Getting Started with Digi 001

Version 5.1.1 for LE on Macintosh
Version 5.3.1 for LE on Windows XP

digidesign

DECLARATION OF CONFORMITY

We Digidesign,

2001 Junipero Serra Boulevard

Daly City, CA 94014-3886, USA

650-731-6300

declare under our sole responsibility that the product

Digi 001

complies with Part 15 of 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.

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 will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

· Reorient or locate 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.

digidesign
A division of *Avid*

Digi 001

FC

Tested To Comply
With FCC Standards

FOR HOME OR OFFICE USE

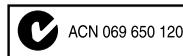Any modifications to the unit, unless expressly approved by Digidesign, could void the user's authority to operate the equipment.

Canadian Compliance Statement:

This Class B digital apparatus complies with Canadian ICES-003

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada

Australian Compliance

ACN 069 650 120

European Compliance

CE

contents

chapter 1

Digi 001 Introduction

About Digi 001

Thank you for purchasing Digi 001, a cross-platform solution for music, sound design, and multimedia production. The Digi 001 package includes the following:

- Installer CD-ROM containing Pro Tools LE software, DigiRack RTAS (Real-Time Audio-Suite) and AudioSuite plug-ins, and online PDF guides
- *Getting Started with Digi 001 Guide*, documents installation, configuration, and basic tutorials for Digi 001
- Digi 001 PCI Card, connects to the I/O and provides 8 channels of Optical I/O
- Digi 001 I/O with connections for audio and MIDI
- Rack ears, lets you install the I/O in a standard 19" rack
- I/O box connector cable, connects the Digi 001 PCI Card to the I/O
- Optical cable, connects the Digi 001 to an ADAT or S/PDIF audio device
- Digidesign Registration card

Pro Tools LE Capabilities

The Pro Tools LE software provides the following capabilities:

- Pro Tools LE 5.1.1 on Macintosh can record and play up to 24 mono digital audio tracks, depending on your computer's capabilities

  – or –

- Pro Tools LE 5.3.1 on Windows can record and play up to 32 mono digital audio tracks, depending on your computer's capabilities
- Record and play up to 128 MIDI tracks
- Use non-linear, random-access editing and mix automation
- Process audio with up to 5 RTAS plug-ins per track, depending on your computer's capabilities
- Use up to 5 inserts and 5 sends per track
- Route up to 32 busses
- Work with 16-bit or 24-bit sessions

⚠ *Pro Tools LE uses your computer's CPU to mix and process audio tracks (host processing). Computers with faster clock speeds yield higher track counts and more plug-in processing.*

Digi 001 Capabilities

Digi 001 provides the following inputs and outputs:

- 8 analog audio inputs (2 with mic preamps)
- Switchable 48V phantom power on mic preamps
- 8 analog outputs
- stereo monitor output
- Stereo headphone output
- Optical input for 8 channels of ADAT input or 2 channels of S/PDIF input
- Optical output for 8 channels of ADAT output or 2 channels of S/PDIF output
- 2 RCA channels of S/PDIF digital I/O
- MIDI in and out, providing up to 16 channels of MIDI I/O

In addition, Digi 001 includes a footswitch jack for punching in and out while recording.

System Requirements

Compatibility Information

Digidesign can only assure compatibility and provide support for hardware and software it has tested and approved. For a list of Digidesign-qualified computers, operating systems, and third-party devices, refer to the latest compatibility information on the Digidesign Web site:

www.digidesign.com

Computer Requirements

Digi 001 can be used on a Digidesign qualified Power Macintosh (with Pro Tools LE 5.1.1) or Windows computer (with Pro Tools LE 5.3.1).

Macintosh

To use Pro Tools LE 5.1.1 on a Macintosh, you need:

- A Digidesign-qualified Power Macintosh (G4 recommended)
- Mac OS 9.1 or later

⚠ *Mac OS X is not supported.*

- At least 256 MB RAM
- CD-ROM drive for software install
- QuickTime 4.1.2 or later (included with Pro Tools LE)
- OMS 2.3.8 (included with Pro Tools LE)
- Color monitor required, minimum resolution of 1024 x 768

Windows

To use Pro Tools LE 5.3.1 on Windows, you need:

- A Digidesign-qualified, single processor computer:
  - Intel Pentium III
  - Intel Pentium 4
  - AMD Athlon XP
  - AMD Athlon Thunderbird
- Intel (Pentium III or Pentium 4) or "pure" VIA (AMD Athlon) chipset

📄 *For specific supported chipset models, refer to the latest compatibility information on the Digidesign Web site (www.digidesign.com).*

- Windows XP Home Edition

⚠️ *Pro Tools LE 5.3.1 does not support Windows 98 or Windows ME.*

- QuickTime version 5 for Windows XP

- At least 256 MB RAM

- A CD ROM or equivalent drive

- An AGP display card

- Color monitor required, minimum resolution of 1024 x 768

Hard Drive Requirements

Macintosh

For audio recording and storage on the Macintosh, Pro Tools LE requires one or more qualified ATA/IDE, FireWire, or SCSI drives with the following properties:

- Formatted with HFS or HFS+ file system

- Data transfer rates of 3 MB per second or faster

- Drive spin speed of 7,200 RPM or faster

- Average seek time of 10.0 milliseconds or faster

📄 *For the latest compatibility information on hard drives and SCSI host bus adapters, visit the Digidesign Web site (www.digidesign.com).*

Windows

For audio recording and storage on the Windows, Pro Tools LE requires one or more qualified ATA/IDE, FireWire, or SCSI drives with the following properties:

- Formatted with NTFS or FAT32 file system (NTFS recommended)

- Data transfer rates of 3 MB per second or faster

- Drive spin speed of 7,200 RPM or faster

- Average seek time of 10.0 milliseconds or faster

💡 *For the latest compatibility information on hard drives and SCSI host bus adapters, visit the Digidesign Web site (www.digidesign.com).*

Using System Drives for Audio

Although Pro Tools will let you record to your operating system drive, this is generally not recommended. Performance for recording and playback on system hard drives is worse than on non-system drives, resulting in lower track counts and fewer plug-ins.

You should record to system drives only when absolutely necessary—if your computer system has just one hard drive, or if your other hard drives are completely out of space.

⚠️ *On Windows, Pro Tools LE can record to the C: drive, but not to other partitions on the same physical drive. For example, if you format your system drive with two partitions (C: and D:) Pro Tools LE can record to C:, but not to D:.*

SCSI and FireWire Hard Drives

SCSI and FireWire hard drives offer several advantages over ATA/IDE drives. First, SCSI and FireWire drives can be external and therefore provide portable audio storage that is easily moved between systems. Second, SCSI and FireWire drives offer slightly better performance when recording large numbers of tracks; attempting to record to large numbers of audio tracks with an ATA/IDE drive can result in a short delay before recording begins.

Formatting and Defragmenting Drives

Macintosh

On the Macintosh, it is recommended that you start with a newly initialized audio drive. You should also periodically *defragment* your audio drive to ensure continued system performance.

If you are using a SCSI hard drive, you can use the *ExpressPro-Tools* software from ATTO (included on the Pro Tools LE Installer CD) to initialize the drive. If you are using an ATA/IDE hard drive, use the *Drive Setup* utility included with the Apple System software.

Windows

On Windows, it is recommended that you start with a newly formatted audio drive. For optimum performance, the drive should be formatted with the FAT32 or NTFS file system using 32k clusters. You should also periodically *defragment* your audio drive to ensure continued system performance.

To format an audio drive:

1 From the desktop, double-click My Computer.

2 Right-click the hard drive you will use for audio and choose Format.

3 Set the Format Type to Full and click Start.

4 Follow the on-screen instructions. When formatting is complete, close the Format window.

To defragment an audio drive:

1 From the desktop, double-click My Computer.

2 Right-click your audio hard drive and choose Properties.

3 Click the Tools tab.

4 Click Defragment Now and follow the on-screen instructions.

5 When defragmenting is complete, close the Properties Control Panel.

On Windows, fragmentation is less likely to occur on drives formatted with higher cluster sizes (such as 32k, which is strongly recommended for optimal performance with Pro Tools). Use Windows Disk Administrator to format FAT32 or NTFS.

Hard Drive Storage Space

Mono audio tracks recorded with 16-bit resolution at 44.1 kHz (CD-quality) require approximately 5 MB of hard disk space per minute. The same tracks recorded with 24-bit resolution require about 7.5 MB per minute.

Table 1 on page 5 lists the required drive space for certain track numbers and track lengths. In deciding the required hard drive space for your needs, plan accordingly.

Table 1. Required hard drive space for audio tracks

Number of tracks and length	16-bit at 44.1 kHz	16-bit at 48 kHz	24-bit at 44.1 kHz	24-bit at 48 kHz
1 mono track, 1 minute	5 MB	5.5 MB	7.5 MB	8.2 MB
1 stereo track (or two mono tracks), 5 minutes	50 MB	55 MB	75 MB	83 MB
1 stereo track (or two mono tracks), 60 minutes	600 MB	662 MB	900 MB	991 MB
24 mono tracks, 5 minutes	600 MB	662 MB	900 MB	991 MB
24 mono tracks, 60 minutes	7 GB	7.8 GB	10.5 GB	11.6 GB
32 mono tracks, 5 minutes	800 MB	880 MB	1,200 MB	1,321 MB
32 mono tracks, 60 minutes	9.3 GB	10.4 GB	14 GB	15.5 GB

Digidesign Registration

Complete and return the registration card included with Digi 001. Registered users are entitled to one year of free technical support, and will periodically receive notice of software updates and upgrades.

About the Guides

This guide will get you started using Digi 001 to record, edit, and mix multiple audio and MIDI tracks. For additional information, see the following online guides:

- *Pro Tools Reference Guide*, documents Pro Tools LE software in detail.

- *DigiRack Plug-Ins Guide*, documents how to use the RTAS and AudioSuite plug-ins included with Pro Tools LE.

- *MIDI Control Surfaces Guide*, documents how to use MIDI control surfaces (such as Motor-Mix) with Pro Tools LE.

- *Keyboard Shortcuts* (Macintosh and Windows), lists keyboard shortcuts for Pro Tools LE.

PDF versions of these guides are installed automatically with Pro Tools LE, and can be accessed from the Help menu in Pro Tools LE. To read the guides online, or print them, you must install Acrobat Reader (included on the Pro Tools LE Installer CD).

💡 *Printed copies of the Pro Tools LE Manual Set (including the Pro Tools Reference Guide) can be purchased separately from the DigiStore (www.digidesign.com).*

Conventions Used in This Guide

Digidesign guides use the following conventions to indicate menu choices and key commands:

Convention	Action
File > Save Session	Choose Save Session from the File menu
Control+N	While pressing the Control key, press the N key
Option-click	While pressing the Option key, click the mouse button
Right-click (Windows)	Click with the right mouse button

The following symbols are used to highlight important information:

☼ *User Tips are helpful hints for getting the most from your system.*

▲ *Important Notices include information that could affect your data or the performance of your system.*

⇧ *Shortcuts show you useful keyboard or mouse shortcuts.*

▤ *Cross References point to related sections in other Digidesign guides.*

Macintosh Configuration

Installing the Digi 001 Hardware

Before installing the Pro Tools LE software, first install the Digi 001 PCI Card.

To install the Digi 001 PCI Card in a Macintosh:

1 Turn off your computer. Leave it plugged in so that it is grounded.

2 Open the computer case. If necessary, refer to the manufacturer's instructions for details.

**3** Remove the rear slot cover and screw of any available PCI expansion slot.
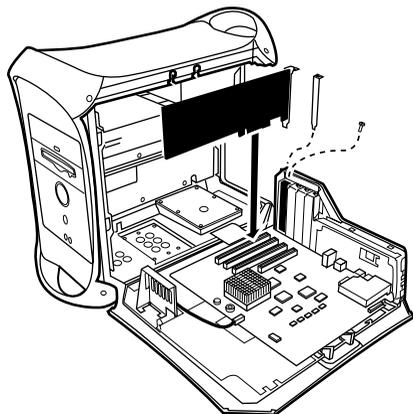
PCI card installation for Macintosh

4 Before handling the Digi 001 PCI Card, discharge any static electricity by touching the outer casing of the power supply.

5 Remove the Digi 001 PCI Card from its anti-static bag.

6 Hold the card gently by the top edges, and line up its PCI connector with the PCI slot inside the computer.

7 When the connector and slot are aligned, press the card into the slot using firm, even pressure. The card should click into place. Secure the card with the previously removed screw. Make sure the card's audio connectors are accessible through the rear slot of the computer.
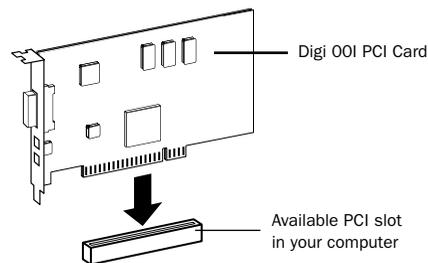
PCI card installation

8 Close the computer case.

Connecting the Digi 001 I/O

⚠ *Your computer must be off when you connect or disconnect the I/O.*

To connect the Digi 001 I/O box:

1 Locate the connector cable with the wide ends that came with your Digi 001.

2 Align a cable end with the connector on the Digi 001 PCI Card (see Figure 1), and insert the cable into the connector until it clicks into place.
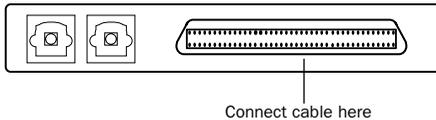

Connect cable here

Figure 1. Digi 001 PCI Card (outside computer view) showing cable connector

3 Align the other cable end with the Computer connector on the Digi 001 I/O (see Figure 2), and insert the cable into the connector until it clicks into place.
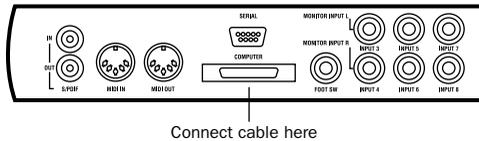

Connect cable here

Figure 2. Digi 001 I/O, back view showing cable connector

4 Turn on your computer.

Installing the Pro Tools LE Software

Apple System Software Settings

To ensure optimum performance with the Pro Tools LE software, configure the Apple System software with the following settings.

To configure the Apple System software:

1 In the Memory Control Panel, do the following:

• Set Virtual Memory to Off.

• Set the Ram Disk to Off.

• Set the Disk Cache to a Custom Setting of 512K.

2 In the Energy Saver Control Panel, set the "inactive" time to Never.

3 In the Appearance Control Panel, do the following:

• Click the Fonts tab and set the Large System Font to Chicago. In addition, deselect "Smooth all fonts on screen."

• Click the Sound tab and select None from the Sound Track pop-up menu.

4 Set the number of colors to thousands in the Monitors & Sound Control Panel. If you are using a Power Macintosh 9600, set the number of colors to 256.

5 In the Extensions Manager Control Panel, do the following:

Extensions Manager Control Panel

- Choose Mac OS 9.1 Base from the Selected Set pop-up menu.

- Click Restart to restart your computer.

Pro Tools LE Installation

After the Apple System software settings are configured, install Pro Tools LE.

To install Pro Tools LE on your Macintosh:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. Locate and double-click "Install Pro Tools LE."

Install Pro Tools LE

2 At the Install window, select the install option for Pro Tools LE, and set the Install Location to your Startup hard drive. Click Install.

3 Follow the on-screen installation instructions.

4 If you want to use the Digi 001 with Apple Sound Manager-compatible applications, select the Digidesign Control Panel option (see Appendix B, "Digidesign Control Panel (Macintosh Only).")

5 When installation is complete, click Quit (not Restart) and, if you have not already done so, install OMS (see "Installing and Configuring OMS" on page 10). You can also install the optional demo sessions (see "Installing the Demo Session" on page 9).

Installing the Demo Session

(Optional)

The Digi 001 system includes two demo sessions, *Pro Tools SoundCheck Digi001*, which you can use to verify that your system is working, and *Be There Digi001*, a more full-featured demo that you can use to test system playback, and to learn some features of Pro Tools LE.

⚠ *Before installing the demo sessions to your audio drive, make sure the drive is configured as described in "Hard Drive Requirements" on page 3.*

To install the demo sessions:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. Locate and double-click "Install PT LE Demo Session."

2 At the Install Screen, make sure the install options for "Be There Session" and "SoundCheck Session" are selected.

3 Set the Install Location to your audio drive and click Install.

4 When installation is complete, click Quit.

Installing and Configuring OMS

To use Pro Tools on the Macintosh you must first install and configure the Open Music System (OMS). OMS, which is included on the Pro Tools Installer CD, has the following capabilities:

- Keeps track of which MIDI devices you are using, how they are connected, and which patches they are using

- Enables MIDI hardware to communicate with your music applications

- Provides timing services and inter-application communication

OMS stores a description of your MIDI studio in *Studio Setup* documents, which are edited in the *OMS Setup* application. Once OMS is configured, your music applications know which MIDI devices you are using by referencing the current Studio Setup document.

📖 *For more detailed information, refer to the online OMS Guide installed with Pro Tools.*

Installing OMS

The OMS Installer is located on your Pro Tools Installer CD-ROM.

To install OMS:

1 Insert the Pro Tools Installer CD in your CD-ROM drive.

2 Open the "OMS Installer" folder and double-click the OMS installer.

3 At the Install window, select the Easy Install option, and set the Install Location to your System drive. Click Install.

4 Follow the on-screen installation instructions.

5 When the installation is complete, restart your Macintosh.

📖 *For basic information on configuring OMS, see Appendix A, "Configuring OMS (Macintosh Only)."*
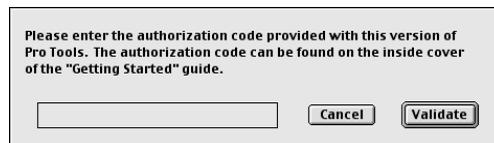
Launching Pro Tools the First Time

Validate Pro Tools Software

When launching Pro Tools the first time, you are prompted to enter an authorization code to validate your software.

To validate Pro Tools software:

1 Double-click the Pro Tools application in the Pro Tools folder inside the Digidesign folder.

2 If OMS was not previously configured, you will be prompted to configure a New Studio Setup. For specific steps, see "Installing and Configuring OMS" on page 10.

3 Enter the authorization code in the dialog when prompted, making sure to observe any spaces, then click Validate.

Please enter the authorization code provided with this version of Pro Tools. The authorization code can be found on the inside cover of the "Getting Started" guide.

[   ]   Cancel   Validate

Authorization code validation for Pro Tools

The authorization code is located on the inside cover of this guide. Again, be sure to include any spaces in the authorization code.

Congratulations! Pro Tools is launched. When Pro Tools is launched for the first time only the menus will appear. To see Edit and Mix windows, a new session must be created. But before you begin working with Pro Tools, you should get acquainted with Pro Tools system settings, described in the following section.
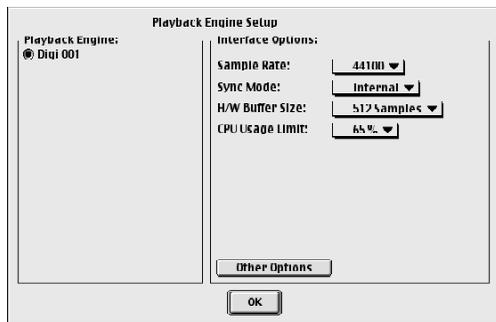
Configuring Pro Tools

Configuring the Playback Engine

The Playback Engine lets you customize various System Usage parameters (such as Hardware Buffer Size and CPU Usage).

To configure the Playback Engine:

1 Choose Setups > Playback Engine.

Playback Engine dialog for Digi 001

⚠ *Selecting Setups > Playback Engine when a Pro Tools session is currently open will automatically save, close, and reopen the session.*

2 From the Sample Rate pop-up, select the hardware sample rate.

📄 *Session sample rate is determined by the selected sample rate in the Create a New Session dialog. (See "Starting a Session" on page 44.)*

3 From the Sync Mode pop-up menu, select the clock source. You will typically leave this at the default setting of Internal, but if you will be recording from a digital source you will need to select the appropriate clock source (S/PDIF or Optical).

4 From the H/W Buffer Size pop-up, select the audio buffer size, in samples, for host processing tasks such as Real-Time AudioSuite (RTAS) plug-in processing. The default setting is 512 samples. Select a higher setting if you need more buffer time for RTAS and Direct Connect applications.

5 From the CPU Usage Limit pop-up, select the maximum percentage of CPU resources to allocate to host processing tasks. The default setting is 65%. Select a higher setting if you need more host processing power for RTAS and Direct Connect applications.

⚠ *Increasing the CPU Usage Limit may slow down screen responses.*

6 Click OK when finished.

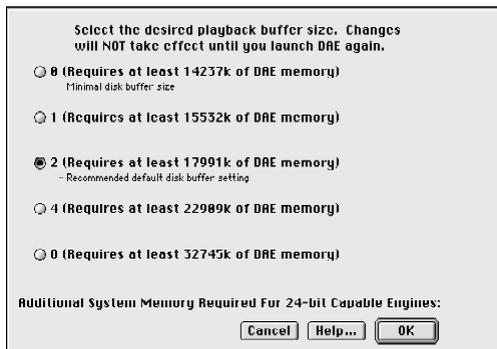## Configuring the DAE Playback Buffer

The DAE Playback Buffer Size determines the amount of memory allocated within DAE to manage disk buffers, which affects system performance.

Though DAE automatically selects the optimal playback buffer size for your system, you may want to adjust this parameter to modify your system's performance:

◆ Allocating a larger buffer size can sometimes allow for a higher density of edits. This can be useful if you experience system performance problems in sessions with a large number of edits in rapid succession. However, choosing a larger buffer size can cause a time lag to occur before playback or recording begins. It can also cause a time lag to occur when you are editing during playback.

◆ Allocating a smaller buffer size can sometimes improve playback and recording initiation speed. This can be useful if you are experiencing a time lag when you initiate playback or recording. However, choosing a smaller buffer size can make it difficult for slower hard drives to play or record tracks reliably.

To configure the DAE Playback Buffer Size:

1 Launch DAE. If Pro Tools is already running, switch to the DAE application.
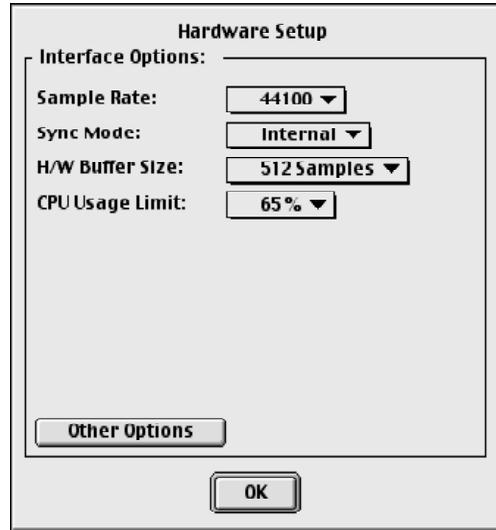
2 Choose File > Set Playback Buffer Size.

DAE Playback Buffer Size dialog

3 Select the desired playback buffer size.

4 Click OK.

Configuring Hardware Setup

The Pro Tools Hardware Setup dialog (Setups > Hardware) provides the same Interface Options as the Playback Engine dialog.

Hardware Setup dialog for Digi 001

Sample Rate Select the hardware sample rate.

Sync Mode Select the clock source.

H/W Buffer Size Select the audio buffer size, in samples, for host processing tasks such as Real-Time AudioSuite (RTAS) plug-in processing and monitoring latency (see "Monitoring Latency and Recording" on page 59).

CPU Usage Limit Select the maximum percentage of CPU resources to allocate to host processing tasks.

Other Options

Clicking the Other Options button will open a dialog that provides controls for Input Gain on Channels 3–8, S/PDIF Compatibility, Mic/Line High-Pass Filter, and Optical Format.
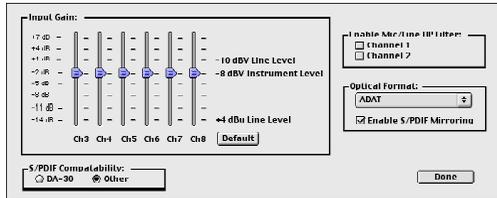
Other Options dialog for Digi 001

Input Gain Adjust the gain on analog channels 3–8 by using the Input Gain controls.

S/PDIF Compatibility Set the S/PDIF I/O format to DA-30 if you are using a Tascam DA-30 DAT recorder. Otherwise, select Other.

Enable Mic/Line HP Filter Enable a high-pass filter (set at 60 Hz) on Channels 1 and 2 for filtering out low-end rumble from a noisy recording environment or microphone handling, or AC noise.

Optical Format Select ADAT or S/PDIF, depending on whether you are using the Optical inputs and outputs for ADAT or S/PDIF.

Enable S/PDIF Mirroring Sets S/PDIF (RCA) outputs to automatically "mirror" the audio that is sent to analog outputs 1 and 2.

Using a Digital Source

If you are recording from an optical or S/PDIF device, you will need to configure Pro Tools LE to synchronize to the external device.

To configure Pro Tools LE for a digital source:

1 Connect an ADAT or S/PDIF format optical device to the Optical In on the Digi 001 PCI Card, or connect an RCA S/PDIF device to the RCA connectors on the back of the Digi 001 I/O.

⚠ *You can only use one pair of S/PDIF inputs (either RCA or optical) at a time.*

2 In Pro Tools LE, choose Setups > Hardware Setup.

3 From the Sync Mode pop-up menu, select Optical or S/PDIF (RCA), depending on where you connected your digital device (see Figure 3 on page 14).

4 Click Other Options in the Hardware Setup dialog.

5 If you are using the S/PDIF (RCA) input, select DA-30 or Other depending on whether or not you are using a Tascam DA-30.

– or –

If you are using the optical input on the Digi 001 PCI Card, select the correct Optical Input Format (ADAT or S/PDIF). See Figure 3 on page 14.
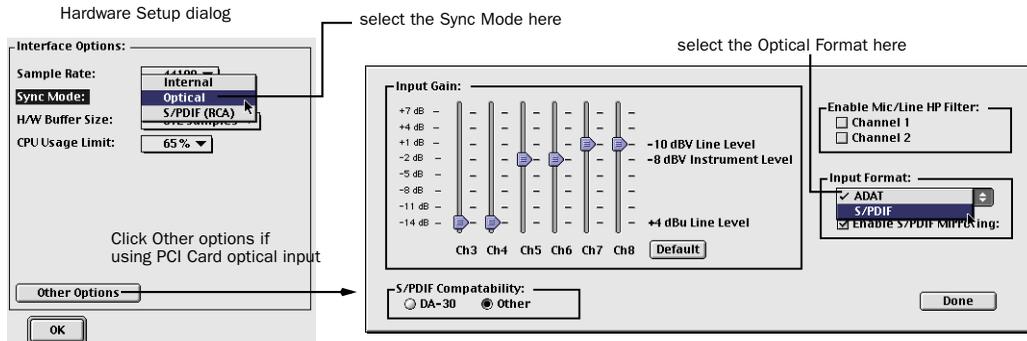
Figure 3. Configuring the Digi 001 for a digital source on Macintosh

Configuring I/O Setup

The I/O Setup dialog lets you label and map Pro Tools LE input, output, insert, and bus *signal paths*. This dialog provides a graphical representation of the signal routing for each connected audio interface. Each I/O attached to your system is displayed, with controls to route physical ports to Pro Tools LE inputs and outputs.

Pro Tools LE ships with default I/O Setup settings that will get you started. You only need to go to I/O Setup if you want to remap or rename the default I/O paths.

To configure I/O routing in I/O Setup:

1 Choose Setups > I/O Setups in Pro Tools LE.

2 Map and name paths as desired.

3 If necessary, redefine formats for I/O channels of any peripherals.
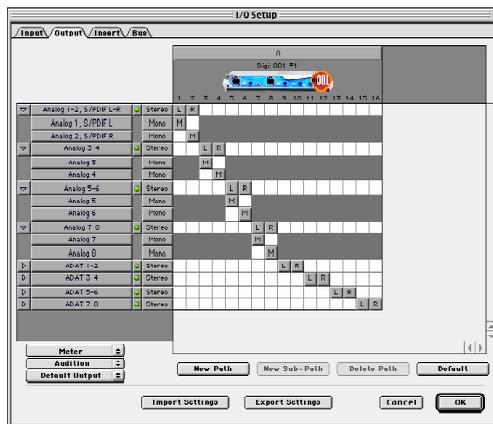
I/O Setup dialog for Digi 001, Output page

📄 *Refer to the Pro Tools Reference Guide (in Pro Tools LE, choose Help > Pro Tools Reference Guide) for more information on setting up I/O paths.*

Optimizing Pro Tools

(For Older Macintoshes)

Pro Tools LE uses your computer's processor for audio tasks. This processing can be very intensive for older computers, such as pre-G3 Power Macintoshes. If you have an older computer, the following steps will help you get better performance from Pro Tools LE.

To set up Pro Tools LE for a slower, pre-G3 Macintosh:

1 Launch Pro Tools LE by opening the Digidesign folder, then the Pro Tools folder, and double-clicking Pro Tools LE.

2 Choose Setups > Playback Engine.

3 From the H/W Buffer Size pop-up, select 1024 samples for the audio buffer size. The default setting is 512 samples

4 From the CPU Usage Limit pop-up, select 85% for the maximum percentage of CPU resources to allocate to host processing tasks. The default setting is 65%.

5 Click OK when finished.

chapter 3

Windows Configuration

BIOS and System Modifications

Before installing any hardware or software, first make changes to your computer's BIOS and System settings. These settings are necessary to ensure optimum performance for Pro Tools LE on Windows.

BIOS Settings

Different BIOS manufacturers often use different names to describe the same system function—or in some cases, do not provide a particular configuration option at all. The names and options that appear in your computer's BIOS may differ slightly from those described in the following procedure.

Make the following changes to your computer's BIOS settings:

1 Turn on your computer, or if it is already on, restart it.

2 During startup, enter the BIOS Setup by pressing the appropriate key (usually indicated in the startup message) on your computer keyboard. The F1, F2, or the Delete keys are commonly used.

3 In the appropriate page of the BIOS Setup, enable USB.

4 In the appropriate page of the BIOS Setup, disable PCI Parity. If the PCI Parity option isn't available on your computer, skip this step.

5 Save changes, exit the BIOS Setup screen, and restart your computer.

Windows System Settings

In Windows, configure the following Control Panel settings.

Enable DMA for any IDE/ATA hard drives:

1 Right-click My Computer, located on the Desktop or in the start menu, and choose Properties.

2 Select the Hardware tab.

3 Click the Device Manager button.

4 Locate and double-click the device for your IDE/ATA controller.

5 In the IDE/ATA Controller Properties dialog, click the Advanced Settings tab.

6 Under Transfer mode, select DMA Transfer mode, if available, and click OK.

7 Repeat for any additional IDE/ATA drives.

8 Click OK to close the Device Manager dialog.

9 Close the System Control Panel.

Other Software and Hardware Affecting System Performance

Pro Tools LE can also be affected by other software and hardware drivers installed on your computer. For best possible performance, it is recommended that you:

• Avoid running other Windows programs at the same time as Pro Tools LE.

• Turn off any software utilities that run in the background, such as calendars and virus protection.

• Disable Windows System sounds. In the Sound Control Panel, set the Sound Scheme to No Sounds.

• If your video display card supports it, enable Bus Mastering in the manufacturer's Control Panel.

• Disable any networking cards.

• Disable any extra startup items.

Disable Driver Signing Warning

Before you begin to physically install your Digi 001 PCI card, temporarily disable the Driver Signing warning option.

To disable the warning option:

1 Turn on your computer.

2 Launch the System control panel.

3 Select the Hardware tab.

4 Click the Driver Signing button.

5 Select "Ignore—Install the software anyway and don't ask for my approval."

6 Click OK twice.

7 Shut down and turn off your computer.

8 Proceed with physically installing your Digi 001 PCI card.

Disable Virus-Protection Software

If you are using virus-protection software, turn it off or remove it and restart your computer. Avoid running virus-protection software while using Digi 001 since it adversely affects system performance.

Installing Digi 001 Hardware

Installing the Digi 001 PCI Card

**To install the Digi 001 PCI card in a Windows computer:**

1 Turn off your computer. Leave it plugged in so that it is grounded, or use an alternate method of grounding according to your computer manufacturer's instructions.

2 Open the computer case. If necessary, refer to the manufacturer's instructions for details.

3 Remove the rear slot cover and screw or clamp of any available PCI expansion slot.

4 Before handling the Digi 001 card, discharge any static electricity by touching the outer casing of the power supply.

5 Remove the Digi 001 card from its anti-static bag.

6 Hold the card gently by the top edges, and line up its PCI connector with the PCI slot inside the computer.
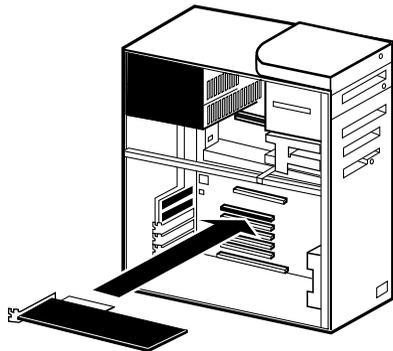
PCI card installation for a Windows PC

7 When the connector and slot are aligned, press the card into the slot using firm, even pressure. The card should click into place. Secure the card with the previously removed screw or clamp. Make sure the card's audio connectors are accessible through the rear slot of the computer.

Digi 00I card

Available PCI slot in your computer
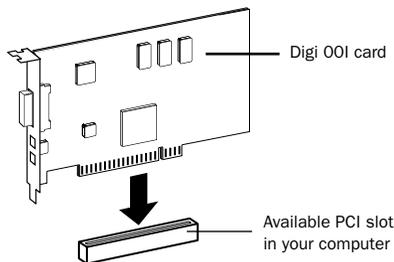
PCI card installation

8 Replace the computer case.

Connecting the Digi 001 I/O

⚠ *Your computer must be off when you connect or disconnect the I/O.*

To connect the Digi 001 I/O:

1 Locate the connector cable with the wide ends that came with your Digi 001.

2 Align a cable end with the connector on the Digi 001 PCI Card, and insert the cable into the connector until it clicks into place.
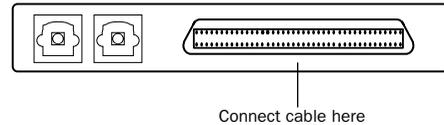

Connect cable here

Figure 4. Digi 001 PCI Card (outside computer view) showing cable connector

3 Align the other cable end with the Computer connector on the Digi 001 I/O, and insert the cable into the connector until it clicks into place.
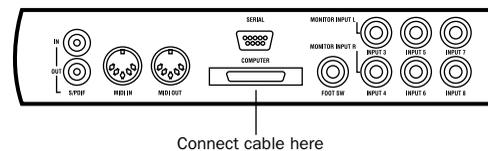

Connect cable here

Figure 5. Digi 001 I/O, back view showing cable connector

Installing Pro Tools LE Software

To install Pro Tools LE on Windows:

1 Turn on your computer.

2 Start up Windows, logging in with Administrator privileges. If you do not have Administrator privileges or do not know how to set them up, see your Windows User's Guide.

3 Wait for the Found New Hardware Wizard dialog to appear and leave it open.

4 If you are using virus-protection software, turn it off or remove it and restart your computer. Avoid running virus-protection software while using Pro Tools LE since it adversely affects system performance.

5 Place the Pro Tools LE Installer CD-ROM for Windows in your CD-ROM drive. Locate (in the Pro Tools LE Installer folder) and double-click the blue icon named "Setup."

6 When the installer opens, click Next to proceed.

7 Choose from the following three install options:

• Typical, recommended for first-time users

• Compact, installs the minimum components necessary to run Pro Tools LE

• Custom, lets you select which components are installed (for advanced users)

8 Click Next to install the selected option. Files are installed to the Digidesign folder inside the Program Files folder.

9 Wait for the installer to finish installing all software components, drivers, and PACE System files before proceeding to the next step.

10 If QuickTime is not already installed, you will be prompted to install the "Recommended" QuickTime installer option now (see "Installing QuickTime" on page 20). Follow the on-screen instructions to complete the QuickTime installation process.

11 When installation is complete, click Finish to restart your computer.

Installing QuickTime

QuickTime 5 is required for Pro Tools LE. Install the latest version of QuickTime for Windows (available on the Pro Tools LE 5.3.1 CD-ROM or from www.apple.com). Be sure to install the "Recommended" install of QuickTime or Pro Tools will not handle QuickTime video correctly.

Digidesign WaveDriver
(Optional)

The Digidesign WaveDriver is a two-channel, multimedia sound driver that allows third-party audio applications to record and play back through channels 1–2 of the Digi 001. The Digidesign WaveDriver is *not* required to use Pro Tools LE with the Digi 001.

⚠ *Check the Digidesign Web site (www.digidesign.com) for the latest third-party drivers for Pro Tools LE hardware, as well as current known issues.*

▤ *For detailed information on installing, using, and removing the Digidesign WaveDriver, see Appendix C, "Digidesign WaveDriver (Windows Only)."*

Installing the Demo Session
(Optional)

The Digi 001 system includes demo sessions, which you can use to verify that your system is working, test system playback, and explore some of the features of Pro Tools LE.

⚠ *Before installing the demo sessions to your audio drive, make sure the drive is configured as described in "Hard Drive Requirements" on page 3.*

To install the demo sessions:

1 Insert the Pro Tools LE Installer CD in your CD-ROM drive.

2 Navigate to your CD-ROM drive, and open the CD-ROM.

3 Open the Pro Tools Demo Session Installer folder, in the Additional Files folder, and double-click the Setup program.

4 When the installer opens, click Browse to set the destination folder to your audio drive, then click Next.

5 Select the install components for the Sound-Check Session and Be There Session.

6 Click Next to install the demo sessions.

Removing Pro Tools LE

If you need to remove Pro Tools LE from your computer for any reason (such as needing to remove the Digidesign WaveDriver), do so using Add or Remove Programs.

To remove Pro Tools LE:

1 Choose Start > Control Panel.

2 Double-click the Add or Remove Programs icon.

3 From the Currently installed programs list, select Digidesign Pro Tools LE.

4 Click the Change/Remove button.

5 Select Remove, and then click Next.

6 Click OK to remove Pro Tools LE.

Launching Pro Tools LE the First Time

Validate Pro Tools LE Software

When launching Pro Tools LE the first time, you are prompted to enter an authorization code to validate your software.

To validate Pro Tools LE software:

1 Double-click the Pro Tools LE application in the Pro Tools folder inside the Digidesign folder.

The authorization code is located on the inside cover of this guide.

2 Enter the authorization code in the dialog when prompted, making sure to observe any spaces.
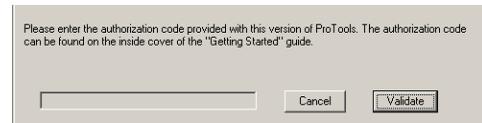
Authorization code validation for Pro Tools LE

3 Click Validate.

Congratulations! Pro Tools LE is launched. When Pro Tools LE is launched for the first time only the menus will appear. To see Edit and Mix windows, a new session must be created. But before you begin working with Pro Tools, see "Configuring Pro Tools" on page 22 to get acquainted with Pro Tools system settings.

Cannot Create DAE Deck Or Error Number 4

Your computer may not recognize your Digi 001 cards if you did not follow all of the steps above.

To correct a "Cannot Create DAE Deck" error:

1 Turn your computer off.

2 Confirm that your Digi 001 card is seated correctly and the connector cable is tightly fastened.

3 Start your computer and launch Pro Tools LE. If the error does not re-appear, you do not need to continue with these steps.

4 With your computer on, right-click the My Computer icon (located in the Start menu).

5 Choose Properties > Hardware > Device Manager.

6 Expand the Sound, Video and Game Controllers list.

7 In Multimedia Devices, will see an "!" icon next to the Digi 001 if it is not properly installed.

8 Select the "!" icons and press Delete.

9 Click OK in the Confirm Device Remove dialog.

10 You are ready to install your Digi 001 card. See "Installing Digi 001 Hardware" on page 18.

Configuring Pro Tools

Configuring the Playback Engine

The Playback Engine sets the voice count (and voiceable tracks) for your system, and it's sessions. Additionally, it lets you customize specific System Usage parameters (such as buffers and CPU Usage).
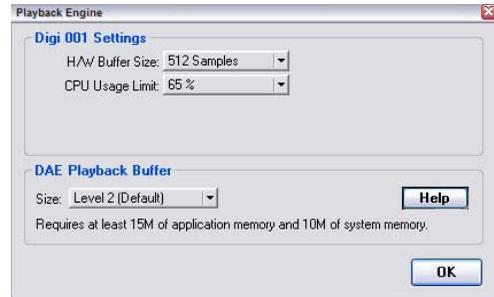
Playback Engine dialog for Digi 001

To configure the Playback Engine:

1 Choose Setups > Playback Engine.

2 From the H/W Buffer Size pop-up, select the audio buffer size, in samples, for host processing tasks such as Real-Time AudioSuite (RTAS) plug-in processing. The default setting is 512 samples. Select a higher setting if you need more buffer time for RTAS and Direct Connect applications.

3 From the CPU Usage Limit pop-up, select the maximum percentage of CPU resources to allocate to host processing tasks. The default setting is 65%. Select a higher setting if you need more host processing power for RTAS and Direct Connect applications.

⚠ *Increasing the CPU Usage Limit may slow down screen responses.*

4 Set DAE Playback Buffer Size (see "DAE Play-back Buffer Size" on page 23).

5 Click OK when finished.

DAE Playback Buffer Size

The DAE Playback Buffer Size determines the amount of memory allocated within DAE to manage disk buffers, which affects system performance.

Though DAE automatically selects the optimal playback buffer size for your system, you may want to adjust this parameter to modify your system's performance:

◆ Allocating a larger buffer size can sometimes allow for a higher density of edits. This can be useful if you experience system performance problems in sessions with a large number of edits in rapid succession. However, choosing a larger buffer size can cause a time lag to occur before playback or recording begins. It can also cause a time lag to occur when you are editing during playback.

◆ Allocating a smaller buffer size can sometimes improve playback and recording initiation speed. This can be useful if you are experiencing a time lag when you initiate playback or recording. However, choosing a smaller buffer size can make it difficult for slower hard drives to play or record tracks reliably.

Configuring Hardware Setup

The Hardware Setup dialog (Setups > Hardware) provides controls for hardware Sample Rate, Clock Source, Input Gain on Channels 3–8, S/PDIF Compatibility, Mic/Line High-Pass Filter, and Optical Format.

Hardware Setup dialog for Digi 001

Clock Select select the clock source (Internal, S/PDIF (RCA), Optical).

Sample Rate Displays the session sample rate.

Optical Format Select ADAT or S/PDIF depending on whether you are using the Optical inputs and outputs for ADAT or S/PDIF.

Enable S/PDIF Mirroring Sets S/PDIF (RCA) outputs to automatically "mirror" the audio that is sent to analog outputs 1 and 2.

S/PDIF Format Set the S/PDIF I/O format to Tascam if you are using a Tascam DA-30 DAT recorder. Otherwise, select Other.

Ch 1–2 Input Sets the input for Channel 1–2 to Analog or S/PDIF.

Mic/Line HP Filter Enable a high-pass filter (set at 60 Hz) on Channels 1 and 2 for filtering out low-end rumble from a noisy recording environment or microphone handling, or AC noise.

Input Gain Adjust the gain on analog channels 3–8 by using the Input Gain controls.

Using a Digital Source

If you are recording from an optical or S/PDIF device, you will need to configure Pro Tools LE to synchronize to the external device.

To configure Pro Tools LE for a digital source:

1 Connect an ADAT or S/PDIF format optical device to the Optical In on the Digi 001 PCI Card, or connect an RCA S/PDIF device to the RCA connectors on the back of the Digi 001 I/O.

⚠ *You can only use one pair of S/PDIF inputs (either RCA or optical) at a time.*

2 In Pro Tools LE, choose Setups > Hardware Setup.

3 From the Clock pop-up menu, select Optical or S/PDIF (RCA), depending on where you connected your digital device.

4 If you are using the S/PDIF (RCA) input, select Tascam or Other depending on whether or not you are using a Tascam DA-30.

– or –

If you are using the optical input on the Digi 001 PCI Card, select the correct Optical Format (ADAT or S/PDIF).

Configuring I/O Setup

The I/O Setup dialog provides a graphical representation of the Hardware Setup. This dialog provides controls to route the physical ports of the Digi 001 I/O to Pro Tools LE inputs and outputs. The I/O Setup dialog also lets you label and map Pro Tools LE input, output, insert, and bus *signal paths*.

I/O Setup dialog for Digi 001

Pro Tools LE ships with default I/O Setup settings that will get you started. You only need to go to I/O Setup if you want to remap or rename the default I/O paths.

To configure I/O routing in I/O Setup:

1 Choose Setups > I/O Setups in Pro Tools.

2 Map and name paths as desired.

3 If necessary, redefine formats for I/O channels of any peripherals.

📄 *Refer to the Pro Tools Reference Guide (choose Help > Pro Tools Reference Guide in Pro Tools LE) for more information on setting up I/O paths.*

Optimizing Pro Tools

(For Slower PCs)

Pro Tools LE uses your computer's processor for audio tasks. Although most supported Windows machines will have plenty of horsepower to run Pro Tools LE, you may experience performance problems with slower computers. If you have an older computer, the following steps will help you get better performance from Pro Tools LE.

1 Launch Pro Tools LE by choosing Start > Programs > Digidesign > Pro Tools > Pro Tools LE.

2 Choose Setups > Playback Engine.

3 From the H/W Buffer Size pop-up, select 1024 samples for the audio buffer size. The default setting is 512 samples

4 From the CPU Usage Limit pop-up, select 85% for the maximum percentage of CPU resources to allocate to host processing tasks. The default setting is 65%.

5 Click OK when finished.

chapter 4

Digi 001 Overview

Digi 001 I/O Inputs and Outputs

All Digi 001 inputs and outputs are factory calibrated for 14 dB of headroom below 0 dB, or full code. This means at the nominal reference input level (+4 dBu or –10 dBV) you can have up to 14 dB of headroom before input or output clipping occurs.

Connectors on the Digi 001 I/O Front Panel

Mic/Line Inputs 1 and 2

These balanced/unbalanced inputs are designed for microphones or line-level inputs (with the –26 dB pad). They accept XLR or 1/4″ analog audio input connections.

–26 dB Pads 1 and 2

These switches allow you accommodate line-level signals on Mic/Line Input 1 and 2 by reducing input sensitivity by –26 dB.

Input Gain 1 and 2

These controls adjust the input gain of Mic/Line inputs 1 and 2.
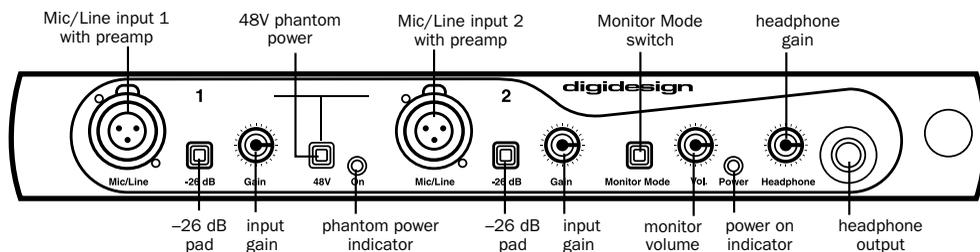
Figure 6. Digi 001 I/O, front panel

Phantom Power

This switch applies 48V phantom power to Mic/Line inputs 1 and 2. These inputs provide 48V phantom power for microphones that require it to operate.

Dynamic microphones (like a Shure SM57) do not require phantom power to operate, but are not harmed by it. Most *condenser* microphones (like an AKG C414) *do* require phantom power to operate. If you are not sure about the phantom power requirements for your microphone, contact the manufacturer, or read your microphone's documentation.

⚠ *Although phantom power can be used safely with most microphones, ribbon microphones can be destroyed by it. Always turn off phantom power, and wait for the red phantom power indicator light to go completely off before connecting or disconnecting a ribbon microphone.*

Phantom Power Indicator

When lit (red), this LED indicates that phantom power is on.

Monitor Mode

When this switch is pushed in, the Digi 001 I/O switches to Monitor Mode, which allows you to monitor analog inputs 3–4 on the Digi 001 I/O even when the power for your computer is off. Use Monitor mode to monitor an audio device such as a CD player or synth without turning on the computer.

Monitor Volume

This control allows you to adjust the output level of the Left and Right Monitor Outputs. This control also adjusts the level of these outputs when the I/O is in Monitor Mode. The monitor outputs mirror the audio routed to outputs 1–2 in software and on the I/O.

Power On Indicator

When lit (green), this LED indicates that the Digi 001 I/O is on. Your computer must be powered on to power the Digi 001.

Headphone Gain

This control adjusts the output level of the headphone jack.

Headphone Output

Use the Headphone Output to connect stereo headphones. This jack accepts a 1/4" stereo plug. This outputs any audio that is routed to analog outputs 1–2 in Pro Tools LE. The Headphone Output is disabled in unpowered Monitor Mode (see "Monitor Mode" on page 28 for more information).
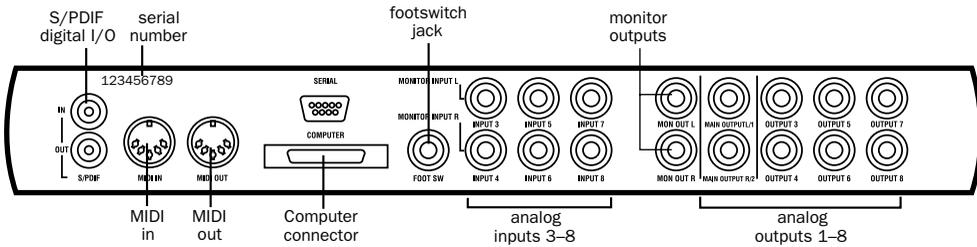
Connectors on the Digi 001 I/O Back Panel

Figure 7. Digi 001 I/O, back panel

S/PDIF Digital I/O

The Sony Phillips Digital Interface Format (S/PDIF) is used in many professional and consumer CD players and DAT recorders. The S/PDIF in/out jacks are unbalanced 2-conductor phono (RCA) jacks that utilize a full 24-bit, 2-channel digital data stream. To avoid RF interference, use 75-ohm coaxial cable for S/PDIF transfers and keep the cable length to a maximum of 10 meters.

MIDI I/O

The MIDI connectors on the Digi 001 I/O allow Digi 001 to act as a MIDI interface. On Macintosh, an Digi 001 driver for OMS is installed when you install Pro Tools LE. Update MIDI Cards & Interfaces in OMS Setup to verify that OMS recognizes the driver. On Windows, a Windows Multimedia MIDI driver for the Digi 001 is installed when you install Pro Tools LE. One MIDI input and one MIDI output allow you to send and receive MIDI on 16 channels. These connectors accept standard 5-pin MIDI cables. Digi 001 MIDI I/O can be used in addition to any other MIDI interfaces you are using.

Computer Connector

This connector is used to connect the I/O to the Digi 001 PCI card. The cable for this is supplied with your system.

Footswitch Jack

This connector allows you to connect a footswitch that can be used for control of Quick-Punch audio punch-in and punch-out, and for MIDI punch-in and punch-out recording features (see "QuickPunch Recording" on page 62). Both continuous on/continuous off and instantaneous on/off pedals with a 1/4″ TRS connector are supported.

Monitor Inputs (Analog Inputs 3–4)

These connectors are used to connect analog audio sources 3–4, or to connect a stereo source such as a CD player, synth, or cassette deck to monitor when using the Digi 001 I/O in Monitor Mode. In Monitor Mode, input 3 is routed to the Left output and input 4 is routed to the Right output. These connectors are balanced, 1/4″ jacks.

Analog Inputs 3–8

These inputs are used to connect analog audio sources that are routed to Analog Inputs 3–8. These are balanced, 1/4″ jacks for analog audio input connections. These analog inputs feature 24-bit analog-to-digital converters.

Monitor Outputs

These outputs can be connected to powered speakers, a stereo power amp, or another stereo destination to monitor your mix. The monitor outputs play the audio that is routed to analog outputs 1 and 2. Analog output 1 material is routed to the left monitor output, and analog output 2 material is routed to the right monitor output. These analog outputs feature 24-bit digital-to-analog converters. You can control the output level of the monitor outputs with the Monitor Volume control. These connectors are balanced, 1/4″ jacks.

Main Analog Outputs 1–2

These main outputs play the audio that is routed to analog outputs 1–2. These outputs can provide left and right outputs to a tape deck for mixdowns, or to another stereo destination. These analog outputs feature 24-bit digital-to-analog converters. These outputs are balanced, +4 dBu line level. The connectors are 1/4″ jacks.

Analog Outputs 3–8

These outputs play the audio that is routed to analog outputs 3–8. These analog outputs feature 24-bit digital-to-analog converters. These outputs are unbalanced, –10 dBu line level. The connectors are 1/4″ jacks.

Connectors on the Digi 001 PCI Card

The Digi 001 PCI Card installs in an available PCI slot in your computer. The PCI Card includes optical digital I/O for 8 channels of ADAT I/O or 2 channels of S/PDIF I/O. The card also includes a connector for the Digi 001 I/O.
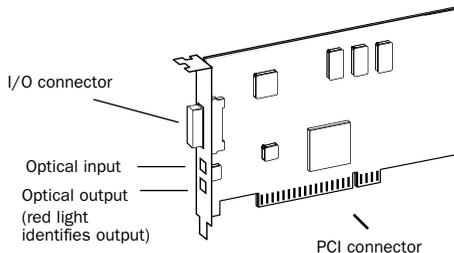
Digi 001 PCI card

Optical Input

The optical input connects to an optical digital audio source. This can be either an 8-channel ADAT format audio source or a 2-channel S/PDIF audio source. The digital format that this input accepts is switchable in Pro Tools LE. This connection provides up to 24-bit digital audio for either format. This format uses a standard optical (Toslink) cable. One optical cable is included with Digi 001.

Optical Output

The optical output sends optical digital audio to a destination such as a digital mixer or a digital recorder. This can be either an 8-channel ADAT format destination or a 2-channel S/PDIF audio destination. The digital output format is switchable in Pro Tools LE. This connection provides up to 24-bit digital audio for either format. This format uses a standard optical "lightpipe" cable. One optical cable is included with Digi 001.

chapter 5

Connecting Your Studio

This chapter explains how to connect your Digi 001 to a mixer, amplification system, digital recorders, and other studio devices, and how to connect audio sources for recording.

You can use Digi 001 with a variety of audio setups, including:

- a mixer, power amplifier, and speakers
- a mixer and a pair of amplified, self-powered speakers
- a stereo receiver and speakers
- a pair of amplified, self-powered speakers
- headphones

Studio Setup Diagrams

Your setup will differ depending on which of these systems you use. The illustrations that follow show two typical home studio setups. Figure 8 on page 32 shows a studio configuration using a mixer, and Figure 9 on page 33 shows a studio configuration without a mixer.
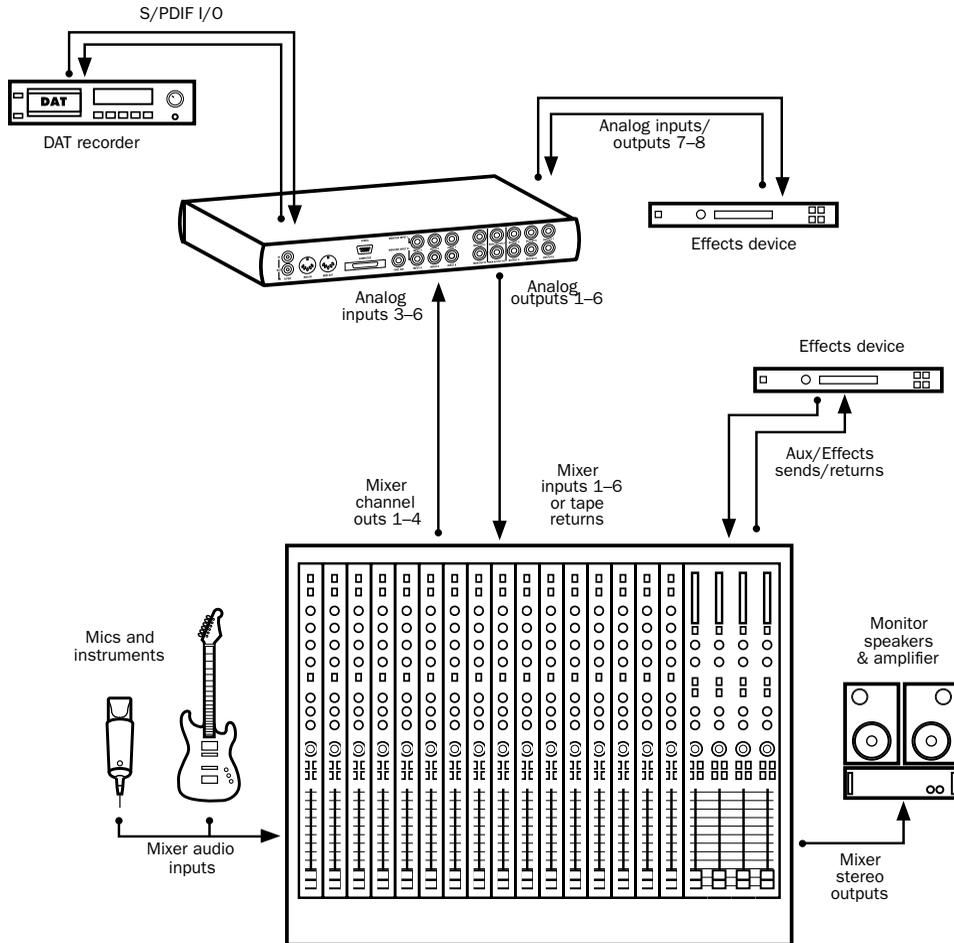
Figure 8. Digi 001 studio configuration with a mixer

Microphones

Monitor speakers & amplifier

Mic/Line Inputs 1/2

Monitor Out L/R

DAT recorder

DAT

S/PDIF I/O

Analog Inputs/ Outputs 5–8

MIDI In and Out

Analog I/O 3–8

Mic preamps, synths, and other sound modules

Outboard effects
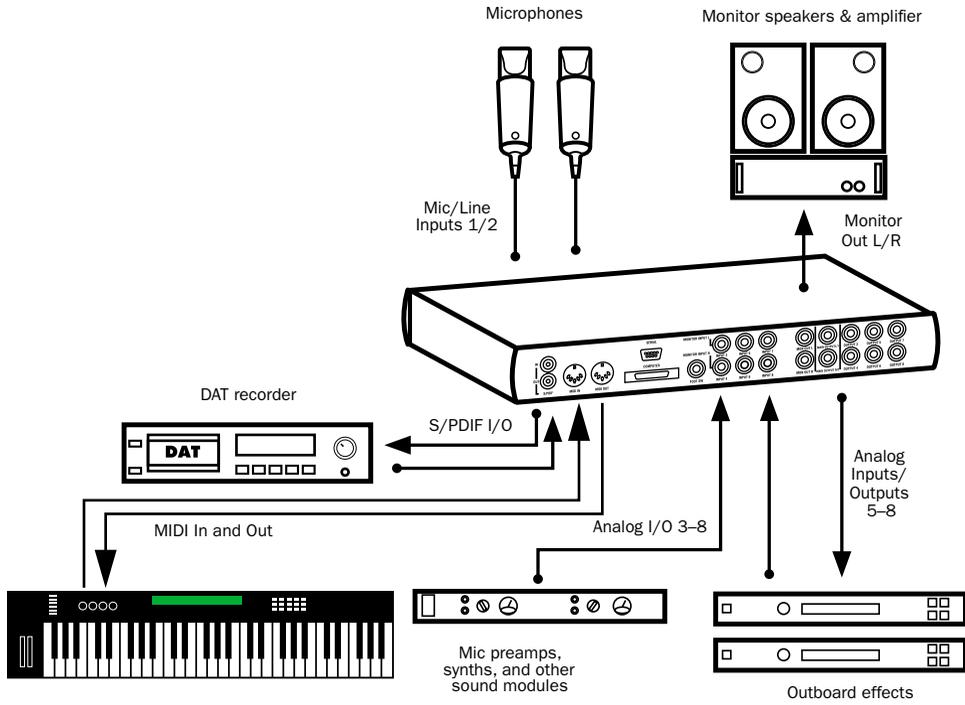
Figure 9. Digi 001 studio configuration without a mixer

Monitoring Audio

Monitoring volume for speakers connected to the Monitor Outputs is controlled with the Monitor Volume knob (see "Monitor Volume" on page 28 for more information). Headphone volume is controlled with the Headphone Gain knob (see "Headphone Gain" on page 28 for more information).

To connect headphones:

1 Connect headphones to the Headphone jack on the Digi 001 I/O. The Headphone input accepts a stereo 1/4″ plug. If your headphones have a smaller "mini-plug," purchase an adapter from your local dealer. For best results, use high-quality, closed-ear headphones.
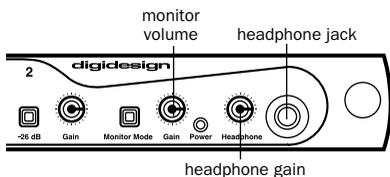
Gain controls and headphone jack

2 Adjust headphone volume with the Headphone Gain knob.

⚠ *The Digi 001 headphone output can produce very loud output levels. Prolonged exposure can cause hearing damage. Adjust headphone volume carefully.*

To connect a home stereo:

1 Connect 1/4″ cables to the Monitor Outputs on the back of the Digi 001 I/O.
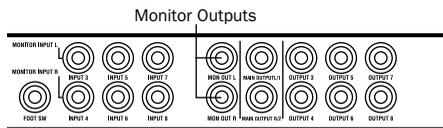
Monitor Outputs

2 Connect the outputs to an available pair of left and right inputs on your stereo.

💡 *Home stereo systems often use RCA connectors. You can use an adaptor or a special cable to convert from the 1/4" connectors used by Digi 001 to the RCA connectors on your home stereo.*

To connect monitor speakers with a power amp or self-powered monitor speakers:

1 Connect 1/4″ cables to the Monitor Outputs on the back of the Digi 001 I/O.

2 Connect the outputs from Digi 001 to the left and right power amp inputs, or to the left and right self-powered speakers.

Connecting Audio Sources to Digi 001

Audio sources of two types can be used with Digi 001: analog or digital.

Analog Audio

Analog audio signals are output by microphones, synths, mixers, and instruments with magnetic pickups. Of these sources, microphones and magnetic pickup instruments output the quietest signals, and generally require the most amplification. Digi 001 includes preamps for these sources on Mic/Line inputs 1 and 2, and 48V phantom power for both channels. Mic/Line inputs 1 and 2 accept XLR or 1/4″ connectors.
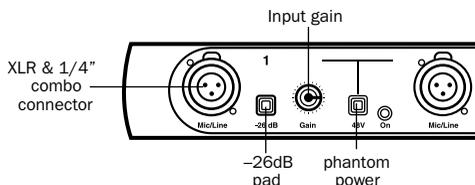
Analog preamp input

Keyboards, preamps, and mixers output "line-level" audio, which varies with each device between the –10 and +4 standards. Use Digi 001's line-level inputs 3–8 (on the back of the Digi 001 I/O) for these devices. Digi 001 includes software controllable gain to accommodate the different line levels that these devices can generate (see "Configuring Hardware Setup" on page 12 for Macintosh, or "Configuring Hardware Setup" on page 23 for Windows). Inputs 3–8 accept 1/4″ connectors. You can also connect line-level signals to Mic/Line inputs 1 and 2 on the front by pressing the –26 dB pad switch.

To connect an analog audio source:

■ Plug a microphone directly into Mic/Line Input 1 or 2 on the front of the Digi 001 I/O (see Figure 10 on page 36). These inputs accept XLR connectors or 1/4″ TRS connectors. If your microphone requires phantom power, press the Phantom Power switch (labeled 48V).

⚠ *Although phantom power can be used safely with most microphones, ribbon microphones can be destroyed by it. You should always turn off phantom power, and wait for the red light to go completely off, before connecting or disconnecting a ribbon microphone.*

■ Plug line-level sources (synths, outputs from your mixer, or microphones or guitars that have been amplified by an outboard preamp) into the analog inputs on the back of the Digi 001 I/O (see Figure 11 on page 36).

condenser mic (usually requires phantom power)

dynamic mic (phantom power won't hurt it)

use 48V phantom power if necessary

mic preamps out to Digi 001

powered monitor speakers

mics 3–8 go through the mixer's preamps

small outboard mixer

"snake" cable: you can also use individual cables for each mic
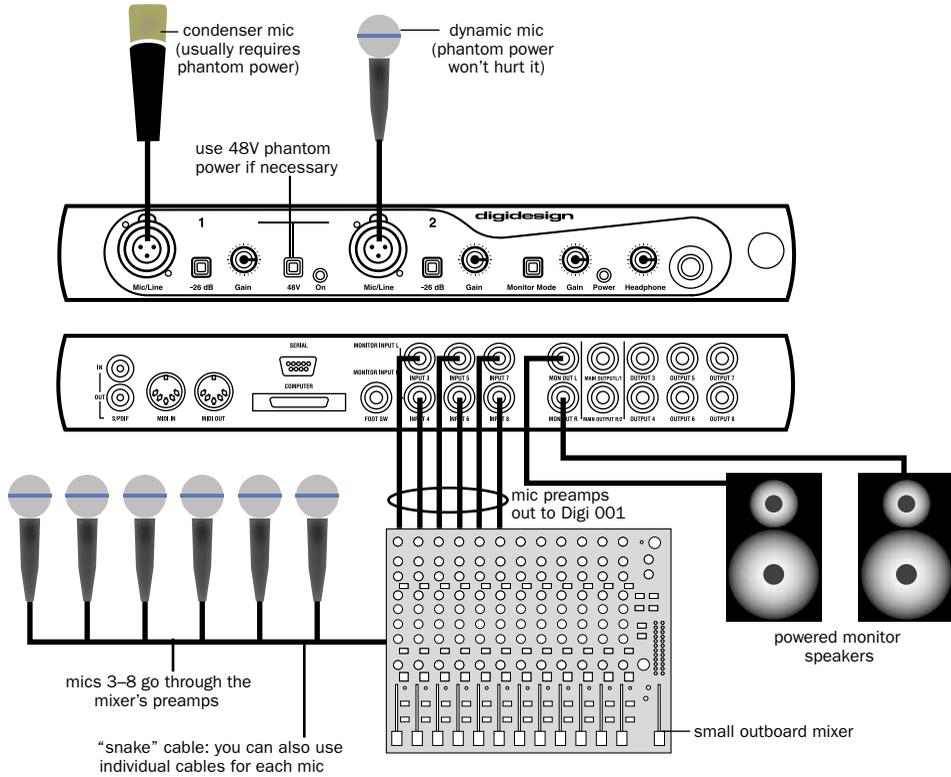
Figure 10. Connecting several microphones to a Digi 001

analog inputs 3-4

L/R monitor outputs

MIDI In and Out

audio out L/R

powered monitor speakers
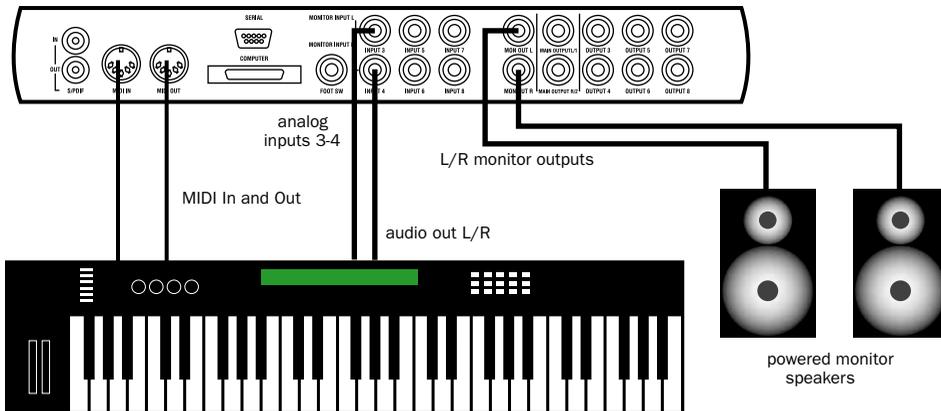
Figure 11. Connecting a synth to a Digi 001

Digital Audio

Digi 001 provides digital inputs and outputs, including:

• Optical input and output for eight channels of ADAT input or two channels of S/PDIF input

• Two channels of S/PDIF digital I/O (RCA)

ADAT Format

The ADAT format was developed by Alesis for use in their ADAT multitrack recorders. Each ADAT optical connection provides 8 channels of digital audio with 24-bit capability. You can connect an ADAT or other ADAT optical format device directly to the optical I/O on the Digi 001 PCI Card (see "Connecting an ADAT to Digi 001" on page 41). The optical I/O connectors accept optical cables.
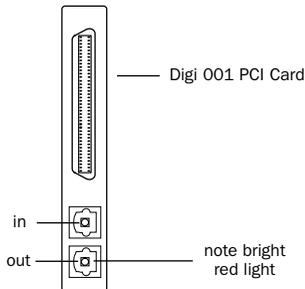
Optical I/O on the Digi 001 PCI Card

S/PDIF

S/PDIF (Sony/Phillips Digital Interchange Format) I/O is available on many DAT decks, compact disc players, and other digital devices. Each S/PDIF connection provides 2 channels of digital audio with 24-bit capability. You can connect a S/PDIF digital input to either the Optical connectors on the Digi 001 PCI card, or to the S/PDIF RCA connectors on the back of the Digi 001 I/O (see "Connecting a Digital Deck (DAT)" on page 40). The optical connectors accept optical cables; the RCA connectors accept RCA cables.
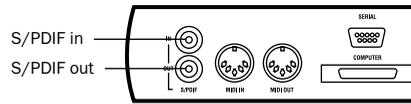
S/PDIF Input and Output

⚠ *Only one S/PDIF input pair can be used at a time. For example, if you use the optical input for S/PDIF data, you cannot use the RCA inputs.*

S/PDIF Mirroring

Pro Tools LE uses S/PDIF mirroring to automatically "mirror" the audio that is sent to outputs 1 and 2 on the S/PDIF RCA outputs. This is useful if you are monitoring a mix using your audio outputs, and also recording the same source to an external S/PDIF device.

Disable S/PDIF mirroring if you want to use the S/PDIF outs to send a separate signal to an external digital effects unit, or if you want to send only certain outputs to the digital device. If you disable S/PDIF mirroring you can select the S/PDIF outputs separately, and route tracks or sends to them.

To enable or disable S/PDIF mirroring:

1 Choose Setups > Hardware Setup.

2 On Windows, skip to the following step.

– or –

On the Macintosh, click Other Options.

3 Select or deselect the Enable S/PDIF Mirroring option.

4 On Windows, skip to the following step.

  – or –

On the Macintosh, click Done.

5 Click OK to close the Hardware Setup dialog.

Using External Effects Devices

The Digi 001 can make dedicated connections to external analog or digital devices. You can send and return signals to analog devices using the analog inputs and outputs on the Digi 001 I/O. You can also send and return a digital signal to an external device that supports digital I/O (such as a reverb unit), and monitor with the analog outputs or (if unused) the other digital output.

If you want to use the digital inputs and outputs on your Pro Tools LE system as effects sends and returns to a digital effects device, Pro Tools LE should be the clock master in most cases. Set your digital effects device to accept an external digital clock so that it synchronizes to Pro Tools LE.

To connect an external analog device to your system:

1 Connect an unused output (or outputs if stereo) on the Digi 001 I/O to an input (or inputs if stereo) of the external signal processor.

2 Connect the output (or outputs if stereo) of the external signal processor to an unused input (or pair of inputs if stereo) on the Digi 001 I/O.

To set up a send to an external digital device (digital sends/returns only):

1 On Macintosh, choose Setups > Hardware; then click Other Options.

  – or –

On Windows, choose Setups > Hardware.

2 Do one of the following:

• If the external device is connected to the S/PDIF RCA jacks, deselect S/PDIF Mirroring. (When S/PDIF Mirroring is on, digital output at the S/PDIF RCA jacks exactly mirrors the output of analog Channels 1–2.) If you disable S/PDIF Mirroring, you must reconfigure your I/O Setup to reflect this change. Refer to the *Pro Tools Reference Guide* for details on configuring the I/O Setup dialog.

• If the external device is connected to the Optical ports, choose a format (most likely S/PDIF for an effects device) from the Optical Format pop-up menu.

3 On Macintosh, choose Internal from the Sync Mode pop-up menu (in most cases).

  – or –

On Windows, choose Internal from the Clock pop-up menu (in most cases).

4 Click OK.

  📰 *You can use the I/O Setup dialog (Setups > I/O Setup) to label the inputs and outputs you are using in Pro Tools LE and identify them as inserts or sends when working in a session. Refer to the Pro Tools Reference Guide for details.*

Using Monitor Mode

(Stand Alone)

The Monitor Mode feature lets you monitor analog inputs 3–4 on the Digi 001 I/O even when the power for your computer is off, or your Digi 001 I/O is disconnected from the computer. You can use this to monitor a CD player, synth, or tape machine without an external mixer, and without your computer on.

To use Monitor Mode:

1 Connect analog audio outputs of your device to analog Inputs 3 and 4 on the back of the Digi 001 I/O.

2 Connect speakers for monitoring audio to the Monitor Outputs on the back of the Digi 001 I/O (see "Monitoring Audio" on page 34 for connection information).

3 Press the Monitor Mode switch in.

4 Adjust the monitoring volume using the Monitor Gain knob.
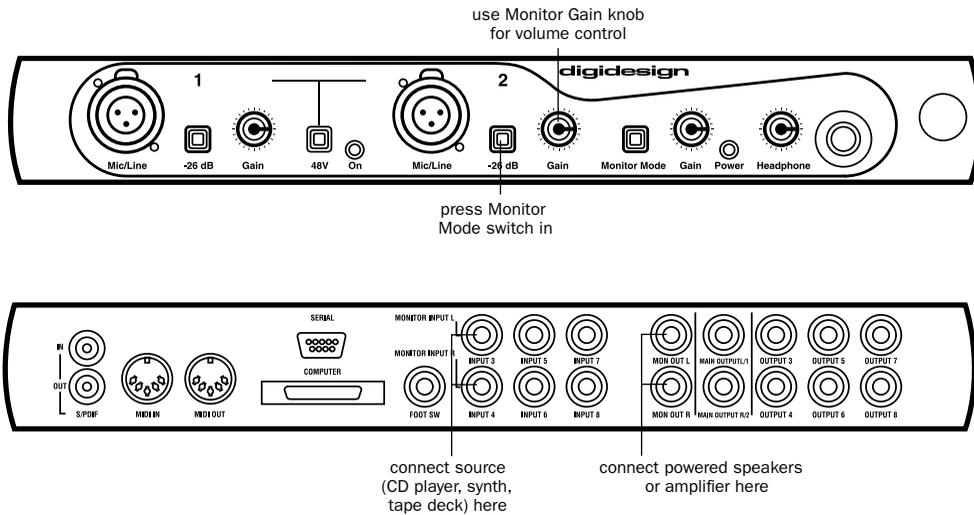
Figure 12. Using Monitor Mode

Connecting a Recorder for Mixdowns

After you record and mix your sessions using your Digi 001, you may want to mix them down to a DAT or other stereo 2-track recording device.

Connecting an Analog Deck

Connect your analog deck's inputs to the Main outputs on the back of the Digi 001 I/O. L/1 connects to the left input of your recorder, and R/2 connects to the right input. These outputs are 1/4″ jacks. You may need adapter cables if your mixdown deck has RCA inputs.
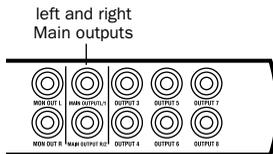
Main Outputs

Connecting a Digital Deck (DAT)

If you have a DAT or other digital device that can send or receive S/PDIF digital audio data, connect it to the S/PDIF In and S/PDIF Out RCA jacks on the back of the Digi 001 I/O.
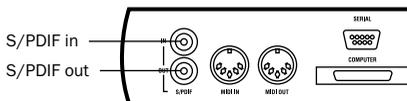
S/PDIF Input and Output

Connecting Tascam DA-30 DAT Recorders

If connecting to a Tascam DA-30 DAT recorder, set the S/PDIF I/O format to DA-30 (Macintosh) or Tascam (Windows) in Pro Tools LE.

Connecting an ADAT to Digi 001

To connect an ADAT to Digi 001:

1 Connect the ADAT optical output to the Optical In port on the Digi 001 PCI Card (see Figure 13 on page 41).

2 Connect the ADAT optical input to the Optical Out port on the Digi 001 PCI Card (see Figure 14 on page 41). When the Digi 001 is on, its Optical Out port emits a red light.
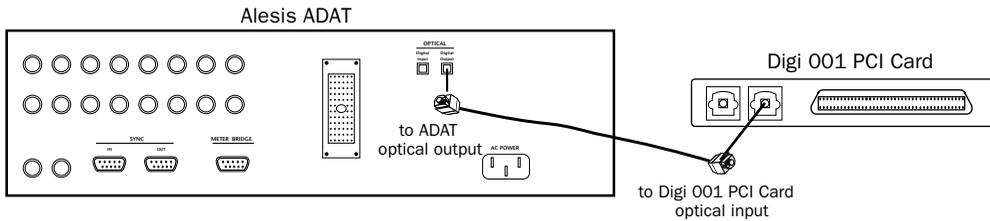
Figure 13. Connecting ADAT optical output to the Digi 001 PCI Card optical input
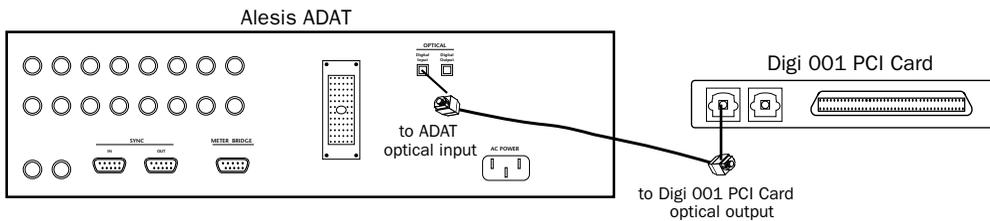
Figure 14. Connecting ADAT optical input to the Digi 001 PCI Card optical output

Connecting a Footswitch

You can connect a footswitch to the Digi 001 that can be used for control of QuickPunch audio punch-in and punch-out, and for MIDI punch-in and punch-out recording features (see "QuickPunch Recording" on page 62). Both continuous on/continuous off and instantaneous on/off pedals with a 1/4″ TRS connector are supported.

⚠ *Pro Tools LE only detects the footswitch if you connect it to the Digi 001 I/O before you launch Pro Tools LE.*

To connect a footswitch to Digi 001:

■ Plug a footswitch into the Footswitch connector on the back of the Digi 001 I/O.

connect footswitch here
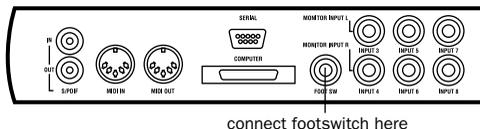
Digi 001 footswitch jack

MIDI Connections

Using the Digi 001's built-in MIDI ports, or an external MIDI Interface, with a MIDI keyboard controller or other MIDI devices, you can take full advantage of the MIDI features of Pro Tools LE. These include recording and editing MIDI tracks, synchronizing to MIDI Time Code or MIDI Beat Clock (this requires an appropriate MIDI interface) and using a MIDI control surface.

💡 *If you have an external MIDI interface, it is recommended that you do not connect the MIDI ports of the Digi 001 to the MIDI ports of the MIDI interface. You can, however, use them both for connecting external MIDI devices. For example, connect a MIDI control surface to the Digi 001 and connect the rest of your MIDI devices to the MIDI interface.*

To connect MIDI devices:

1 Using standard 5-pin MIDI cables, connect the MIDI Out of the MIDI device or controller to the MIDI In of your Digi 001 I/O.

2 Connect the MIDI In of your MIDI device or controller to the MIDI Out of the Digi 001 I/O.

3 Connect the audio outputs of your device to the audio inputs of the Digi 001 I/O (or to an external mixer if you are using one).

📖 *For information on configuring OMS (Open Music System), which is required by Pro Tools LE on the Macintosh, see Appendix A, "Configuring OMS (Macintosh Only)."*

For information on configuring a MIDI control surface for use with Pro Tools LE, see the online MIDI Control Surfaces Guide.

Working with Pro Tools LE

This chapter takes you on a guided tour of Pro Tools LE, introducing its main windows and features. Also included is a step-by-step over-view of basic audio recording (see "Basic Record-ing" on page 55).

How to Use This Chapter

If you are new to Pro Tools LE, read this chapter for an overview of how to get started learning to record, edit, and mix using Digi 001.

All of the features described in this chapter are explained fully in the *Pro Tools Reference Guide*. Refer to that guide and its index to find addi-tional information on all Pro Tools features.

Session Basics

Pro Tools LE projects are created and saved as *sessions*. Sessions store all tracks, audio, MIDI, and other session information. Audio and fade files are stored in folders within the Session folder.

Session folder, containing the session file and its Audio Files and Fade Files folders

Pro Tools LE remembers audio interface config-uration and other system settings and applies them to all new sessions.

Starting a Session

The basic steps to set up a new session are:

1 Launch Pro Tools LE.

2 Choose File > New Session.

3 In the New Session dialog, set sample rate, bit depth, and other session parameters for the new session.
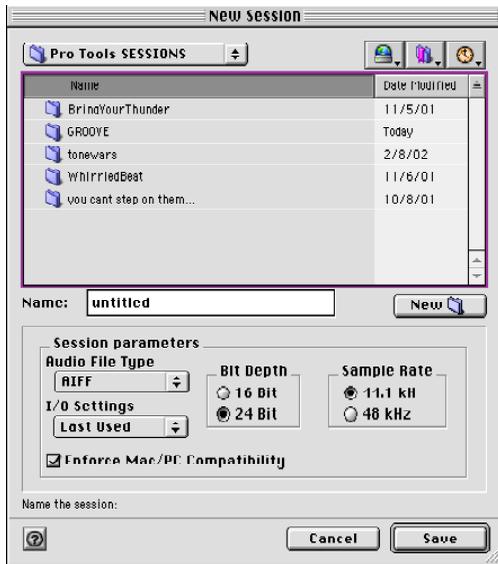
New Session dialog

4 Select where you want to save your session. If using external hard drives with your Pro Tools system, make sure you select the appropriate drive in the New Session dialog.

☼ *Enable Enforce Mac/PC Compatibility to ensure cross-platform compatibility for your new session.*

5 Type a name for your session.

6 Choose Save. The new session opens its Mix, Edit, and Transport windows (see Figure 15 on page 45).

Main Windows

The Mix, Edit, and Transport windows are the main Pro Tools work areas (see Figure 15 on page 45). You can show (or hide) any of these windows by choosing show (or hide) commands in the Windows menu.

▣ *Use Command+"=" on Macintosh, or Ctrl+"=" on Windows, to quickly switch between the Edit and Mix windows.*

Mix Window Displays the Pro Tools mixer, with its familiar fader strip controls for track level, pan, solo, mute, and signal routing.

Edit Window Displays tracks, with audio waveforms, MIDI notes, and automation data along the session's Timeline (see "Timebase Rulers" on page 45). You will work in the Edit window to edit audio, MIDI, and automation data.

Transport Provides standard transport controls for Play, Stop, Rewind, Fast-Forward, Pause, and Record. The Transport window can also show Counter and MIDI Control displays.

Edit window

Timebase
Rulers

Tracks

Regions
Lists

Mix window

Transport

Tracks
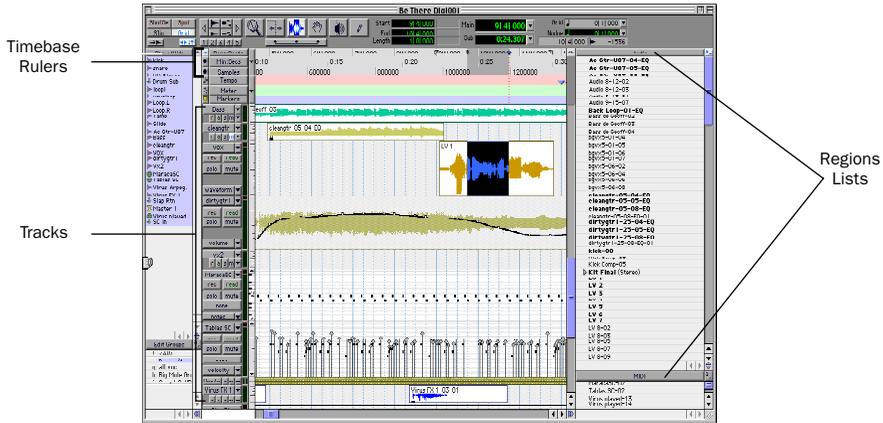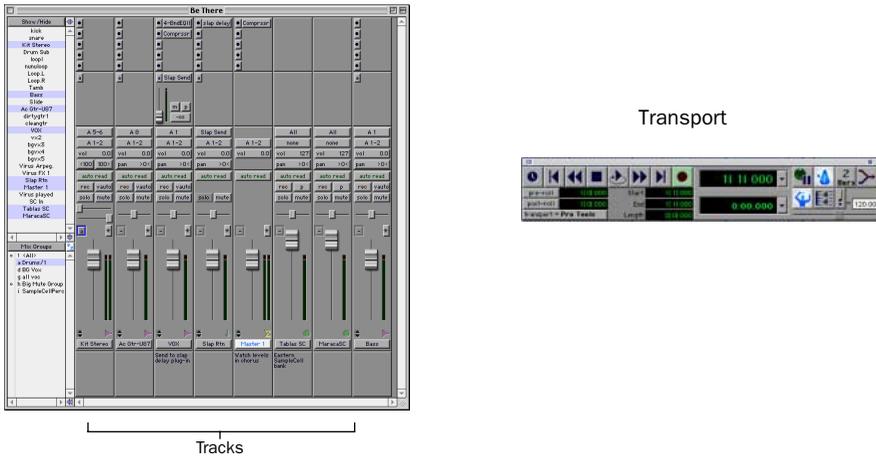
Figure 15. Main session windows

Session Settings

Timebase Rulers

Pro Tools LE provides several different Timebase Rulers to select the timebase for your session. Timebase Rulers, displayed along the top of the Edit window (such as Bars:Beats or Minutes:Seconds) provide a valuable timeline reference for editing (for example, spotting regions). The current Timebase determines the format of the time counters (at the top of the Edit window and in the Transport window), and provides the basis for the Edit window Grid.

To select a Timebase Ruler:

■ Click the circle next to the desired Timebase Ruler at the top left side of the Edit window (labeled Bars:Beats, Min.:Secs, or Samples).

– or –

Select the desired Timebase Ruler from the Display menu.

Tempo

You can set the default tempo for your session using Tempo Events, or using the MIDI tempo controls in the expanded Transport window.

📄 *For information on Tempo Events and MIDI Tempo controls, refer to the Pro Tools Reference Guide.*

To insert a default tempo event:

1 Choose Windows > Show Tempo/Meter.

– or –

Double-click the Meter button in the Transport window.

2 At the top of the Tempo/Meter Change window, choose Tempo Change from the pop-up menu.
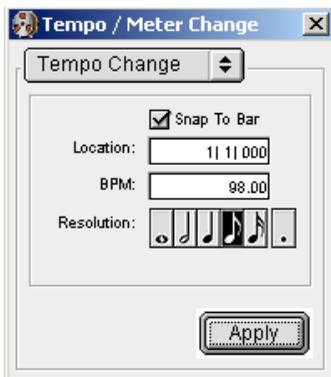
Tempo/Meter Change window

3 Enter the BPM value you will use for the session and set the Location to 1|1|000 (so the inserted tempo event replaces the default tempo).

4 To base the BPM value on different note value (such as an eighth-note rather than the default quarter-note), select the desired note value.

5 Click Apply to insert the new tempo event.

Click and Metronome

Pro Tools provides its own MIDI Click options. This feature can be turned on and off using the Metronome icon in the Transport window, and is configured from the MIDI Click Options dialog.

To configure and enable the Pro Tools click:

1 Choose MIDI > Click Options.

2 Configure the click parameters as needed for your MIDI sound source.

3 During recording or playback, you can turn the Click on or off using the Click switch in the Transport window, MIDI Controls display.
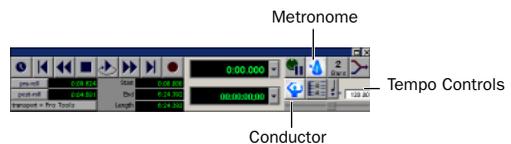
Figure 16. Transport window, displaying Click and Tempo Controls

Saving Sessions

As you build a session by adding tracks and changing session parameters, you will want to save your work. Pro Tools provides three ways to save sessions, with each providing a different set of options.

Saving sessions is most often performed for data security, archiving, and in preparation for transferring projects. In addition, session files can be saved in order to perform sample rate conversion, or even to create session templates. Session templates are Pro Tools sessions that have tracks, routing, plug-ins, or any other parameters predefined. See the Pro Tools Reference Guide for more information about how to create and use session templates.

To save a session:

■ Choose File > Save Session, Save Session As, or Save Session Copy In.

Save Session Saves the currently open session as is, leaving it open to continue working.

Save Session As Creates a duplicate session file with the name you choose. It does not create a new Audio Files or Fade Files folder. This can be useful if you want to experiment with different arrangements in the session without affecting the original session.

Save Session Copy In Only saves the files that you are using in the current session. This can be useful for creating a final copy of the session that does not include audio files or fades you are no longer using.

System Resources and Settings

You can customize many Pro Tools LE system settings in the Playback Engine dialog to optimize system performance. See "Configuring the Playback Engine" on page 11 for Macintosh, and "Configuring the Playback Engine" on page 22 for Windows.

System Usage Window

The System Usage window displays information on System, PCI, and CPU performance. It is useful to monitor CPU usage if you are using RTAS plug-ins, particularly those that are DSP intensive, because you do not want to assign more plug-ins than your CPU can handle.
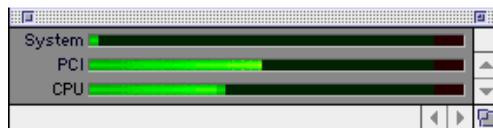
Meters in the System Usage window

To view system resources and usage:

■ Choose Windows > Show System Usage.

Transport Controls

The Transport window provides all Pro Tools LE transport commands. Different transport controls can be displayed or hidden by selecting or deselecting them in the Transport Window Shows sub-menu.

To show the Transport window:

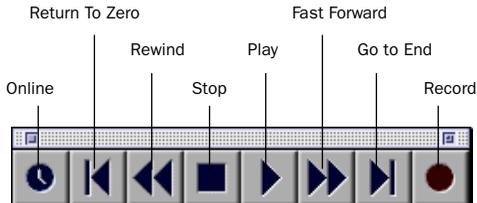■ Choose Windows > Show Transport Window.

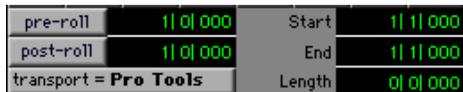*Transport window*

To configure the Transport window:

■ Choose Display > Transport Window Shows and select the desired view options.

In standard view, the Transport window provides Play, Stop, and other standard transport controls.

Transport window, standard view

The Expanded Transport window provides pre- and post-roll, start, end, and length indicators for Timeline selection, as well as the Transport Master selector.

Expanded Transport

The Transport window can also display the following MIDI controls: Wait for Note, Click, Countoff, MIDI Merge, Conductor, Meter, and Tempo.

Transport window MIDI Controls

To start and stop playback:

1 Click Play in the Transport window to begin playback.

2 Click Stop in the Transport window to stop playback.

⌂ Use the Spacebar on your computer keyboard to start and stop playback.

◌ Pro Tools LE starts playing from the location of the cursor, or from the beginning of the current selection. The current setting of the Link Edit and Timeline Selection command in the Operations menu also affects playback. See the Pro Tools Reference Guide for more information.

Navigating

Pro Tools LE provides many ways to navigate in a session, including using the mouse or entering a location into one of the counters.

To navigate to a location in the Edit window:

1 Select Operations > Link Edit and Timeline Selection.

2 Enable the Selector tool at the top of the Edit window by clicking it (see "Edit Tools" on page 63).
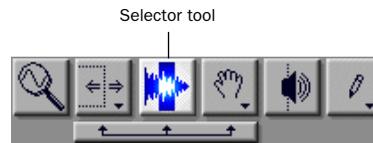
Edit tools in Edit window

3 Click in a track or Timebase Ruler at the desired location. The cursor will appear at the selected location and the counters will display the current time location.

Click in a track, or on a Timebase Ruler
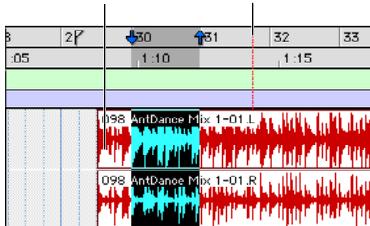
Navigating in the Edit window

To navigate using the counters:

1 Click in the Main counter in the Edit window toolbar and type the desired location.

2 Click Enter.

Click and enter a location into either counter
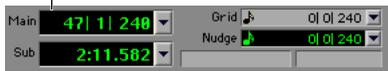
Navigating in the Counter

Memory Locations

Memory Locations provide another way to navigate within sessions. Memory Locations appear as markers under the Timebase Rulers.

To define a Memory Location:

■ Press the Enter key on the numeric keypad while stopped or during playback. The New Memory Location window appears, in which you can define a marker, store a selection, or store any combination of the other available settings. These settings include track height, group enables, pre- and post-roll values, and track Show/Hide. Choose settings for the marker and click OK.

To go to a stored Memory Location:

■ Press the Decimal (.) key on the numeric keypad, followed by the marker number, followed by the Decimal (.) key.

Tracks

Pro Tools LE lets you create audio and MIDI tracks as needed, for audio and MIDI recording, submixing, routing, automating, and editing. There are four types of tracks: audio tracks, Auxiliary Inputs, Master Faders, and MIDI tracks. Audio tracks, Auxiliary Inputs, and Master Faders can be mono or stereo.

Audio Track Record and play back audio to and from hard disk, monitor audio input when record-enabled, and edit audio regions.

Auxiliary Input Audio mixer channels, used for input, routing, and submixing.

Master Fader Provides master channel controls and options for any Output or Bus path.

MIDI Track Record, play back, and edit MIDI data.

To create a new track:

1 Choose File > New Tracks.

New Track dialog

2 Specify the number of tracks, track type (Audio Track, Aux Input, Master Fader, or MIDI Track), and mono or stereo (except for MIDI).
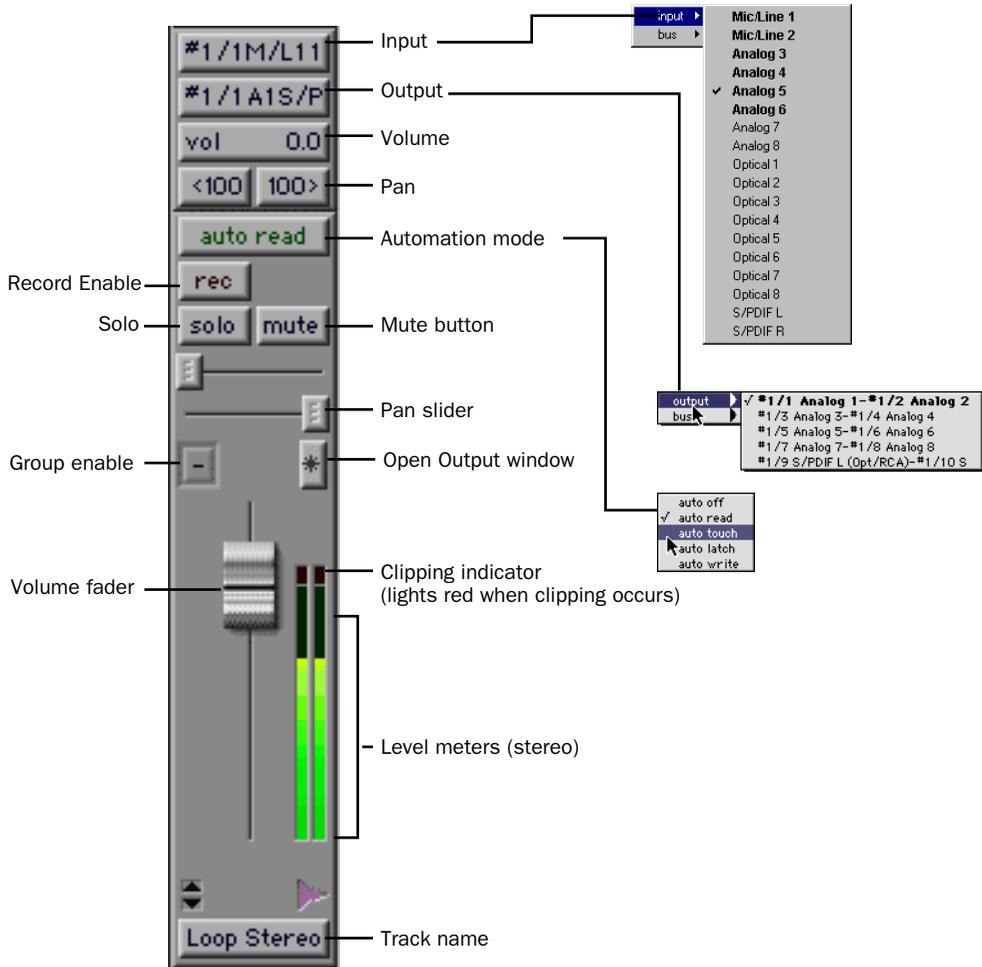
3 Click Create.

Tracks in the Mix window

Audio, Auxiliary Input, Master Fader, and MIDI tracks appear as vertical channel strips in the Mix window. Track type is indicated by the Track Type icons, just below the faders.

Tracks in the Mix window

Audio Tracks

All audio tracks—whether audio (disk) tracks, Auxiliary Inputs, or Master Faders—share many identical controls. Figure 17 on page 51 shows the Channel controls found in the Mix window for a stereo audio or Auxiliary Input track. Master Fader tracks do not provide all the controls of an audio track, such as Sends, Pan, or Record Enable, Mute and Solo buttons.

MIDI Tracks

MIDI tracks provide track level, solo, and mute, in addition to MIDI input, output, channel, and program (patch) controls. MIDI volume, mute, and pan can also be automated using Pro Tools automation features (see "Mix Automation" on page 68 for more information).

Adjusting the Volume and Panning of a Track

To adjust the volume of a track:

■ Click the Volume fader on the channel strip of an audio or MIDI track and move it up or down to increase or decrease volume.

To adjust panning of a track:

■ Click the Pan slider on the channel strip of an audio or MIDI track and drag it to the left or right to pan the track left or right in the mix.

Figure 17. Stereo audio track in the Mix window

The figure labels are as follows:

- Input — #1/1M/L11 — menu: input ▶ / bus ▶ — Mic/Line 1, Mic/Line 2, Analog 3, Analog 4, ✓ Analog 5, Analog 6, Analog 7, Analog 8, Optical 1, Optical 2, Optical 3, Optical 4, Optical 5, Optical 6, Optical 7, Optical 8, S/PDIF L, S/PDIF R
- Output — #1/1 A1S/P
- Volume — vol 0.0
- Pan — <100 100>
- Automation mode — auto read — menu: auto off / ✓ auto read / auto touch / auto latch / auto write
- Record Enable — rec
- Solo — solo
- Mute button — mute
- Pan slider
- Group enable
- Open Output window — menu: output ▶ / bus ▶ — ✓ #1/1 Analog 1–#1/2 Analog 2, #1/3 Analog 3–#1/4 Analog 4, #1/5 Analog 5–#1/6 Analog 6, #1/7 Analog 7–#1/8 Analog 8, #1/9 S/PDIF L (Opt/RCA)–#1/10 S
- Volume fader
- Clipping indicator (lights red when clipping occurs)
- Level meters (stereo)
- Track name — Loop Stereo

Tracks in the Edit Window

In the Edit window, tracks are displayed horizontally under the Timebase Rulers. The area in which audio appears for each track is called a Playlist (see "Playlists and Non-Destructive Editing" on page 65). Use the Edit window to create and edit audio regions in audio tracks and MIDI notes in MIDI tracks.
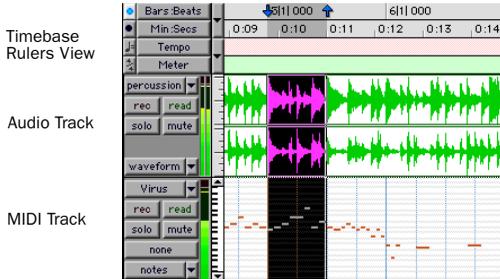
Timebase Rulers, and a stereo audio track and a MIDI Track in the Edit window

Viewing and Zooming

When viewing tracks in the Edit window, you can adjust the height of tracks as well as zoom in vertically and horizontally using the Track Height selector and Zoom tools.
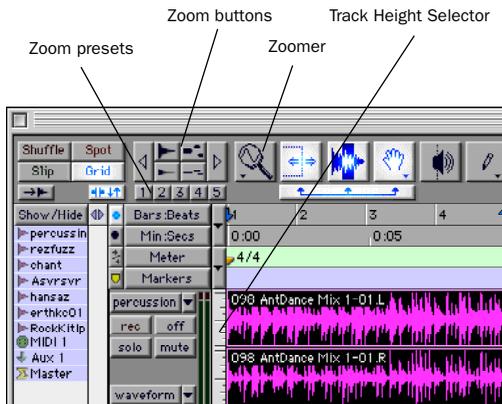
Zoom and Track Height tools in the Edit window

To change track height:

■ Click the Track Height Selector, and select a view size for the track.

To zoom in horizontally for all tracks:

■ Click the right Horizontal Zoom button. To zoom out, click the other (left) Horizontal Zoom button.

– or –

■ Press Command+] (Macintosh) or Control+] (Windows). To zoom out, press Command+[(Macintosh) or Control+[(Windows).

– or –

■ Click and drag on the Horizontal Zoom button to zoom continuously.

To zoom in vertically for all tracks:

■ Click the (top) Vertical Zoom button with the audio waveform for audio tracks or the Vertical Zoom button with the MIDI notes for a MIDI track. To zoom out, click the bottom Vertical Zoom button.

– or –

■ Press Command+Option+] (Macintosh) or Control+Alt+] (Windows). To zoom out, press Command+Option+[(Macintosh) or Control+Alt+[(Windows).

– or –

■ Click and drag on the Vertical Zoom button to zoom continuously.

Zoom Presets

Pro Tools also provides five Zoom preset buttons. You can use these to immediately return to established zoom levels (you can define the magnification level for each preset, on a session-by-session basis).

To store a new Zoom preset definition:

■ Command-click (Macintosh), or Alt-click (WIndows) a Zoom preset button (1–5) to store the current horizontal and vertical Zoom to that preset.

To recall a Zoom preset:

■ Click the desired Zoom preset button (1–5).

Using Memory Locations for Zoom Control

Pro Tools Memory Locations let you store many attributes with each marker or memory location, including Track Height and Zoom Settings. By creating Memory Locations that are neither Markers or Selections, but have Track Height, Zoom Settings, or other options enabled, you can use Memory Locations to zoom in and out using just the numeric keypad.

Regions Lists

All regions that are recorded, imported, or created by editing appear in the Audio and MIDI Regions Lists. Regions can be dragged from either list to tracks and arranged in any order. Regions can also be auditioned from the Regions List by Option-clicking (Macintosh) or Alt-clicking (Windows) them. The Regions List pop-up menus provide several useful features for managing regions and files (such as, Sorting, Import Audio, Clear Selected, Rename Selected, Export Selected As Files, and so on).
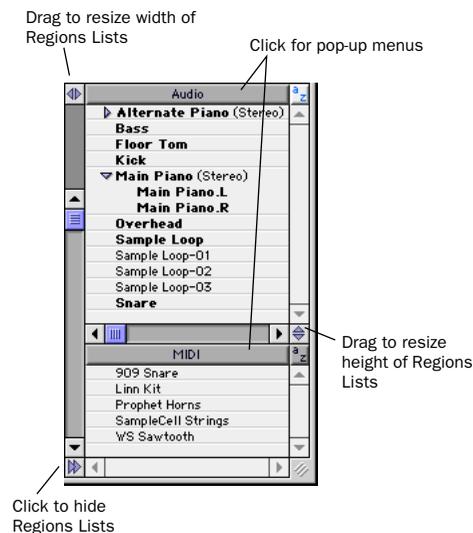
Audio and MIDI Regions Lists

📖 *For information on the Regions List, refer to the Pro Tools Reference Guide.*

Importing Audio

Pro Tools LE lets you import existing audio files from disk, as well as import tracks from an audio CD (Macintosh only), into the Regions List or directly to new tracks. This is very useful if you are working with sample libraries or you have audio files you've already recorded to disk that you want to use in a new session.

Selected Region
in a track and in the Regions List
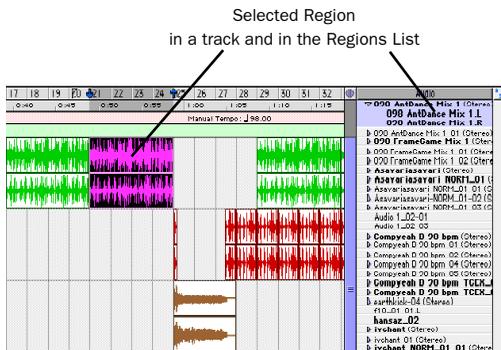
Selected audio region on a track and in the Regions List

To import audio files or regions from disk:

■ Use File > Import Audio to Track to import files and regions to separate audio tracks (they will also appear as regions in the Audio Regions List).

– or –

Use Import Audio from the Audio Regions List to import files and regions to only the Audio Regions List.

To import a CD audio track (Macintosh Only):

1 Insert the audio CD into your CD-ROM drive.

2 Choose Movie > Import Audio From Other Movie.

3 Locate and select the audio track to be imported, then click Convert.

4 When the Save dialog appears, click the Options button.

5 In the Options dialog, select the sample rate, bit resolution, and stereo format.

6 At the bottom of the Options dialog, set the range of the audio track to be imported by adjusting the Start and End times, then click OK.

7 To audition a selected file or region before you import it, use the Play and Stop buttons.

8 Specify the destination folder for the selected converted audio file and click Save. Pro Tools imports the CD audio track as a QuickTime movie and writes it to your hard drive.

9 When the Track Import window appears, click OK.

Pro Tools converts the audio track to your session's sample rate and bit resolution and imports the selected audio tracks into the Audio Regions List. From there you can drag the regions to existing tracks.

💡 *Use File > Import Audio to Track to import an audio file into a new track. Pro Tools LE also lets you import tracks from other Pro Tools sessions using File > Import Tracks.*

Basic Recording

Before you begin recording in Pro Tools LE, you will need to route audio to a track and set input levels.

Routing Audio to a Track

To route audio to a track:

1 Verify the connections to your instruments. For more information on making studio connections, see Chapter 5, "Connecting Your Studio."

2 Choose File > New Track and specify 1 Mono Audio Track, then click Create.

3 Click the Input Selector of the new track and select the desired input from the pop-up menu (see Figure 18 on page 55). For example, specify Mic/Line 1 if your audio source is plugged into the first analog input. The menu displays the names of the inputs defined in the I/O Setup dialog.
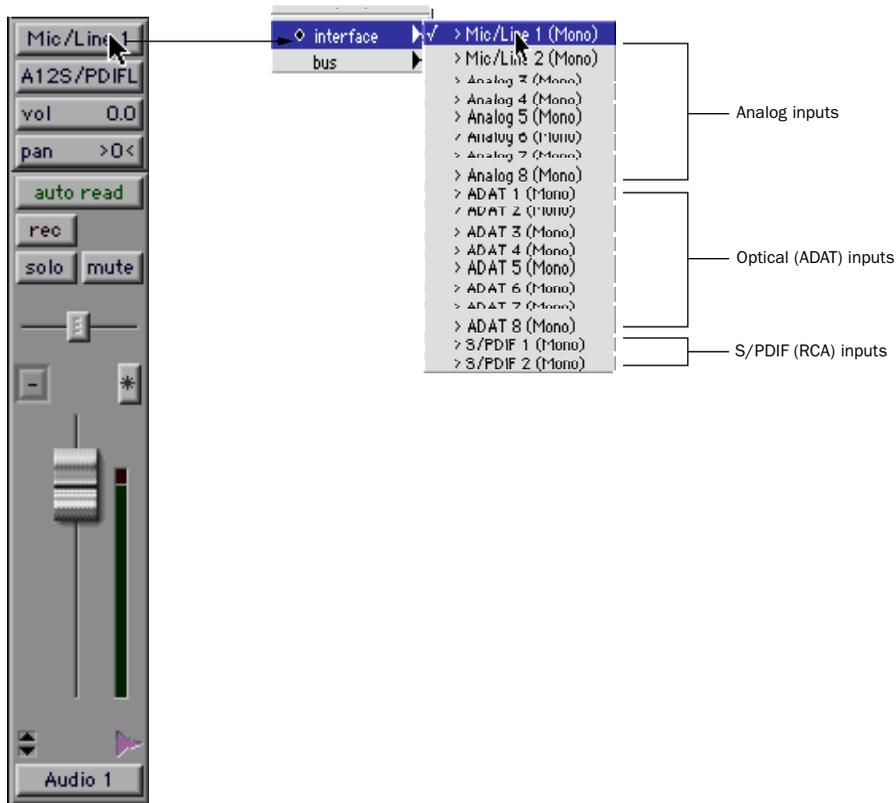
Figure 18. Routing an input to a track in the Mix window

Setting Digi 001 Input Levels

Digi 001 input levels for analog inputs 1 and 2 are adjusted using the Gain knobs on the front panel of the Digi 001 I/O for each channel. Input levels for analog inputs 3–8 are software-adjustable to accommodate a variety of equipment output levels.

The key to setting input levels is to get a signal as loud as possible without creating digital clipping. Signals that get close to the top of the meter in Pro Tools LE use more of the full bit range (the 16 or 24 bits that make up each audio sample). The more you maximize this bit range, the better your sound quality. Additionally, by setting optimum levels, you'll get the least possible noise and distortion.

⚠ *Watch out for digital clipping. Clipping occurs when you feed a signal to an audio device that is louder than the circuitry can accept. The result is distortion. Digital clipping is harsh, and usually not something you want to hear at all, so watch those meters!*

💡 *For best signal-to-noise performance, set the Digi 001 input gain to +4 dBu when recording devices that provide this output level.*

To adjust input gain on the Digi 001 (Mic/Line inputs 1–2):

1 Connect the instrument or microphone to the input.

2 If the microphone requires phantom power, apply phantom power now by pressing the 48V switch.

3 Choose File > New Track and specify 1 Mono Auxiliary Input track, then click Create.

4 Set the track input to the correct Digi 001 input channel (Mic/Line 1 or 2).

5 Play the instrument or sound source at the volume you will record.

6 Adjust the input gain for the channel using the gain knob on the front of the Digi 001 I/O. Increase or decrease gain until you are able to achieve maximum signal level without clipping. Typically such levels are in the yellow area of the track's meter.
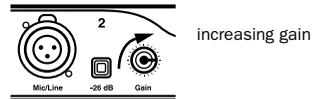
Digi 001 Input Gain control

To adjust input gain on the Digi 001 (Analog inputs 3–8):

1 Connect the instrument or device to the Digi 001 I/O.

2 On Macintosh, choose Setups > Hardware; then click Other Options.

– or –

On Windows, choose Setups > Hardware.

3 Set the input trim slider to match the output level of the connected instrument. Refer to the manufacturer's documentation for details. If you do not know the output level of the device, use the default input trim level, then fine-tune the input level gain using the procedure below.

4 On Macintosh, click Done; then click OK.

– or –

On Windows, click OK.

💡 *Increasing gain raises the noise floor. Make sure that the device you have connected is outputting as strong a signal as possible without distortion, then set the input gain accordingly.*

To fine-tune the input level gain (Analog inputs 3–8):

1 Choose File > New Track and specify 1 Mono (or Stereo) Auxiliary Input track, then click Create. The Auxiliary Input track should be either mono or stereo depending on the device you are monitoring. Option-click (Macintosh) or Alt-Click (Windows) the fader on the track to set it to unity gain (0 dB).

2 Set the track input to the correct Digi 001 input channel (mono) or channels (stereo).

3 Play the instrument at the volume you will record.

4 Note where the instrument output signal registers on the on-screen meters in Pro Tools LE. Good levels are in the yellow range of the Pro Tools LE track meters. If the levels hit the red, they are clipping, and you should lower the input gain.

5 If the meters are not clipping, and they are not in the yellow range, increase the input gain by raising the volume slider for the appropriate input in the Other Options dialog (Macintosh), or the Hardware Setup dialog (Windows).

6 Click Done and OK (Macintosh), or click OK (Windows), and play the audio source again.

7 Repeat steps 3–6 for each input, until you have the maximum signal level without clipping.
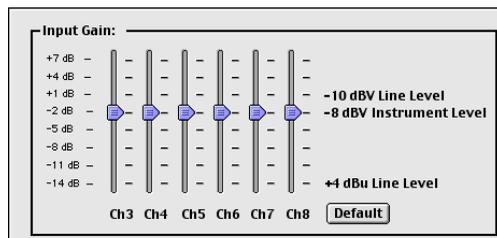
Input Gain controls for Channels 3–8 (Macintosh)
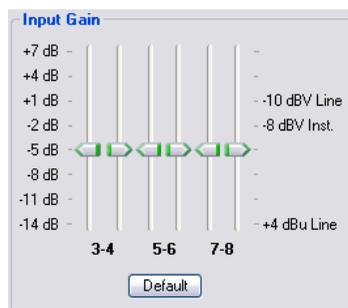
Input Gain controls for Channels 3–8 (Windows)

⚠ *Gain for digital inputs cannot be adjusted in Pro Tools LE. Adjust gain at the source.*

Mic/Line High-Pass Filter

Digi 001 includes a high-pass filter set at 60 Hz. This filter can be useful for filtering out low-end rumble from a noisy recording environment or microphone handling, or AC noise.

To use the high-pass filter on analog input 1 or 2:

1 On Macintosh, choose Setups > Hardware; then click Other Options.

– or –

On Windows, choose Setups > Hardware.

2 Enable the high-pass filter for the required inputs.

3 On Macintosh, click Done; then click OK.

– or –

On Windows, click OK.

Recording an Audio Track

To record an audio track:

1 Click the Record Enable button for the desired track, assign its input (see "Routing Audio to a Track" on page 55), and set the input levels appropriately ("Setting Digi 001 Input Levels" on page 56).

2 In the Transport window (Windows > Show Transport), click Return To Zero to ensure that you are starting from the beginning of the session. You can also record according to a selection or from the cursor location in the Edit window.

3 Click Record in the Transport window to enable recording.

4 Click Play or press the Spacebar to record on all record-enabled tracks.

5 Start playing your instrument.

6 Click Stop in the Transport window or press the Spacebar when you are done recording.

To play back a recorded track:

1 Disable the track's Record Enable button.

2 Click Play in the Transport window or press the Spacebar to start playback.

3 Click Stop in the Transport window or press the Spacebar to stop playback.

Recording To and From Digital Devices

The Digi 001 I/O provides S/PDIF (RCA) connectors for digital input and output. The Digi 001 PCI card also provides optical input and output so that you can digitally transfer as many as eight tracks at a time to or from an ADAT.

Setting Digital Format and Clock Source

Before recording from a digital source, make sure you have enabled the appropriate Digital Format in the Hardware Setup dialog on Windows, or the Other Options dialog on Macintosh. For more information, see "Using a Digital Source" on page 13 for Macintosh, or "Using a Digital Source" on page 24 for Windows.

Recording To and From an ADAT

You can use Digi 001 to interface with an ADAT, either to record tracks from an ADAT into Pro Tools LE for editing, or to record tracks from Pro Tools LE to an ADAT.

Using Output Pairs

Because of the way that outputs function in Pro Tools LE, each track looks for a stereo output pair. This means that in order to record to eight ADAT tracks, you have to send four pairs of Pro Tools LE tracks (each pair panned hard left and right) to Dig 001's four pairs of ADAT Optical Digital outputs.

📄 *For detailed information on connecting an ADAT to Digi 001, see "Connecting an ADAT to Digi 001" on page 41.*

To record ADAT tracks into Pro Tools LE:

1 Open or create a session in Pro Tools LE.

2 Record enable up to eight audio tracks (depending on how many tracks are used on the ADAT tape).

3 Assign ADAT Optical Inputs 1–8 to your eight tracks.

4 Verify that Pro Tools LE is synchronized to Optical, and that the Optical Format is set to ADAT (see "Using a Digital Source" on page 13 for Macintosh and "Using a Digital Source" on page 24 for Windows).

5 Click Record in the Transport window.

6 Click Play in the Transport window to begin recording, then press Play on the ADAT.

7 When playback from the ADAT tape is finished, click Stop in the Transport window, or press the Spacebar.

To record Pro Tools LE tracks to an ADAT:

1 Open the session you want to record to ADAT.

2 Record enable up to eight audio tracks on the ADAT.

3 Pan four pairs of tracks so that each pair is panned hard stereo (one track of each pair is panned all the way left, and the other is panned all the way right).

4 Route each track pair to a separate Optical output pair by selecting from the Output pop-up menu for each track. For example, if one of your pairs was 3(L)–4(R), you could route this pair to the output labeled #1/9 Optical 1-#1/10 Optical 2.

5 Verify that Pro Tools LE is synchronized to Internal in the Hardware Setup dialog (see "Configuring Hardware Setup" on page 12 for Macintosh and "Configuring Hardware Setup" on page 23 for Windows).

6 Start recording on the ADAT, then click Play in the Transport window in Pro Tools LE. When playback is complete, stop both systems.

Monitoring Latency and Recording

Because Pro Tools LE uses the host processor in your computer for audio processing, playback, and recording, there is a small amount of audio delay, or latency, when monitoring audio through the system. You can set the latency shorter when you are recording and monitoring through Digi 001, and longer when you are trying to achieve higher track counts with more plug-ins. See Table 2 on page 60.

Set latency in the Playback Engine dialog. Latency is controlled by the H/W Buffer Size setting, and is displayed in samples. The recommended setting for listening back to audio is 512–1024 samples. For recording, when monitoring through Digi 001, the recommended setting is 128–256 samples.

To set the Hardware Buffer Size for record or playback:

1 Choose Setups > Playback Engine.

2 Choose the number of samples from the H/W Buffer Size pop-up, then click OK.

Table 2. How Hardware Buffer settings affect audio monitoring latency

Sample rate	Buffer setting (samples)	Latency (ms)	Use this setting for:
44.1 kHz	128	2.9	recording drums and other timing-critical instruments
	256	5.8	recording vocals and instruments with slower attacks
	512	11.6	mixing with 24 tracks
	1024	23.2	final mixdown or many plug-ins
	2048	46.4	final mixdown or many plug-ins
	4096	92.8	final mixdown or many plug-ins
	8192	185.5	final mixdown or many plug-ins
48 kHz	128	2.7	recording drums and other timing-critical instruments
	256	5.3	recording vocals and instruments with slower attacks
	512	10.7	mixing with 24 tracks
	1024	21.3	final mixdown or many plug-ins
	2048	42.7	final mixdown or many plug-ins
	4096	85.3	final mixdown or many plug-ins
	8192	170.7	final mixdown or many plug-ins

Low Latency Monitoring

Pro Tools LE includes a feature called Low Latency Monitoring for Digi 001 systems. This feature allows you to use a built-in mixer on the Digi 001 PCI card to record and monitor up to 16 inputs (8 analog and 8 ADAT) with extremely low latency. This mode can be very desirable for recording multiple instruments at the same time (such as a band).

To use Low Latency Monitoring tracks must be record-enabled, assigned to an actual audio input (not a bus), and assigned to outputs 1 or 2.

To enable Low Latency Monitoring:

■ Select Operations > Low Latency Monitoring.

When Low Latency Monitoring is enabled, any plug-ins and sends assigned to record-enabled tracks (routed to Outputs 1–2) are automatically bypassed, and must remain bypassed. Also, these tracks will not register on meters for Master Faders.

Recording MIDI

To configure a new MIDI track for recording:

1 Choose File > New Track and specify 1 MIDI Track, then click Create.

2 In the Mix window, click on the track's MIDI Device/Channel Selector and assign a device and channel from the pop-up menu.
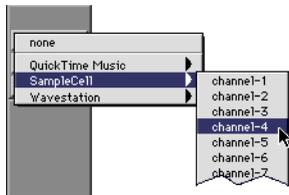
MIDI Device Channel Selector

3 If you want, you can assign a default program change to the track by clicking on the Program button in the Mix window and making the necessary selections for program and bank select, and then clicking Done. Default program changes are sent when playing a track.

4 In the Mix Window, record enable the MIDI track.

5 Make sure MIDI > MIDI Thru is selected, then play some notes on your MIDI controller. The MIDI instrument assigned to the track should sound, and the track's meters should register MIDI activity.

To record the new MIDI track:

1 Verify that the MIDI track you want to record to is record-enabled and receiving MIDI.

2 In the Transport window, click Return To Zero to ensure that recording starts from the beginning of the track. You can also record according to a selection or from the cursor location in the Edit window.

3 Click Record in the Transport window.

4 Click Play in the Transport window or press the Spacebar to begin recording.

– or –

If using Wait for Note, the Play, Record, and Wait for Note buttons flash. Recording begins when the first MIDI event is received.

– or –

If using Countoff, click Play. The Record and Play buttons flash during the Countoff—after which, recording begins.

5 Play your MIDI instrument.

6 When you have finished recording, click Stop in the Transport window, or press the Spacebar. The newly recorded MIDI data appears as a MIDI region on the track in the Edit window, as well as in the MIDI Regions List.

To play back the recorded MIDI track:

1 Disable Record Enable on the MIDI track to take it out of Record-Ready mode.

2 In the Transport window, click Return To Zero to play back from the beginning of the track. You can also play back according to a selection or from the cursor location in the Edit window.

3 Click Play in the Transport window to begin playback. The recorded MIDI data plays back through the track's assigned instrument and channel.

� *MIDI is not audio. The messages that travel down a MIDI cable are only numbers that translate to specific instructions. For more information, see the Pro Tools Reference Guide.*

Monitoring MIDI Instruments Without a Mixer

Create an Auxiliary Input to monitor your MIDI instrument. Auxiliary Inputs function as inputs for both internally bussed signals and external audio sources.

To configure an Auxiliary Input for MIDI monitoring:

1 Connect the MIDI instrument's audio output to the appropriate inputs on your audio interface.

2 Choose File > New Track and specify 1 mono or stereo Auxiliary Input track, then click Create.

3 Click the Input selector of the Auxiliary Input channel and choose the input to which your MIDI instrument is connected.

4 Click the Output selector of the Auxiliary Input channel and choose an output.

5 Adjust the level of the Auxiliary Input with its volume fader.

QuickPunch Recording

QuickPunch recording lets you punch in and out of audio recording on armed tracks. Recording can be triggered from the Transport window, or using a standard footswitch. You can use a standard footswitch (such as a keyboard sustain pedal) with QuickPunch to "punch in" when recording audio. You can also punch in when recording MIDI, without enabling QuickPunch.

📑 *For more information on QuickPunch and punch recording, see the Pro Tools Reference Guide.*

To punch in when recording audio with QuickPunch:

1 Select Operations > QuickPunch.

2 Set input routing and click the Record button on each audio track you want to punch in. You can punch in on up to 8 audio tracks while playing 24 tracks on Macintosh or 32 track on Windows, or you can punch in on up to 16 tracks while playing 16 tracks on Macintosh or 24 tracks on Windows.

3 Click Play in the Transport window.

4 Click Record in the Transport window or step on the footswitch to begin recording (punch in) on all record-enabled tracks.

5 Click Record in the Transport window or step on the footswitch again to stop recording (punch out).

Notice that the session continues to play, and you can continue to punch in and out as many times as you want.

⇧ *With QuickPunch enabled, press Command+Spacebar (Macintosh) or Ctrl+Spacebar (Windows) to punch in and punch out.*

To punch in when recording MIDI:

1 Set your MIDI input routing and click the Record button on each MIDI track you want to punch in. QuickPunch is not required to punch in on MIDI tracks.

2 Click Play in the Transport window.

3 Click Record in the Transport window or step on the footswitch to begin recording (punch in) on all record-enabled tracks.

4 Click Record in the Transport window or step on the footswitch again to stop recording (punch out).

Editing

Pro Tools LE provides several tools for editing audio and MIDI. In the Edit window, audio and MIDI tracks can be edited into regions or repeated in different locations, to create loops, rearrange sections or entire songs, or to assemble tracks using material from multiple takes.

Audio and MIDI editing are typically used to:

- Fix or replace mistakes
- Re-arrange songs and projects
- Clean up track timing and rhythm by aligning hits to Grid values like bars and beats
- Create final tracks using selections from multiple takes (also known as *comp tracks*, or compilation)

Edit Modes

Pro Tools LE has four Edit modes: Shuffle, Spot, Slip, and Grid. The Edit mode is selected by clicking the desired button in the upper left of the Edit window.

Edit mode buttons

⬛ *You can also use F1 (Shuffle), F2 (Slip), F3 (Spot), and F4 (Grid) to set the Edit mode.*

The Edit mode affects the movement and placement of audio and MIDI regions (and individual MIDI notes), how commands like Copy and Paste function, and also how the various edit tools (Trimmer, Selector, Grabber, and Pencil) work.

📋 *For detailed descriptions of Edit mode, see the Pro Tools Reference Guide.*

Edit Tools

Pro Tools LE has seven Edit tools: Zoomer, Trimmer, Selector, Grabber, Scrubber, Pencil, and Smart Tool. Select the desired Edit tool by clicking it in the tool bar along the top of the Edit window. The Trimmer, Grabber, and Pencil tools have multiple modes. Click and select the desired mode from a pop-up menu for these Edit tools.
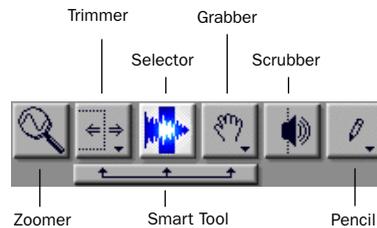
Edit tools in Edit window

⬛ *Use the Esc key to toggle through the Edit tools.*

📋 *For detailed descriptions of the Edit Tools in Pro Tools LE, see the Pro Tools Reference Guide.*

Editing Regions

Pro Tools LE's Edit tools are used to edit regions in the Edit window. A region is a piece of audio or MIDI data that can also have associated automation data. A region could be a loop, a guitar riff, a verse of a song, a sound effect, a piece of

dialog, or an entire sound file. In Pro Tools, regions are created from audio or MIDI files, and can be arranged in audio and MIDI track playlists.

Audio region

Trimming Regions

The following example demonstrates how you might trim a region to exclude unwanted audio. After having recorded an audio track (for example, a guitar solo), you will have an audio region on that track. If there is some silence at the beginning of the region, and there is some extra audio at the end of the region, you can use the Trimmer tool in Slip mode to shorten the beginning and end of the region as desired.

Audio region on a track

To trim an audio region:

1 Select Slip mode.

2 Select the Trimmer tool.

3 Move the cursor near the beginning of the audio region (notice the cursor changes to a "[").

Trimming the beginning of a region

4 Click at the beginning of the region and drag right to shorten the region.

5 Move the cursor near the end of the audio region (notice the cursor changes to a "]").

Trimming the end of a region

6 Click at the end of the region and drag left to shorten the region.

The trimmed region

You can also lengthen a region using the trimmer tool if there is audio data beyond the current boundaries of a region. If trimming the region's beginning, click and drag to the left; if trimming the region's end, click and drag to the right.

Arranging Regions

There are many ways to edit and arrange regions; the following example demonstrates how you might create and arrange a drum loop to compose a rhythm track.

To create and arrange a rhythm sequence:

1 Specify the session meter (MIDI > Change Meter) and tempo (MIDI > Change Tempo).

2 Select Grid mode.

3 Prepare to record using a MIDI click (see "Click and Metronome" on page 46)

4 Record a drum track (see "Recording an Audio Track" on page 58) keeping in mind that you want to use only the best bar (measure). Your recording should fit the grid at the specified tempo and meter.

– or –

Import an existing audio file, such as a drum loop from a sample library, and place it on an audio track (see "Importing Audio" on page 54).

💡 *If you do not know the tempo of an audio region, you can use the Identify Beat command and then calculate the tempo from the selection.*

5 Select the Selector tool.

6 Click and drag on the waveform with the Selector to make the desired selection. Note that the selection snaps to the specified grid.
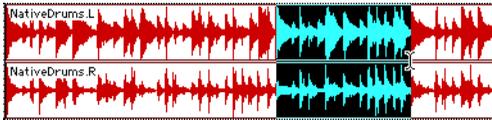
Making a selection in Grid mode

7 Create a new audio track (File > New Track).

8 From the Grabber pop-up, select the Separation Grabber tool.

9 With the Separation Grabber tool, click and drag the selection to the beginning of the new audio track. A new region will be created and appear at the beginning of the new track.
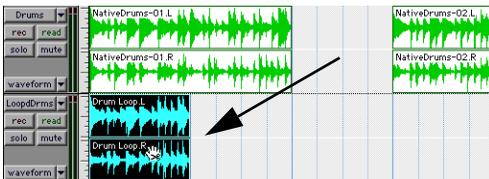
Dragging a selection with the Separation Grabber tool to a track

10 With the new region still selected, choose Edit > Repeat.

Repeat dialog

11 In the Repeat dialog, enter the desired number of repeats, and then click OK.

You now have a new rhythm track with a "looped" (repeated) phrase. You can use these editing tools to do much more advanced and involved editing of regions. For example, you could separate beats or "hits" into individual regions and rearrange them in Grid mode as a way of coming up with new and interesting rhythms.

Playlists and Non-Destructive Editing

Playlists let you create and retrieve multiple versions of track edits. A playlist can be a complete take, an overdub, or an arrangement of selections from multiple takes. You can duplicate playlists to save edits in their current state, then continue making additional edits to the new playlist knowing you can always go back to the previous version. The following example demonstrates how you can use playlists to create different versions of track edits.

To create multiple playlists for editing:

1 Start with a track on which you want to try different edits.

2 From the Playlist Selector pop-up menu, choose Duplicate.
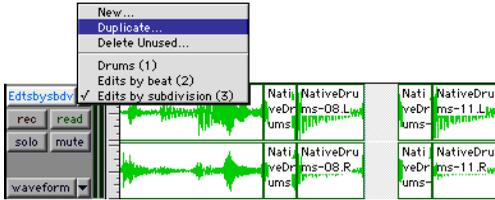
Duplicating a playlist

3 Name the duplicated playlist and click OK.

4 Make your first series of edits as desired.

5 Return to the original playlist by selecting it from the Playlist Selector pop-up menu.

6 Repeat steps 2–5 as desired.

In this fashion, you can try out different edits of a track, and switch back and forth for comparison until you come up with the best version, while maintaining the original playlist.

Mixing

Pro Tools LE provides many familiar channel strip controls for setting track level, pan, solo, and mute (see Figure 17 on page 51). You can also automate your mix or use a MIDI control surface to "play" your mix in real-time. Once you have finished preparing your mix, you will probably want to mixdown to a stereo recording. For example, you can record your mix to an external analog or digital deck (such as a cassette or DAT), or you can "bounce" your mix to a stereo file so you can burn it to CD.

Mixer and I/O controls for signal routing can be shown in both the Mix and Edit windows. Mixing is done primarily in the Mix window.

To view the Mix window:

■ Select Windows > Show Mix.

📇 *Use Command+"=" on Macintosh, or Ctrl+"=" on Windows, to quickly switch between the Edit and Mix windows.*

Using Channel Strip Controls

Volume Increase or decrease the track level by clicking the Volume fader and dragging it up or down.

Pan Pan a track left or right in the mix by clicking the Pan slider and dragging it left or right.

Solo Solo a track (muting all other tracks) by clicking the Solo button.

Mute Mute a track by clicking the Mute button.

Basic Signal Routing

Signal routing is accomplished by assigning track inputs and outputs. Audio track inputs can be from any hardware input. Once recorded, an audio track's input is its audio file on disk. Auxiliary Track inputs can be any hardware input or internal mix bus. For all types of audio tracks, outputs can be routed to any hardware output or internal bus send.

Together, these signal routing features let you set up virtually any mixer architecture needed for your projects, including submixing, and sends and returns for effects processing.

Creating a Send

Pro Tools LE provides up to five sends per audio track. A send can be mono or stereo, routing to an output or one of sixteen internal bus paths (as configured in Setups > I/O Setup).

When you are submixing for reverb, delay, and similar effects processing, use sends to achieve traditional send/return bussing. You can use a real-time plug-in (see "Plug-Ins" on page 69) or a hardware I/O insert (see "Using External Effects Devices" on page 38) as a shared resource for all tracks included in a submix. The wet/dry balance in the mix can be controlled using the track faders (dry level) and Auxiliary Input fader (effect return, or wet, level).

To assign a send on a track:

1 Make sure Sends View is enabled in the Mix window (Display > Mix Window Shows > I/O View).

2 Click the Sends button on an audio track and choose a path from the pop-up menu.
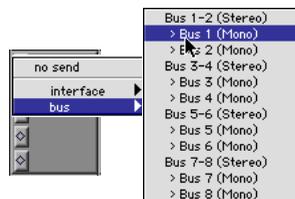
Assigning a send to a mono bus path

3 Set the output level of the send. You can set the send level to zero by Option-clicking (Macintosh) or Alt-clicking (Windows) the send fader. When you create a new send, its output level is automatically set to –∞.

You can configure the default level for new sends to be off or at unity gain (0) by enabling or disabling the Sends Default To "–INF" option under the Operation tab in Setups > Preferences.

Creating a Return

Auxiliary Input tracks can be created to act as return channels for busses, as well as for inputs from hardware sources.
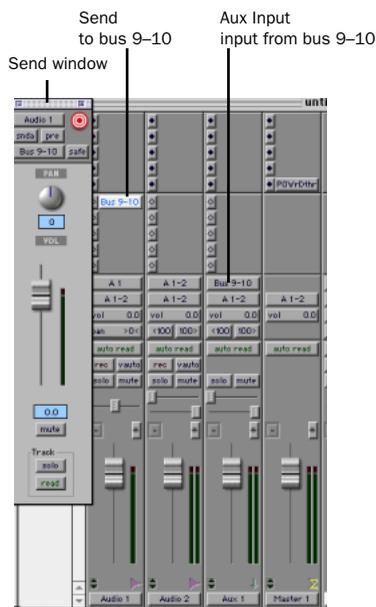
Audio and Auxiliary Input tracks configured for a send and return

To assign a return:

1 Choose File > New Track and specify 1 mono or stereo Auxiliary Input track, then click Create.

2 Click the Input Selector of the Auxiliary Input track and set it to the bus path you assigned to the sends on the source tracks.

3 Click the Output Selector of the Auxiliary Input track and choose an output path (your main mix, or other output).

Master Faders

Master Faders are provided, to be used as output and bus masters. Master Faders can be used for master level, solo, mute, and insert assignment (plug-ins or hardware inserts) of any mono or stereo Output or Bus path. It is recommended that you use a dithering plug-in on a Master Fader when you are mastering your final mix (see "Dithering" on page 71).
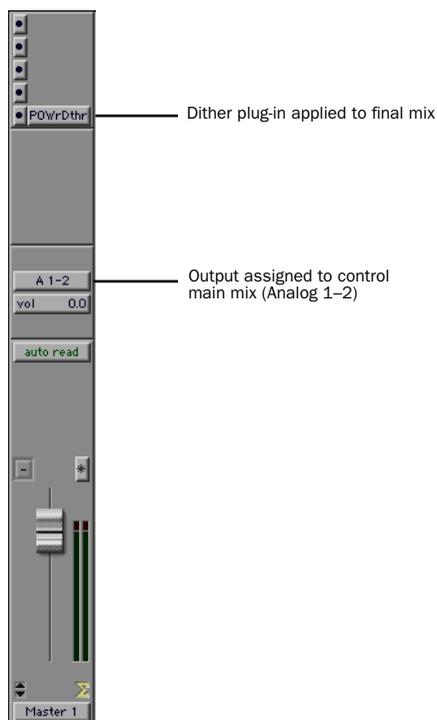
Master Fader controlling main outputs

To create a Master Fader:

1 Choose File > New Track and specify 1 mono or stereo Master Fader track, then click Create.

2 In the Mix window, click the Master Fader's Output Selector and choose the output path that you want to control. You can choose either audio interface outputs or internal busses. If the Master Fader is a stereo fader, you can control the level of a pair of outputs.

To use Master Faders as a master volume control for all tracks in a session:

1 Choose File > New Track and specify 1 stereo Master Fader track, then click Create.

2 Set the outputs of all audio tracks in the session to outputs 1–2 and set the panning of each track.

3 Set the output of the Master Fader to your main output path (outputs 1–2).

Mix Automation

Mix automation lets you record, or *automate*, changes to track and send levels, mutes, pan, and plug-in parameters. MIDI tracks provide track level, pan, and mute automation only.

The basic steps for automation recording are:

1 In the Automation Enable window (Windows > Show Automation Enable), enable an automation *type* (volume, pan, mute, send level, send pan, send mute, or any plug-in automation).

2 Select an automation *mode* for the tracks to be automated (Write, Touch, Latch, or Trim mode).

3 Begin playback and begin automation recording, adjusting faders and other controls as desired. Pro Tools LE remembers all moves performed on enabled parameters.
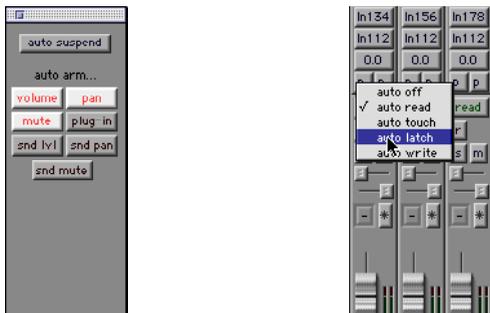
Enabling automation (left) and setting a track Automation mode (right)

Once recorded, automation can be re-recorded, or displayed and edited graphically in the Edit window.

Track View set to Volume

Volume breakpoint automation
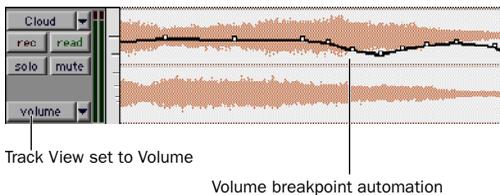
Volume automation in a track in the Edit window

💡 *Pro Tools also provides Automation Safe mode for protecting plug–in automation from being overwritten, as well as many Automation Preferences to fine-tune performance.*

📄 *For more information on using automation, see the Pro Tools Reference Guide.*

Mixing with a Control Surface

Rather than mixing with a mouse—adjusting one fader at a time—you might find using a MIDI control surface (such as MotorMix from CM Labs) or an ethernet control surface (such as Control|24) for mixing to be much more effective. The Digi 001's MIDI ports provide an excellent interface for MIDI control surfaces.

📄 *For more information on using a MIDI Control Surface, see the MIDI Control Surfaces Guide.*

For more information on using Control|24, see the Control|24 Guide.

Plug-Ins

Pro Tools LE comes with a complete set of Digi-Rack plug-ins, and many more are available from Digidesign and our Development Partners. Plug-ins provide EQ, dynamics, delays and many other types of effects processing.

Plug-ins function either in real-time or in non-real-time. RTAS plug-ins are non-destructive effects, which are inserted on tracks to process audio in real-time—just like an external, hardware processor (during playback). AudioSuite plug-ins, on the other hand, are destructive effects that process audio files on disk in non-real-time. For purposes of mixing, use real-time plug-ins

Real-time plug-ins are assigned to tracks from the Inserts view in the Mix or Edit windows. Once assigned to a track, plug-ins appear in the track's Inserts view, and can be opened by clicking on the Insert button.
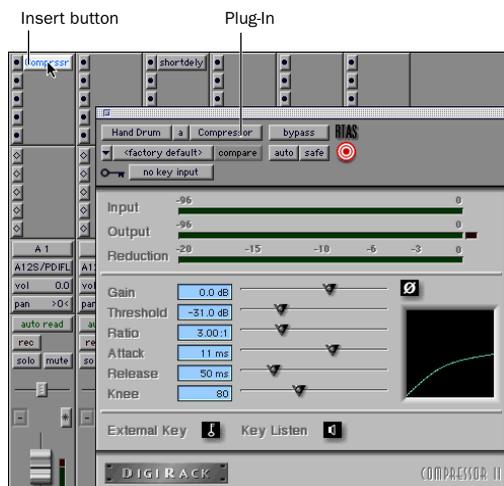
Compressor plug-in

To insert a real-time plug-in on a track:

1 Make sure the Inserts View is shown in the Mix or Edit window.

2 Click the Insert Selector on the track and select the plug-in that you want to use.

📄 *For more information about plug-ins, see the DigiRack Plug-Ins Guide, the Digidesign Plug-Ins Guide, and the Plug-Ins chapter of the Pro Tools Reference Guide.*

Bounce to Disk

The Bounce to Disk command lets you write a final mix to disk, create a new loop, print effects, or bounce any submix. Once you have "bounced" your final mix to disk, you can use another program (such as MasterList CD) to burn the resulting file to Compact Disc.

When you bounce a track to disk, the bounced mix includes the following:

Audible Tracks All audible tracks are included in the bounce. Any muted tracks do not appear in the bounce. If you solo a track or region, only the soloed elements appear in the bounced mix.

Automation All read-enabled automation is played back and incorporated in the bounced mix.

Inserts and Sends All active inserts, including real-time plug-ins and hardware inserts, are applied to the bounced mix.

Selection or Track Length If you make a selection in a track, the bounced mix will be the length of the selection. If there is no selection in any track, the bounce will be the length of the longest audible track in the session.

To Bounce to Disk:

1 Choose File > Bounce to Disk.

2 Select any mono, stereo, or multichannel output or bus path as the source for the bounce.

3 Select the File Type (such as AIFF), Format (such as mono or stereo), Resolution (such as 16-bit), and Sample Rate (such as 44.1 kHz).

4 Click Bounce.

Dithering

You should use a dithering plug-in when mastering to a 16-bit file with the Bounce To Disk command, or when mastering to an external device that records at 16-bit. If you use Bounce to Disk, it is important to understand that the Bounce to Disk process does *not* apply dither. To dither a bounce file, you should insert one of the included Digidesign Dither plug-ins, or another dithering plug-in, on a Master Fader assigned to the bounce source path. Master Faders are often preferable to Auxiliary Inputs because Master Fader inserts are post-fader (better for dithering).

📄 *For more information on using dither, see the Pro Tools Reference Guide.*

appendix a

Configuring OMS (Macintosh Only)

Open Music System (OMS), which is included on the Pro Tools Installer CD, has the following capabilities:

• Keeps track of which MIDI devices you are using, how they are connected, and which patches they are using

• Enables MIDI hardware to communicate with your music applications

• Provides timing services and inter-application communication

OMS stores a description of your MIDI studio in *Studio Setup* documents, which are edited in the *OMS Setup* application. Once OMS is configured, your music applications know which MIDI devices you are using by referencing the current Studio Setup document.

The following sections provide basic instructions for configuring OMS. For more detailed information, refer to the online *OMS Guide* installed with Pro Tools.

Configuring a New Studio Setup

(First-Time OMS Users Only)

Before configuring OMS, make sure the Digi 001 hardware and Pro Tools LE software have been installed, and that any other MIDI interfaces are connected according to the manufacture's instructions and turned on.

To configure a New Studio Setup in OMS:

1 Launch the OMS Setup application. If OMS has not yet been configured, you'll be prompted to configure a New Studio Setup. Click OK.

2 Select whether your MIDI interface is connected to the Modem or Printer port. If using a USB or PCI-based MIDI interface (including the Digi 001), leave both ports unchecked. Click Search.
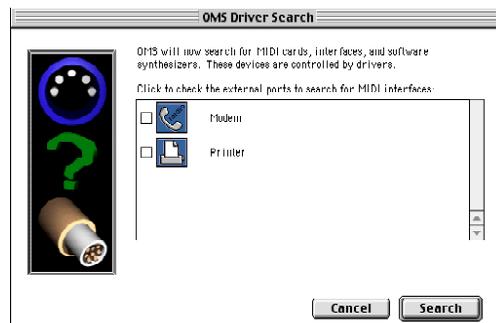
Ports for OMS Driver Search

OMS searches for and displays any detected MIDI interfaces, MIDI cards, and OMS drivers. If your interface is not detected, click Trouble-shoot. Once your interface *is* detected, you are prompted to search for MIDI instruments connected to your interface.

3 Click OK to search for MIDI devices connected to your MIDI interface. To be detected, the device must be turned on with both of its MIDI ports connected to your MIDI interface.
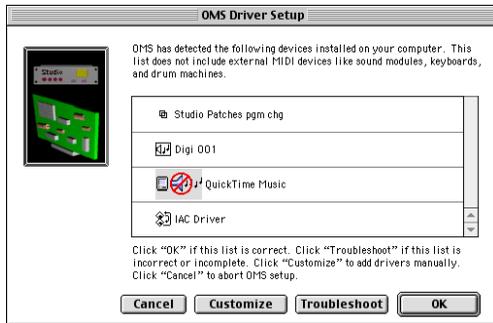
OMS Driver Setup

OMS searches for and displays any detected MIDI devices. Some older instruments, as well as some newer ones, may not be recognized by the OMS auto-detection routines.

Undefined OMS device

Devices not recognized by OMS appear with a red question mark and are named based on the interface or port to which they are connected. These devices can be defined as necessary within the OMS Setup application (see "Defining MIDI Devices in OMS" on page 74).

4 Click OK to save your Studio Setup document.
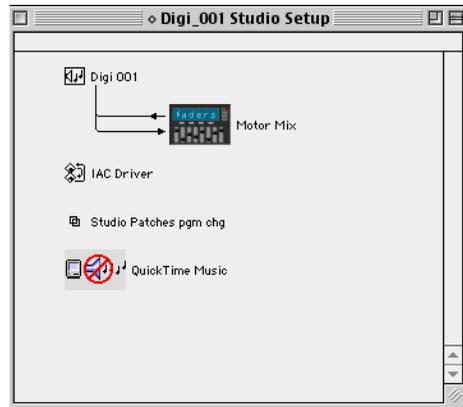
OMS Studio Setup

Defining MIDI Devices in OMS

To define a MIDI device in OMS Setup:

1 Double-click the device's icon in the Studio Setup window.

2 In the MIDI Device Info dialog, select the Manufacturer and Model for the device from the pop-up menus. If the device is not listed, leave the Model set to "other" and enter a name for the device.
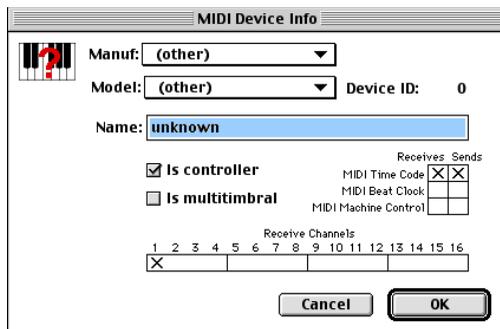
MIDI Device Info

3 Select the Receiving Channel for the device. If receiving multiple channels, select the option for "Is Multitimbral."

4 If you will record from the device in Pro Tools, select the option for "Is Controller." If the device will be a source or destination for MIDI Time Code, Beat Clock, or MIDI Machine Control, select the appropriate option.

5 Click OK.

Disabling SerialDMA in OMS

Pro Tools requires that you deselect the "Use Apple SerialDMA Driver When Available" option in OMS Setup. If you do not disable this option, problems will occur with MIDI and synchronization functions within Pro Tools.

To disable SerialDMA in OMS:

1 Double-click the OMS Setup application.

2 Choose Edit > Preferences.

3 Deselect "Use Apple SerialDMA Driver When Available," and click OK.

4 Quit OMS Setup.

appendix b

Digidesign Control Panel (Macintosh Only)

The Digidesign Control Panel should be installed if you are planning to use your Digidesign hardware with Apple Sound Manager-compatible applications.

To install the Digidesign Control Panel:

■ Select the Digidesign Control Panel option when installing Pro Tools LE (see "Pro Tools LE Installation" on page 9).

Digidesign Control Panel

To configure the Digidesign Control Panel:

1 From the Apple menu, choose Control Panels > Digidesign.

Digidesign Control Panel

2 Click the Setup Hardware button in the Digidesign Control Panel. The Hardware Setup dialog will open.

3 Configure the Hardware Setup dialog as desired.

To use your Digidesign hardware with Apple Sound Manager:

1 Choose Apple menu > Control Panels > Sound.

2 Select the Output tab.

3 Select Digidesign.

Apple Sound Control Panel

☼ *It is recommend that you turn the Alert Volume control all the way down under the Alerts tab.*

appendix c

Digidesign WaveDriver (Windows Only)

Introduction

The Digidesign WaveDriver is a two-channel, multimedia sound driver that allows third-party audio applications to record and play back through channels 1–2 of the Digi 001 on Windows. The Digidesign WaveDriver is not required to use Pro Tools LE with the Digi 001.

⚠ *Check the Digidesign Web site (www.digidesign.com) for the latest third-party drivers for Pro Tools LE hardware, as well as current known issues.*

Full-duplex recording and playback of 24- and 16-bit audio are supported at sample rates of 48 kHz and 44.1 kHz. Other word lengths and sample rates are available through the Microsoft Sound Mapper.

Also included is the DigiGain volume control application. DigiGain allows control over the WaveDriver's master output volume, and input and record monitoring levels. DigiGain has no effect on recording or playback in Pro Tools or any other application that communicates with Digidesign hardware using Digidesign Direct I/O.

⚠ *WaveDriver is not multi-client. Only one application at a time can use the WaveDriver. Be sure to disable the Windows system sounds. It is also recommend that you install a separate sound card for third-party soft-synthesizer and samplers, games, or multi-client audio work.*

Installing the WaveDriver

Before installing the driver please verify the following:

Pro Tools hardware and software must be properly installed and functional prior to installing the Digidesign WaveDriver

The WaveDriver requires several files installed with Pro Tools LE. Install Pro Tools LE prior to installing the WaveDriver. After launching and verifying that Pro Tools LE and Digi 001 are functioning correctly, restart Windows. The Digi 001 must be correctly installed, connected, and powered on to successfully install the Digidesign WaveDriver.

Disable System sounds before installing the WaveDriver

Digidesign recommends disabling all system sounds. You may encounter problems when system sounds are associated with Empty Recycle Bin, Select, Open Program, and Close Program and other Windows events. In addition, disabling the Windows Start and Exit Windows sounds helps prevent possible damage to your speakers (and your hearing). The Digidesign WaveDrivers default to 0dB when installed. Remember to turn down your monitoring levels before rebooting after the WaveDrivers are installed.

⚠ *With the WaveDrivers set for 0dB, the Digi 001 will output the system sounds at >110dB!*

To disable system sounds:

1 From the Start menu, choose Settings > Control Panel > Sounds.

2 To disable all system sounds, under the Scheme pull-down menu select No Sounds.

– or –

To disable specific system sounds, scroll down the list of Events and select the one you want to disable (such as Start Windows). In the Name drop down list, select None.

3 Click Apply, then OK.

4 Restart Windows XP.

💡 *You should also disable Internet Explorer's sounds for the same reasons.*

Remove any previously installed versions of the Digidesign WaveDriver

If you have previously installed an earlier version of the WaveDriver, you must completely remove it before installing another version of the WaveDriver. For more information, see "Removing the WaveDriver" on page 81.

Installation Instructions

To install the Digidesign WaveDriver:

1 Install Pro Tools.

2 Launch any Pro Tools session to verify that Pro Tools is working correctly.

3 Quit Pro Tools and restart your computer.

4 From the Start menu, choose Settings > Control Panel.

5 Double-click Add Hardware.

6 Click Next.

7 Select "Yes, I have already connected the hardware" and click Next.

8 Select Add a New Device and click Next.

9 Select "Install the hardware that I manually select from a list" and click Next.

10 Select "Sound, video and game controllers" and click Next.

11 Click on Have Disk....

12 Browse to the location of the driver, select the oemsetup.inf file, and click OK.

13 Click Next.

14 If the "Digital Signature" warning dialog appears, click Yes.

15 Click Next.

The Digidesign WaveDriver Settings dialog will automatically open.

16 Click the Advanced button to open the I/O Setup dialog. (See How to Change WaveDriver Settings below for more information about these dialogs.)

17 Click the A: No Interface tab.

18 Select Digi 001 for the Peripheral Type.

19 Make any other desired settings in the I/O Setup dialog.

20 Click OK to close the I/O Setup dialog.

21 Click OK to close the WaveDriver Settings dialog.

22 Restart Windows when prompted.

Removing the WaveDriver

To remove the WaveDriver:

1 From the Start menu, choose Settings > Control Panel.

2 Click the System icon.

3 Click the Hardware tab.

4 Click the Device Manager button.

5 Expand the "sound, video, and game controllers" section.

6 Double click Digidesign WaveDriver.

7 Select the Driver tab.

8 Click Uninstall.

⚠ *If you remove the WaveDriver, it is recommended that you also remove the Dalwdm.sys file and Pro Tools LE (in that order), and then do a clean install of Pro Tools LE.*

How to Change WaveDriver Settings

To change settings for the WaveDriver:

1 From the Start menu, choose Settings > Control Panel.

2 Click the System icon.

3 Click the Hardware tab.

4 Click the Device Manager button.

5 Expand the "sound, video, and game controllers" section.

6 Double click Digidesign WaveDriver.

7 Select the Properties tab.

8 Expand Audio Devices.

9 Double click Digidesign WaveDriver.

10 In the Digidesign WaveDriver Properties dialog, click the Settings button.

The Digidesign WaveDriver Settings dialog appears.

WaveDriver Settings Dialog
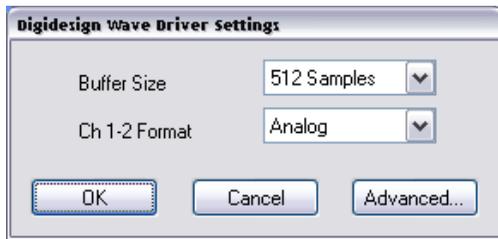
Digidesign WaveDriver Settings dialog

The Digidesign WaveDriver Settings dialog cannot be accessed under the following circumstances:

◆ When Pro Tools LE is running and the Operations > Active in Background option is enabled.

◆ When Pro Tools LE is running and the Convert and Import dialog is open.

◆ When playing or recording in another audio application.

◆ When using a third-party audio application that has an option to keep the WaveDriver "open" even when you are not playing or recording. (You must close the audio application before you can open the WaveDriver Settings dialog.)

Buffer Size Control

When you play a file from a client audio application, the client application divides the file into little chunks (buffers) and sends each of these to the WaveDriver. The WaveDriver copies the client applications buffers to the Digi 001's own buffers in a double-buffering scheme. The Buffer Size control in this dialog allows you to set the size of each of the two buffers the WaveDriver uses on the Digi 001 card.

You may choose from the following buffer sizes:

- 128 samples (default)
- 256 samples
- 512 samples
- 1024 samples

Small buffers have the advantage of low latency in the record monitor path. (Latency is the time delay between a signal entering the audio inputs and leaving the outputs during recording.) Larger buffers have the advantage of making the WaveDriver more immune to audio dropouts during playback and recording. In some third-party audio applications, performing various tasks such as maximizing or minimizing windows will interrupt the WaveDriver and create glitches in the audio. Choosing medium or large buffers can help alleviate this problem.

Pressing the OK button will cause settings to be saved in the registry when you shut down or re-boot Windows. Pressing Cancel restores settings to what they were before this dialog was opened. Changing the Buffer Size for the WaveDriver does not effect the H/W Buffer Size settings in the Playback Engine and Hardware Settings dialogs in Pro Tools LE.

Ch 1–2

This control may be set to Analog or Digital. It determines whether the WaveDriver plays and records through the Digi 001's analog or digital I/O. The WaveDriver can only play and record through channels 1–2 of the Digi 001.

I/O Setup Dialog

Click the Advanced button in the Digidesign WaveDriver Settings dialog to open the I/O Setup dialog:
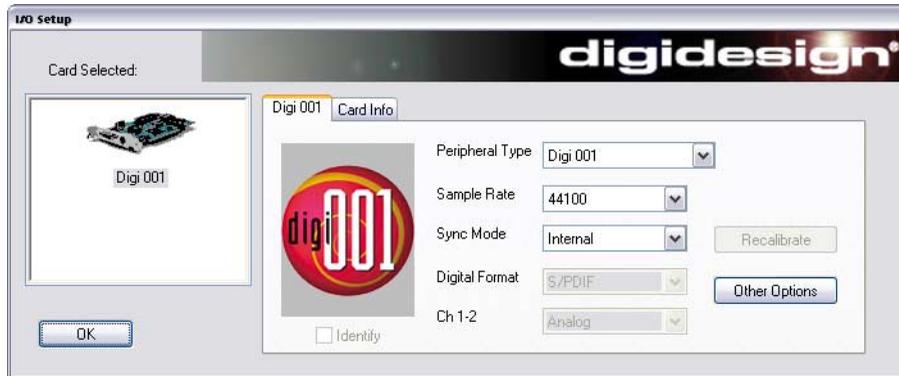
Figure 19. I/O Setup dialog

Digi 001 Tab

Peripheral Type

The Peripheral Type will always be set to Digi 001.

Sample Rate

Available sample rates are 48000 Hz and 44100 Hz. You do not need to change the sample rate in this dialog before playing or recording a file with a new sample rate. If you are playing a file, it will automatically play back at the correct sample rate. If you are recording a new file, simply choose the desired sample rate using the audio application's Preferences or Record Options dialog.

Sync Mode

Sync Mode may be set to Internal or Digital (Internal is the default setting).

Digital Format

This control may be set to S/PDIF or Optical (S/PDIF is the default setting).

Ch 1–2

This control may be set to Analog or Digital. It determines whether the WaveDriver plays and records through the Digi 001's analog or digital I/O. The WaveDriver can only play and record through channels 1–2 of the Digi 001.

Identify Checkbox

The Identify checkbox is not available for Digi 001.

Recalibrate Button

The Recalibrate button is not available for the Digi 001.

Other Options Button

The Other Options button opens the Hardware Setup dialog for the Digi 001 (see "Configuring Hardware Setup" on page 23).

Card Info Tab

Bus, Slot Number

These controls display card specific PCI bus information and should not be altered.

Installing DigiGain

DigiGain is an optional volume control applet that allows you to control the master output of the Digi 001 as well as control the monitoring input levels of the WaveDriver independently from your third-party audio applications. By default, the master level is set to 0 dB.

DigiGain is not available as a volume control on the Windows task bar. As a result, the following settings will be disabled in the Multimedia control panel (Audio tab). "Show volume control on the taskbar," the playback volume control, and the recording volume control will all be disabled.

Before Installing DigiGain

The WaveDriver must be installed before installing DigiGain. If you did not install the WaveDriver or reboot the computer after installing the WaveDriver, do so now.

Installation Instructions

To install DigiGain:

1 Insert the Pro Tools LE Installer CD.

2 Locate DigiGain.exe on the CD, and copy it to the Desktop.

Removing DigiGain

To remove DigiGain:

1 Delete (move to Recycle Bin) DigiGain.exe from the Desktop.

2 Empty the Recycle Bin.

Using DigiGain
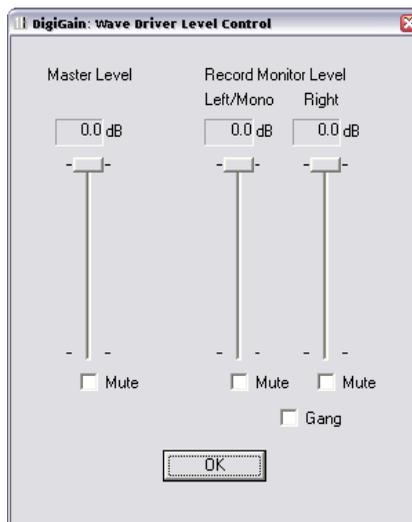
DigiGain WaveDriver Level Control

Master Level

This slider adjusts the output volume of channels 1–2 on the Digi 001.

☼ *During recording, this does not affect the audio data being recorded.*

Master Mute

The master mute checkbox, when checked, mutes all output of channels 1–2 of the Digi 001.

Record Monitor Level

These sliders adjust the output monitoring level of the Left/Mono and Right recording channels.

💡 *As with the Master Level slider, these sliders do not affect the audio data being recorded.*

Record Monitor Mute

The Mute buttons under the Record Monitor Level sliders individually mute the Left/Mono and Right recording streams.

Gang

The Gang button links the left and right Record Monitor Level sliders and Mute buttons.

OK Button

Clicking on the OK button saves the volume settings, so that they remain the same upon the next reboot or startup of the system. Volume settings are stored in a registry key.

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