

# FILM-TECH

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## User Guide and Technical Information

v. 1.5 Hardware  
Microsoft Windows Driver v. 2.5 with ASIO 2.09  
Macintosh OS 9.X Driver v. 2.0 with ASIO 2.09  
Macintosh OS X Driver v 3.0

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## ***Welcome!***

The staff of Sound Devices welcomes you to the USBPre. We have designed the the product to be the best tool to interface microphones and other analog audio sources with personal computers. The S/PDIF connectivity of version 1.5 hardware adds even more flexibility. The USBPre includes all the necessary connections for hard disk recording, streaming, and audio measurement in the studio and field. By combining the best in field production analog audio, high quality digital conversion, the USB protocol, and robust driver software, the USBPre opens up new possibilities for computer audio.

### **Applications for the USBPre include:**

- ▶ Music Recording
- ▶ Voice-Over Recording
- ▶ Acoustical Test and Measurement
- ▶ Audio for Video
- ▶ Film Sound
- ▶ Live Audio Webcasting
- ▶ High Quality Computer Telephony/Conferencing

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## Product Features

### Simplicity

- ▶ One USB cable provides all power for unit and carries all audio to and from PC.
- ▶ All controls on front panel - no software-only features.
- ▶ No sound card needed - no opening the PC to connect.

### Audio Performance

- ▶ Input dynamic range greater than 104 dB (in 24-bit mode).
- ▶ Flat 10 Hz - 20 kHz audio bandwidth.
- ▶ Very low distortion characteristics.

### Analog Audio Inputs

- ▶ Active-balanced microphone and line level inputs.
- ▶ Phantom power (48-volt) for condenser microphones.
- ▶ High-impedance, low-noise DI instrument inputs.
- ▶ Tape level audio inputs on RCA connectors.
- ▶ Input type is selectable per channel - allowing two different signal levels simultaneously.

### Digital I/O

- ▶ S/PDIF input (coaxial) for direct digital audio transfers from DAT or other digital medium.
- ▶ S/PDIF output (coaxial) to interface to external digital recorders and playback systems.

### Level Metering

- ▶ Six-segment, LED peak input meter for precise level control of analog input sources.
- ▶ Calibrated in dB FS.

### Audio Monitoring

- ▶ Mix control enables zero-delay monitoring of analog source audio, computer audio, or a mix of both source and computer audio in headphones.
- ▶ Phono (RCA) jacks connect PC Audio output to external loudspeakers or preamplifiers.
- ▶ S/PDIF output of PC Audio sources.

### USB Powered

- ▶ Bus powering from the USB port eliminates external power sources or batteries.
- ▶ Regulated internal DC/DC converter for low noise, consistent audio quality.

### Compact, Durable Mechanical Construction

- ▶ High-strength extruded aluminum chassis.
- ▶ Machined aluminum knobs.

### Computer Interface

- ▶ Microsoft Windows 98SE, ME, 2000, and XP compatible.
- ▶ Mac OS 9X compatible.
- ▶ ASIO 2.0 for Mac OS and Windows.
- ▶ Mac OS X, version 10.2 and 10.3
- ▶ Simple Control Panel application duplicates front panel buttons.

## Hardware

### Specifications

**Frequency Response: (reference 1 kHz)**

10 Hz - 20 kHz, +/- 0.5 dB  
(any input to PC recording)  
10 Hz - 20 kHz, +/- 1.0 dB  
(PC source to PC AUDIO out)

0.009% max. (PC AUDIO output, 0 dB FS output, 100k ohm load)

0.05% max. (HEADPHONES output, 2 V rms output, 600 ohm load)

**THD+N: (10 Hz - 22 kHz measurement bandwidth)**

0.05% max. (any input to PC recording, gain control at min., input driven to -6 dB FS)

**E.I.N.: (MIC inputs)**

-124 dBu min. (10 Hz - 22 kHz bandwidth, 150 ohm source, gain control at 50% or more, 15 dB pad out)

### Analog Audio Inputs:

	Clip Level (1% THD)	Sensitivity (typical, for 0 dB FS) min. gain and max. gain		Impedance (actual)
<b>MIC</b> (15 dB pad out)	-12 dBu (195 mV rms)	-10 dBu	-53 dBu	2k ohm, active-balanced
<b>MIC</b> (15 dB pad in)	+4 dBu (1.2 V rms)	+5 dBu	-38 dBu	2k ohm, active-balanced
<b>LINE</b>	+24 dBu (12.3 V rms)	+24 dBu	+7 dBu	65k ohm, active-balanced
<b>DI</b>	+6 dBu (1.5 V rms)	+ 8dBu	-9 dBu	10M ohm, unbalanced
<b>TAPE</b>	+8 dBu (2.0 V rms)	+10 dBu	-7 dBu	110k ohm, unbalanced

**Output Clipping Levels: (1% THD, Windows Mixer/Mac volume at max.)**

PC AUDIO: +8 dBu (2.0 V rms) w/ 100k ohm load  
HEADPHONES: +11 dBu (2.75 V rms) w/ 600 ohm load

**Output Impedance:**

PC AUDIO: 3.3k ohms  
HEADPHONES: 20 ohms

**S/PDIF Digital:**

24-bit maximum input, 20-bit maximum hardware output (limited to 16-bit output in Windows Me and Mac Sound Manager), sample rate and bit depth selected by recording software and operating system

**A/D Converter:**

24-bit resolution - no dither added  
104 dB min. dynamic range, 24-bit mode (10 Hz - 22 kHz bandwidth, A-weighted)  
96 dB min. dynamic range, 16-bit mode (10 Hz - 22 kHz bandwidth, A-weighted)

**D/A Converter:**

16-bit resolution  
90 dB min. dynamic range, 24 and 16-bit mode (10 Hz - 22 kHz bandwidth, A weighted)

**Sample Rates / Bit Depths:**

*Recording:* 8, 16, or 24-bit at 32, 44.1, 48 kHz  
*Playback:* 8, 16-bit at 5 to 55 kHz, will play back 24-bit sources at 16-bit

**Master Clock: (recording)**

PLL generated, low jitter

**Metering:**

Input level at A/D converter  
6 segments, 30 dB total range, peak responding  
0 dB on meter = 0 dB FS (0 dB referenced to Full Scaled Digital)

**Phantom Power:**

48 V through 6.8k W resistors, each mic input will supply 10 mA

**Powering:**

USB bus powered, 3 stage soft-start meets USB hot-plugging power requirements  
5 V, 100 mA max current drawn during enumeration  
5 V, 350 mA quiescent current from USB port  
5 V, 500 mA max current from USB port  
USBPre requires a full 500 mA USB port. The USBPre will not be available if connected to a passive USB connection or hub.

**Dimensions (unpacked):**

4.3 cm x 18 cm x 10 cm (H x W x D)  
1.7 in. x 7.25 in. x 4.25 in.

**Weight:**

0.5 kg  
1.13 lbs.

**Certifications:**

Meets FCC Part 15 Class B  
Complies with the requirements of European Directive 89/336/EEC

**Included Accessories:**

USB Cable  
USBPre software installation CD-ROM for Mac OS and Windows OS  
Rubber Feet

## System Requirements - Windows OS

The USBPre relies on the USB port of a Windows PC for its interface to the computer. The USBPre does not function without being connected to a computer.

The requirements below outline the minimum configurations acceptable for operation with Windows computer systems and USBPre hardware. Software applications used with the USBPre have their own requirements that may be in addition to the requirements of the USBPre. Consult your software application's documentation.

**Operating System:**

Windows 98 Second Edition  
Windows 2000 SR-1  
Windows Me  
Windows XP (Home and Professional)

**Processor:**

Intel Pentium II/300 MHz or Intel Celeron/450 MHz minimum  
(Cyril processors not recommended)

**RAM / System Bus Speed:**

64 MB (128 MB with most software) / 66 MHz, 100 MHz recommended

**Hard Drive:**

5400 rpm, 7200 rpm mechanism recommended

**Sound Card:**

None required

**Audio Software:**

Windows compatible audio software with wave audio support.  
Windows compatible audio software with ASIO audio support.

**Motherboard Chipset:**

Intel strongly preferred, Via and ALI based motherboards not recommended

**USB Connection:**

Full USB 1.1 compliance, single controller, single hub

**For Notebook Computer users:**

For proper operation of the USBPre, turn off all power management when using the USBPre 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.

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

## System Requirements - Mac OS

The USBPre relies on the USB port of the Mac for its interface to the computer. The USBPre will not function without a USB equipped Mac.

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

### Operating Systems:

Mac OS 9.0.4 and greater, OS X version 10.2 or 10.3

### Processor:

G3/266 or better, native USB port

### RAM:

64 MB (128 MB with most software) physical RAM with virtual memory turned off

### System Bus Speed:

66 MHz, 100 MHz recommended

### Hard Drive:

5400 rpm recommended, 7200 rpm beneficial for recommended for multi-track recording

### Sound Card:

None required

### Audio Software:

Sound Manager compatible audio software.  
ASIO-Compatible audio software for use with ASIO drivers.

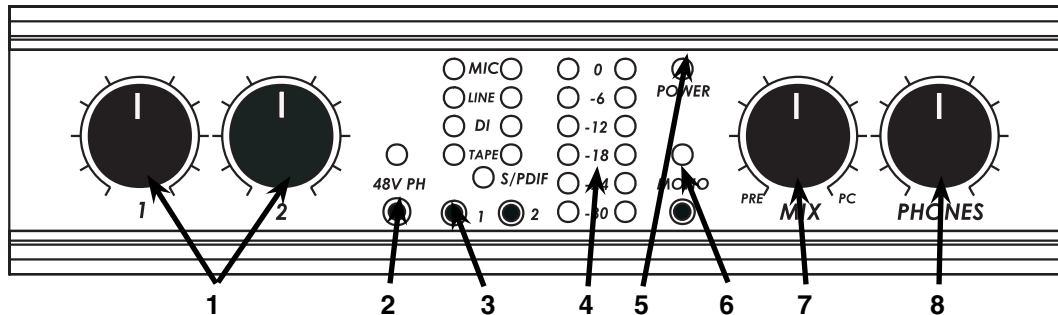
### For PowerBook and iBook users:

For proper operation of the USBPre, turn off all power management when using the USBPre 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.

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



## Front Panel - Controls, Indicators



### 1. Input Gain Controls

Adjusts input gain levels. Gain is minimized (not turned off) at full counter-clockwise setting. Gain control only affects analog input sources.

### 2. 48V Phantom Power Switch and LED

Toggles 48-volt phantom power for both microphone inputs. Phantom is present only at the XLR microphone inputs. LED illuminates when phantom power is applied.

### 3. Input Selection Switches

Selects the input connection type. The adjacent LED indicates selected input type. For each input channel (1 or 2), a single input can be selected - they do not get mixed together. S/PDIF input is selected for both channels.

### 4. Input Level Meter

Calibrated in dB FS, the meter shows the input level of each channel (analog inputs only).

### 5. Power LED

Illuminates when USBPre is connected to a computer and receiving power over the USB port.

### 6. MONO Monitoring Switch

Toggles between mono and stereo monitoring of analog input audio in the headphones only, especially useful when multi-track recording and recording from one input. Red LED illuminates when MONO is selected. Audio from the PC is unaffected.

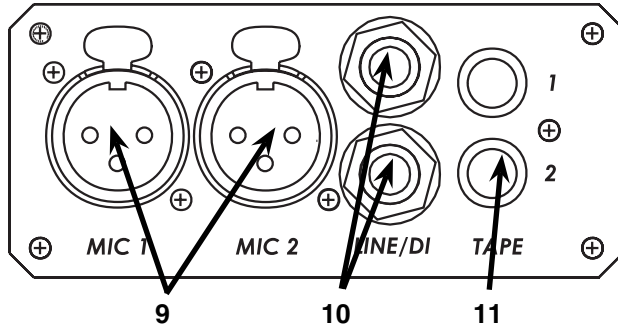
### 7. Mix Control

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 recording sources. The center position mixes monitoring of both source and computer audio. The signal at the PC Audio Output is unaffected by this control. *NOTE: S/PDIF digital inputs cannot be monitored in the headphones. S/PDIF signal can be monitored after being processed by the computer.*

### 8. Headphone Volume Control

Adjusts overall headphone volume.

## Side Panels - Connectors



### 9. Mic Inputs

Active-balanced XLR inputs accept low-impedance microphone level signals.

### 10. Line/DI Inputs

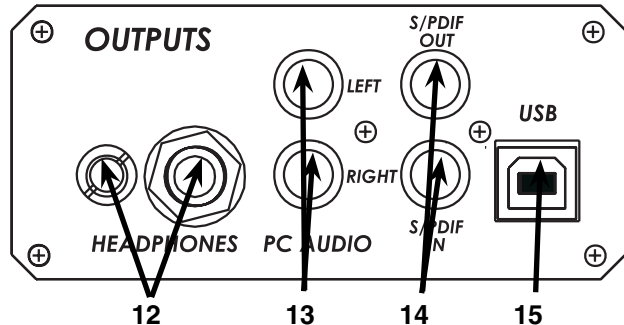
Dual function inputs. Accepts balanced line level signals when the front panel switch is in LINE position. Accepts musical instrument inputs such as guitar pick-ups and electronic keyboards when the front panel switch is in DI position. Impedance changes automatically with front panel Selection Switches.

### 11. Tape Inputs

Accepts consumer level inputs such as CD, MiniDisc, DAT, and cassette players via RCA connectors.

### 12. Headphone Outputs

3.5 mm and ¼-inch TRS stereo headphone outputs can drive low-impedance head-



phones. *Note: The USBPre can drive headphones to dangerously loud levels - take caution when raising the headphone level.*

### 13. PC Audio Output

Audio output to feed powered loudspeakers or consumer level DAT, MiniDisc, and CD recorders. RCA connectors. Computer audio only. The Volume level from this connection is controlled only by the PC and its software.

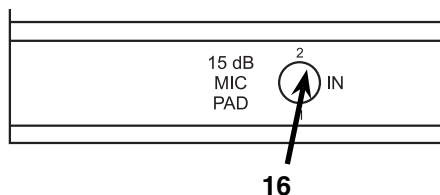
### 14. S/PDIF Input and Output

Coaxial digital input and output connectors. Input is selected via the front panel input selection switch. S/PDIF output mirrors the PC Audio Output signal.

### 15. USB Port

USB B Type connector, interconnection with the computer; provides all data and power to the USBPre via USB bus powering.

## Bottom Panel - Controls



### 16. Microphone Input Pad

15 dB pad for use with “hot” microphone inputs. Pad can be inserted per channel. Reduces microphone sensitivity by 15 dB.



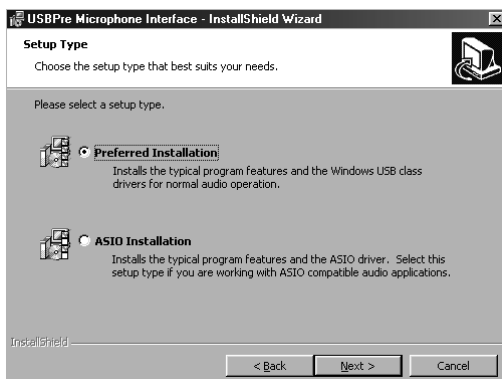
## Windows OS

### Driver Software Installation

**Note: Do not connect the USBPre to a computer without first installing the USBPre drivers and control software.**

The included Windows driver software for the USBPre allows you to select between a “Preferred Installation” or an “ASIO Installation”. For most users the Preferred Installation is advised. With it, the USBPre will act as the audio hardware for all wave compatible software applications, including Windows system sounds, Windows Media Player, DVD players, and most audio recording and playback software.

If the ASIO Installation is selected, the USBPre installs ASIO driver software. ASIO drivers are a low-level connection to ASIO-compatible audio applications. With ASIO, a more direct connection between recording software and the USBPre is obtained, greatly reducing latency - beneficial in multi-track music production. Software applications such as Cubase, Logic, and n-Tracks support hardware via the ASIO drivers. *When ASIO drivers are installed the USBPre will have limited functionality with audio applications and system applications that do not specifically support ASIO.* If you are not certain that you require ASIO drivers, install using the Preferred Installation. You can only have one type of drivers installed on the computer at a time. **To switch between ASIO and Preferred audio requires uninstalling and reinstalling the driver software.**



Select Preferred or ASIO Installation

### Preferred Installation

To install the software for the USBPre:

1. Power on your computer and start Microsoft Windows 98SE, ME, 2000, or XP.
2. Close all open applications.
3. Place the Sound Devices USBPre CD-ROM in your CD-ROM drive.
4. Run the application **D:\setup.exe** (where D is the letter of your CD drive). If your computer is set to auto launch a CD-ROM, the setup application will start automatically. *Note: The setup application uses a Windows 2000 version of the installer application. You may need to restart your machine during installation if it is the first time running this installer application in Windows 98SE.*
5. Select the Preferred Installation to install the USBPre for most Windows audio software.

Once the setup program has begun, a series of on-screen instructions will guide you through the rest of the installation procedure.

*In Windows 2000 and XP, you will be warned that the USBPre drivers are not digitally signed. Click “continue anyway” to complete the installation.*

### Windows ASIO Installation

Follow the same steps as for the Preferred Installation, but selection ASIO Installation when prompted.

To verify that the ASIO driver is installed, enter the Device Manager and view the USB controllers. When the USBPre is connected to the computer “USBPre ASIO” will show as the installed device. (See Windows ASIO.)

### Installing Hardware

Once the USBPre drivers have been installed, follow the instructions below to complete the USBPre hardware installation. These steps will only need to be performed once. Note: You may need your original Windows CD or have the Windows .cab files loaded on your hard drive to properly install all of the USBPre hardware drivers.



1. Close any open applications.
2. Connect the USBPre hardware directly to the computer with the included USB cable.
3. The Windows Hardware Wizard activates and automatically begins searching for drivers for the USBPre.
4. Depending on your system configuration and Windows OS, you may be prompted to search for USBPre drivers. If prompted, define the path **C:\WINDOWS\INF** in the “search for” dialog box of the Hardware Wizard to point the Wizard to the installed USBPre drivers.
5. The Hardware Wizard will finish, and the USBPre will be ready to use.
6. Unplug the USBPre hardware, wait a few seconds, and re-connect.

The USBPre is now installed, subsequent installation procedures are not necessary and the USBPre can be plugged and unplugged when needed.

*If you are installing ASIO drivers under Windows XP, the new hardware wizard will open when hardware is connected. Follow the dialog boxes to allow Windows to complete the installation.*

## Deleting Software Drivers

To remove the USBPre and all of its software components from the computer:

1. Disconnect USBPre hardware from the computer.
2. Follow the path **Start>Settings>Control Panel>Add/Remove Programs**.
3. Select “USBPre Microphone Interface” from the list of software applications.
4. Click “Add/Remove..”
5. The wizard will begin. Follow the on-screen instructions.
6. Restart the computer when prompted to clear the system registry. USBPre software is now removed from the system.

To change your system between Preferred installation (wave audio) and an ASIO installation requires deleting the software drivers and reinstalling.

## Selecting the USBPre

The USBPre communicates with the Windows operating system and audio software through Windows USB audio drivers. Software applications that communicate with Windows wave or direct sound audio can access the USBPre for recording and playback. The USBPre functions as a very

powerful outboard sound card and replaces the on-board sound cards functionality.

With most computer systems the USBPre becomes the default audio input and output device upon connection to the computer. Depending on your system’s configuration, it may be required to manually select the connected USBPre as the addressed audio device:

Follow the path **Start>Settings>Control Panel>Multimedia**. (In Windows ME and Windows 2000, select path **Start>Settings>Control Panel>Sounds & Multimedia**.)

1. In Multimedia Properties, select the Audio tab.
2. Pull down the menu for Playback devices and select the USBPre Interface (it may be named differently if renamed).
3. Pull down the menu for Recording devices and select the USBPre Interface (it may be named differently if renamed).

*Note: Do not plug or unplug the USBPre when actively recording or playing audio. The application and the operating system may become unstable. Unplug the USBPre only after exiting out of audio application software.*

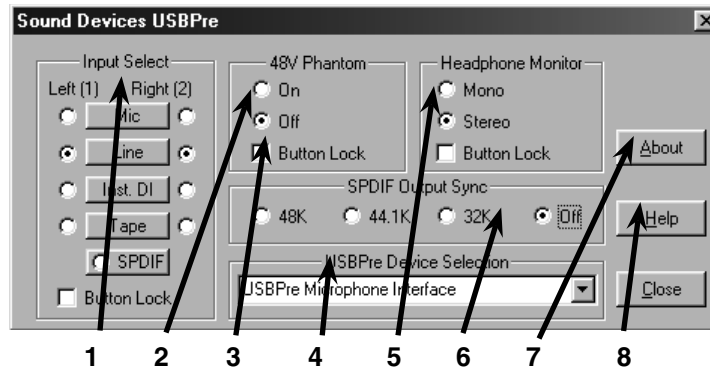
To test whether the USBPre is properly recording, perform the following test:

1. Connect the USBPre to the computer.
2. Select the USBPre as the preferred device (see Selecting the USBPre)
3. Connect an audio source to an input of USBPre and select its input type via the front panel input selection buttons.
4. Verify that the front panel level meters are responding to the audio.
5. Launch the Windows Sound Recorder application from **Start >Programs >Accessories >Entertainment >Sound Recorder**.
6. Select **File>Convert Now**, and select 44.1/16 bit attributes.
7. Record audio.
8. Play back the audio to verify that it has recorded.



## Control Panel Application

The Windows control panel application duplicates the selections of the front panel of the USBPre hardware. The control panel also allows naming individual USBPre's for identification. When two USBPre devices are connected to the computer the control panel can select between the two units. To launch the application follow **Start> Applications> Sound Devices USBPre> USBPre**.



### 1. Input Selection

Selects the input type of each channel. If a S/PDIF version of USBPre is connected, S/PDIF shows up as an available input type.

### 2. Phantom Power

Applies 48-volt phantom power to both microphone inputs.

### 3. Button Lock

When selected, button lock prevents the function selection on the USBPre hardware from being active, preventing unintended changes to the function.

### 4. Device Selection

Shows the name of the attached USBPre. From the factory the USBPre is named "USBPre Microphone Interface". The name in the Device Selection field can be highlighted and the hardware can be renamed. This

name will be applied to the hardware and will show up in the Device Selection field in software applications that can select between audio hardware.

### 5. Headphone Monitor

Selects between mono and stereo headphone monitoring of analog audio sources.

### 6. S/PDIF Output Sync

When a frequency is selected, the S/PDIF output clock remains active at the selected frequency in the absence of audio.

### 7. About

Indicates the revision of the USBPre driver software.

### 8. Help

Launches the help file.

## System Tray Icon

When the USBPre Control Panel application is active a system tray icon shows the status of the USBPre. Under Windows 2000 and XP the application will launch automatically when USBPre hardware is connected to the computer, however, the control panel will be hidden. To open the control panel with connected hardware, double-click

on the USBPre icon in the system tray. When the USBPre is properly connected to the computer the icon illuminates green.

When the USBPre is disconnected from the computer, the system icon changes from green to red. The application is still open, however, there is no hardware to control.



*USBPre is activated.*

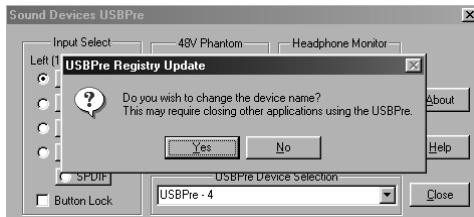


*USBPre is deactivated.*



## Naming USBPre Hardware

A user-defined name can be associated with each USBPre. This name appears in audio application software - typically in the device selection menu. From the factory the default name is “USBPre Microphone Interface”. This name is written to non-volatile memory inside the USBPre, and will appear whenever the USBPre is connected.



*Renaming the USBPre*

To change the default name:

1. Connect the USBPre to the computer.
2. Open the Control Panel application.
3. Highlight the name in the Device Selection area.
4. Enter a new name and hit “enter”. Follow the on-screen instruction.
5. Disconnect the USBPre, then reconnect. The name will be written to the USBPre firmware.

## Audio Playback

When connected to a computer the USBPre becomes the preferred audio hardware. To test whether the USBPre is properly playing audio, perform the following test:

1. Connect the USBPre to the computer.
2. Select the USBPre as the preferred device (see Selecting the USBPre in Windows)
3. Connect headphones or powered loudspeakers to the output of the USBPre.
4. Double-click on the file Play Me.wav on the Sound Devices installation CD. This is a 16-bit / 44.1 kHz wave file.
5. Listen to verify that audio is playing through the USBPre.

## S/PDIF Input and Output

The USBPre can be used to transfer digital audio into and out of a computer via coaxial S/PDIF.

### Input

The USBPre can accept S/PDIF input sources at 16, 20, and 24-bit and with sample rates of 32, 44.1, and 48 kHz. With Windows 98SE and Windows 2000 a full 24-bit signal will be transferred. In Windows Me signals with bit depths higher than 16-bit will be truncated to 16-bit. The input selection LED flashes without S/PDIF connection and turns solid when a valid S/PDIF source is connected.

### Output

In Windows 98SE and 2000 the output of the USBPre is limited to 16-bit with wave audio (using the ASIO drivers enables a maximum output of 20 bits via S/PDIF). A 20 or 24-bit signal sent to the USBPre will output 16-bit data via the analog output.

To improve the transfer of digital audio, the USBPre Control Panel has an S/PDIF output sync

selection. With no sync selected devices connected to the USBPre’s S/PDIF output may take several seconds to “lock-up” to the S/PDIF signal. During lock-up, objectionable audible artifacts are present. When no audio is present the S/PDIF output is inactive. When an output sync sample rate is selected in the Control Panel the S/PDIF output port is always active, sending 0’s at the selected sample rate when no audio is present. This greatly improves the performance of transfers from the S/PDIF output, since a lengthy pre-roll is not required to lock-up the data.

NOTE: Selecting an output sync sample rate in the control panel may have a negative on audio performance since all audio, regardless of its native sample rate, will output at the selected sync rate. Sample rate conversion will occur in Windows when the computer receives an audio signal at a frequency that is different from the selected sync sample rate. Again, make certain that the selected output sync sample rate matches the sample rate of the files being played, otherwise sample rate conversion will occur.





## ASIO (ASIO Installation Only)

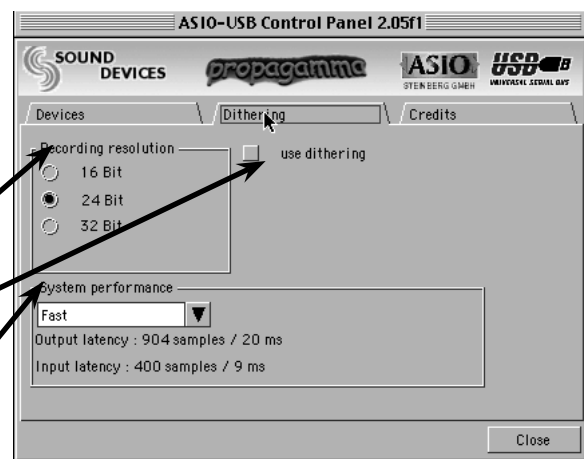
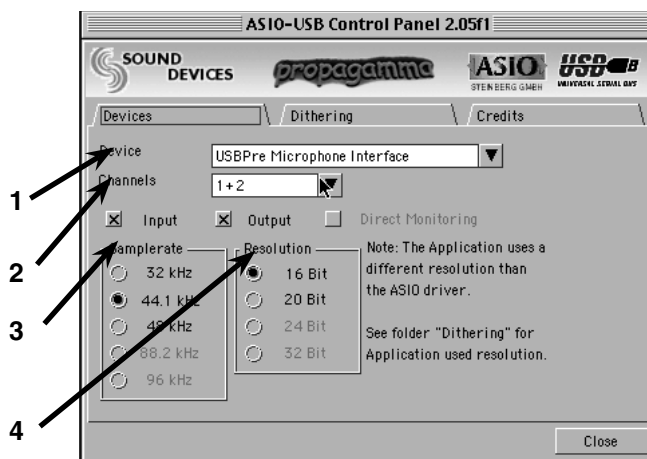
When ASIO is the installed driver type, the USBPre will show as an ASIO device in the ASIO control panel of supported software. To verify that the ASIO driver is installed open the USBPre control panel application as view **About**. The installation type will be shown.

Under ASIO the USBPre is still available as audio hardware to Windows audio applications, but the Preferred installation is recommended for use when ASIO is not required. The USBPre will appear as USB Audio Device in the multimedia panel when the USBPre ASIO driver is installed.

## ASIO Control Panel

The ASIO control panel allows selecting various functions for the USBPre. The Control Panel allows control of the USBPre input sample rate,

input recording resolution, and output resolution. This panel can be launched from within an audio application's audio setup window.



1. **Device**  
Shows the device that is under control - USBPre Microphone Interface.
2. **Channels**  
Shows for which input channels the settings apply.
3. **Input Sample Rate**  
This is the rate at which the USBPre will sample the incoming audio signal. The USBPre supports 32 kHz, 44.1 kHz, and 48 kHz.
4. **Output Resolution**  
This is the resolution of the output bit stream. The USBPre can support either 16 bit or 20 bit output. Note: If the recording resolution and the output resolution do not match a warning message will appear in the Devices window. See the use dithering note for the reason why.
5. **Recording Resolution**  
This is the size of each sample taken from the

5. **Recording Resolution**  
input stream. The USBPre can support 16 bit, or 24 bit. *Note: The option for 32 bit recording does not result in 32 bit resolution out of the USBPre.*
6. **Use Dithering**  
The use of dithering will improve the conversion to a lower bit depth on both the output and the input. Enable the "use dithering" check box in two situations. 1) The ASIO recording resolution is set higher than the application recording resolution. 2) The application output resolution is higher than the ASIO output resolution.
7. **System Performance**  
This controls the speed at which the recorded signal is set. The ASIO control panel supports Highspeed, Fast, Normal, and Relaxed. If you system has noticeable clicks decrease the system performance.



## Macintosh OS 9 Operation

### Software Installation

**Note: The USBPre software must be installed onto the computer in order to communicate with the USBPre. Install the software before plugging in the USBPre for the first time.**

Follow these simple installation and instructions and you will be ready to connect audio sources in minutes. The included CD-ROM installs the USBPre Control Panel Application and required extension software on to your computer.

1. Power on your computer and navigate to the desktop.
2. Close any open applications.
3. Place the Sound Devices USBPre CD-ROM in your CD-ROM drive.
4. Launch USBPre Installer from the CD-ROM, or launch the installer application downloaded from the support website.
5. Once the installation program has begun follow the on-screen instructions in the installer application. Be certain to review the READ ME file for late breaking information regarding the USBPre.

### Connecting Hardware

Make certain to quit any open audio applications before connecting the USBPre. If not, the USBPre will not be available for use as audio I/O. There is

no on or off switch on the USBPre. Plugging and unplugging the USBPre is its equivalent.

When the hardware is connected, the input selection LEDs will scroll, showing that the USBPre is connecting with its driver software.

**If the LEDs do not scroll when the USBPre is connected, the driver software is not properly installed.**

To verify that the USBPre is connected, open the USBPre control panel and notice that changes made to the USBPre's settings are reflected in the control panel.

The USBPre is now connected, subsequent installation procedures are not necessary and the USBPre can be plugged and unplugged when needed.

### Deleting USBPre Software

To remove the USBPre and all of its software components from the computer:

1. Disconnect USBPre hardware from the computer.
2. Run the USBPre Installer application and select "Uninstall".
3. Restart the computer. USBPre software is now completely removed from the system.

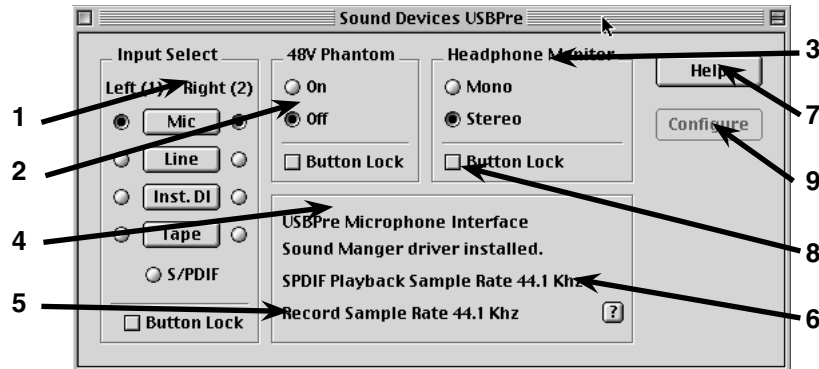




## USBPre Mac OS Control Panel

The USBPre control panel application duplicates the selections of the front panel of the USBPre hardware. The control panel also serves as the utility to load configuration files onto the USBPre.

Configuration files are required to change record sample rates. The USBPre control panel is installed into the Control Panels folder of the System Folder.



### 1. Input Selection

Selects the input type of each channel. If a S/PDIF version of USBPre is connected, S/PDIF shows up as an available input type.

### 2. Phantom Power

Applies 48-volt phantom power to both microphone inputs.

### 3. Headphone Monitor

Selects between mono and stereo headphone monitoring of analog audio sources. PC audio remains in stereo.

### 4. Device Information

Shows the name of the attached USBPre, the sample rates under Sound Manager, and whether it is in Sound Manager or ASIO mode.

### 5. Record Sample Rate

Indicates the selected record sample rate.

See “Configure the USBPre” to change record sample rates.

### 6. S/PDIF Playback Sample Rate

If an S/PDIF unit is connected, the control panel will indicate the sample rate of S/PDIF audio played out of the S/PDIF connection.

### 7. Help

Launches the HTML-based help file.

### 8. Button Lock

When selected, button lock prevents the function selection on the USBPre hardware from being active, preventing unintended changes to the function.

### 9. Configure Button

When in the configuration mode, this allows record sample rates to be changed in Sound Manager (see Configuration Mode).

## Selecting the USBPre

The USBPre communicates with the Mac OS and audio software through a USB Sound Manager driver. Software applications that communicate with Sound Manager can communicate with the USBPre for recording and playback.

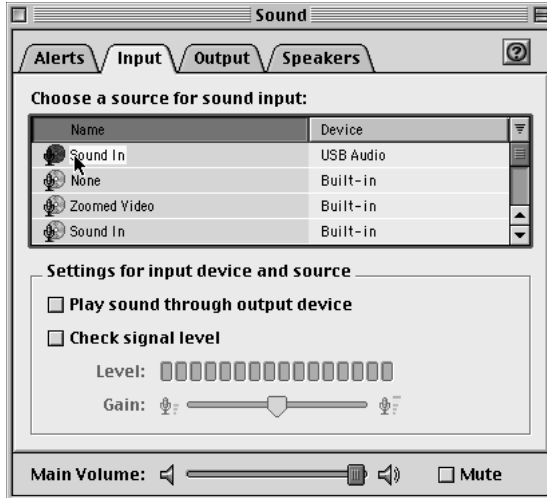
Depending on the applications software, you may need to select the USBPre in the Sound control panel before launching audio software in order for it to be used as audio input and output hardware.

Note: Do not plug or unplug the USBPre when

actively recording or playing through the USBPre. The application and the operating system may become unstable. Unplug the USBPre only after exiting out of audio application software.

## Audio Playback

Depending on the configuration file loaded (see below), the USBPre may show up as built-in audio or as a separate USB audio output device. When connected to the computer the USBPre can take over playback of audio, disabling internal audio



Sound Manager Input



Sound Manager Output

playback. To return to built-in audio playback, unplug the USBPre (do not unplug the USBPre while playing or recording audio). The USBPre will play back 8 or 16-bit audio files with sample rates

from 5 kHz to 48 kHz. Because of the way Sound Manager functions playback sample rate may always be at 44.1 kHz.

## Configuring the USBPre

The USBPre ships from the factory with a record sample rate of 44.1 kHz. To change record sample rates, you must to install a new configuration file into the USBPre firmware. To enter the configuration mode:

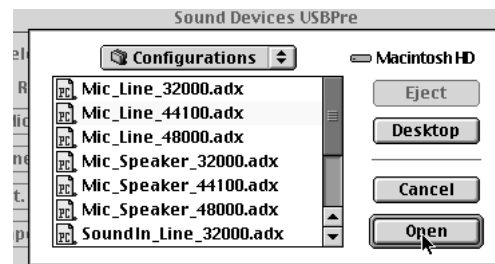
1. Unplug any USBPre hardware from the computer.
2. Launch the USBPre control panel.
3. Hold down any front panel button while plugging in the hardware.

This will bring up the following dialog box:



After hitting OK the USBPre control panel will open again with the Configure button available.

Select Configure. A list of possible configuration settings is available in the Configurations folder in the Sound Devices USBPre folder. Select from the following:



### Configurations

There are three variables to the USBPre's Macintosh configuration files. The syntax of the file names is as follows:

***Input Type\_ Output Type\_ Record Sample***

### Input Types

There are two different input types, Mic In and Sound In. Both types function identically in most applications. The difference is the selection in the



Sound Control Panel, where the USB audio device (USBPre) will show up as either a Mic source or a Sound In source. The one advantage of a Sound In configuration type is that the selection “Play Through Hardware” is available in the Sound Manager Control Panel. Playing through hardware is not available with Mic In types.

### Output Types

Two different output types, Speaker and Line are available. With the Line configuration type the USBPre shows up in the audio output selection of the Sound Control Panel as a separate USB audio output device. Because it is seen as separate hardware, it can be selected as required. With the Speaker output types, the USBPre is not seen in the Sound Control Panel as a selection - it becomes the “built-in” audio device, and simply takes over all playback audio functions of the Macintosh. To revert to internal speakers, unplug the USBPre with the Speaker type.

### Record Sample Rate Selection

Three possible record sample rates are available, 32 kHz, 44.1 kHz, and 48 kHz. When using the S/PDIF input on the USBPre it is very important to select a Record Sample Rate that matches the

source material, otherwise objectionable audio will occur.

After selecting a configuration you will receive this dialog box:



Disregard this message and hit OK. If you successfully configured the box you will see:



Click OK, unplug the USBPre, wait a few seconds, and reconnect. Verify the new sample rate in the USBPre control panel.

## S/PDIF Input and Output

The USBPre can be used to transfer digital audio into and out of a computer via its S/PDIF connections. Please read the following notes relating to S/PDIF in Mac OS.

### Input

The USBPre can accept S/PDIF input sources at 16, 20, and 24-bit and with sample rates of 32, 44.1, and 48 kHz. The input selection LED flashes without S/PDIF connection and turns solid when a valid S/PDIF source is connected. Mac OS Sound Manager will truncate data higher than 16-bit to 16-bit.

Be certain to match the sample rate of the S/PDIF input with the corresponding configuration file of the same sample rate, otherwise objectionable distortion will be present. For instance, select a 48 kHz sample rate configuration file (see Configuring the USBPre) when accepting a 48 kHz S/PDIF signal.

### Output

Macintosh Sound Manager is limited to a maximum of 16-bit output. Any audio file greater than 16-bit will be truncated to 16-bit.

The Macintosh Sound Manager continuously outputs S/PDIF clock data at 44.1 kHz, even when no audio is present. Therefore, all audio played back through the USBPre S/PDIF output is at 44.1 kHz. This means that audio files different than 44.1 kHz go through a sample rate conversion in the operating system before being sent to the USBPre. For many applications, this is acceptable, however, you may want to change this output sample rate to transfer 32 kHz or 48 kHz files at their respective rates.



## Mac OS ASIO Installation

The USBPre is installed as a Sound Manager audio device as its default. To enable the ASIO driver several steps are required.

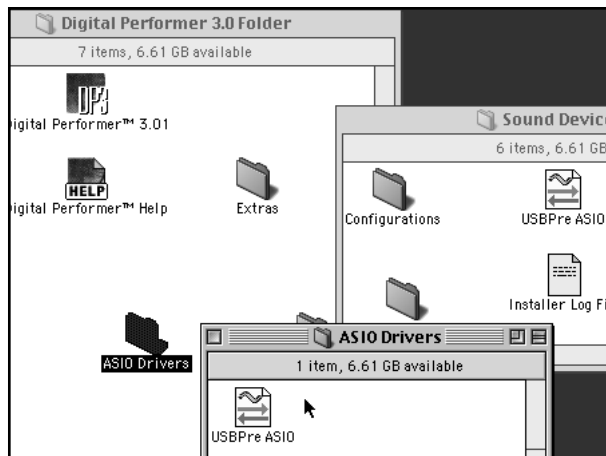
1. In Extension Manager, enable the extension named "PGUSBPre".

<input checked="" type="checkbox"/>	OpenGLMemory	16K	1.2.2
<input checked="" type="checkbox"/>	OpenGLRenderer	2,808K	1.2.2
<input checked="" type="checkbox"/>	OpenGLRendererATI	424K	1.2.5
<input checked="" type="checkbox"/>	OpenGLUtility	216K	1.2.2
<input checked="" type="checkbox"/>	OpenTpt Remote Access	952K	4.0.2
<input checked="" type="checkbox"/>	OpenTpt Serial Arbitrator	8K	4.0.2
<input type="checkbox"/>	PGUSBPre	72K	2.05f1
<input checked="" type="checkbox"/>	Printer Share	80K	1.1.3
<input checked="" type="checkbox"/>	PrintingLib	884K	8.7.1
<input checked="" type="checkbox"/>	PrintMonitor	64K	7.1.4
<input checked="" type="checkbox"/>	QD3DCustomElements	20K	1.6

### Extensions Manager

**Note, you DO NOT NEED TO RESTART the computer after changing the state of the PGUSBPre extension. Simply unplug and plug the USBPre to enable the extension.**

2. Copy (do not move) the USBPre ASIO file to the ASIO Driver folder of the audio software applications.



Copy the USBPre ASIO file

The USBPre is now available as an ASIO device for ASIO compatible software. Verify that the USBPre is an ASIO device by opening the USBPre control panel.



Control Panel - USBPre as ASIO

When the USBPre is enabled as an ASIO device, the USBPre does not show up in Sound Manager. The USBPre can be **either** an ASIO device **or** a Sound Manager device under Mac OS, both not both at once.

In audio software, open the devices selection to adjust the ASIO control panel (see ASIO Control Panel)



USBPre Selected in Digital Performer



## Macintosh OS X

### Software Installation

**Note: The USBPre software must be installed onto the computer in order to communicate with the USBPre. Install the software before plugging in the USBPre for the first time.**

For OS X installation use version 3 Mac installer on the included CD-ROM or download from the Sound Devices website. The install places the control panel application and the necessary drivers on the computer.

1. Power on your computer and navigate to the desktop.
2. Close any open applications.
3. Place the Sound Devices USBPre CD-ROM in your CD-ROM drive.
4. Launch USBPre version 3 installer from the CD-ROM, or launch the installer application downloaded from the support website.
5. Once the installation program has begun follow the on-screen instructions in the installer application. Be certain to review the READ ME file for late breaking information regarding the USBPre.

### Connecting Hardware

Make certain to quit any open audio applications before connecting the USBPre. If not, the USBPre will not be available for use as audio I/O. There is no on or off switch on the USBPre. Plugging and unplugging the USBPre is its equivalent.

When the hardware is connected, the input selection LEDs will scroll, showing that the USBPre is connecting with its driver software.

### Selection and Control of the USBPre in Audio MIDI Control Panel

When the USBPre is connected to the Mac it is available for use by the system and audio software applications. Select the USBPre in the Audio MIDI Control Panel, located in Applications>Utilities.

**If the LEDs do not scroll when the USBPre is connected, the driver software is not properly installed.**

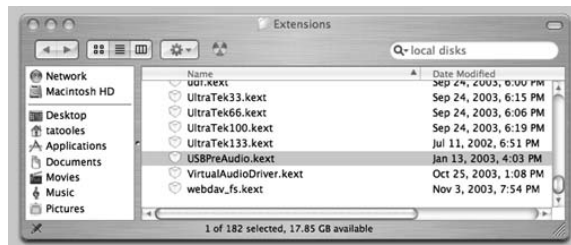
To verify that the USBPre is connected, open the USBPre control panel and notice that changes made to the USBPre's settings are reflected in the control panel.

The USBPre is now connected, subsequent installation procedures are not necessary and the USBPre can be plugged and unplugged when needed.

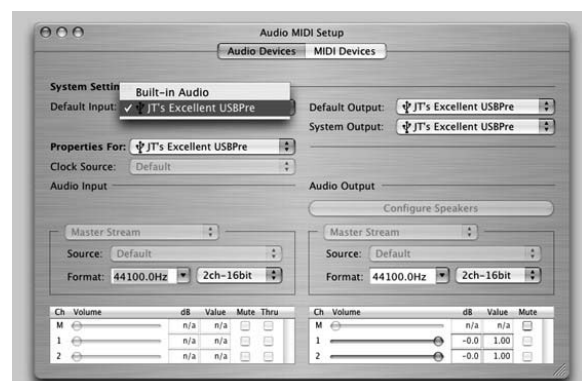
### Deleting USBPre Software

To remove the USBPre and all of its software components from the computer:

1. Disconnect USBPre hardware from the computer.
2. Drag the folder Sound Devices USBPre in the Applications directory to the trash.
3. Locate the file USBPreAudio.kext in the System>Extensions folder (below).



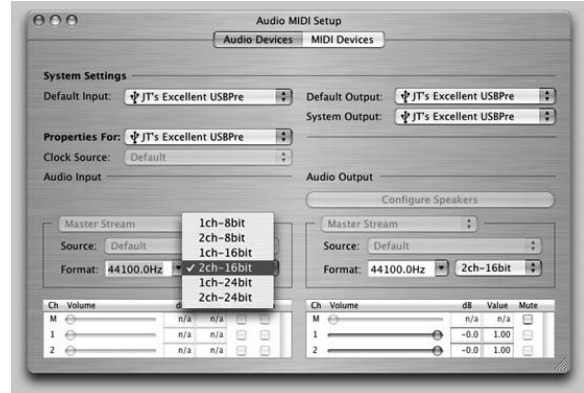
4. Drag the extension file to the trash (super user privileges are required to remove this file).





## Bit Depth

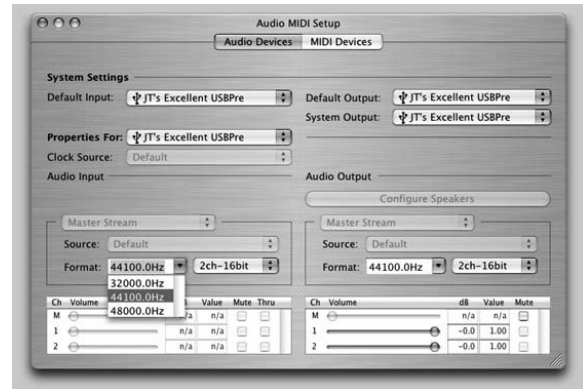
Select the recording bit depth from the available rates of 8, 16, or 24-bit.



## Sample Rate

Select the available record sample rates from 32 kHz, 44.1 kHz, or 48 kHz.

Output sample rates and bit depths have defaults of 44.1 kHz or 48 kHz, although rates from 5 Hz to 52 kHz are supported by the hardware and are available to audio software applications.



## USBPre Control Panel

The USBPre control panel is a duplicate of the front panel of the USBPre. In addition, it provides the ability to lock-out front panel buttons, and view the embedded help file. For full information on the control panel, see the call-outs in the Mac OS 9 section.



## OS X General Tips

Audio applications generally have their own audio I/O selection control. These are in lieu of the selections made in the Audio MIDI control panel.

Unlike in Mac OS 9, configuration files are not required for changing sample rates. Sample rate are selected either in the Audio MIDI control panel or within audio software applications.



## Recording with the USBPre

### Input Source Selection

USBPre has two input channels. Depending on the recording software used, the inputs can be defined as a single, stereo input or as two separate mono inputs. Each analog input on the USBPre can be set to different input types. Since S/PDIF is a two-channel digital protocol, both channels are S/PDIF when selected.

### Input Pad

With some combinations of microphone sensitivity and sound pressure levels, the microphone input of the USBPre can become overloaded. The bottom-side panel input pad inserts a 15 dB pad to scale the input gain range for high microphone input levels. This pad is selected per channel. The pad affects only the microphone inputs.

### Sample Rates

In Windows OS, software applications control the sample rate and bit depth of the analog inputs of the USBPre. Valid sample rates for recording with the USBPre are 32 kHz, 44.1 kHz, and 48 kHz. Valid bit depths for recording with the USBPre are 8, 16, and 24 and 32-bits (32-bit is really the same as 24-bit to the operating system). Recording software applications may show other “valid” sample rates for the USBPre. These should not be used, as the operating system performs a “sample rate conversion” while recording. Sample rate conversion is very CPU-intensive and can cause choppy audio and/or crashes. In Mac OS, the sample rate is selected by loading a configuration file onto the USBPre (see Selecting Sample Rates for Mac OS). When using S/PDIF inputs sources in both Windows and Mac OS, the sample rate selected in software must match the sample rate that is at the S/PDIF input or digital distortion will be heard.

Any sample rate from 5 to 55 kHz can be played back on the USBPre at 8 or 16-bit.

### S/PDIF Inputs

The coaxial S/PDIF input on the USBPre accepts digital input sources with bit depths of 16, 20, and 24-bit, and sample rates of 32, 44.1, and 48 kHz. When S/PDIF input is selected on the hardware, the front panel selection LED will flash until it receives a valid digital signal. *Note: in Windows Me and Mac OS without ASIO any source with bit depths greater than 16-bit will be truncated to 16-bit.*

In Windows the sample rate of the source material into the S/PDIF input must match the sample rate selected in recording software, otherwise a rate mismatch will occur and distortion will cause an unusable signal. In Mac OS the sample rate of source material must match the sample rate selected in the configuration file, otherwise a rate mismatch will occur. See S/PDIF in the individual operating systems sections for more information.

It is not possible to directly listen to S/PDIF input signals via the USBPre since the USBPre has its digital-to-analog converter connected to the PC audio output. S/PDIF signals can be monitored after recording or streaming via the PC Audio outputs. However, depending on the recording software used, you may be able to route an S/PDIF input to an output for “real-time” monitoring.

### Metering

The input meter on the USBPre is calibrated in peak responding dB FS. If recording software does not have its own level metering, metering from the USBPre is necessary. When the red peak LED illuminates, the signal is very near clipping. Reduce the input gain control to avoid overloading the inputs. The front panel meter reads signals from the analog inputs only. If S/PDIF is selected as an input sources the meters will not activate.

### Phantom Power

USBPre provides phantom power for condenser microphones. When selected, 48-volt phantom power is applied to both inputs. Condenser microphones that can operate on phantom voltages from 11-52 volts will function properly with 48-volt phantom.

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 documentation.

### Headphone Monitoring

USBPre has a high current headphone amplifier that can monitor analog input audio, computer

audio, or a mix of both. When monitoring analog input audio, the audio playing in the headphones is the direct analog signal before any digital conversion has occurred and before it is sent to the computer. When monitoring PC audio, the com-

puter controls the digital audio. Note: The Windows Volume Control (controlled with the “speaker”- icon in the system tray) and the Mac volume control adjust the level of the computer audio in the headphones and at the PC Audio output.

## **USB Audio Optimization**

When connected to the computer, the USBPre is a highly integrated part of the PC that relies on the host (computer) to handle data traffic in and out of its hardware. With late model computers there is sufficient processing power to handle all of the tasks of computing along with audio. The performance of the USBPre with your system is dependent on three major factors - the hardware configuration, operating system configuration, and the audio software configuration. To obtain the best performance from the USBPre optimization of each of these factors is recommended.

Assuming that the computer system meets the minimum requirements outlined in this documentation there are other areas that can be optimized.

### **Memory**

Sufficient RAM is important for audio applications. Since a system with insufficient RAM must access the hard drive as virtual memory, the data flow is slowed greatly in and out of the processor. 128 MB of RAM or more is highly recommended for most audio applications.

### **Hard Disk**

Multi-track audio recording is a hard disk intensive activity. As an audio production increases its track count, the demands on the disk drive increase. In general, higher rpm drives have greater sustained throughput than low speed drives. High sustained transfer rates are more important than high burst rates when comparing hard drives for audio (and video) applications. SCSI drives typically have higher sustained throughputs than IDE drives, although newer IDE implementations have sufficient data rates for audio. Depending on the computer system, increased hard disk activity can interfere with (interrupt) the USB bus, resulting in audio dropouts. In general, disk drives with fast sustained data rates and large memory caches perform best for multi-track audio.

### **Buffer Adjustment**

Many audio applications have selections to adjust playback and record buffer sizes. These adjustments change how much audio data is retained in RAM. With too small of a buffer, audio hardware runs out of audio data before it can be read from the hard drive. Typically, larger buffer sizes improve stability of audio applications at the expense of program responsiveness. Refer to your software documentation for guidance in adjusting buffer sizes.

### **Power Management**

Power conservation is a significant issue for notebook computer designers and is becoming more popular on newer desktop computers. Most computers are shipped from the factory with some power management applied. Audio applications and USB audio work best when all power management is deactivated. Power management can spin down hard disks, slow processor and bus speeds, and shut down displays. Often, when recording long programs, the computer keyboard and mouse are not touched. The computer thinks that it is idle and goes into standby mode. The change in state can cause audible artifacts when recording and playing.

### **Notebook Computers (Windows)**

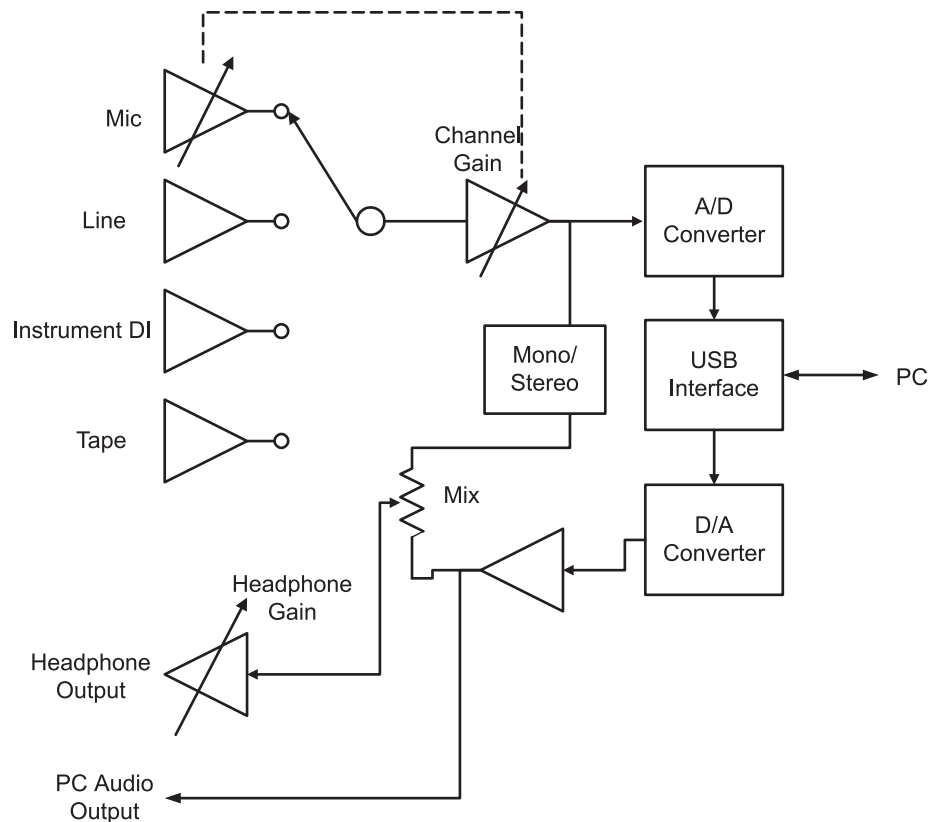
Many notebook computers share IRQ's between the display adapter or other devices and the USB controller. This causes additional traffic on the USB's interrupt. To check for this condition, follow **Start>Settings>System** and select the Device Manager tab, select Computer and click on Properties. This reveals the list of system interrupts. If any device (except for “PCI steering”) shares an IRQ with the USB Host Controller, try removing any unused hardware devices to free up IRQs and turn off hardware acceleration to improve USB audio performance. To turn off hardware acceleration follow **Start>Settings>Control Panel>Display**, select the Settings tab, click “Advanced..”, select the Performance tab and slide the control to the None position.



## USBPre Architecture Overview

The USBPre is a digital system made up of many components. USBPre can be thought of as a combination of stand-alone products - a stereo microphone preamplifier, A/D converter, S/PDIF format converter, D/A converter, and headphone amplifier

in a single box. The convenience of having all of these components in a single, compact product powered from the computer is obvious. The block diagram below shows one analog input of the USBPre.



## FAQ (Frequently Asked Questions)

**1. Why does the USBPre take long to power up?**

The USBPre is classified a “high power” USB peripheral. Like all USB devices, it is required to enumerate with the operating system initially in low power mode before it steps up to high power mode. It takes roughly 15 seconds for the USBPre to complete “checking-in” with the operating system and be available for use.

**2. When I plug the USBPre into the computer why do some of the input LED’s flash?**

The LED’s flash on enumeration with the operating system (see above). Also, if one of the buttons is being held down on power-up, the USBPre goes into configuration mode. This mode is used to reprogram the non-volatile memory in the USBPre and should be avoided except when changing configuration files in Mac OS or upgrading the USBPre.

**3. Why can’t I use Windows 95, Windows 98 (first release), or Windows NT 4.0 with the USBPre?**

Windows 95 OS2 was the first Windows OS with USB support. Windows 98 (first release) is essentially the same as Windows 95 OS2 and has an early implementation of USB audio support. Both of these operating systems USB audio drivers are problematic with the USBPre (and other USB audio products). Upgrade to Windows 98SE (or Windows Me) from Windows 95 and Windows 98. In addition, early implementations of USB hardware may not be USB 1.1 compliant and even with Windows 98SE, interconnection with the USBPre may be problematic.

Windows NT 4.0 has very limited USB support. Upgrade to Windows 2000 from NT for USB audio support.

**4. Why is the unit connected, with the power LED lit, but the input selection LED’s are not lit and I can’t select the USBPre as a playback device.**

The software drivers and control panel software have not been loaded on the computer. Disconnect the USBPre and install the software from the included CD-ROM. Also check

that you are running on a system that meets the minimum requirements.

If the computer has successfully connected to the USBPre in the past, disconnect the hardware, wait several seconds, and reconnect. This will reconnect the USBPre with the operating system.

**5. I can’t get the USBPre to start up. It doesn’t seem to be getting enough power.**

Depending on your computer setup, you may not be connecting the USBPre to a high-powered USB port. The USBPre requires a full 500 mA USB port like those provided with an active hub directly on the computer. Connecting the USBPre to a passive hub is inadequate to power the hardware, since passive hubs typically provide 250 mA or less of current to each USB port. With iMac computers, connect the USBPre directly to the computer, not the keyboard, since the keyboard acts as a passive hub.

**6. Why is audio playback low or no audio output?**

The volume control in the Windows Mixer and the Mac’s volume control adjusts the output level of the PC Audio output and the level to the headphones. The Windows mixer is accessed by the icon in the system tray that looks like a speaker (if it is there). Alternatively, go to **Start >Programs >Entertainment >Volume Control** to launch the Windows Mixer. Raise both the “Volume Control” and the “Wave” for more level. Verify that the USBPre is the selected playback hardware in the Multimedia settings in the Control Panel. Raise the volume control in the Mac for more level.

**7. Why does the USBPre seem distorted when recording even though the red overload LED’s have not illuminated?**

The headphone amplifier is most likely distorting. High monitoring levels can overdrive the headphones when using high impedance headphones. Play back recorded tracks at lower monitoring levels to confirm that the recorded audio signal is distortion-free.

**8. Why does my audio click?**

There are a variety of reasons that audio may have dropouts, or gaps during playback or recording. This is primarily an issue between the USB audio implementation of the operating system and your computer's hardware and software configuration. See USB Audio Optimization to improve performance.

**9. Why the mono/stereo button? Does it mono the inputs?**

The ability to monitor in mono is important when multi-track recording. When recording with one input, the ability to hear that input in both ears in the headphones makes monitoring less fatiguing. Monitoring in mono is necessary with single channel sources. The Mono function can be heard only through the headphones, and only affects the input signals; any signals from the PC stay stereo.

**10. How do I connect a turntable to the USBPre to transfer my vinyl into my computer?**

The output of a turntable is a low-level, high impedance signal. A phono preamplifier is needed between the turntable and the Tape input of the USBPre to amplify and equalize the turntable signal.

**11. How do I get my internal CD player to play through the USBPre?**

In Windows 98, go to **Start>Settings>Control Panel>Multimedia** and select the CD Music tab and check the "Enable digital CD audio" to play audio through the USBPre. In Windows 2000, go to **Start>Settings>Control Panel>Sounds and Multimedia** and select the Hardware tab. Select the CD-ROM, and then click on the Properties button, then select the Properties tab, and check the "Enable digital CD audio..." . In Mac OS, select USB Audio as the output

type in the Sound Control Panel.

**12. When playing audio through the unit the meters don't respond. Why?**

The front panel meters of the USBPre are analog input meters only. No output levels show on them. In addition the meters are measuring analog inputs only, therefore they will not respond with an S/PDIF input signal.

**13. I am losing the first few seconds of audio when I use the S/PDIF output in Windows. Why?**

With S/PDIF interconnections a clock signal is sent along with the audio data. Depending on the receiving input, it may take several seconds for the S/PDIF input to "lock" onto the received clock. To minimize this lock-up time the USBPre Control Panel has an output sample rate sync frequency selection (see S/PDIF in the Windows OS section). If selected the S/PDIF output transmits a blank signal at the selected frequency. By sending an empty signal but at a valid clock rate external S/PDIF inputs can immediately lock to the audio data when present.

## Technical Support, Warranty, Approvals

### Technical Support

For technical support for the USBPre and all Sound Devices products, contact:

Sound Devices, LLC  
**e-mail: support@sounddevices.com**  
Telephone: (608) 524-0625  
Fax: (608) 524-0655

*Sound Devices cannot guarantee that a given computer, software, or operating system configuration can be used satisfactorily with the USBPre based exclusively on the fact that it meets the minimum system requirements.*

### Warranty

Sound Devices, LLC warrants the USBPre Audio Interface against defects in materials and workmanship for a period of ONE (1) year from date of original retail purchase. This is a non-transferable warranty that extends only to the original purchaser. Sound Devices, LLC will repair or replace the product at its discretion at no charge. Warranty claims due to severe service conditions will be addressed on an individual basis. THE WARRANTY AND REMEDIES SET FORTH ABOVE ARE EXCLUSIVE. SOUND DEVICES, LLC DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOUND DEVICES, LLC IS NOT RESPONSIBLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH OF WARRANTY OR UNDER ANY OTHER LEGAL THEORY. Because some jurisdictions do not permit the exclusion or limitations set forth above, they may not apply in all cases.

For all service, including warranty repair, please send the USBPre, along with proof of purchase date to:

**Sound Devices, LLC**  
Service Repair  
300 Wengel Drive  
Reedsburg, WI 53959 USA

telephone: (608) 524-0625

### FCC Statement

This device has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

### CE Declaration of Conformity

According to ISO/IEC Guide 22

Sound Devices, LLC  
300 Wengel Drive  
Reedsburg, WI 53959 USA

declares that the product, USBPre Microphone Preamplifier is in conformity with:

**EN55103-1 (1997)**, Emissions standard for product family audio devices for professional use

**EN55103-2 (1997)**, Immunity standard for product family audio devices for professional use

**EN55022 (1995)/CISPR 22 (1997)**, Radiated and Conducted emissions, Class B

**EN61000-4-2 (1995)/ IEC1000-4-2 (1995)**, ESD - 6kV contact, 8kV air-discharge

**EN61000-4-3 (1995)/ IEC1000-4-3 (1995)**, Radiated RF Immunity, 10 V/m, 80% 1 kHz amplitude modulation

**EN61000-4-4 (1995)/ IEC1000-4-4 (1995)**, EFT/ Burst, I/O lines, +/- .25 kV to +/- 1.0 kV

**EN61000-4-6 (1996)/ IEC1000-4-6 (1996)**, Conducted RF Immunity, 10 V, 80% 1 kHz amplitude modulation

Tested by L. S. Compliance, Inc. Cedarburg, Wisconsin

February 3, 1999

Matthew Anderson  
Director of Engineering  
Sound Devices, LLC

## Software License

### End-user license agreement for Sound Devices USBPre Software

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