-weighted) 	
Analog Gain	<ul style="list-style-type: none"> Mic: 80 dBu max Mic: (15 dB pad) 65 dBu max 	<ul style="list-style-type: none"> Line: 30 dBu max Aux: 13 dBu max
Sample Rates / Bit Depths	<ul style="list-style-type: none"> Recording: 8, 16, or 24-bit at 8, 16, 32, 44.1, 48, 96, or 192 kHz 	<ul style="list-style-type: none"> Playback: 24-bit at 8, 16, 32, 44.1, 48, 96, or 192 kHz
Master Clock	<ul style="list-style-type: none"> Crystal-based, low jitter 	
USB Mode	<ul style="list-style-type: none"> Asynchronous (for lowest jitter) 	
Metering	<ul style="list-style-type: none"> 2x23 segments, 44 dB total range, peak ballistics. 0 dB on meter = 0 dBFS (0 dB referenced to full scale digital) 	

Physical

NAME	DESCRIPTION
Dimensions (H x W x D)	<ul style="list-style-type: none">• 1.7 in x 7.25 in x 4.25 in• 4.3 cm x 18 cm x 10 cm
Weight (without receivers)	<ul style="list-style-type: none">• 1.13 lbs• 0.5 kg



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