USB 2.0

0404

Audio/MIDI Interface

Owner's Manual

CREATIVE PROFESSIONAL

≡≡ E-MU

USB 2.0

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Audio/MIDI Interface

Owner's Manual

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Revision: C

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INTRODUCTION

Thanks for your purchase of the E-MU 0404 USB 2.0 Audio/MIDI Interface. This interface brings an unparalleled level of USB audio quality to the Mac or PC, with pristine 24-bit/192kHz A/D and D/A converters, ultra-low jitter clock, and XTC™ Class-A, ultra-low noise mic/line/hi-Z preamps. The signal-to-noise specs of the E-MU 0404 USB 2.0 are unmatched by any other USB interface on the market! From its plug-and-play functionality and hands-on ergonomic design, to professional features like zero-latency direct monitoring, S/PDIF and MIDI interfaces, the 0404 USB will forever change your expectations of USB audio. The 0404 USB also comes complete with the powerful E-MU Production Tools Software Bundle so that you have everything you need to create, record, edit, mix and burn your music right out of the box.

Some of the other key features are detailed below:

- Switchable Analog Soft-Limiting and true 48 Volt Phantom Power on both analog inputs.

- Record and Playback support for a multitude of sample rates: 44.1k, 48k, 88.2k, 96k, 176.4k, 192k. *(176.4k &192k available on PC version only)*

- Independent ground lift switches for both analog inputs help to solve potential ground loop problems

- Studio-Grade Headphone Amplifier with level control

- Main Output level control

- Stereo S/PDIF digital interface features coaxial and optical connectors for easy hookup to your other digital gear

- AC-3/DTS passthrough via the digital S/PDIF outputs

NOTE
There are some limitations when operating at higher sample rates. See *for details.*

PACKAGE INCLUDES:

- E-MU 0404 USB 2.0 AudioPod
- USB Cable
- Universal Power Adaptor
- Quick Start Installation Guide

E-MU Software/Manual CD-ROM (OS X /Windows)
- Window XP and x64 Drivers
- Mac OS X Drivers
- Owner's Manual and Tutorials

E-MU Production Tools Software Bundle CD-ROM (Windows)
- Cakewalk Sonar LE
- Steinberg Cubase LE
- Steinberg Wavelab Lite
- Celemony Melodyne essential
- IK Multimedia AmpliTube LE
- SFX Machine LT
- Minnetonka diskWelder BRONZE (5-burn trial)

E-MU Proteus VX CD-ROM (Windows)
- E-MU Proteus VX (with over 100 sounds)

E-MU Production Tools Software Bundle CD-ROM (OS X)
- BIAS Peak Express
- Celemony Melodyne essential
- IK Multimedia AmpliTube LE
- SFX Machine LT
- Minnetonka diskWelder BRONZE (5-burn trial)

Ableton Live Lite for E-MU CD-ROM (OS X, Windows)
- Ableton Live Lite

COMPUTER REQUIREMENTS

The minimum computer system requirements for the E-MU 0404 USB 2.0 are listed below.

Windows

- Intel® or AMD® processor — 1.2 GHz or faster
- Intel, AMD, or 100% compatible motherboard & chipset
- Microsoft® Windows® XP (SP 2 or greater) or Windows XP x64
- 1 available (Hi-Speed) USB 2.0 port *
- 256 MB System RAM
- 900 MB of free hard disk space for full installation
- CD-ROM/CD-RW or DVD-ROM drive required for software installation
- XVGA Video (1024 x 768)

OS X

- Apple® Macintosh® G4 — 800 MHz or faster
- Apple Macintosh OS X (10.4.3 or greater)
- 1 Available (Hi-Speed) USB 2.0 port †
- 512 MB System RAM
- 500 MB of free hard disk space for full installation
- CD-ROM/CD-RW or DVD-ROM drive required for software installation
- XVGA Video (1024 X 768)

When using a USB 1.1 port, performance is limited to16-bit and 44.1/48 kHz recording and playback.

† USB 1.1 is not supported on the Macintosh

SOFTWARE INSTALLATION

Windows XP

Follow these instructions to install the 0404 USB 2.0 software and E-MU Production Tools software bundle on a Windows XP computer.

1. First connect the 0404 USB 2.0 to your computer using the supplied USB cable, and turn it on. Connect the 5VDC Adapter as shown on .

2. If Windows prompts you with an Add New Hardware Wizard, click **Cancel**.

3. Insert the E-MU Software/Manual Installation CD into your CD-ROM drive. If Windows AutoPlay mode is enabled for your CD-ROM drive, the CD starts running automatically. If not, from your Windows desktop, click **Start**->**Run** and type **d:\setup.exe** (replace **d:** with the drive letter of your CD-ROM drive). You can also simply open the CD and double-click **Setup.exe**.

4. The installation splash screen appears. Follow the instructions on the screen to complete the installation. You will have the option to install 0404 USB 2.0, and Adobe Acrobat Reader.

5. Choose "Continue Anyway" when you encounter the "Windows Logo Testing" warning screen. See the note below.

6. When prompted, restart your computer.

7. Be sure to register your 0404 USB 2.0 so we can advise you of future software updates and special offers. You can register online at: www.emu.com/register

8. Your 0404 USB 2.0 is now ready to use.

9. Insert the **Windows Production Tools Software Bundle CD-ROM** into your CD-ROM drive.

10. The installation splash screen appears. Follow the instructions on the screen to complete the installation.

Note About Windows Logo Testing

When you install the 0404 USB 2.0 drivers, you will see a dialog box that informs you that the driver has not passed Windows Logo testing.

However, the 0404 USB 2.0 drivers have been rigorously tested using the same test procedures that a signed driver requires, and it passes in all important categories, including those that measure the relative stability of the driver. So, it is perfectly safe to install these drivers on your computer.

Uninstalling all Audio Drivers and Applications

At times you may need to uninstall or reinstall the 0404 USB 2.0 application and device drivers to correct problems, change configurations, or upgrade outdated drivers or applications. Before you begin, close the E-MU USB 2.0 Audio control application. Applications running during the uninstallation will not be removed.

1. Click **Start** -> **Control Panel**.

2. Double-click the **Add/Remove Programs** icon.

3. Click the **Install/Uninstall** tab (or **Change or Remove Programs** button).

4. Select the **E-MU 0404 USB 2.0** entry and then click the **Change/Remove** button.

5. In the **InstallShield Wizard** dialog box, select the **Remove ALL** option.

6. Click the **Yes** button.

7. Restart your computer when prompted.

You may now re-install existing or updated E-MU device drivers or applications.

Macintosh OS X

Follow these instructions to install the 0404 USB 2.0 drivers and software on a Macintosh OS X computer. First, connect the 0404 USB 2.0 to your computer as shown on page 12.

Install the 0404 USB 2.0 Software

1. Insert the **E-MU Software/Manual CD-ROM** into your CD-ROM drive.
2. Double-click on the **E-MU** icon on the desktop.

3. Double-click on the **Install** icon to start the installation.

4. The installation Welcome screen appears. Follow the instructions on the screen.
5. When the **Authenticate** dialog box appears, enter the administrator password you chose when you installed OS X.
6. Continue to follow the instructions on the screen to continue the installation. You will be given the option to install:
   - **Easy Install:** Installs the following applications and drivers.
      E-MU 0404 USB 2.0: USB Drivers and Control Application
   - **Custom Install:** allows you to choose which components are installed.
7. **Easy Install** is recommended. The software will be quickly installed. When prompted, restart your computer.
8. Be sure to register your 0404 USB 2.0 so we can advise you of future software updates and special offers. You can register online at: www.emu.com/register

*Set-up the 0404 USB 2.0 as your Default Audio Device*

9. Click **Go -> Utilities** from the menu bar.
10. Double-click **Audio MIDI Setup**, then click the **Audio Devices** button if it's not already selected. The window shown on the following page appears.
11. Select the 0404 USB 2.0 for the following: **Default Input**, **Default Output**, **System Output**, **Properties For**.
12. Play a song on **iTunes** to verify that the 0404 USB 2.0 is the default device for audio playback.
13. Quit iTunes.
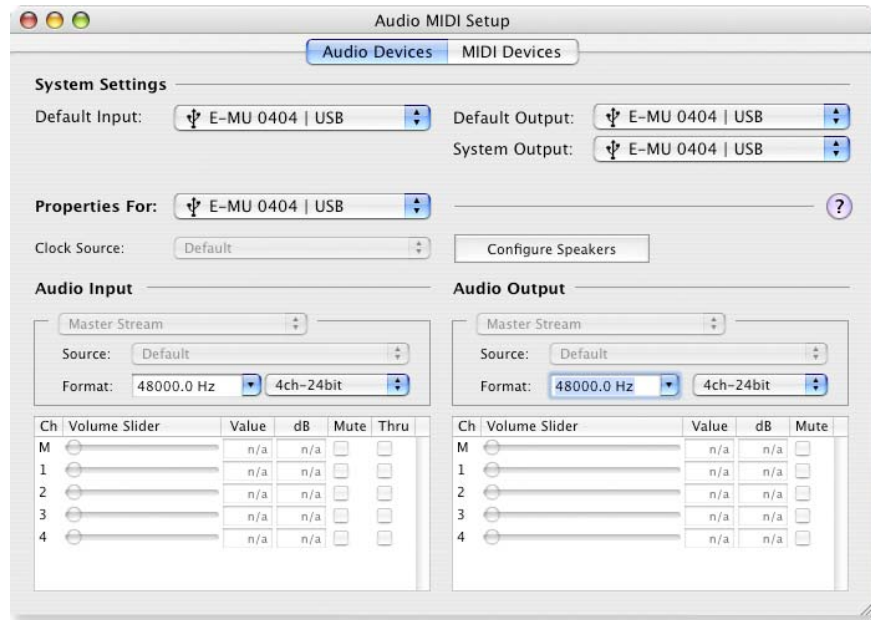
Setup the MIDI Devices

If you plan to use a MIDI keyboard, now would be a good time to set up your MIDI devices. Connecting a MIDI keyboard will allow you to use the virtual instruments provided in the software bundle and get the most out of your purchase.

14. Click the **MIDI Devices** button. The window shown below appears.
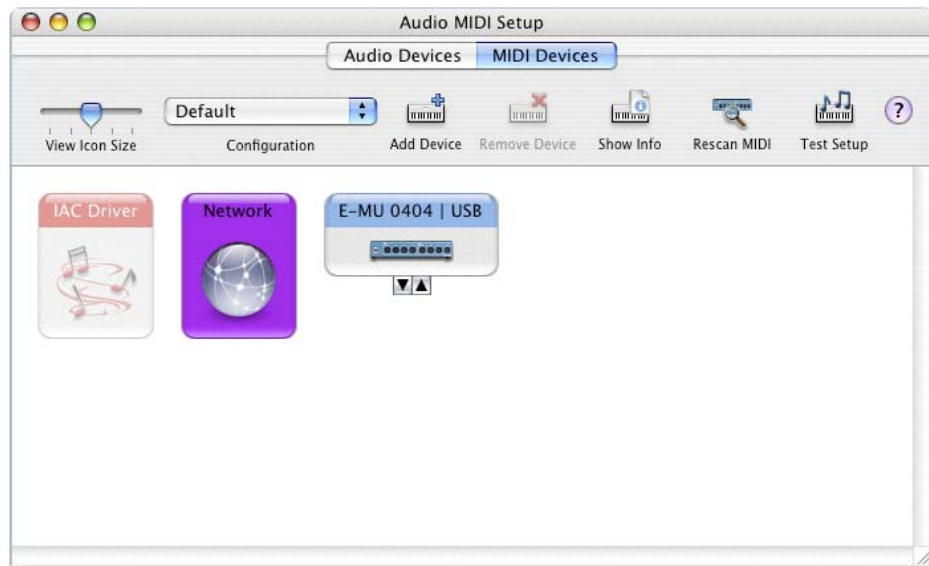
15. Click the **Add Device** button. A new external device icon like the one shown at left appears.

16. Double-click on the new external device if you want to set the MIDI Keyboard Properties. You have the option to name and change the icon for the device. Click **Apply**, then click the **Close** button ⊖ to close the Properties window.

17. Connect the new external device to the E-MU 0404 USB by dragging between the input and output connectors.

18. The window below shows a properly connected MIDI device.

19. Press the close button ⊖ to close the Audio MIDI Setup window.

Install the Production Tools Software Bundle

20. Insert the **Macintosh Production Tools CD** into your CD-ROM drive.

21. Double-click on the installer package.

22. The installation splash screen appears. Follow the instructions on the screen.

23. Continue to install applications from the bundle as desired,

Uninstalling the Audio Drivers and Applications

At times you may need to uninstall or reinstall the 0404 USB 2.0 application and device drivers to correct problems, change configurations, or upgrade outdated drivers or applications. Before you begin, close the E-MU USB 2.0 Control Panel application. Applications running during the uninstallation will not be removed.

1. Open the **Applications** folder.

2. Open the **Creative Professional** folder.

3. Open the **E-MU USB Audio** folder.

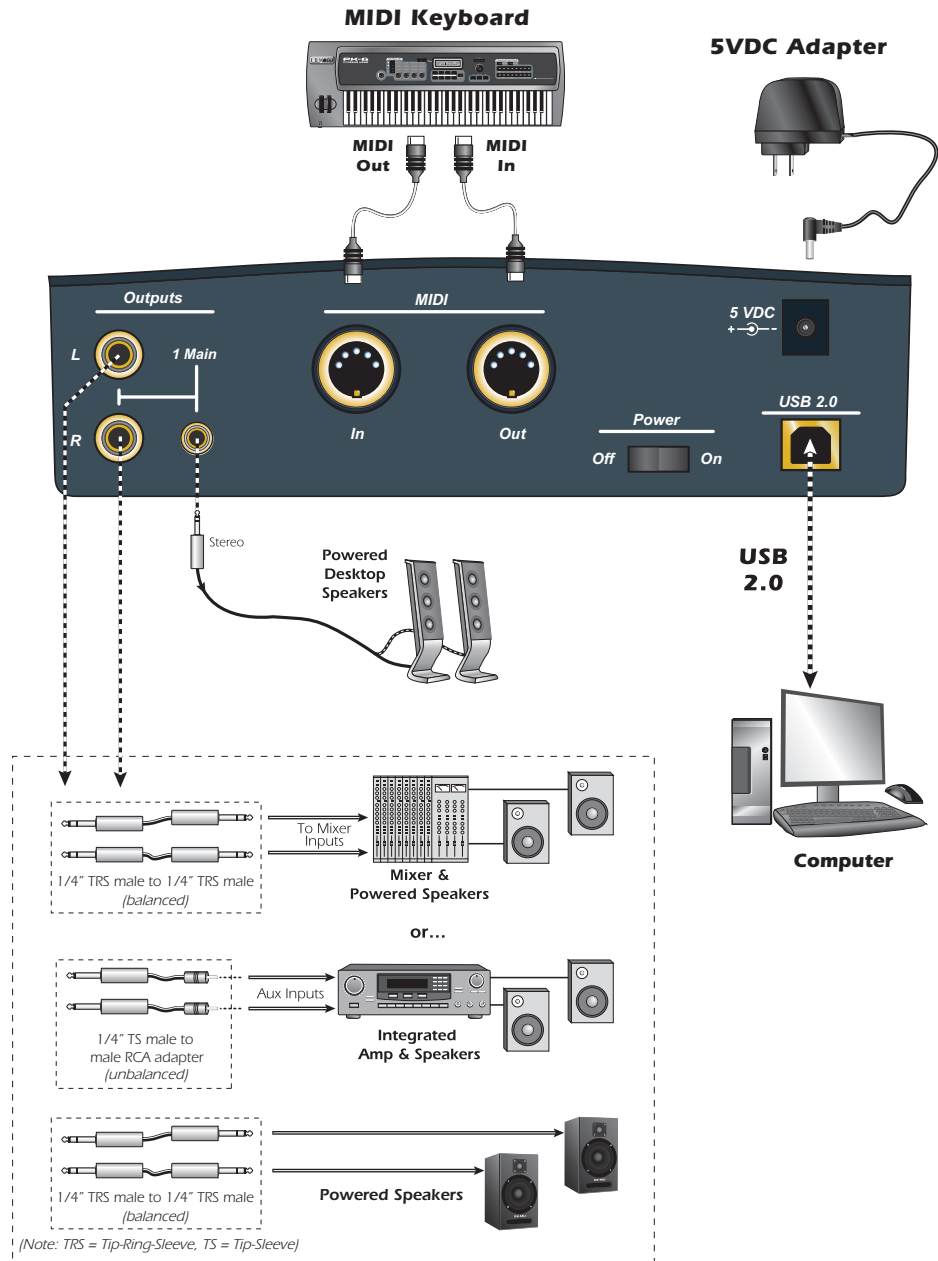4. Click the **E-MU USB Audio Uninstaller** and follow the instructions.
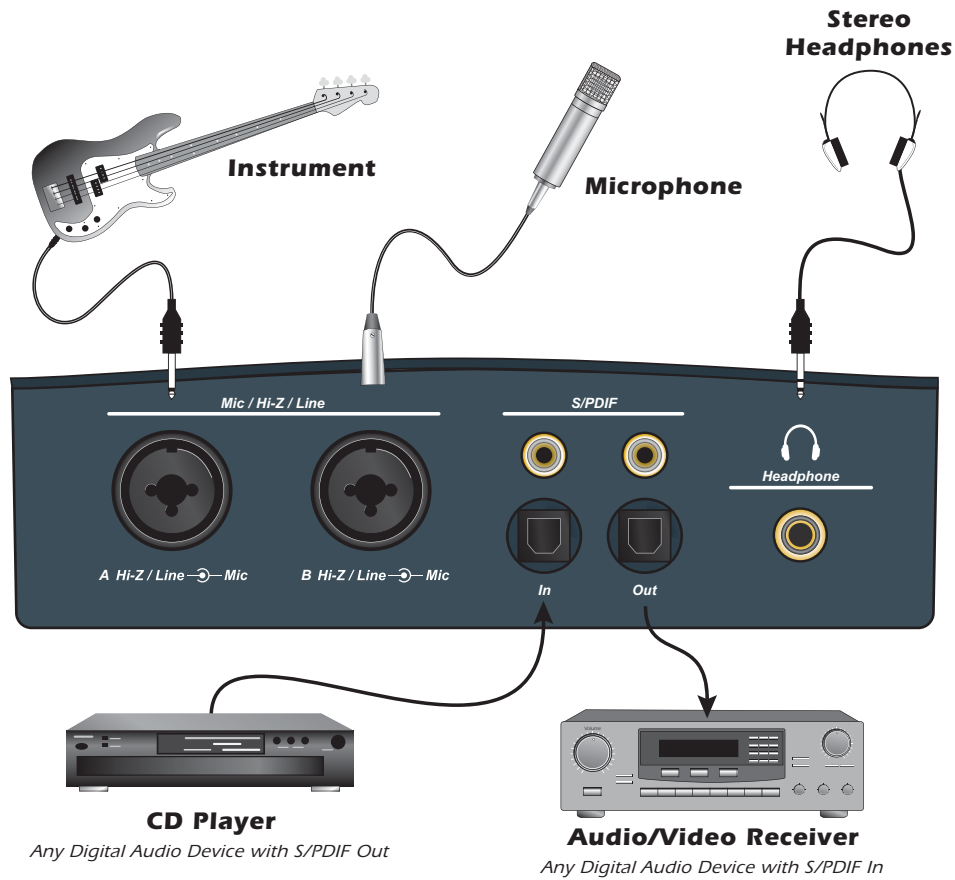
CONNECTION DIAGRAMS

MIDI Keyboard

5VDC Adapter

MIDI Out   **MIDI In**

NOTE

The universal power adapter comes with several types of snap-on plugs. Use the type of plug appropriate for your country.

Outputs   *MIDI*   5 VDC

L   1 Main   In   Out   Power   USB 2.0

R   Off   On   USB 2.0

Stereo

WARNING!

Use only a USB 2.0 certified Hi-Speed cable (like the one supplied) for the USB connection. Using a USB 1.1 cable may cause erratic behavior and degraded performance.

Powered Desktop Speakers

USB 2.0

To Mixer Inputs

1/4" TRS male to 1/4" TRS male
(balanced)

Mixer & Powered Speakers

Computer

or...

Aux Inputs

1/4" TS male to male RCA adapter
(unbalanced)

Integrated Amp & Speakers

1/4" TRS male to 1/4" TRS male
(balanced)

Powered Speakers

(Note: TRS = Tip-Ring-Sleeve, TS = Tip-Sleeve)

Analog Inputs/Outputs & S/PDIF

Stereo Headphones

Instrument

Microphone

Mic / Hi-Z / Line

S/PDIF

Headphone

A Hi-Z / Line ——⊙—— Mic   *B Hi-Z / Line ——⊙—— Mic*

In   *Out*

CD Player
Any Digital Audio Device with S/PDIF Out

Audio/Video Receiver
Any Digital Audio Device with S/PDIF In

The Mic/Hi-Z/Line Inputs accept any balanced or unbalanced instrument, line level signal or microphone. The coaxial/optical S/PDIF inputs and outputs allow you to interface with external digital audio equipment.

MAIN PANEL CONTROLS
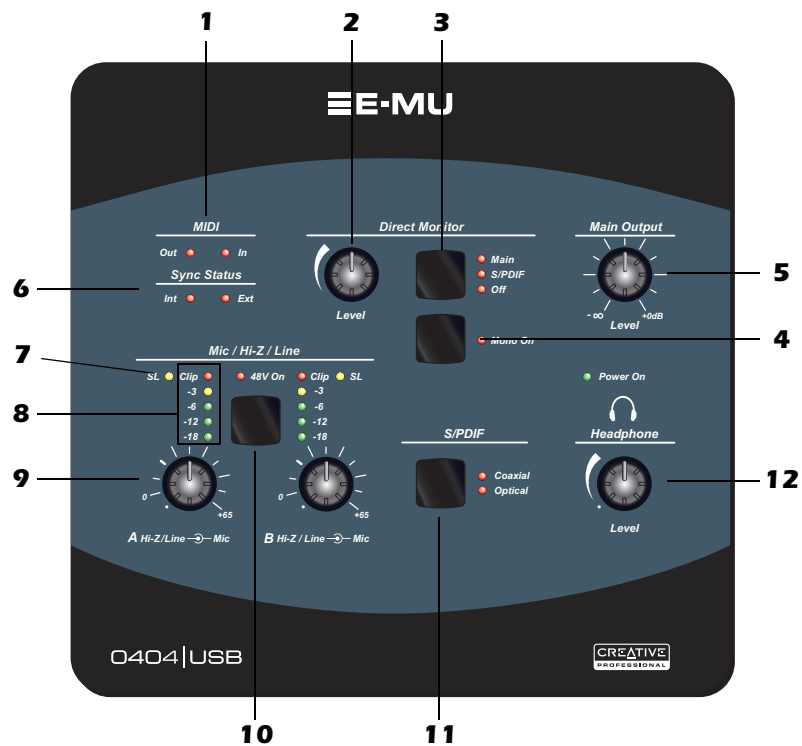
1. **MIDI In/Out Activity Indicators**

   These indicators light when data is being sent or received from the MIDI ports.

2. **Direct Monitor Level Control**

   This encoder controls the mix of the input signal into the output from full level to off.

3. **Direct Monitor Output Switch & Indicators**

   Turns direct monitoring on or off and allows you to send the direct monitor signal to either the Main output or the S/PDIF output. The direct monitor signal is a mix of all inputs. See "Direct Monitoring" on page 21.

4. **Mono Switch (Direct Monitor)**

   When on, the left and right direct monitor channels are summed to mono. This feature is useful when the two inputs are being used for separate instruments.

5. **Main Output Level**

   Controls the Main Output level.

6. **Sync Status Indicators**

   Indicates if the digital clock source is set to internal or external. Select **External** Sync in the E-MU USB 2.0 Audio Control Panel to select external clock. **The External LED will flash if sync is not valid.** See page 19 for additional information about using digital inputs.

7. **Soft Limit LEDs**

    The Soft Limit LEDs indicate that the signal level is being soft limited. When enabled in the E-MU USB 2.0 Audio Control Panel, the analog soft limiters begin to gently turn down the gain whenever the signal level goes above -12 dBFS. The soft limiters allow you to run a hotter signal without fear of clipping.

8. **Signal Level & Clip Indicators**

    The LED signal level indicators show the signal level for both analog inputs. The red clip indicators momentarily remain on whenever your input level exceeds 0 dBFS. With a proper signal level, the yellow -3dB LED will come on occasionally, but the red clip LED should never light.

9. **Input Level Gain Controls**

    The preamp level controls set the input gain from 0dB to +65dB. The wide mark indicates the 0dB/unity setting when using **unbalanced** input cables. The 0dB mark indicates unity gain when using **balanced** input cables.

    0dB/Unity
    (Unbalanced)

    0dB/Unity
    (Balanced)

    0

    +65
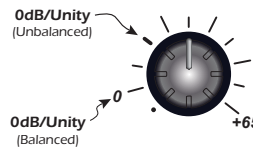
10. **48V On Switch & LED**

    This switch enables +48 Volts to both XLR inputs for powering microphones that require phantom power. The red LED indicates that phantom power is on.

11. **S/PDIF Mode**

    Coaxial or Optical. This button selects between coaxial cable or optical inputs for the S/PDIF digital interface. Both outputs are always active.

12. **Headphone Level Control**

    This knob controls the volume of the Headphone output.

WARNING!

Some microphones cannot tolerate phantom power and may be damaged. Check your microphone's specifications and requirements before using phantom power.

INPUT/OUTPUT
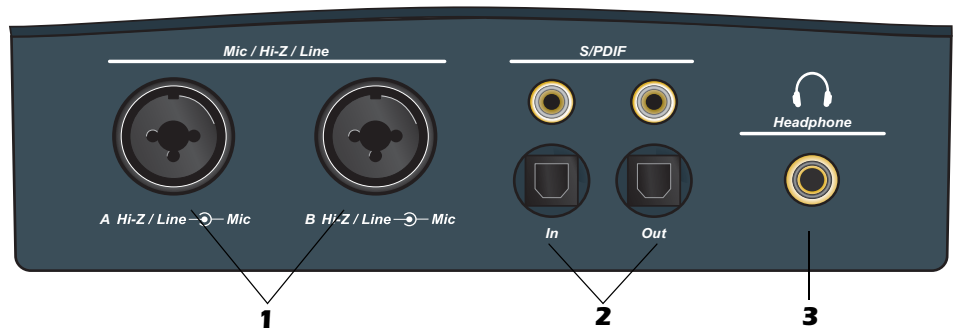
1. Mic / Hi-Z / Line Inputs

These Neutrik combination jacks can be used either as balanced microphone inputs, Hi-Z guitar pickup inputs or line level inputs.

XLR Connectors - Use for dynamic or condenser microphones. (1=gnd, 2=hot, 3=cold)

1/4 inch Jacks - Center opening. Use for electric musical instruments (i.e. guitar, bass, etc.), or line-level signals. The inputs are balanced, but you can use either balanced (TRS = tip-ring sleeve) or unbalanced (TS= tip-sleeve) cables for line-level signals (tip=hot, ring=cold, sleeve=gnd).

2. S/PDIF In/Out

Each jack carries two channels of digital audio data from external devices such as external A/D-D/A converters or other digital devices with S/PDIF. Both the coaxial (RCA) jacks and the optical ports carry identical data. Select the output format you want to use in the E-MU USB 2.0 Control Panel (AES/EBU or S/PDIF).

3. Headphone Output

The headphone output is designed to drive stereo headphones with 1/4″ stereo plugs. If your headphones have a smaller 1/8″ plug, use a commonly available plug adapter.

- **Ground Lift Switches**

There are "ground lift" switches for both analog inputs located on the bottom of the unit. These switches can be used to safely stop the hum if a ground loop occurs in your setup. See for more information.
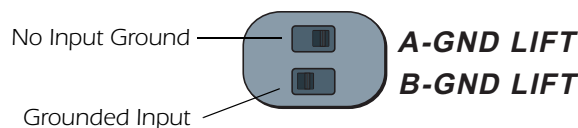
The input ground is lifted when the A or B slide switch is closest to the GND LIFT label.

NOTE

Unbalanced cables provide 6dB less level than balanced cables. Adjust the level using the input gain control. See for more information.
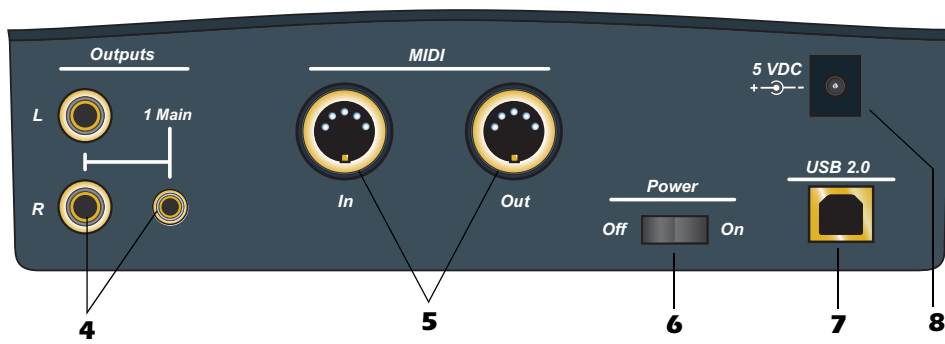
4. Main Outputs

The main outputs are normally connected to your monitoring system. The signal is duplicated on a stereo 1/8¨ jack for easy connection to desktop stereo speakers.

Use TS unbalanced cables for consumer-level line signals and TRS balanced cables for pro-level line signals. Balanced cables provide +6dB more output.

5. MIDI In/Out

The MIDI input and output ports allow you to interface any type of MIDI equipment such as keyboards, effect units, drum controllers (anything with MIDI).

6. On/Off Switch

This switch turns the 0404 USB 2.0 on or off. Don't cycle the power on and off quickly or the internal computer may lock up. Wait a second or two between power cycles.

7. USB

Connects the 0404 USB 2.0 to the USB 2.0 port on your computer via the supplied USB cable and provides two-way, hi-speed communication. The 0404 USB 2.0 is NOT powered via USB and uses an external power adapter in order to maintain the highest level of audio quality.

8. Power: 5 Volts DC

The 0404 USB 2.0 is powered from a +5VDC Adapter *(supplied)*.

NOTE to PC Users:
When using a USB 1.1 port, performance is limited to 16-bit and 44.1/48 kHz recording and playback.

E-MU USB AUDIO CONTROL PANEL

After you have successfully installed the audio drivers, launch the E-MU USB Audio control panel. The E-MU USB Audio control panel is shown below.

- • **Windows:** The E-MU USB Audio control icon will be visible in the Taskbar, which is normally located in the bottom right of the screen. It can also be launched from the Start Menu *(All Programs, Creative Professional, E-MU USB Audio Application).*

- • **OS X**   The E-MU USB Audio control application is located in the **Applications** folder. You can also open the E-Control Application using the icon on the desktop.
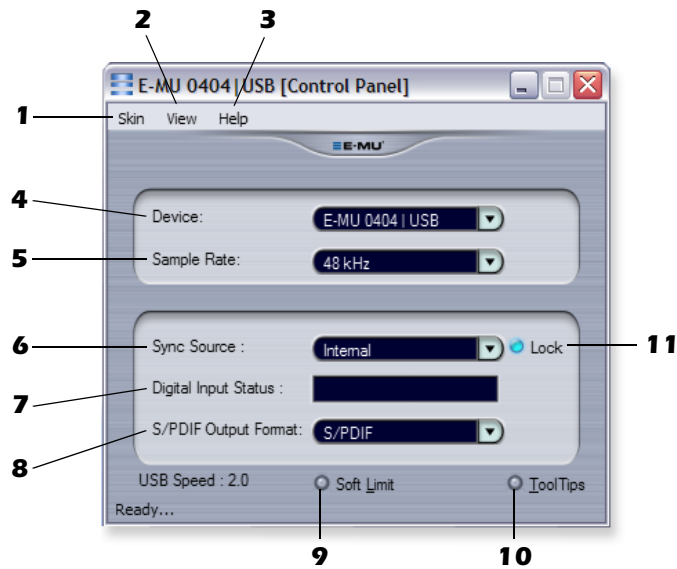
1. **Skin**
   Choose between different appearances for the E-MU USB Audio control panel.

2. **View**
   Hide the application (Ctrl+H, Windows) You can restore the application by clicking the E-MU icon in the System Tray (Windows), or by clicking the E-MU icon in the Dock (OS X).

NOTE
There are some limitations when operating at higher sample rates.

PC at 174.4/192kHz
- No Direct Monitor
- Stereo I/O only
- MIDI Disabled

Mac
- 88.2/96k - Stereo I/O only
- 176.4/192k - Disabled

3. **Help**
   About E-MU 0404 USB 2.0, Audio control, Launch Manual, Check Updates

4. **Device**
   If you are using more than one E-MU USB Audio device, you can choose which unit is currently being controlled.

5. **Sample Rate**
   Allows you to set the system sample rate: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz or 192kHz.

6. **Sync Source**
   Selects internal or external sync.

7. **Digital Input Status**

   Displays the sample rate of external sync source, if used.

8. **S/PDIF Output Format**

   Selects between S/PDIF or AES/EBU format for the S/PDIF output. This sets the S/PDIF-AES status bit, but doesn't affect the signal level.

9. **Soft Limit**

   Enables or disables the analog peak limiters on the inputs. Soft limiting allows you to record a hotter signal without clipping. The soft limiters gradually engage at -12 dBFS. Signal levels below -12 dBFS are unaffected.

10. **Tool Tips**

    Enables or disables pop-up tool tips about E-MU USB Audio control functions.

11. **Lock Indicator**

    Indicates that the 0404 USB 2.0 is locked to an external clock source.

S/PDIF

S/PDIF (which stands for Sony/Philips Digital Interface Format) carries two channels of digital audio at sample rates of up to 96kHz, and also carries an embedded clock for synchronization. The 0404 USB 2.0 provides two types of S/PDIF: **Coaxial** or **Optical**.

The **Coaxial** interface has an advantage of using commonly available RCA-type connectors. However, high-quality cable should be used to avoid data dropouts and interference from radio frequency radiation. Coaxial S/PDIF uses a transformer on the transmitting end to prevent ground loops, but ground loops may still occur, mainly because of improper S/PDIF implementation on some equipment.

The **Optical** interface is immune to radio interference and also prevents ground loops between different pieces of equipment. On the downside, optical fiber is generally more expensive than coaxial cable. For best performance use high-quality glass cables. Plastic fiber lightpipes work well for short distances.

NOTE
The S/PDIF digital input is not available at 176.4 or 192 kHz.

Using External Synchronization to S/PDIF

To synchronize to an "External" S/PDIF sync source, you must use the 0404 USB Control Panel to set the sample rate to match the external device, then switch to external sync. In addition, the S/PDIF source must be chosen by pressing the S/PDIF button to specify Coaxial or Optical input.

Refer to the information on the following page for additional information about S/PDIF synchronization.

S/PDIF to Analog / Analog to S/PDIF converter

The 0404 USB can be also used as a standalone S/PDIF -> Analog or Analog -> S/PDIF converter.

Analog Input to S/PDIF: Attach analog device to Dock A/B (Left/Right); enable direct monitoring (set to S/PDIF). Analog input will be mirrored to S/PDIF out.

S/PDIF to Analog: Attach a S/PDIF source, power cycle the device, and set direct monitor to "Main".

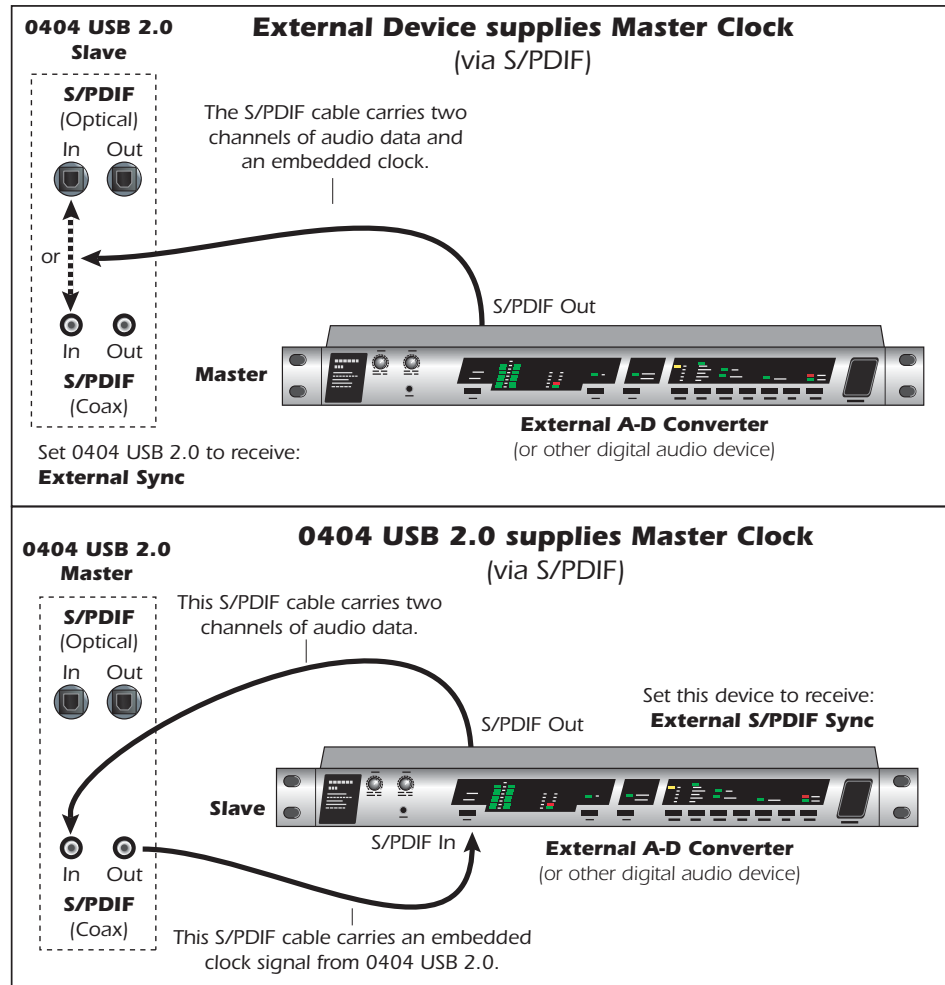## Synchronizing the 0404 with other Digital Devices

When interconnecting two digital audio devices using a digital interface such as S/PDIF, the two devices must be properly synchronized. Unsynchronized digital audio will result in random clicks, pops and dropouts, or even no audio at all.

- **The digital audio input is UNSYNCED if BOTH Sync Status LEDS are on.**

- **The internal and external sample rates are mismatched if the "Ext" LED is flashing.**

Two digital devices are properly synchronized when one unit is supplying the master clock to the other unit (the slave) and the slave is set to receive external clock. Make sure you set the sync source to **External** and set the sample rate to match the external device in the E-MU 0404 USB Control Panel. The diagrams below show two ways to synchronize an external device.

NOTE to PC Users:
S/PDIF is only available for recording via ASIO and Kernal Streaming, you cannot record S/PDIF with MME applications.

External Device supplies Master Clock
(via S/PDIF)

0404 USB 2.0 Slave — S/PDIF (Optical) In Out — or — In Out — S/PDIF (Coax) — Master

The S/PDIF cable carries two channels of audio data and an embedded clock.

S/PDIF Out

External A-D Converter
(or other digital audio device)

Set 0404 USB 2.0 to receive:
External Sync

0404 USB 2.0 supplies Master Clock
(via S/PDIF)

0404 USB 2.0 Master — S/PDIF (Optical) In Out — In Out — S/PDIF (Coax) — Slave

This S/PDIF cable carries two channels of audio data.

Set this device to receive:
External S/PDIF Sync

S/PDIF Out

S/PDIF In

External A-D Converter
(or other digital audio device)

This S/PDIF cable carries an embedded clock signal from 0404 USB 2.0.

The Sync Status indicators on the 0404 USB 2.0 function as follows:

INT solid ....Internally sync'd, no external digital input detected.

INT solid + EXT blinking ....Internally sync'd, external digital input of different sample rate detected; MUTE S/PDIF input

INT solid + EXT solid ....Internally sync'd, external digital input of same sample rate detected.

EXT solid ....Externally sync'd; valid S/PDIF input present

DIRECT MONITORING

Direct monitoring allows you to monitor inputs without having any software open. It can also be used as an alternative to software monitoring if you desire the lowest latency monitoring possible.

When using a computer for digital recording, an audible time delay occurs while the audio signal is being input to the computer, processed by the software and then returned to the output for monitoring. This time delay is called *Latency*.

Latency becomes a problem when you have to use high buffer settings to conserve CPU resources. Because the 0404 USB 2.0 has hardware direct monitoring, you can enjoy zero latency regardless of your buffer setting.

The Direct Monitor feature connects the input signals to the selected outputs when recording so that you can hear your performance without delay. The Direct Monitor level control lets you adjust the volume of the input signal in relation to the recorded tracks.

Direct monitoring is controlled manually from the Direct Monitor switch on the 0404 USB 2.0. It's not necessary to turn it on in your recording application.

NOTE to PC Users:
Direct monitoring is not available at 176.4 or 192 kHz.

Latency (delay)

——— Software Monitoring
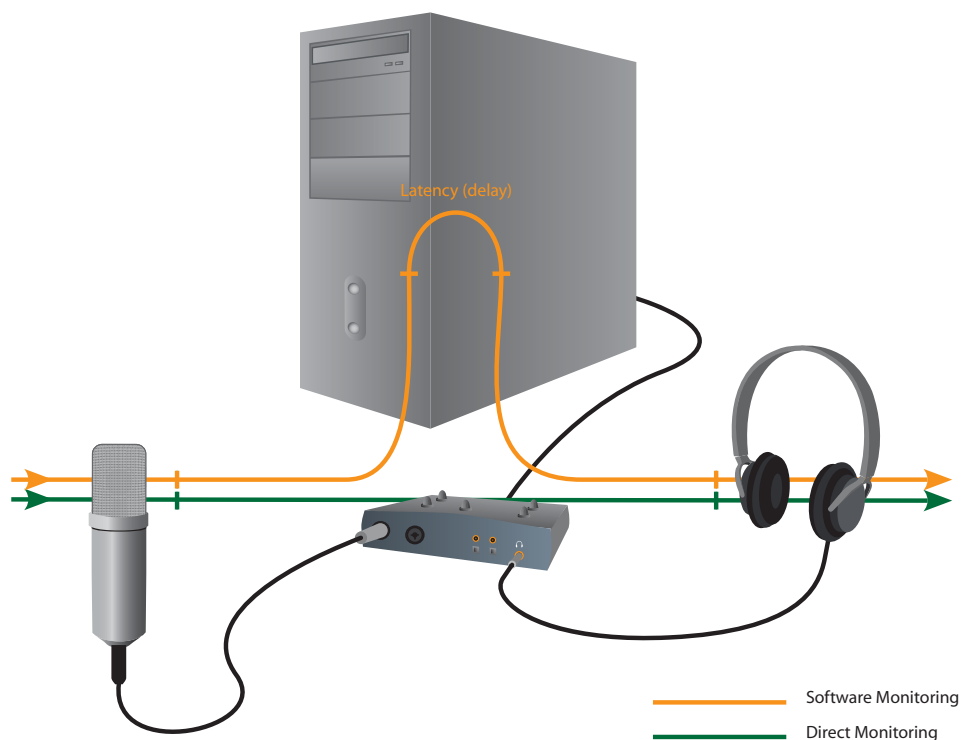
——— Direct Monitoring

Direct Monitoring allows you to listen to the **direct** *sound of your instrument during recording, without the delay incurred by going to the computer and back.*

Direct Monitoring vs. Software Monitoring

Direct monitoring is lower latency and can also be used without software running (or even without a computer!).

Software monitoring has the advantage of allowing audio effects or EQ added in the host software to be heard on the output. Its round-trip latency depends on what latency is chosen. If you choose to software monitor, make sure to disable direct monitoring. If both are enabled, you will experience a 'comb filter' or doubling effect.

TUTORIALS

Introduction

This guide contains step-by-step walk-throughs of basic recording operations using your E-MU 0404 USB 2.0 interface with software applications for your Windows or Macintosh computer. We encourage you to perform the steps on your computer as you read so that you become familiar with the process. The first tutorial only takes about half an hour to complete, by which time you'll know how to make a multi-track recording.

NEED MORE HELP?

If you need additional help with the bundled applications, please see

- **Windows:** Program Files\Creative Professional\E-MU 0404 USB\Documents\ 3rdParty.htm.
- **OS X:** Applications Drive\Library\Documentation\E-MU 0404 USB

Before you Begin...

- You should have already installed the E-MU software on your computer
- You should hear the computer sounds coming out of the E-MU 0404 USB 2.0 and your speakers when you play a CD or an MP3 using Windows Media Player or iTunes. If not, make sure your E-MU 0404 USB 2.0 is properly connected according to the diagram on page 12.
- A source of audio should be connected to the inputs (a microphone, musical instrument, or CD/MP3 player).

Getting Started with Steinberg Cubase LE *(Windows)*

Steinberg Cubase LE is a 24-bit, multi-track audio/MIDI sequencer with high-quality effects, automation, virtual instruments (VSTi), and many other professional features.

The following step-by-step tutorials are designed to get you recording as quickly as possible. After you have finished the tutorial we encourage you to read the Cubase LE PDF manual in order to learn about the many features of this powerful program.

1 - Setting up Cubase LE

Follow these instructions carefully to ensure that Cubase LE runs smoothly the first time. Cubase LE will remember these settings, so you'll only have to do this once.

1. **Open Cubase LE** from the Start menu. An ASIO multimedia driver test dialog box will pop up to ask if you want to run the ASIO test. Choose **No,** because you won't be using the driver anyway.

2. Select **New Project** from the **File** menu.

3. Select **Empty** and click **OK.**

4. A **Select Directory** pop-up dialog box will appear. Choose a location on your hard disk where you want to store your audio files, then click **OK**.

5. The Cubase LE Project window appears.
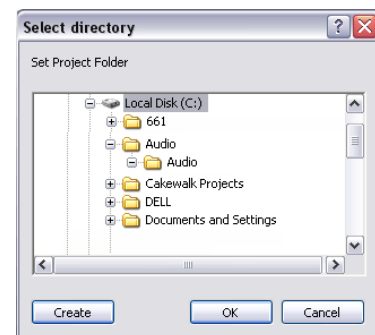
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6. Select **Device Setup…** from the **Devices** menu.
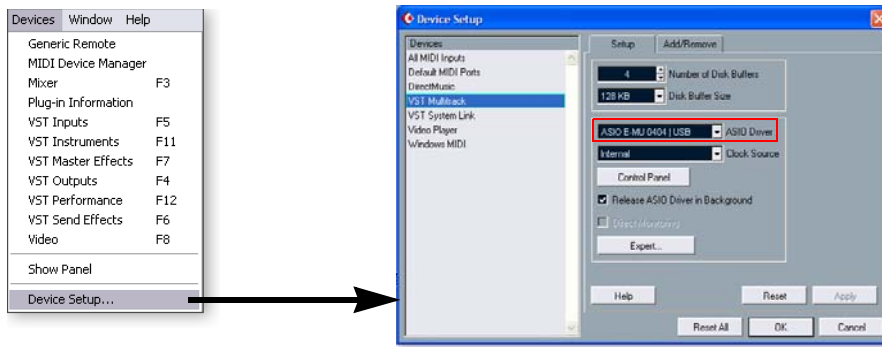
7. Select **VST Multitrack** from the Devices list.

8. In the **Setup** section of the dialog box, select **ASIO E-MU 0404|USB**. A pop up dialog box asks, if you want to keep or switch the ASIO driver. Select **Switch**.

Buffer Latency Setting

9. Click the **Control Panel** button. The pop-up dialog box shown at right appears.

10. Set the **ASIO Buffer Latency** as low as your computer will allow and click **OK**. (10ms is a good starting point.) A low latency setting is important to assure fast response when using virtual instruments and to minimize delay when monitoring through Cubase. If you hear crackles or other audio problems, try increasing the Buffer Size.

11. Close the **Device Setup** screen by clicking **OK**.

12. **Note:** If the Cubase LE application crashes for any reason, it is recommended that you re-boot the computer.

13. Select **Project Setup** from the **Project** menu. This is where you set the Sample Rate and Record Format (bit depth), among other things. Set the Record Format to **24-bits** and the Sample Rate to **44.1kHz.**
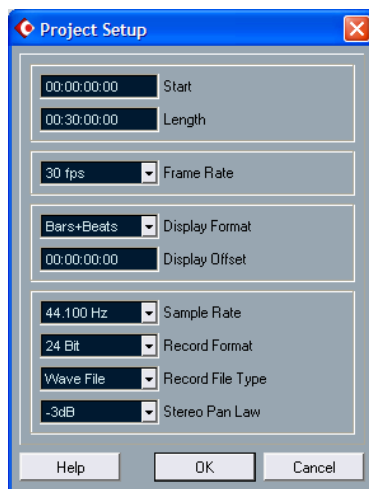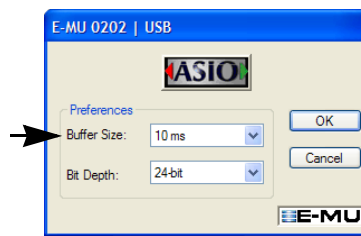
14. Select **VST Inputs** from the **Devices** menu. This is where you enable the inputs you wish to use. Make the inputs active.

2 - Basic Multitrack Recording

This tutorial assumes you're using a single input or a pair of inputs. For more advanced recording, refer to the Cubase LE manual.

Add an Audio Track

1. From the Cubase LE menu bar, select **Project**, **Add Track**, **Audio.** An audio track is added to the project window.

Inspector button · Stereo/Mono button

Monitor · Track Input
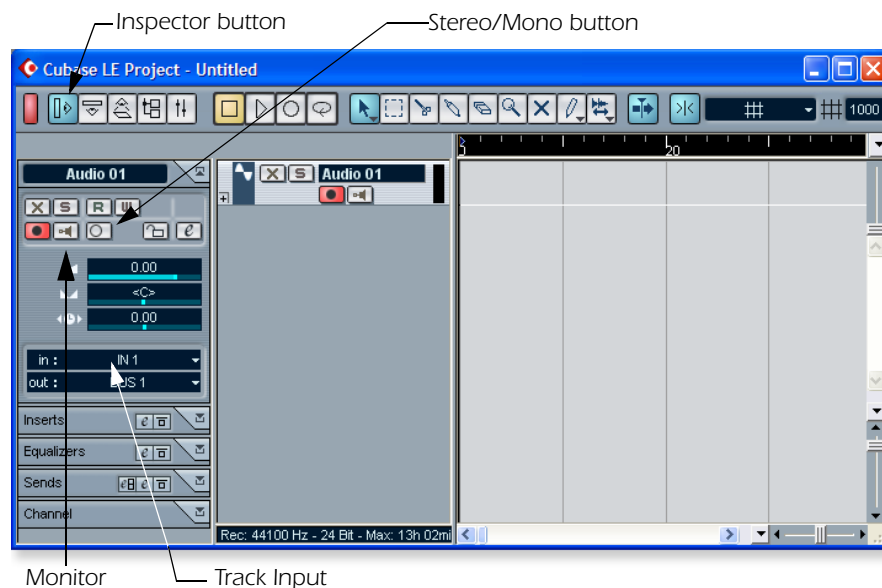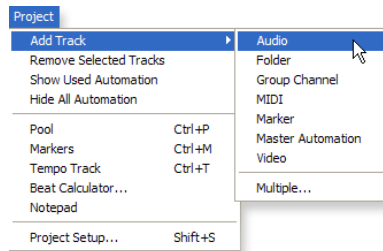
2. The screen shows the "A" input of the 0404 USB. Note that **IN 1** is shown in the **Track Input** field (Input A =IN1, Input B =IN2). If you want to record in stereo, turn the **Stereo/Mono** button On and select IN 1 + IN 2 for the Track Input.

3. Make sure the Monitor button ◼ is **OFF.** You will be monitoring the input through the E-MU 0404 USB 2.0.

4. Press the **Direct Monitor** button on your E-MU 0404 USB 2.0. The LED should show **Main**. If you are recording a mono track, set Direct Monitor to **Mono** by pressing the **Mono On** button.
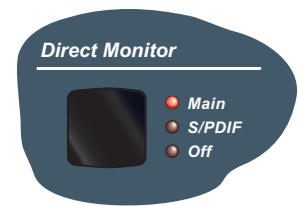
Get Ready To Record

5. Plug in your instrument or microphone and set the input gain control for a good signal level. The meters should show signal activity, but the clip LED should never come on.

6. You should be hearing your instrument or microphone through your monitor speakers or headphones. If not, go back to steps 4 and 5.

7. **Optional Step - Metronome:** To toggle the Metronome on and off, press **C** on the computer keyboard. To adjust the metronome output level, press the transport **Play** control, then select **Metronome Setup...** from the **Transport** menu. Use the volume slider to set the desired metronome level.

8. Press the **Go to Start** button ◄|.

9. Make sure the **Record Enable** button on the track is on (it should be by default).

Record Enable—

10. Press the **Record** button on the Cubase transport control panel. The button turns red and you're recording.

Go to Start— Stop— Play — Record
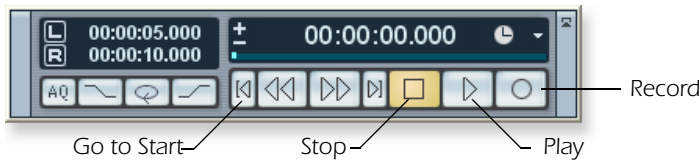
11. When you're finished recording your track, press the **Spacebar**, or press the **Stop** button on the Cubase Transport Control.

12. Press the **Go to Start** button ◄|.

13. Press the **Spacebar** or press the **Play** button to play back your new Track.

Record Another Track

14. Press the **Go to Start** button ◄|.

15. Drag the audio chunk you just recorded down below itself and release the mouse button. A new track is automatically created with your recording. This is by far the quickest and easiest way to set up a new track in Cubase. Now you're all set to record again on Track 1.

Drag — Audio 01_02
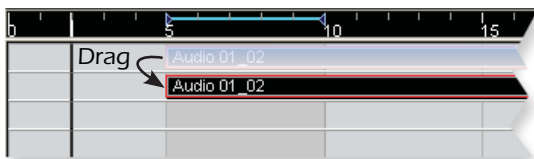
16. Press the **Record** button on the Cubase transport control panel and you're recording again. You'll hear your first track playing along with you.

17. **Repeat steps 12-14** to record more audio tracks.

18. Press the **Mute** button ⊠ to silence any tracks you don't want to hear.

Direct Monitor

● Main
● S/PDIF
● Off

NOTE
Turning on the metronome adds a 2-bar lead-in before recording begins.

3 - Recording a MIDI Track using Proteus VX

You'll need a MIDI keyboard (or other MIDI input device) for this tutorial.
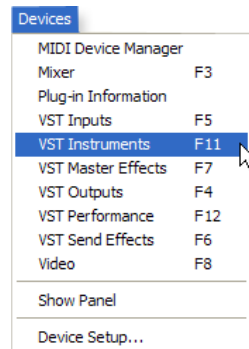
Make the Connections

1. Connect the MIDI out of your MIDI keyboard to the MIDI input of the 0404 USB 2.0.
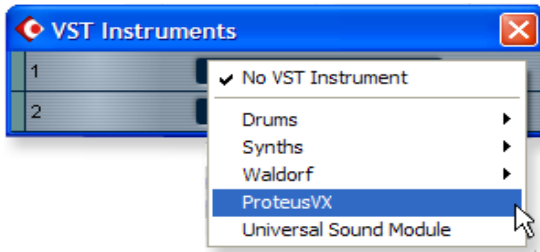
2. From the **Project** menu, select **Add Track**, **MIDI**.
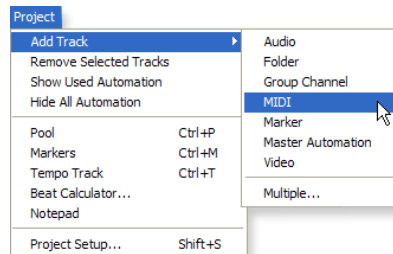
The Cubase Project Window should now look more or less like the one below with one or more Audio tracks and one MIDI track:
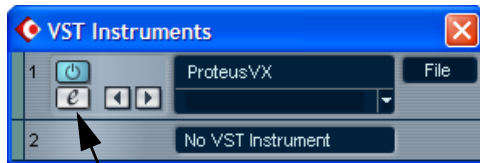
MIDI Track
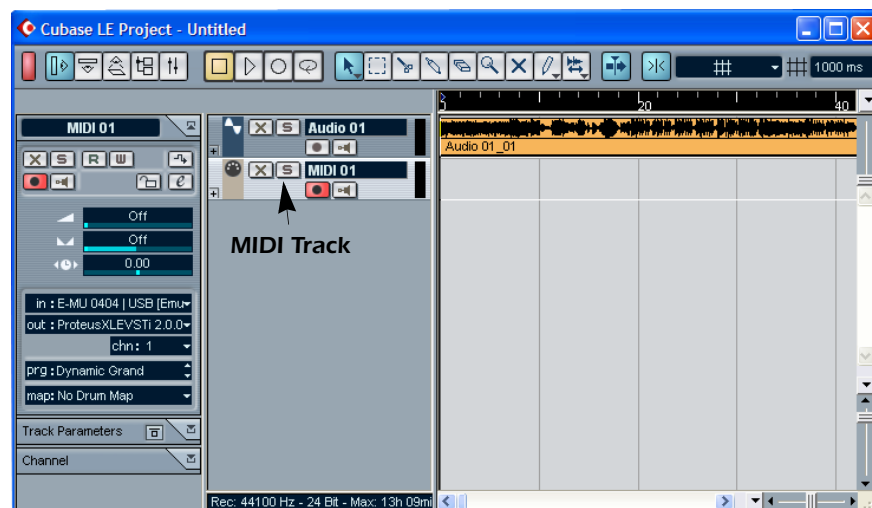
3. Click the **Devices** menu, and select **VST Instruments**.

4. From the **VST Instruments** window, select **E-MU**, then **ProteusVX** .

The VST Instruments window now looks like this.

Edit Button

5. Take a look at the **Inspector** area on the left side of the Cubase LE project window. Make sure the input to the MIDI track is connected to the E-MU 0404 USB 2.0.

6. The Output is not yet connected to anything. Click on the Output and select **ProteusVX.**

Input
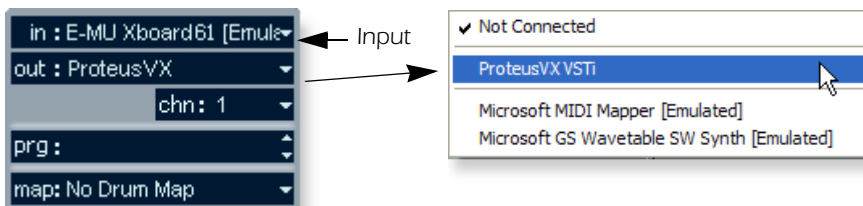
7. Click the **Edit** button of the **VST Instruments** window to open Proteus VX. Alternatively, you could click on the **Edit** button of the track **Inspector** to open Proteus VX.

8. Next, you have to load the Proteus X Composer bank. Select **Open** from the File menu. and locate the Proteus X Composer sound bank. The banks is installed here: "Program Files/Creative Professional\ E-MU Sound Central\Proteus X Composer." Loading takes a few seconds.

9. Bring up the **mini keyboard** by clicking the icon on Proteus VX and play a few notes. You should be hearing sound. If not, verify that the 0404 USB 2.0 is properly configured.

10. **Play your MIDI controller** and verify that it plays Proteus VX.

11. Change the Preset using the inc/dec keys of the **prg:** field of the inspector. The preset on Proteus VX should change to follow the one in Cubase LE. If not, make sure the **Receive Program Changes** box is checked in Proteus VX (Options, Preferences..., MIDI).

12. Feel free to play around for awhile and don't worry about losing anything. Nothing is made permanent until you **Save** the bank, so have fun.

To Record a MIDI Track

13. Make sure the **Record Enable** button on the MIDI track is on (it should be by default).

Record Enable

14. Click **Record** on the Cubase LE Transport control and start playing your MIDI controller.
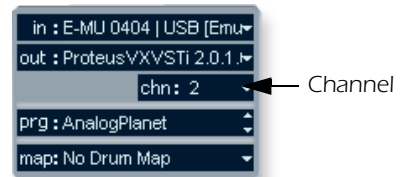
Record

15. Press **Stop** when you're finished recording the first track.

16. Press the **Go To Start** button ◄.

17. Press **Play** ▶ on the Cubase Transport to play back your track.

To Record a MIDI Track on another MIDI Channel
Proteus VX VSTi can play back up to 16 MIDI tracks at once. It's much more efficient to use several channels on one VSTi than to use multiple VSTi's with one channel each.

18. From the **Project** menu, select **Add Track**, **MIDI**. Notice that the channel number in the **Inspector** section is now set to **chn:2.**

Channel

19. Select **Proteus VX** as the Output destination in the Inspector section.

20. Select a new Preset for this track using the inc/dec keys ↕ of the **prg:** field of the inspector.

21. When you're ready, click **Record** on the Cubase LE Transport and start playing.

22. Click **Stop** when you're finished recording, press the **Go to Start** button on the transport, then **Play**. Proteus VX now plays both MIDI channels.

On Your Own
Cubase LE and Proteus VX include excellent online documentation and help files. Take the time to learn all the features of these powerful programs, and most of all have fun.

Getting Started with Cakewalk Sonar LE *(Windows)*

Sonar LE is a 24-bit multi-track audio/MIDI sequencer with high-quality effects, automation, virtual instruments (VSTi/DXi), and many other professional features.

IMPORTANT: During installation of Sonar LE you will be asked to run the Cakewalk VST Adapter. You must do this in order for Sonar to recognize Proteus VX or any other VST plug-ins.

The following step-by-step tutorials are designed to get you recording on Sonar LE. After you finish the tutorial we encourage you to read the Sonar LE PDF manual in order to learn about the many features of this comprehensive program.

1 - Setting up Sonar LE

Follow these instructions carefully to ensure that Sonar LE runs smoothly the first time. Sonar LE will remember these settings, so you'll only have to do this once.

Run Sonar LE for the first time

1. **Open Sonar L**E from the Start menu or by double-clicking on the desktop shortcut. The first time you run Sonar LE, the following dialog box appears:

2. Click **No** to close the dialog box. (The tests do not apply to the 0404 USB 2.0.) Sonar LE opens and the following dialog box appears.
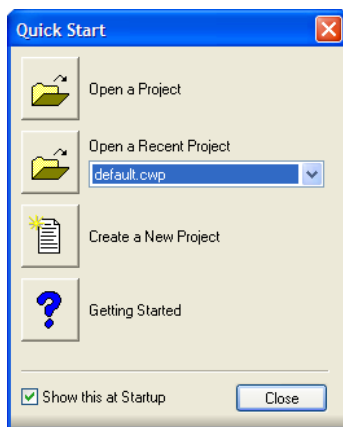
3. Click **Close** to close the dialog box. The Sonar Project Window appears.

Setup the Audio Options

4. From the **Options** menu, select **Audio.** The following dialog box appears.
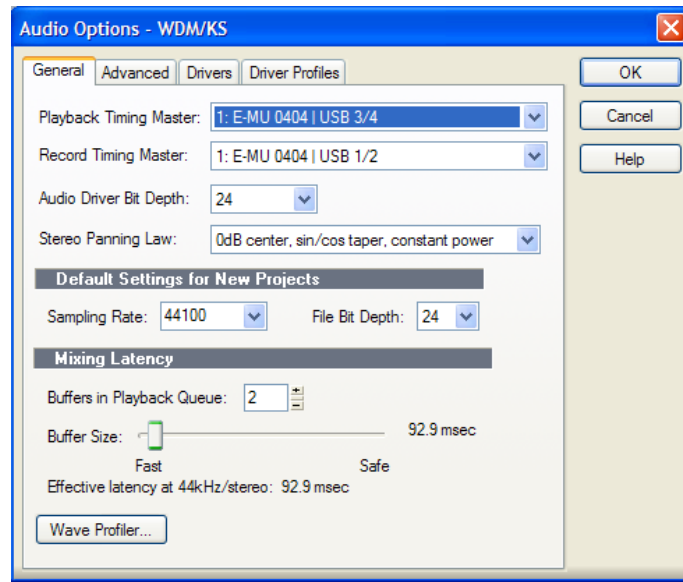

5. Click on the **Advanced** Tab to access the next window.
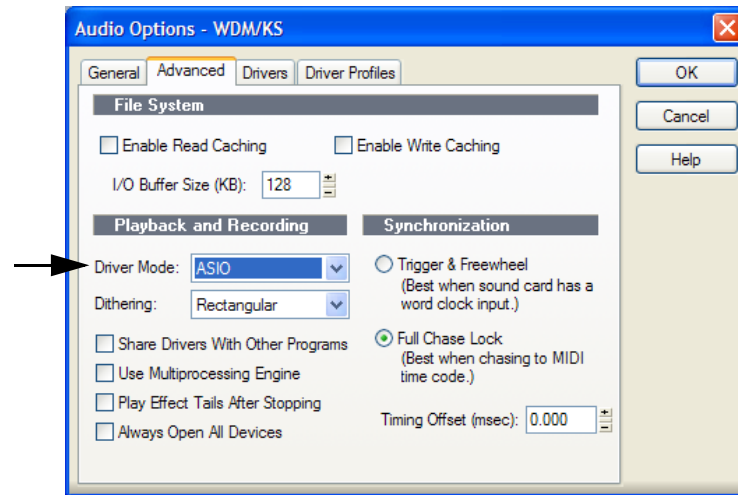

6. Select **ASIO** as the Driver Mode and click **OK**. You'll get a pop-up dialog box explaining that the ASIO settings won't take effect until the next time you start Sonar LE.

7. **Close Sonar LE** completely and restart the application.

Return to the Audio Setup Options

8. Once Sonar LE has restarted, select **Audio** from the **Options** menu.
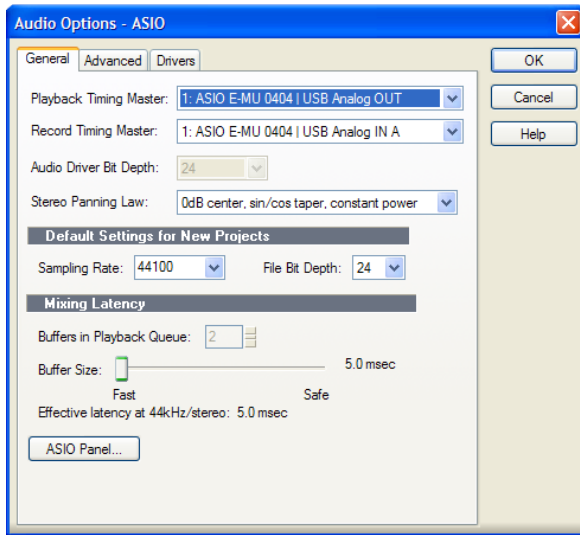
9. Click the ASIO Panel. The pop-up dialog box shown at right appears.

10. Set the **ASIO Buffer Latency** as low as your computer will allow. A low latency setting is important to assure fast response when using virtual instruments and to minimize delay when monitoring through Sonar LE. If you hear crackles or other audio problems, try increasing the Buffer Size.

11. Close the **Audio Options** screen by clicking **OK**.

    Note: If the Sonar LE application crashes for any reason, it is recommended that you re-boot the computer.
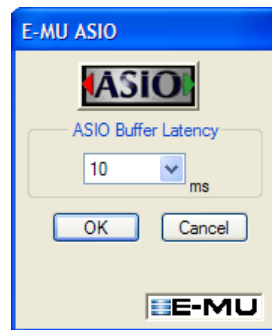
Set the Location of your Audio Files

12. From the **Options** menu, select **Global**.

13. Select **Audio Data**, then select a location for the **Global Audio Folder**.

TIP . . .
If you have two or more hard disks, it's better to store audio files on a disk that isn't running your OS.

2 - Basic Multitrack Recording

This tutorial assumes you're using a single input or pair of inputs. For more advanced recording, refer to the Sonar LE manual. Sonar opens by default with with 2 audio tracks and 2 MIDI tracks.

The Sonar Project Window
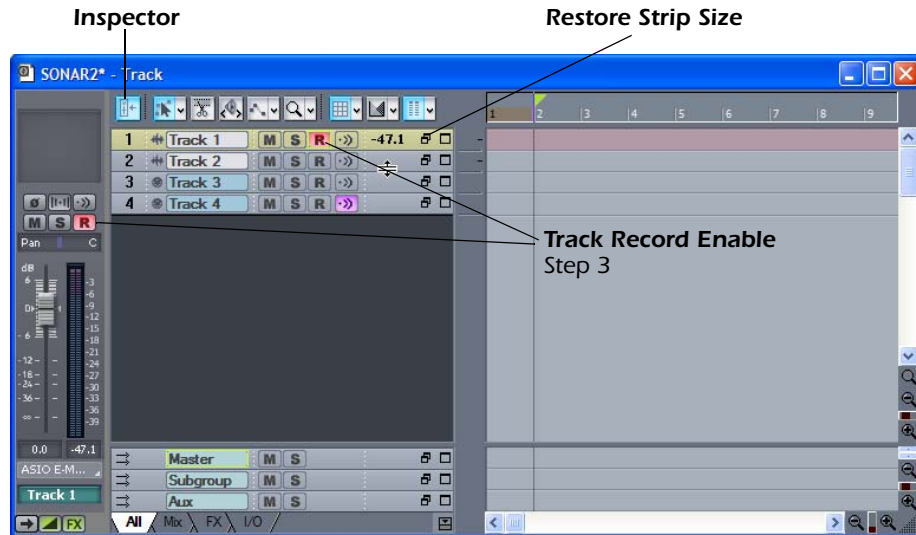
1. Click the **Restore Strip Size** button for Track 1. This reveals the input and output routing of the track. The E-MU 0404 USB 2.0 will already be selected as the output destination.
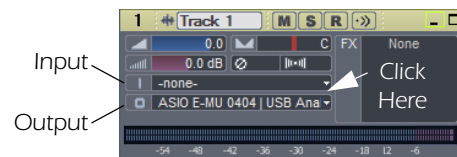
2. Select the input source by clicking on the small triangle on the input field. If you wish to record a mono signal on the "A" input of the 0404 USB, select **Left ASIO E-MU 0404 USB Analog In A**. To record both inputs in stereo select **Stereo ASIO E-MU 0404 USB Analog In A.**
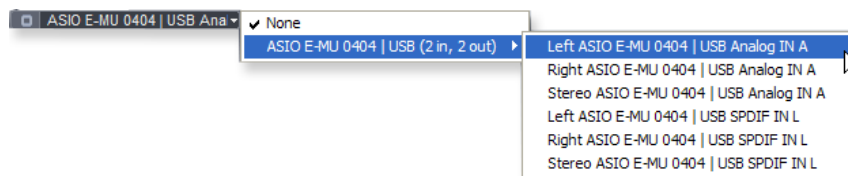
3. The Input Echo button [>] should be **OFF.** You will be monitoring the input through the E-MU 0404 USB 2.0.

4. Press the **Direct Monitor** button on your E-MU 0404 USB 2.0. The LED should show **Main**. If you are recording a mono track, set Direct Monitor to **Mono** by pressing the **Mono On** button.

5. Press the **Track Record Enable** button [R] for the track. (See the diagram above.) The track turns a dull red color to indicate that it is record-enabled. You should now see activity on the Track Input Meter when feeding a signal into the 0404 USB 2.0.

6. If your input signal is either too weak or too strong, adjust the input level control on the 0404 USB 2.0.

TIP . . .
If you don't see meter activity on the track, check the Input for the track. Make sure you are selecting the proper input source.

7. **Optional Step - Metronome:** First, select **Toolbars** from the **View** menu and check the **Metronome** Toolbar. Next turn **Metronome During Record** On by clicking the 🖲 button.

Record a Track

8. Press **Record** on the Sonar LE Transport control and start playing.
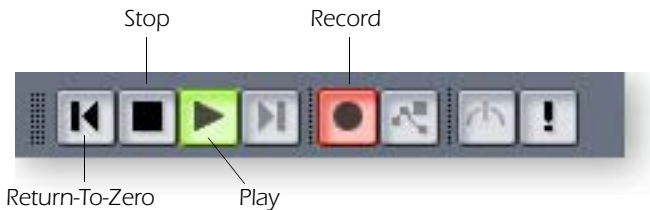
9. Press **Stop** when you're finished recording the first track.

10. Press **Play** on the Sonar LE Transport to play back your track.

11. If you want to dump the track and start over, **Right-click over the waveform display** in the track and choose **Delete**.

Record Another Track

12. **Select Track 2** and click the **Restore Strip Size** button 🗗 to expose the input and output routing.

13. **Set the Input source** for the track. Click on the little triangle ▼ on the right side of the track **Input** box.

14. Disable record for Track 1 by clicking on the **Track Record** button Off. Ⓡ

15. Enable recording for Track 2 by clicking on the **Track Record** button **On**.

16. Press the transport **Record** button and you're recording.

Hot Tip: A quick way to record additional tracks using the same input is to simply drag the Part (audio region) you just recorded up or down to another track in the Sonar Project Window, then just hit **Record** again and go. (Choose **Blend Old and New** when asked in the Drag & Drop Options.)

Save your Project

17. Choose **Save As...** from the Sonar LE **File** menu to save your project. Choose a name and location that will make the project easy to find later.

TIP . . .
You can create a new track by selecting Clone, from the Track menu. This handy feature duplicates the currently selected track complete with input/output routings.

### 3 - Recording a MIDI Track using Proteus VX

These instructions explain how to start Proteus VX from within Sonar LE. You'll need a MIDI keyboard (or other MIDI input device) for this tutorial.

- **Important:** If Sonar was installed BEFORE Proteus VX VSTi, you will have to run the Cakewalk VST Adapter before Sonar can use the VSTi. (Start, Programs, Cakewalk, Cakewalk VST Adapter).
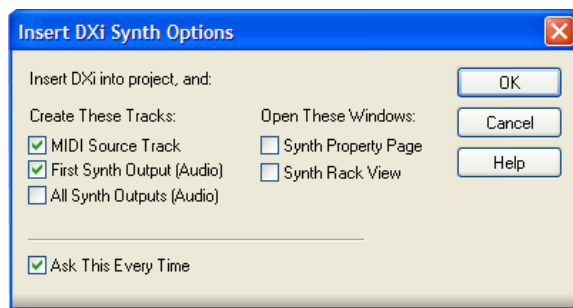
1. Connect the **MIDI output** of your MIDI keyboard to the **MIDI input** of the 0404 USB 2.0.

Select the Virtual Instrument

2. Select **Synth Rack** from the **View** menu. The following window appears:

Click Here
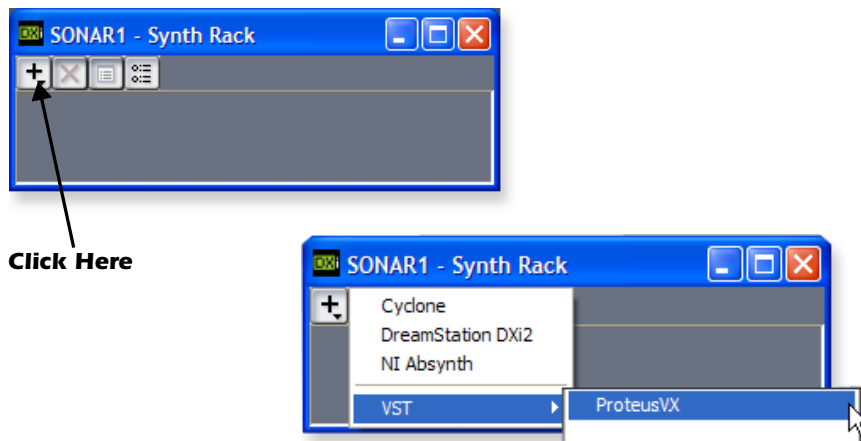
3. Click on the **+** symbol to add an instrument. Follow the path shown above and select **Proteus VX** from the list of VST instruments. The following pop-up dialog box appears.

4. Select the default options (MIDI Source Track & First Synth Output) as shown. Click **OK** to continue. (This may a take a few seconds.)

5. Proteus VX now appears in the Synth rack and two new tracks have been added to the bottom of the track list. (You may have to scroll down to see the new tracks.)

New Proteus VX Tracks

—— Audio Output from Proteus VX
—— MIDI input to Proteus VX

Click Here to view the strip controls.

The MIDI Connection

6. Select the blue **MIDI Input** track by clicking on it. The MIDI Input connection appears in the strip to the left of the MIDI tracks.
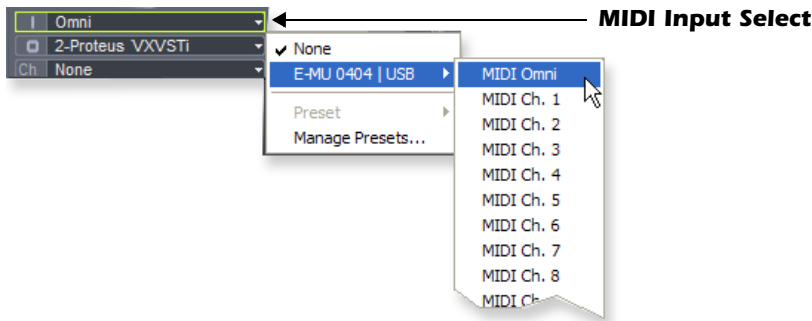
MIDI Input Select

7. **The E-MU 0404 USB 2.0** should already be selected as the MIDI input in **Omni** mode as shown above. "MIDI Omni" allows Proteus VX VSTi to receive on all 16 MIDI channels from your MIDI keyboard. (Proteus VX VSTi is "multi-timbral" and can assign a different preset to each of the 16 MIDI channels.)

8. Set the MIDI Channel for the track to channel 1 as shown at right. This "re-channelizes" the incoming MIDI data on any MIDI channel to channel 1.
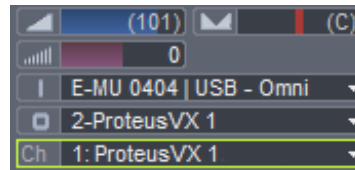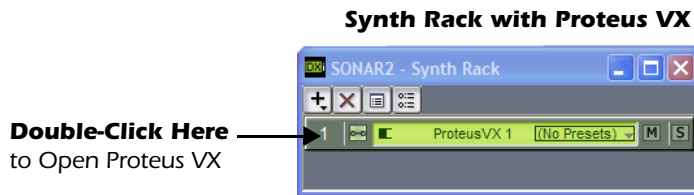
Open Proteus VX
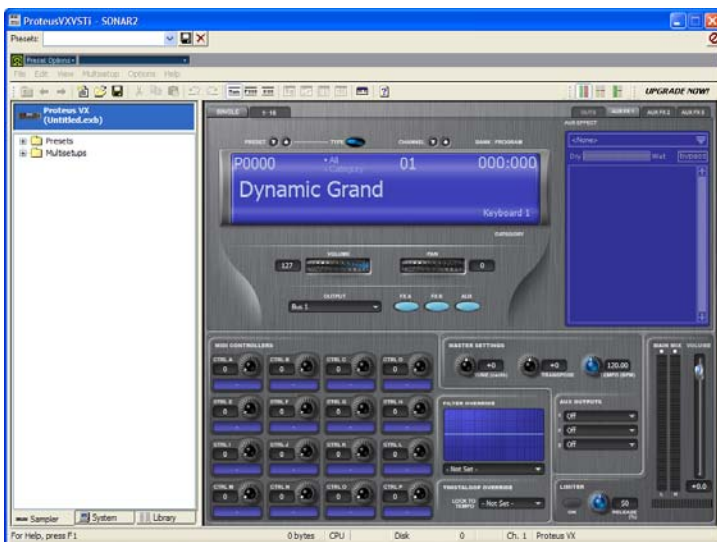
9. Double-click on the number (or on the Proteus VX name) to open the Proteus VX editor.

Synth Rack with Proteus VX

Double-Click Here
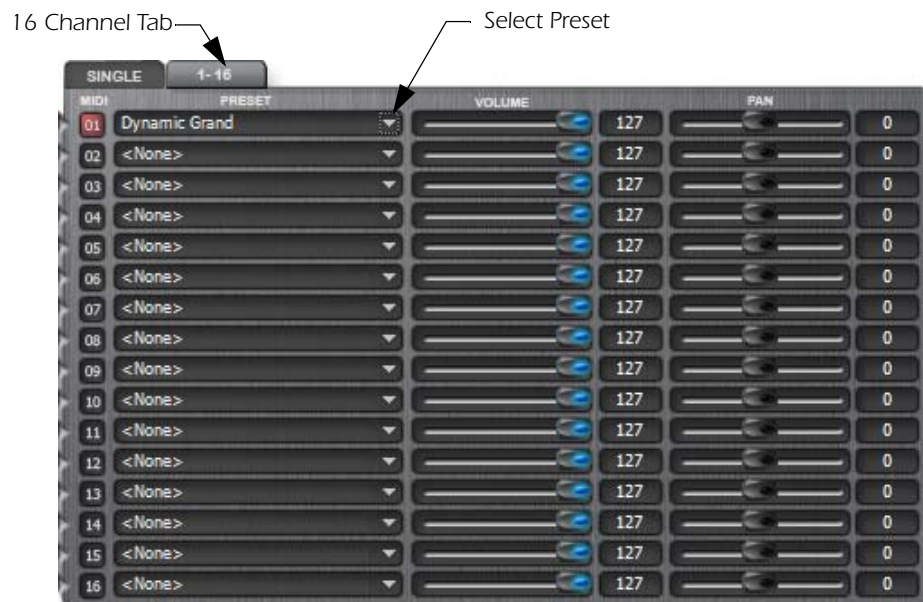to Open Proteus VX

10. After a few seconds, the Proteus VX application window shown below appears.

*Play the Proteus X Composer Bank.*

11. Select the 16 channel tab. This page allows you to select presets for all 16 MIDI channels.

16 Channel Tab ⌐   Select Preset

12. Select a preset for MIDI Channel 1 by clicking the little triangle.

13. Play your MIDI keyboard and verify that it plays Proteus VX.

14. Feel free to play around for awhile selecting presets and exploring Proteus VX. Don't worry about losing anything. Nothing is made permanent until you **Save** the bank, so have fun.

To Record a MIDI Track

15.   Minimize the Proteus VX window by pressing the minimize button ▫.

16. **Record-Enable** the MIDI Track by pressing the track **Record** button (R). The track turns a dull red color to indicate that it is record-enabled.

   • **Important:** Be sure to turn Track Record Enable **OFF** for any tracks you don't want to record on, such as previously recorded tracks.

Track Record Enable
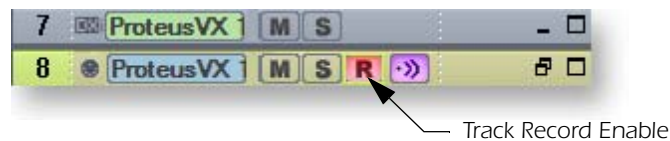
17. Press **Record** on the Sonar LE Transport control and start playing.

18. Press **Stop** when you're finished recording the first track.

19. Press **Play** on the Sonar LE Transport to play back your track.

To Record a MIDI Track on another MIDI Channel

Proteus VX VSTi can play back up to 16 MIDI tracks at once. It's much better to use several channels on one VSTi than to use multiple VSTi's with one channel each.

20. Select **MIDI Track** from the **Insert** menu.

21. Select the MIDI input for the new MIDI track. Select **MIDI Omni** as you did before.

22. Select **Proteus VX** as the **Output** destination for the track.

23. Select **MIDI Channel 2** in the **Ch.** field as shown below.
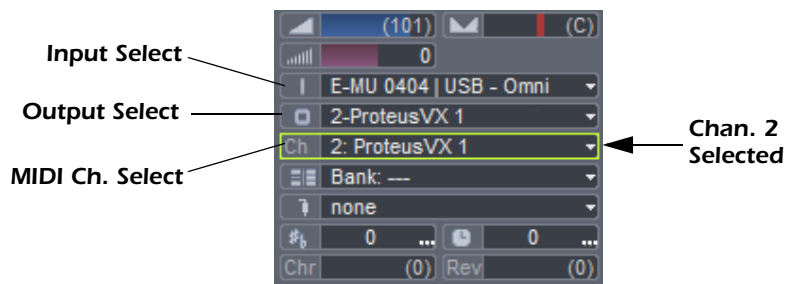
24. Restore Proteus VX by clicking on the **Restore Up** ⊡ button on the minimized Proteus FX window. Select a preset for channel 2 by clicking the little triangle on channel 2 in the 1-16 channel view of Proteus VX.

25. Play your MIDI keyboard to listen to the presets during the selection process. Click **OK** when you've made your selection.

26. Record Enable the track by pressing the **Track Record Enable** button [R]. If you want to record multiple tracks simultaneously, simply turn **Record** Enable on for each track you wish to record.

27. Press **Record** on the Sonar LE Transport control and start playing.

28. Press **Stop** when you're finished recording the second track.

On Your Own

Now that you've had a taste of Proteus VX, please read the Proteus VX Operation Manual PDF to learn all about this exceptional instrument. Sonar LE also includes useful online documentation and help files to help you learn about the features of this powerful program.

Getting Started with Ableton Live Lite 4 *(Windows/OS X)*

This guide contains a basic walk-through of Ableton Live Lite 4 (E-MU Edition) to get you recording and playing back audio. A Proteus VX tutorial is also included for Windows users. We encourage you to perform the steps on your computer as you read so that you can "learn by doing."

Ableton Live Lite 4 is an innovative composition and performance tool. Live combines digital recording, virtual instruments, and digital effects with an original interface design that many people find more intuitive than traditional designs.

The following step by step tutorials are designed to get you recording as quickly as possible. After you've finished the tutorial we encourage you to follow Ableton Live's excellent interactive Lessons and read the Ableton Live reference manual pdf in order to learn more about the program.

Before you Begin:

- You should have already installed the 0404 USB 2.0 and software on your computer according to the instructions in your printed "Getting Started" manual.
- You should have already installed the Ableton Live Lite 4 software on your computer according to the instructions provided with the Ableton software.
- You should hear sounds from Ableton Live Lite 4 when you play the Ableton demo.
- You should have your MIDI keyboard connected if you want to record MIDI.

#### 1 - Setting up the Preferences

Unlock Ableton Live Lite 4 for E-MU by following the instructions in the Preferences menu. *(Windows - Options menu, Preferences; OS X - Live menu, Preferences)* Read the following instructions to configure the Audio and MIDI preferences. Live will remember these settings, so you'll only have to do this once.

Set up the Plug-ins

The following steps allow Ableton Live Lite 4 to find the VST Plug-ins and Proteus VX.
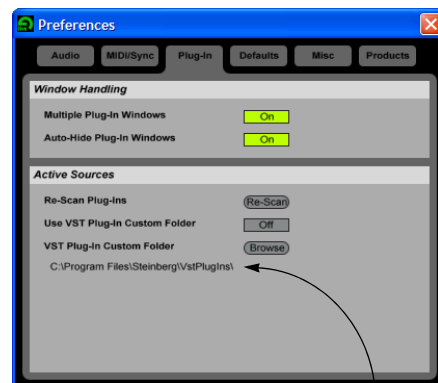
1. Click on the **Plug-ins** tab of the **Preferences** dialog box under the **Options** menu (Windows) or **Live** menu (OS X). The following screen appears.

OS X   *Windows*
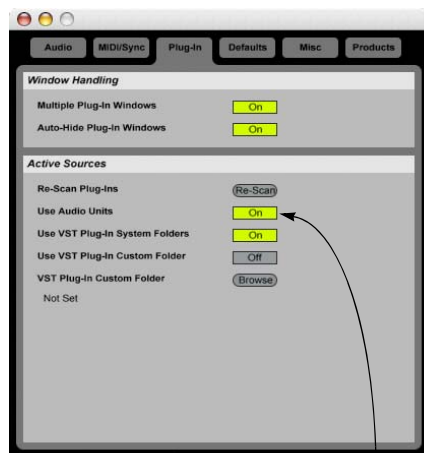
Locate: *Steinberg\VSTplugins*

Turn On: Use Audio Units &
           Use VST Plug-in System Folders

Then Re-Scan Plug-ins

OS X Users

2. Turn on **Use Audio Units**.

3. Turn on **Use VST Plug-in System Folders.**

4. Press the **Re-scan Plug-ins** button. (You may have to wait a few seconds.)
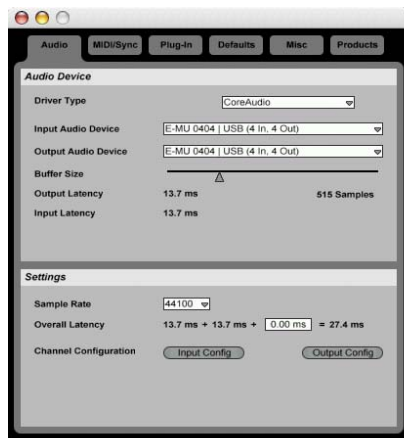
Windows Users

5. Press the **Browse** button, then locate **VST Plug-ins** located in the **Steinberg** folder. (Default path: C:\Program Files\Steinberg\VstPlugIns\)

6. After selecting the VST plug-ins folder, press **OK**. (You may have to wait a few seconds while Ableton locates the plug-ins.)
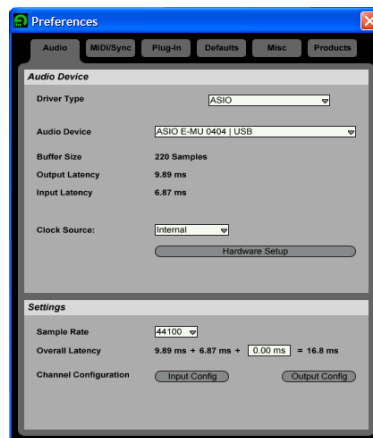
Set up the Audio Parameters

7. Click the **Audio** tab of the **Preferences** dialog box. The Audio Setup page appears.
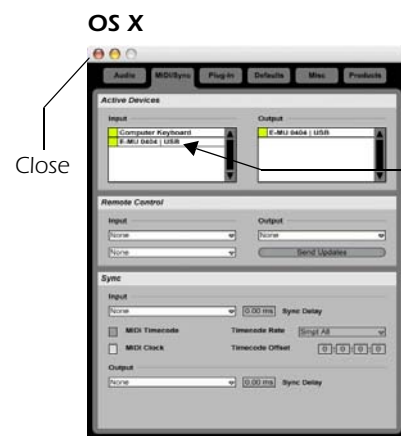
OS X

Windows

Set up the Audio Parameters as shown above.

8. **Windows Users:** Select **ASIO** and **ASIO E-MU 0404|USB** as the **Audio Device**. **OS X Users:** Select **Core Audio** and **E-MU 0404|USB** as the **Audio Device.**

Set up the MIDI Parameters

9. Click the **MIDI/Sync** tab of the Preferences dialog box. The MIDI Setup page appears.

OS X

Windows

Close

Select MIDI Interface

Close

10. The 0404|USB should appear in the list. Make sure it's selected.

11. Preference Setup is now complete. Click the **close button** to close the window.

2 - Playing Audio Clips

Ableton Live Lite contains a bunch of great pre-recorded audio clips. In this short section, you'll learn to select and play clips.

1. Select **New Live Set** from the **File menu**. A new Ableton Live set opens with two audio tracks and two MIDI tracks such as the one shown below. If the window doesn't look like the one below, click the **Session View** button.

Session View Button

Click Here
File Browser 1

Open Folder
Starter Sets

Open Folder
breaks Sounds

Drag & Drop
Drum Clips

Note...
On the Macintosh, the folder "Starter Sets" is located inside the "Demos and Tutorials" folder.

Show/Hide In/Out Section
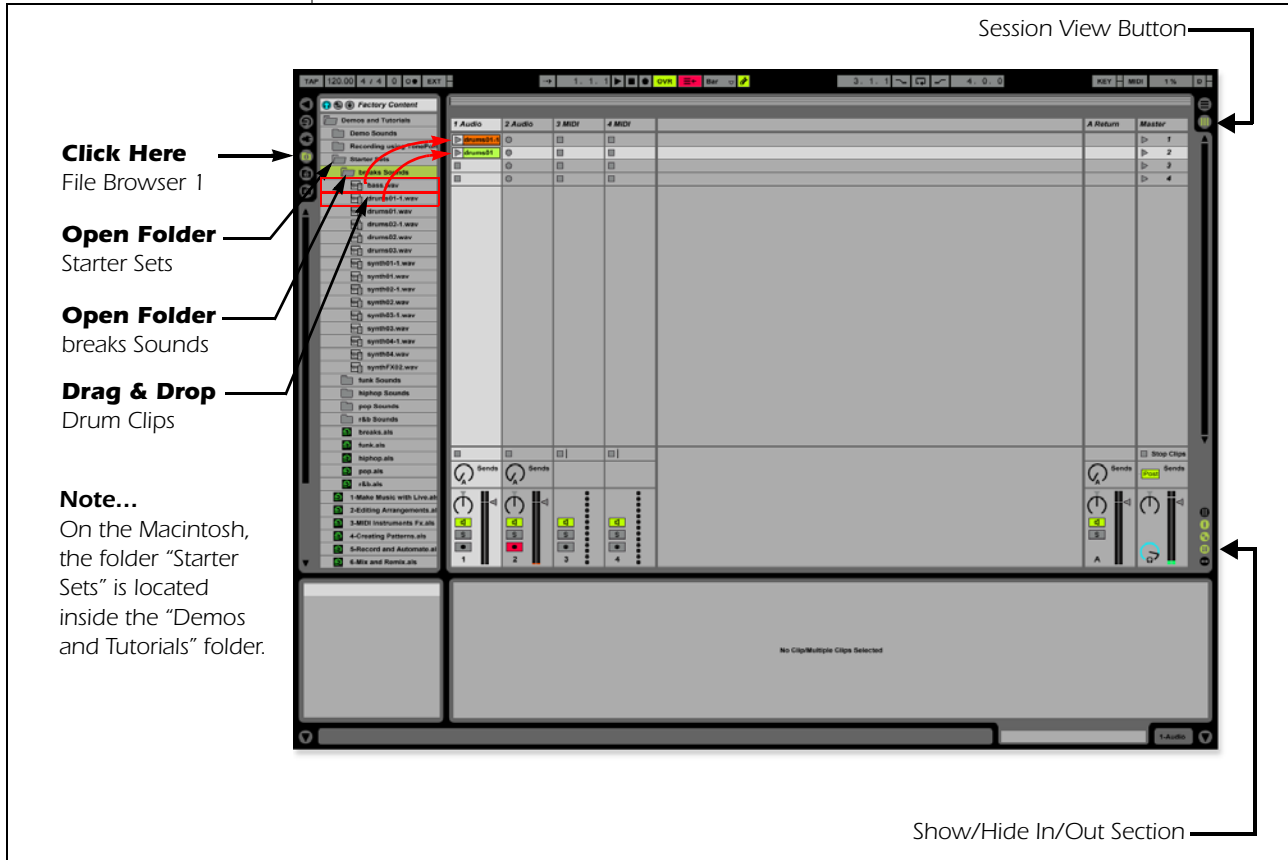
2. Follow the three steps shown above in the diagram to open the "**breaks Sounds**" folder. **Note:** On the Macintosh, the folder "Starter Sets" is located inside the "Demos and Tutorials" folder.

3. Drag and drop the **drums01-1.wav** and **drums01.wav** clips over to Audio Track 1.

4. Now click on the **Clip Launch Button** (little triangle) ▶drums01-1 on one of the clips you just dragged over. The loop begins playing. To stop playing, press the Stop button on the transport.

5. Click the **Clip Launch Button** on the other clip. The new clips begins as soon as the first one is finished.

6. Try out more pre-recorded audio clips. (To delete a clip, just select it and press Delete.)

7. Press the Stop button ▣ in the Transport to stop playing.

8. When you're finished exploring, and are ready to go on to the next tutorial, just make sure that you have at least **one drum clip in Audio Track 1** and **one empty slot in Audio Track 2.**

3 - Recording Audio into Ableton Live

1. Select an empty **Audio Track** with no clips.

2. From the **View Menu** on Ableton Live, select **In/Out**. *(Alternatively, you could also click the "Show/Hide In/Out Section button" as shown in the diagram on the previous page.)* Several more options now appear in the mixer strips.

3. Input channels 1/2 are selected by default (stereo). If you want to record a mono track select input 1 or 2 from the drop-down menu.

4. Feed an input signal into the 0404 USB 2.0 from a guitar, keyboard, CD player or other audio source. A mini-meter appears in the input selection field. The mini-meter should appear green. If not, reduce the input level.

5. Press the Arm Session Record button located at the bottom of the strip. The button turns red. You should now hear your input signal if **Monitor is set to Auto**.

6. Start one of the Drum Clips and practice playing along with a short riff.

7. When you're ready to record, **click on the empty circle** ◉ in one of the empty clips in Track 2. Recording begins immediately. After recording a bar or two, hit the **Space Bar to Stop**.

8. Double-click on the audio clip you just recorded and it appears below the mixer section as shown below. Play both clips back by clicking **Play** button ▶ above the mixer section. Make sure your recorded loop plays in time with the drums. If not, delete the audio clip and re-record it.
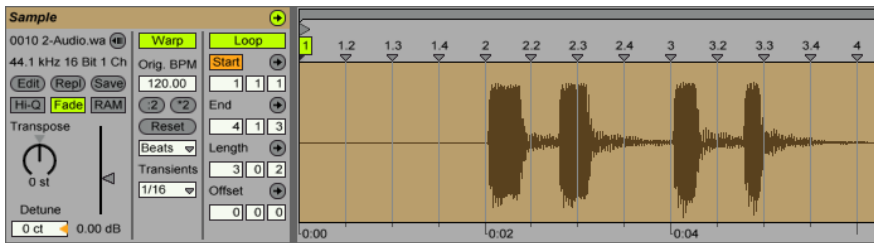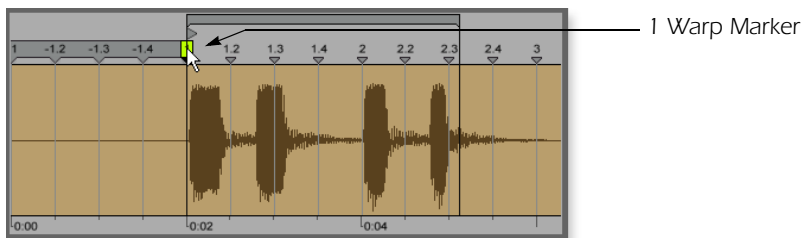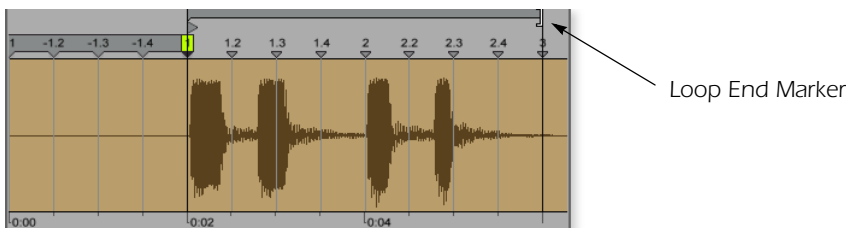
9. **Click and drag the 1 Warp Marker** over to the beginning of your recording as shown below.

1 Warp Marker

10. **Next, drag the Loop End marker** to make your loop the desired length.

Loop End Marker

11. **Press Play.** Your loop should now play in time with the drum loop.

NOTE
*These instructions also apply to Proteus X or Emulator X.*

4 - Running Proteus VX VSTi from Ableton Live *(Windows only)*

These instructions explain how to run Proteus VX from within Ableton Live Lite 4. Ableton Live's forte is making it easy to combine pre-recorded audio and MIDI clips in new and exciting ways. In this tutorial, you'll learn how to use a MIDI keyboard or the pre-recorded MIDI loops that come with Ableton Live Lite 4 to play Proteus VX.

1. Select **New Live Set** from the **File menu**. A new Ableton Live set opens with two audio tracks and two MIDI tracks such as the one shown below. If the window doesn't look like the one below, click the **Session View** button.


3. Drop Here

Session View button

1. Click Here
to open Plug-ins

2. Drag
Proteus VX
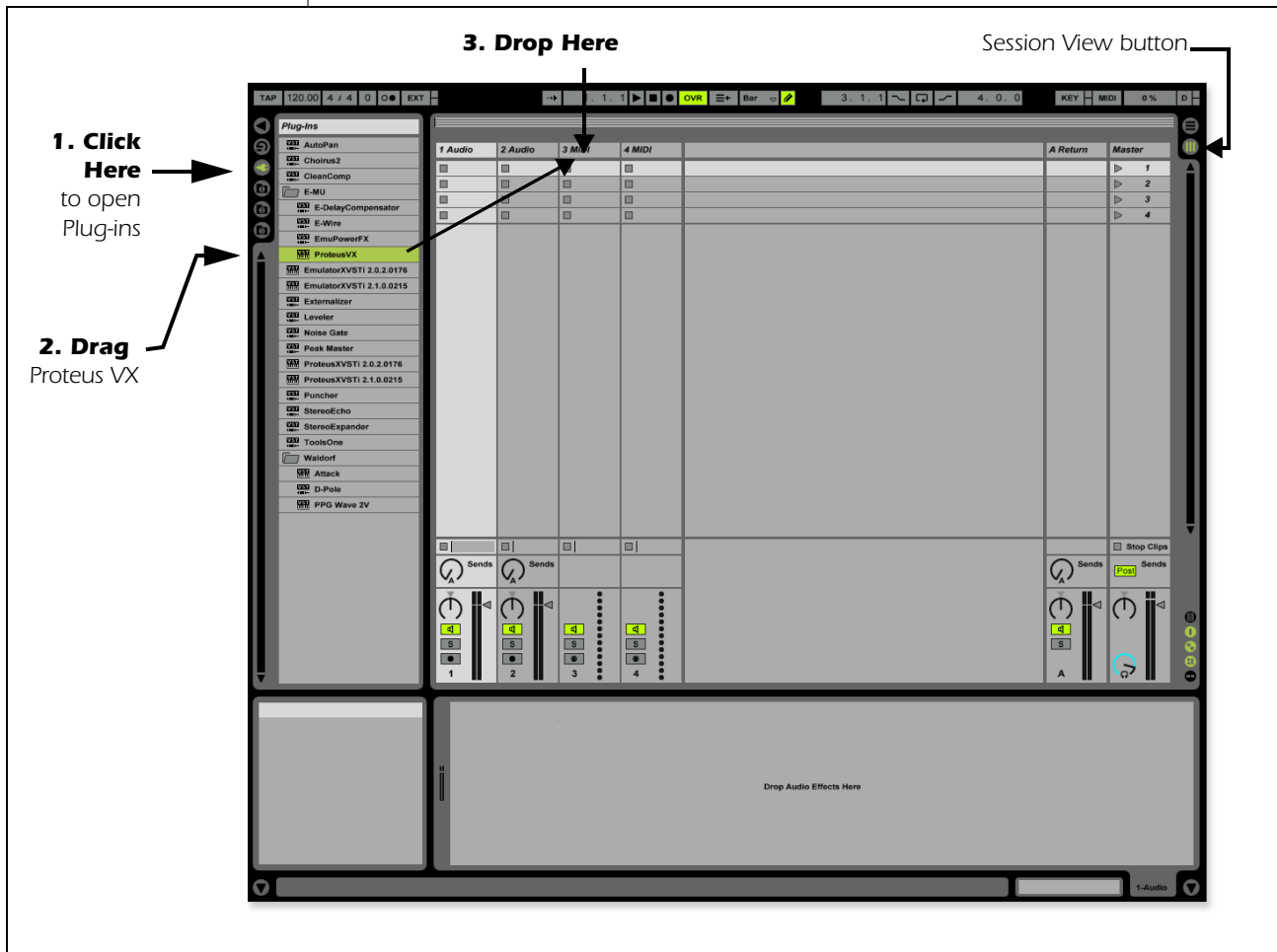
Select Proteus VX as a Virtual Instrument

2. Click on the Plug-in Device Browser button on the left side of the window. The list of Ableton Plug-ins appears at the left side of the window.

3. Select **Proteus VX** from the Plug-ins list and **drag it over the MIDI Track heading** as shown above. Wait a second or two, then you'll see the Proteus VX VSTi appear in the MIDI Track View area below the mixer.
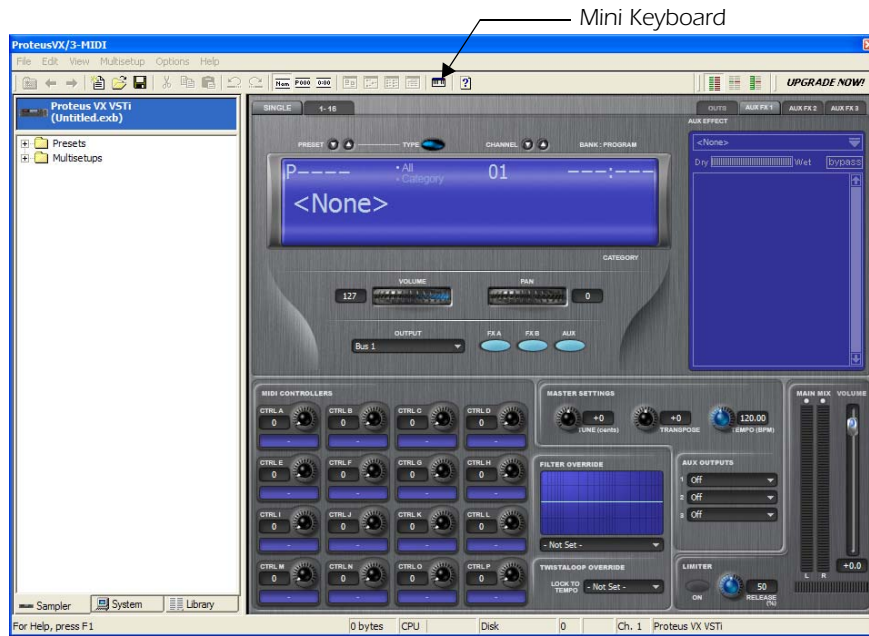
Load the Proteus VX Bank

4. Click on the wrench icon on Proteus VX in the area below the mixer. See the image at right.
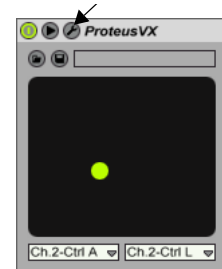
Step 2:
Plug-in Device Browser

Step 4:
Select Wrench Icon

5. The Proteus VX application window shown below appears.

Mini Keyboard

Load the Proteus X Composer Bank

6. Proteus VX is now running, but you need to load a bank of sounds.

7. Choose **Open** from the **File** menu on Proteus VX. Locate and load the Proteus X Composer bank, which is located here: ("Program Files/Creative Professional/E-MU Sound Central"). This big bank takes a few seconds to load.

Play the Proteus X Composer Bank

8. Bring up the **mini keyboard** 🎹 by clicking the icon on Proteus VX and play a few notes.

9. **Change the Preset** using the preset inc/dec keys. `PRESET` ⊙ ⊙ Cool sounds! Whenever you're ready, drag the Proteus VX window off to the side so you can access the Ableton window.

10. From the **View Menu** on Ableton Live, select **In/Out**. Several more options now appear in the mixer strips.

11. **Select E-MU 0404** in the "MIDI From" field and turn **Monitor On** as shown at right. Now you can use your MIDI keyboard.

12. Feel free to play around for awhile and don't worry about losing anything. Nothing is made permanent until you **Save** the bank.

13. When you're ready to move on, set the **Monitor** to **Auto,** select preset **P0004 A KuStq**, then close the Proteus VX editor by clicking on the close box ❌ .

Play MIDI Clips

14. Locate **MIDI Loops by Keyfax** in the Factory Content section of the Ableton Live Lite 4 Browser.

15. Click on the folder to open it. You'll see a bunch of other folders.

16. Open the first folder, **BRK_120**. Next, open the next folder **BRK-Bass.mid**. Now, you'll see a MIDI file named **BRK-Bass**.

TIP . . .
If you're not hearing sound, go to the Ableton Preferences and make sure that the Driver Type is set to ASIO and the Audio Device is set to ASIO E-MU 0404|USB.
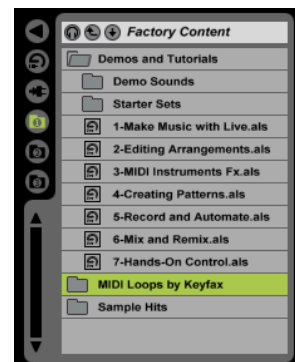
Step 14:
Locate MIDI Loops

17. **Click and drag BRK-Bass** over one of the clip slots in the 3 MIDI strip as shown below.

Stop

Show/Hide In/Out Section

18. Now click on the **Clip Launch Button** (little triangle) ▷ on the MIDI clip you just dragged over. The MIDI bass loop begins playing the bass preset on Proteus VX. To stop playing, press the Stop button.
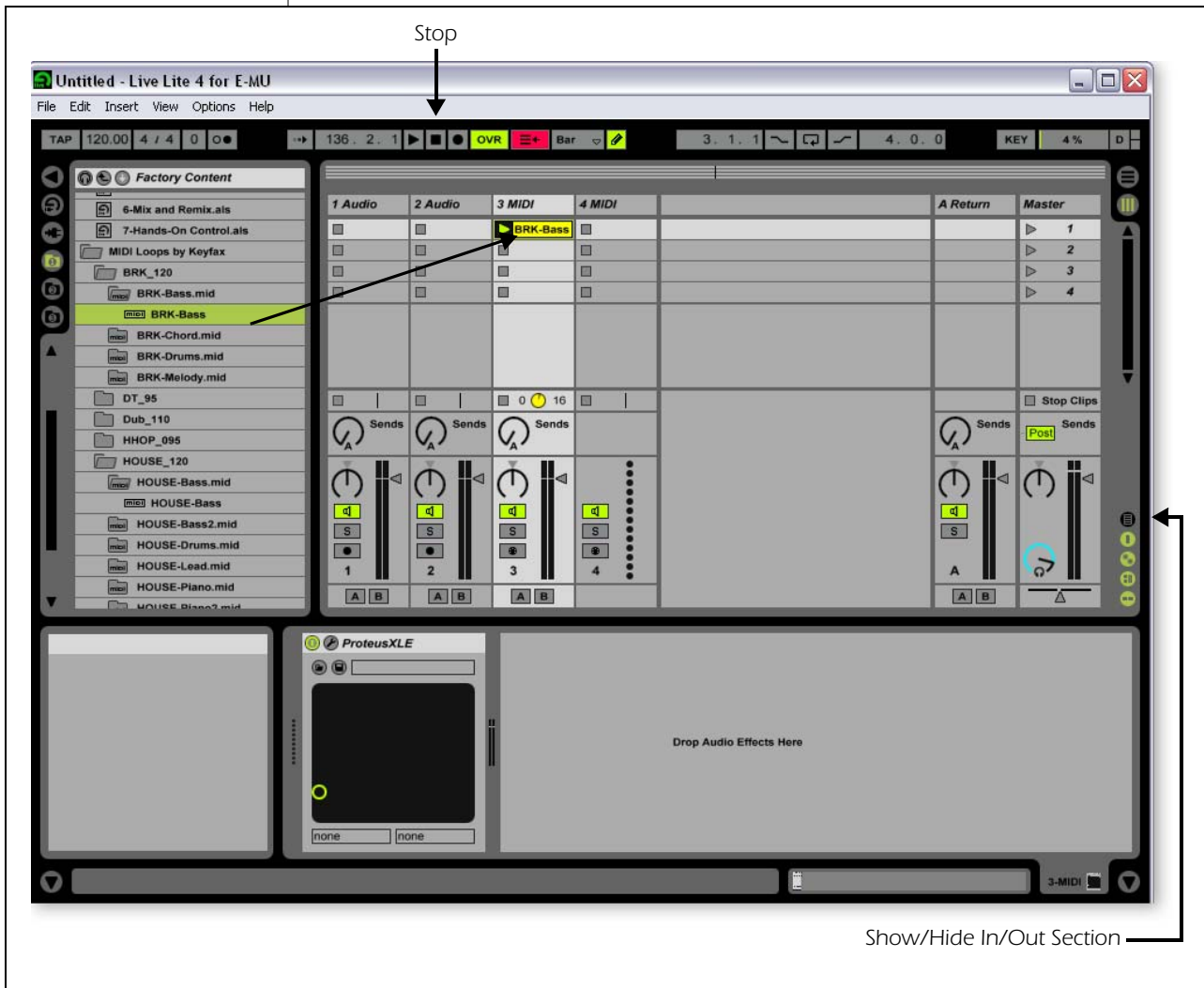
19. Find some other MIDI loops and drop them into the other slots of the track. **Hint:** look in different folders. Click on the Clip Launch Buttons to switch between clips.

Add Another MIDI Track

Ableton Live Lite 4 allows four MIDI tracks, so let's play a different MIDI loop and sound on track 4 MIDI.

20. Choose a different MIDI loop such as **House-Lead**, (located in the **HOUSE-120** folder) and drop it onto one of the **4 MIDI** clip slots.

21. Currently, the **MIDI To** box reads "No Output". Instead, select **3-MIDI**. Another option box labeled "Track In" now appears beneath 3-MIDI.

22. Click on the **Track In** box to see the list of MIDI channels.

Select 3-MIDI
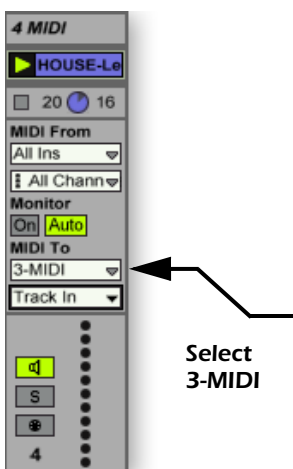
23. Select **MIDI Channel 2** as shown at right.

24. Click on the **Clip Launch Button** ▷ on the 4 MIDI clip to get it started. You won't hear anything because you haven't yet assigned a preset to MIDI channel 2 on Proteus VX.

Choose a Sound for MIDI Channel 2

25. **Click on the 3 MIDI heading** to show the Proteus VX VSTi. Next, click on the wrench icon 🔧 again (in the MIDI Track View) to open Proteus VX.

26. **Select MIDI Channel 2** using the channel inc/dec keys ⬛CHANNEL⬇⬆.

27. **Select a Preset** on **Channel 2**. Place the cursor in the preset number field and use the up/down arrow keys on your computer keyboard to scroll through the list until you find a preset you like.

• **Note:** There are several ways to select presets. See the Proteus VX Operation manual for details.

28. Now you should be hearing the sound you chose on channel 2. If not, check to make sure both clips are playing (green triangle). Each clip plays a different preset.

Add MIDI Clips

29. Drop a few more MIDI clips into both MIDI channel slots. Play around with the Clip Launch buttons.

Preset Change

Here's another way to change the MIDI Program (Preset in E-MU speak) without going into the Proteus VX editor.

30. **Double-click on one of the currently playing MIDI clips.** The Clip View appears at the bottom of the window.

31. Select the **Show/Hide Notes Box** ⊕🎵⊗ located in the lower left corner of the Clip View window. The Notes box appears in the Clip View section.

32. **Select a Program number.** You'll hear the Proteus VX sound change. Keep selecting until you find one you like.

• **Hint:** Use the **Up/Down Arrow** keys to select Programs. Use **Sub-Banks 2-8** to select presets higher than 128.

33. As an added bonus of selecting programs this way, the program (sound) you selected is now associated with the MIDI clip. Whenever you select this MIDI clip, the sound will also be selected.

34. Select another clip and assign a different program number. Notice that the Preset changes when you switch back and forth between clips.

Save the Set

35. Save your work by selecting **Save Live Set As...** from the File menu. The next time you load the set, the Proteus VX bank will automatically load as well.
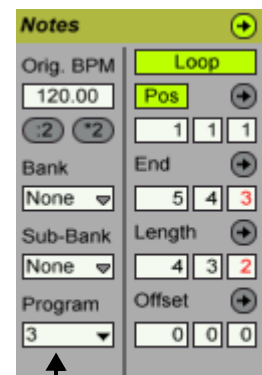
Record a MIDI Track using your MIDI Keyboard

36. You can use the MIDI Track you set up on MIDI channel 2. Make sure there is at least one empty slot in the MIDI track. (Select and hit backspace to delete a clip.)
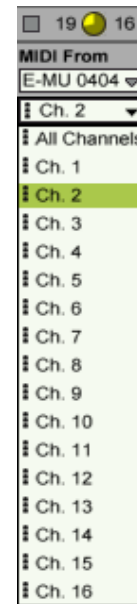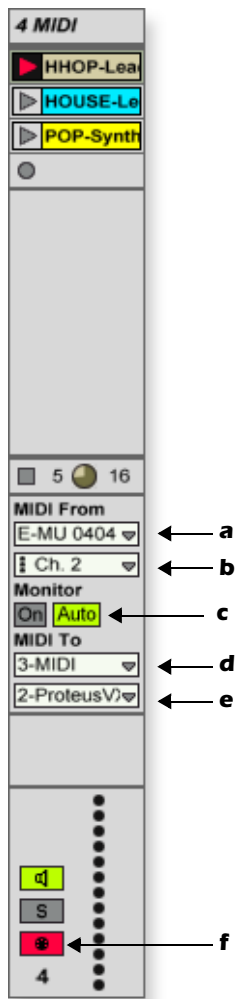
NOTE
Proteus VX sounds are called Presets or Programs. Ableton Live Programs are offset by +1 from Proteus VX.

Notes Box

Select
Preset

4 MIDI

HHOP-Lead
HOUSE-Le
POP-Synth

5 16

MIDI From
E-MU 0404 ▽ ← **a**
Ch. 2 ▽ ← **b**
Monitor
On Auto ← **c**
MIDI To
3-MIDI ▽ ← **d**
2-ProteusV⟩▽ ← **e**

S

● ← **f**

4

37. Set up the MIDI track as shown at left.

a. Select the 0404|USB in the "MIDI from" field.

b. Set the input to listen to MIDI channel 2.

c. Monitor should be set to Auto.

d. This field routes the MIDI data to track 3 (which contains Proteus VX).

e. Set the output to MIDI channel 2.

f. Turn record On (red).

38. Set your MIDI Keyboard to transmit on **MIDI channel 2**.

39. **Play the keyboard.** You should hear Proteus VX playing the last sound you selected on channel 2. Go ahead and change the sound if you wish. (Double-click the top of Track 3, then click the **Wrench** icon on the Device Title Bar. Make sure you're changing the sound on channel 2.)

Ready to Record

40. Start up the bass line on track 3 MIDI and practice playing along with it.

41. **Optional:** You can set the **Global Quantization** value to time correct your playing. Set it to anything other than "None".

▶ ■ ● OVR ≡+ 1/16 ▽ ← *Quantize*

42. Click one of the round **MIDI Clip Record** buttons to begin recording. →●

43. Click the **Clip Launch** button, the **Clip Stop** button, or the **Spacebar** to stop recording.

On Your Own

Now you've had a taste of what Proteus VX and Ableton Live Lite 4 can do. But don't stop now! Read the Proteus VX Operation Manual pdf to learn all about this exceptional instrument.

Ableton Live Lite 4 includes several excellent hands-on tutorials to help you learn all the features of this ground-breaking music application.

ⓘ ▶ ⑦ *ProteusVX*

Ch.2-Ctrl A ▽ Ch.2-Ctrl L ▽

Assign Controllers

Other Cool Tips

• **To control Proteus VX with the knobs on your MIDI keyboard:**
 Go to the MIDI Preferences on Proteus VX (Options, Preferences, Controllers tab) and make sure the MIDI Continuous Controller numbers match the ones your keyboard is sending. You can change the controller numbers on either your MIDI keyboard or Proteus VX, just as long as they both match.

• **To control Proteus VX with the Assignable X/Y Controls in Live:**
 Simply select the Proteus VX Channel and Proteus VX controller letter A-M for each axis of the X/Y controller. Open Proteus VX to see what controllers A-M are controlling. For more information about MIDI controllers please refer to the Proteus VX pdf manual.
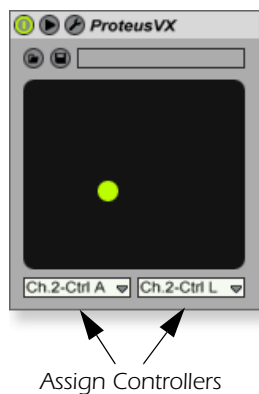
USING DOLBY AC-3 PASS-THROUGH

The coaxial or optical digital output of the E-MU 0404 USB 2.0 can pass Dolby AC-3 encoded 5.1 surround sound audio from your computer to an AC-3 decoder such as a surround sound AV receiver. This feature allows you to watch DVDs on your computer and enjoy 5.1 surround sound.

To utilize this feature you'll need:

- DVD playback software that supports Dolby Digital 5.1 (such as WinDVD for the PC or DVD Player on the Mac)
- An AC-3 decoder such as an AV receiver or preamplifier.
- A surround sound playback system.

▶ To Listen to a DVD in 5.1 Surround Sound

1. Connect the S/PDIF coaxial or optical output of the 0404 USB 2.0 to the digital input of your AC-3 receiver.

WinDVD

2. Make sure the 0404 USB 2.0 is the Default Sound Playback Device" in the "Sounds and Audio Devices" Control Panel on your PC.

3. Setup your DVD software to, "Output digital S/PDIF to external processor."

Mac DVD Player

4. Select Preferences... located under DVD Player on the Menu Bar.

5. Select the Disc Setup tab.

6. Select Digital Out - E-MU 0404 USB 2.0 as the Audio Output.

7. Click OK

Receiver

8. Set your AV receiver to input from the proper digital input.

9. Play the DVD. You should be hearing audio through your system.

10. When the 0404 USB 2.0 is receiving AC-3, the Direct Monitor and S/PDIF LEDs will NOT be lit. In addition the Sample Rate and Sync Source fields in the Control Panel application will be greyed out. Otherwise, the 0404 USB 2.0 is not receiving valid AC-3.

TIP . . .

If you don't get AC-3 passthrough, turn off the DVD player, then set the sample rate of the 0404 USB to match the sample rate of the DVD (usually 48kHz).

0404 USB 2.0 Control Panel

TROUBLESHOOTING

Can't hear Windows Media Player in Windows
If you have, or ever have had, another audio device installed in your PC, you may have to set the E-MU 0404 USB 2.0 as the "Default Audio Device".

1. Open the **Control Panel**, then select **Sounds and Audio Devices.**

2. Click the **Audio** tab and select the **E-MU 0404 USB 2.0** as the Default device under **Sound Playback**.

3. Click the **Volume button** under Sound Playback and turn up **Wave volume**.

You cannot record or monitor ASIO and WAVE at the same time. The first audio application you open controls the E-MU 0404 USB 2.0.

Lost Communication
Should you lose communication between your E-MU 0404 USB 2.0 and an audio application (Ableton Live, Cubase, Sonar, etc.), the E-MU 0404 USB 2.0 drivers may need to be re-selected in your application.

1. Go to your application's I/O settings, de-select the **E-MU 0404 USB 2.0** for both input and output.

2. Apply these changes and exit the dialog.

3. Re-enter the application's preference settings and re-select the **E-MU 0404 USB 2.0** drivers. If this doesn't work, the application may need to be restarted.

Ground Loops
In digital audio devices and computers, audio ground loops may appear as pitched tones, digital hash in the background, as well as the familiar 60 cycle hum.

Ground loops are caused by a difference in ground potential between two pieces of equipment. Computer audio devices are particularly susceptible to ground loops because most computers were not designed with high quality audio in mind.

The E-MU 0404 USB 2.0 contains built-in "ground lift" switches for both analog inputs in order to safely break the loop if a ground loop occurs in your setup.

No Input Ground — **A-GND LIFT**
B-GND LIFT
Grounded Input
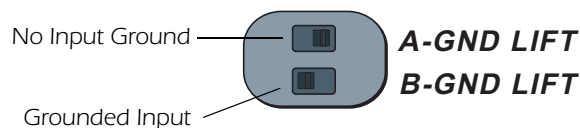
The ground-lift switches are located on the bottom of the unit, close to the front panel. The input ground is lifted when the A or B slide switch is closest to the GND LIFT label.

Pops & Crackles
Pops and crackling noises in the audio are most often caused by having the **ASIO Buffer Size** set too low. Adding audio tracks and VST plug-ins increases the load on your computer's CPU. If your computer cannot keep up with all the tasks you are asking it to perform, pops and crackles may occur. In effect, increasing the ASIO buffer gives your computer "more time" to complete its assigned tasks. The hardware Direct Monitor feature of the 0404 USB 2.0 allows you to increase the ASIO Buffer setting without the associated latency problems during recording and overdubbing.

USB hubs can create problems with digital audio and should be avoided whenever possible.

No S/PDIF I/O (OS X)

S/PDIF is not available at the 88.2/96 kHz sample rates. When these higher sample rates are selected in the OSX Audio MIDI Setup, 2-channel mode is automatically selected. When you switch the sample back to 44.1/48 kHz, 2-channel mode remains in effect. To remedy the situation:

1. Click **Go** -> **Utilities** from the menu bar.

2. Double-click **Audio MIDI Setup**.

3. Select the 44.1/48 kHz sample rate and select **4-ch-24bit** for the Audio Input and Audio Output.

Simultaneous WDM/ASIO/AC-3 Playback (Windows only)

The 0404 USB 2.0 only supports playing back 1 stream format at a time. Each of the 3 mentioned stream types has a priority associated with it. If a higher priority stream type is opened while a lower priority stream is already playing, the lower priority stream will stop playing. The stream priorities, from highest to lowest, are AC-3, ASIO, WDM.

USB 2.0 vs. USB 1.1 Operation (Windows only)

The 0404 can operate in USB 2.0 or USB 1.1 mode. 96 kHz and 192 kHz sample rates are only available while operating in USB 2.0. The included E-MU USB Audio Control panel software includes an indicator to let the user know which mode the device is running in.

0404 USB comes up in USB 1.1 mode (Windows only)

Always turn the 0404 USB power off before connecting or disconnecting the USB cable. Hot-plugging the unit with the power on can cause the 0404 to power-up in USB 1.1 mode. If you see the Windows message, "This device could perform faster...", simply turn power off, wait a few seconds, then turn power on again.

Internet References

The internet contains vast resources for the computer musician. A few useful sites are listed here, but there are plenty more. Check it out.

Software Updates, Tips & Tutorials . http://www.emu.com/support

Setting up a PC for Digital Audio .... http://www.musicxp.net

MIDI Basics.. Search for "MIDI Basics" (many sites)

MIDI & Audio Recording................... http://www.midiworld.com

MIDI & Audio Recording................... http://www.synthzone.com

Sonar Users Group............................ http://www.cakewalknet.com/index.php

Cubase, ASIO & Digital Audio.......... http://www.steinberg.net

Cubase Users Group .... http://www.groups.yahoo.com/group/ cubase/messages

Forums

Unofficial E-MU Forum..................... http://www.productionforums.com/emu

Sound-On-Sound Forum .... http://www.soundonsound.com

Computer Music Forum .... http://www.computermusic.co.uk/main.asp

Home Recording Forum................... http://homerecording.com/bbs

Studio Central Forum........................ http://www.tweakheadz.com

KVR Forum .... http://www.kvr-vst.com/forum/search.php

MIDI Addict Forum........................... http://forum.midiaddict.com/search.php

Sound Card Benchmarking............... http://audio.rightmark.org

Driver Heaven Forum .... http://www.driverheaven.net

TECHNICAL SPECIFICATIONS

General

Sample Rates: 44.1, 48, 88.2, 96, 176.4, 192kHz from internal crystal with no sample rate conversion.
(Note: 176.4k & 192k sample rates not supported on Macintosh)

Bit Depth: 24-bit I/O, 32-bit processing

USB 2.0 Hi-Speed

Full 24-bit resolution at all sample rates
4in/4 out channels from 44.1-96kHz
2 in/2 out channels from 176.4-192kHz (MIDI disabled at 176.4-192kHz)

Zero-latency direct hardware monitoring (Disabled at 176.4/192kHz)

ASIO2, WDM MME, Apple Core Audio and Core MIDI drivers

AC3 and DTS Passthru supported

Anti-Pop speaker protection minimizes noise during power on/off

Ultra-low jitter clock subsystem

<500ps RMS in PLL mode (48kHz, Coaxial S/PDIF Sync)

Combo Microphone Preamplifier/Hi-Z/Line Inputs (2)

Type: E-MU XTC™ combo mic preamplifier and Hi-Z/line input w/ Soft Limiter

A/D converter: AK5385A

Gain Range: +60dB

Frequency Response: (min gain, 20Hz-20kHz) +0.0/-0.16dB

Stereo Crosstalk: (1kHz min gain, -1dBFS) < -110dB

Hi-Z Line Input

Input Impedance: 1Mohm

Max Level: +12dBV (14.2dBu)

Dynamic Range: (A-weighted, 1kHz, min gain) 113dB

Signal-to-Noise Ratio: (A-weighted, min gain) 113dB

THD+N: (1kHz at -1dBFS, min gain) -101dB (.0009%)

Microphone Preamplifier

Input Impedance: 1.5Kohms

Max Level: +6dBV (+8.2dBu)

EIN: (20Hz-20kHz, 150ohm, unweighted) -127dBu

Signal-to-Noise Ratio: (A-weighted, min gain) 112.5dB

THD+N: (1kHz at -1dBFS, min gain) -101dB (.0009%)

Phantom Power: 48V

Soft Limiter: 5dB max compression (software selectable)

Analog Line Outputs (2)

Type: *balanced, AC-coupled, 2-pole low-pass differential filter*

D/A converter: *AK4396*

Level *(auto detect):*

> *Professional: +12dBV max (balanced)*
> *Consumer: +6dBV max (unbalanced)*

Frequency Response: *(20Hz - 20kHz) 0.06/-.035dB*

Dynamic Range: *(1kHz, A-weighted) 117dB*

Signal-to-Noise Ratio: *(A-weighted) 117dB*

THD+N: *(1kHz at -1dBFS) -100dB (.001%)*

Stereo Crosstalk: *(1kHz at -1dBFS) < -114.5dB*

Headphone Amplifier

Type: *Class-A power amplifier*

D/A converter: *AK4396 (shared with Line Out)*

Gain Range: *60dB*

Maximum Output Power: *20mW*

Output impedance: *22 Ohms*

Frequency Response: *(20Hz–20kHz) +0.06/-0.035dB*

Dynamic Range: *(A-weighted) 114dB*

Signal-to-Noise Ratio: *(A-weighted) 114dB*

THD+N: *(1kHz, max gain): 600ohm load -95.5dB (.0018%)*

Stereo Crosstalk: *(1kHz at -1dBFS, 600 ohm load) < -85dB*

Digital I/O

S/PDIF

> *2 in/2 out coaxial (transformer coupled)*
> *2 in/2 out optical*
> *AES/EBU or S/PDIF format (software selectable)*

MIDI

> *1 in, 1 out*

Synchronization

Internal crystal sync at: 44.1, 48, 88.2, 96, 176.4, 192kHz

External sample rate sync via:

> *Optical S/PDIF (44.1 – 96kHz)*
> *Coaxial S/PDIF (44.1 – 96kHz)*

Weight / Dimensions

Weight: *1.685 lb / 0.764kg*

Dimensions: W: *7.25" (184 mm)* **H:** *2.0" (50.8 mm)*   **L:** *7.0" (177.8 mm)*

DECLARATION OF CONFORMITY

Trade Name:	E-MU Systems
Model No.:	EM8761
Responsible Party:	E-MU Systems
Address:	1500 Green Hills Road, Suite 101 Scotts Valley, CA 95066 U.S.A.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Note:

This equipment 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 to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cables must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Compliance Information

United States Compliance Information

FCC Part 15 Subpart B Class B using:

CISPR 22 (1997) Class B

ANSI C63.4 (2001) method

FCC Site No. 958979

Canada Compliance Information

ICES-0003 Class B using:

CISPR 22 (1997) Class B

ANSI C63.4 (2001) method

Industry of Canada File No. IC 5933

European Union Compliance Information

EN55024 (1998 w/A1:01 & A2:03)

EN55022 (1998) Class B

Australia/New Zealand Compliance Information

AS/NZS CISPR 22 (2002) Class B using:

EN55022 (1998) Class B

Japan Compliance Information

VCCI (April 2000) Class B using:

CISPR 22 (1997) Class B

ANSI C63.4 (2001) method

VCCI Acceptance Nos. R-2160 & C-2332

Attention for the Customers in Europe

This product has been tested and found compliant with the limits set out in the EMC Directive for using connection cables shorter than 3 meters (9.8 feet).

Notice

If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the USB cable again.

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