

# Getting Started with Digi 002 Rack

**Version 6.1 for LE Systems on Windows or Macintosh**

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**digidesign**

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## Communications & Safety Regulation Information

### Compliance Statement

The model Digi 002 Rack complies with the following standards regulating interference and EMC:

- FCC Part 15 Class B
- EN55022
- EN55024
- AS/NZS 3548 Class B
- CISPR 22 Class B

### Radio and Television Interference

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.

### DECLARATION OF CONFORMITY

We Digidesign,

2001 Junipero Serra Boulevard

Daly City, California 94014-3886, USA

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declare under our sole responsibility that the product

Digi 002 Rack

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.



## Digi 002 Rack



Tested To Comply  
With FCC Standards

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



### Safety Statement

This equipment has been tested to comply with USA and Canadian safety certification in accordance with the specification of UL Standards : UL1419 and Canadian CAN C22.2NO.1-98, IEC60950. Digidesign Inc., has been authorized to apply the appropriate UL & CUL mark on its compliant equipment.

### Warning!



### Important Safety Instructions

When using electric or electronic equipment, basic precautions should always be followed, including the following:

- Read all instructions before using this equipment.
- To avoid the risk of shock, keep this equipment away from rain water, and other moisture. Do not use this equipment if it is wet.
- The equipment should only be connected to the correct rating power supply as indicated on the product.
- Do not attempt to service the equipment. There are no user-serviceable parts inside. Please refer all servicing to authorized Digidesign personnel.
- Any attempt to service the equipment will expose you to a risk of electric shock, and will void the manufacturer's warranty.
- The product should be connected only to the correct power supply as indicated on the product.
- Do not block any ventilation openings. Install in accordance with the manufacture's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other, A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Clean only with dry cloth.

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## chapter 1

# Welcome to Digi 002 Rack

Welcome to Digi 002 Rack, Digidesign's cross-platform Pro Tools workstation for music, sound design, and multimedia production.

The Digi 002 Rack package includes the following:

- Digi 002 Rack unit
  - Installer CD-ROM containing Pro Tools LE software, DigiRack RTAS (Real-Time Audio-Suite) and AudioSuite plug-ins, and electronic PDF guides
  - *Getting Started with Digi 002 Rack Guide*, covering installation, configuration, and basic tutorials for Pro Tools LE and Digi 002 Rack
  - FireWire cable for connecting the Digi 002 Rack to a computer
  - AC power cable
  - Digidesign Registration card
- 48V phantom power on mic preamps, switchable in channel pairs
  - –10 dBV input pair for direct monitoring of tape or CD input sources
  - 8 analog audio outputs, with D/A converters supporting up to 24-bit, 96 kHz audio
    - Monitor Output pair (+4 dBu) mirrors Main Outputs 1–2 with dedicated volume control for direct connection to powered speakers
    - Alternate Main Output pair (–10 dBV) mirrors Main Outputs 1–2 for direct output to –10 dBV devices.
  - Stereo headphone output with level control
  - Optical connectors for 8 channels of ADAT I/O (up to 48 kHz) or 2 channels of Optical S/PDIF I/O (up to 96 kHz)
  - RCA connectors for 2 channels of S/PDIF digital I/O supporting up to 24-bit, 96 kHz audio
  - 1 MIDI In port and 2 MIDI Out ports, providing up to 16 channels of MIDI input and up to 32 channels of MIDI output
  - Footswitch jack for punching in and out while recording

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## Digi 002 Rack Features

### Audio and MIDI Features

Digi 002 Rack provides the following input and output capacity:

- 8 analog audio inputs (4 with mic preamps), with A/D converters supporting up to 24-bit, 96 kHz audio

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## Pro Tools LE Capabilities

Pro Tools LE software provides the following capabilities with Digi 002 Rack:

- Record and play back up to 32 mono digital audio tracks, depending on your computer's capabilities.
- Sessions can include up to 128 audio tracks (with 32 voiceable tracks maximum), 256 MIDI tracks, 128 Auxiliary Input tracks, and 64 Master Fader tracks.
- 16-bit or 24-bit audio resolution, at sample rates up to 96 kHz.
- Nonlinear, random-access editing and mix automation.
- Audio processing with up to 5 RTAS plug-ins per track, depending on your computer's capabilities.
- Up to 5 inserts and 5 sends per track.
- Up to 16 internal busses.

**⚠** *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.*

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## System Requirements

Digi 002 Rack can be used with a DigiDesign-qualified Windows or Macintosh computer running Pro Tools LE software.

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, hard drives, and third-party devices, refer to the latest compatibility information on the DigiDesign Web site ([www.digidesign.com/compto](http://www.digidesign.com/compto)).

### Hard Drive Configuration and Maintenance

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.

For a list of qualified hard drives, visit the DigiDesign Web site ([www.digidesign.com/compto](http://www.digidesign.com/compto)).

If you are using a FireWire hard drive, initialize your drive with the Disk Utility application included with your Apple System software.

## Avoid Recording to System Drives

Although Pro Tools LE will let you record to your system drive, this is generally not recommended. Recording and playback on system hard drives results in lower track counts and fewer plug-ins.

**⚠** *Digidesign does not recommend recording to system drives. Record to system drives only when absolutely necessary.*

## 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. Recording at higher sample rates (88.2 kHz or 96 kHz) requires about twice the hard disk space.

Figure 1 lists the required drive space for certain track numbers and track lengths, to help you estimate your hard disk usage.

**Figure 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	16-bit at 88.2 kHz	16-bit at 96 kHz	24-bit at 88.2 kHz	24-bit at 96 kHz
1 mono track 1 minute	5 MB	5.5 MB	7.5 MB	8.2 MB	10 MB	11 MB	15 MB	16.4 MB
1 stereo track 5 minutes	50 MB	55 MB	75 MB	83 MB	100 MB	110 MB	150 MB	164 MB
1 stereo track 60 minutes	600 MB	662 MB	900 MB	991 MB	1.2 GB	1.3 GB	1.8 GB	2 GB
32 mono tracks 5 minutes	800 MB	883 MB	1.2 GB	1.4 GB	1.6 GB	1.8 GB	2.4 GB	2.8 GB
32 mono tracks 60 minutes	9.4 GB	10.4 GB	14 GB	15.5 GB	18.8 GB	20.8 GB	28 GB	31 GB

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## Digidesign Registration

Complete and return the registration card included with Digi 002 Rack. Registered users will receive periodic software update and upgrade notices. Refer to the registration card for information on technical support.


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## About the Pro Tools Guides

This *Getting Started with Digi 002 Rack Guide* explains how to install and use Digi 002 Rack to record, edit, and mix audio and MIDI tracks in Pro Tools LE. For additional information, see the following online guides:

- *Pro Tools Reference Guide* explains Pro Tools LE software in detail
- *DigiRack Plug-Ins Guide* explains how to use the RTAS and AudioSuite plug-ins included with Pro Tools LE
- *Keyboard Shortcuts* lists keyboard shortcuts for Pro Tools LE

PDF versions of the Pro Tools guides are installed automatically with Pro Tools LE, and are accessible from the Pro Tools Help menu (Windows XP) or the Pro Tools menu (Mac OS X). To view or print the PDF guides, install Acrobat Reader (included on the Pro Tools LE Installer CD-ROM).


 *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
Control-click	While pressing the Control 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.*

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## About [www.digidesign.com](http://www.digidesign.com)

The Digidesign Web site ([www.digidesign.com](http://www.digidesign.com)) is your best source for information to help you get the most out of your Pro Tools system. The following are just a few of the services and features available.

**Support** Contact Digidesign Technical Support or Customer Service; download software updates and the latest online manuals; browse the Compatibility documents for system requirements; search the online Answerbase; join the worldwide Pro Tools community on the Digidesign User Conference.

**Training and Education** Become a certified Pro Tools Operator or Expert; study on your own using courses available online, or find out how you can learn in a classroom setting at a certified Pro Tools Training Center.

**Products and Developers** Learn about Digidesign products; download demo software; learn about our Development Partners and their plug-ins, applications, and hardware.

**News and Events** Get the latest news from Digidesign; sign up for a Pro Tools demo.

To learn more about these and other resources available from Digidesign, visit our Web site ([www.digidesign.com](http://www.digidesign.com)).



## chapter 2

# Windows Configuration

Installation of the Digi 002 Rack on a Windows computer includes the following steps:

**1** Configuring Windows System Software settings. (See “Windows System Settings” on page 7.)

**2** Connecting the Digi 002 Rack unit to your computer. (See “Connecting Digi 002 Rack to the Computer” on page 9.)

**▲** *When connecting Digi 002 Rack to your computer the first time, your computer should be off.*

**3** Installing Pro Tools LE Software. (See “Installing Pro Tools LE” on page 12.)

**4** Making audio and MIDI connections to the Digi 002 Rack. (See Chapter 5, “Connecting Your Studio” for details.)

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## Windows System Settings

When configuring your system, there are required and recommended Windows XP system settings.

**Required Settings** These instructions must be followed before installing Pro Tools.

**Recommended Settings** These instructions should be followed to optimize your system’s capabilities, or to let older computers run Pro Tools LE.

**▲** *If problems occur after configuring all required and suggested settings, see Appendix A, “Windows System Optimizations” for information on troubleshooting and configuring advanced settings.*

## Required Settings

To ensure optimum performance with Pro Tools LE, configure the following Control Panel settings for your version of Windows XP.

### Disable Hyper-Threading

For Pentium IV computers with Hyper-Threading, disable Hyper-Threading in the BIOS.

### Enabling DMA

Enabling your computer’s DMA (Direct Memory Access) frees up CPU bandwidth so your computer can do other Pro Tools tasks.

In most cases the DMA option will already be set correctly, as Windows XP detects and activates DMA mode by default.

### **Enable DMA for any IDE hard drives:**

- 1 Right-click My Computer and choose Manage.
- 2 In Classic view, choose Start > Control Panel > System > Hardware.  
– or –

In Category view, choose Start > Control panel > Performance and Maintenance > System > Hardware.

- 3 Under System Tools, choose Device Manager.
- 4 In the Device Manager window, double-click IDE ATA/ATAPI controllers, then double-click the Primary IDE Channel for your IDE hard drive.
- 5 Click the Advanced Settings tab.
- 6 For each device, set the Transfer Mode to “DMA if available,” and click OK.

In most cases, this will already be set correctly as Windows XP will detect and activate DMA mode by default.

- 7 Repeat steps 4–6 for any additional IDE Channels.
- 8 Close the Computer Management window.

### **Disabling Virus Protection Software**

Avoid running virus protection software while using Digi 002 Rack since it adversely affects system performance (as do all background processes). If you are using virus protection software, you must turn it off or remove it and restart your computer.

### **Disabling System Standby and Power Management**

When using Pro Tools, the Windows System Standby power scheme must be set to Always On. This helps prevent long record or playback passes from stopping due to system resources powering down.

#### **To configure Windows Power Management:**

- 1 Choose Start > Control Panel.
- 2 In Classic View, double-click the Power Options Control Panel, then click the Power Schemes tab.  
– or –

In Category view, click Performance and Maintenance, then click Power Options, then click the Power Scheme tab.

- 3 From the Power Schemes pop-up menu, select Always On.
- 4 Click OK.

This sets System Standby, System Hibernate, and “Turn off hard disks” to Never.

### **Disable ClearType Font Smoothing**

When using Pro Tools, the Effects “Clear Type” setting must be disabled.

#### **To disable ClearType font smoothing:**

- 1 Choose Start > Control Panel.
- 2 In Classic view, double-click Display.  
– or –

In Category view, click Appearance and Themes, then click Display.

- 3 Click the Appearance tab.
- 4 Click Effects.





5 Do one of the following, depending on your system configuration:

- Plug the other end of the FireWire cable into an available FireWire port on your computer.
- Plug the other end of the cable into an available FireWire port on a FireWire hard drive connected to your computer. (See “Connecting FireWire Drives” on page 10.)

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## Connecting FireWire Drives

Connect FireWire hard drives directly to a FireWire port on your computer. Do not connect a FireWire hard drive to the second FireWire port on the rear panel of Digi 002 Rack because Digi 002 Rack FireWire ports do not pass audio data when the unit is powered off.

### To connect a FireWire hard drive:

■ If your computer has more than one FireWire port, connect the FireWire hard drive to one FireWire port on the computer, and connect Digi 002 Rack to another FireWire port on the computer.

– or –

■ If your computer has only one FireWire port, connect the FireWire hard drive directly to your computer and then connect Digi 002 Rack to an available FireWire port on the drive.

**⚠** *While it is possible to connect a FireWire hard drive to an available port on Digi 002 Rack, if the Digi 002 Rack unit is powered off, any mounted FireWire drives will lose their data connection with the computer, which may result in hard drive errors or data loss.*

## 4-pin FireWire Cable

Digi 002 Rack includes a 6-pin to 6-pin FireWire cable. Some Windows based laptops include a 4-pin FireWire port. To use Digi 002 Rack with these computers, a 4-pin to 6-pin cable is required. Purchase this cable (model #CS625) through your authorized Digidesign dealer or online through the DigiStore ([www.digidesign.com](http://www.digidesign.com)).

**⚠** *This cable can also be purchased at computer supply stores. Maximum supported cable length for FireWire (IEEE-1394) is 14 feet (4.3 meters).*

## Connecting Other FireWire Devices to Digi 002 Rack

The second FireWire port on the Digi 002 Rack unit is available for daisy-chaining FireWire devices such as digital cameras or digital video recorders. Even when it is powered off, Digi 002 Rack supplies power from the computer through its FireWire ports, letting you recharge batteries in other FireWire devices.

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# Hard Drive Configuration and Maintenance

## Formatting an Audio Drive

On Windows, it is recommended that you start with newly formatted drives dedicated for audio. For optimum performance, audio drives should be formatted with the FAT32 or NTFS file system.

### To format and configure an audio drive:

- 1 Right-click My Computer and choose Manage.
- 2 Under Storage, choose Disk Management.
- 3 In the Disk Management window, right-click the hard drive you will use for audio and choose Format.
- 4 For optimal disk performance, select 32K from the Allocation unit size pull-down. This increases how efficiently audio data is written to and read from the drive.
- 5 Make sure the Quick Format option is deselected, then click Start, and follow the on-screen instructions.

 *Pro Tools only supports Basic drive Types.*

- 6 When formatting is complete, close the Format window.

## Audio Drives and Disk Cleanup

The process of recording, editing, and deleting tracks and sessions can quickly decrease overall drive performance. It is suggested that you regularly use Disk Cleanup (or an equivalent utility) to assess the condition of drives and, if necessary, delete temporary files and other unused data.

### To use Disk Cleanup:

- 1 Choose Start > Control Panels.
- 2 In Classic view, double-click Administrative Tools.

– or –

In Category View, click Performance and Maintenance, then click Administrative Tools.

- 3 Select Computer Management, then select Storage.
- 4 Choose Disk Management.
- 5 Select the desired volume in the list, then choose File > Options.

Disk Cleanup determines how performance is being affected by drive condition, and lets you review and delete temporary and other unnecessary files from the selected volume. For more information on using Disk Cleanup, see your Windows XP documentation.

## Defragmenting an Audio Drive

Periodically *defragment* audio drives to maintain system performance.

### To defragment an audio drive:

- 1 Right-click My Computer and choose Manage.
- 2 Under Storage, choose Disk Defragmenter.
- 3 In the Disk Defragmenter window, choose the drive you want to defragment.
- 4 Click the Defragment button and follow the on-screen instructions.
- 5 When defragmenting is complete, close the Computer Management Window.

## Avoid Recording to System Drives

Although Pro Tools will let you record to your system drive, this is generally not recommended. Recording and playback on system hard drives results in lower track counts and fewer plug-ins. You should record to system drives only when necessary (for example, if your computer system has just one hard drive)

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## Installing Pro Tools LE

### To install Pro Tools LE on Windows:

- 1 Turn on your computer.
- 2 Start Windows, logging in with Administrator privileges. For details on Administrator privileges, refer to your Windows documentation.
- 3 Wait for the Found New Hardware Wizard dialog to appear and leave it open (do not press Next).
- 4 Insert the Pro Tools Installer CD-ROM for Windows in your CD-ROM drive. Locate and open the Pro Tools Installer folder, and double-click the Setup icon.
- 5 Click Next to begin installation.
- 6 Select an Installation type:
  - 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)
- 7 Click Next.

**⚠** *If you get a warning dialog about the driver not passing Windows Logon testing, click Continue Anyway.*

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

9 Click Quit when prompted to install QuickTime (you will install QuickTime later).

10 Restart your computer.

## Removing Pro Tools LE

If you need to remove Pro Tools LE from your computer use the Add or Remove Programs command.

### To remove Pro Tools LE:

- 1 Choose Start > Control Panel.
- 2 In Classic view, double-click the Add or Remove Programs icon.

– OR –

In Category view, click Administrative Tools, then click Add or Remove Programs.

- 3 From the Currently installed programs list, select Digidesign Pro Tools LE.
- 4 Click the Change/Remove button.
- 5 Select Remove, then click Next.
- 6 Click OK to remove Pro Tools LE.

## Installing QuickTime


### (Optional)

QuickTime 5 or later is required for Pro Tools LE if you plan to include movie files in your sessions. Installing the latest version of QuickTime for Windows is highly recommended (available from [www.apple.com](http://www.apple.com)). Be sure to install the “Recommended” install of QuickTime or Pro Tools will not handle QuickTime video correctly.

### To install QuickTime:

1 Locate the QuickTime Installer on your Pro Tools LE Installer CD-ROM (located in the Additional Files folder). Follow the on-screen instructions to complete the QuickTime installation process.

2 When installation is complete, click Finish to restart your computer. See “Installing Optional Software for Pro Tools LE” on page 13.

 *If your computer does not start up after installing QuickTime, use Add/Remove Programs to remove Pro Tools LE and QuickTime, then repeat the installation process in “Installing Pro Tools LE” on page 12.*

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## Installing Optional Software for Pro Tools LE

Your Pro Tools Installer CD-ROM includes several software options (as available for your system).

### Sound Drivers


#### Installing Digidesign ASIO Driver

The Digidesign ASIO (Audio Sound Input Output) Driver is a multichannel, multimedia sound driver that lets third-party audio applications record and play back through channels 1–2 of Digi 002 Rack. The Digidesign ASIO Driver is *not* required to use Pro Tools LE with Digi 002 Rack.

 *For information on installing, using, and removing the Digidesign ASIO Driver, see “Removing the ASIO Driver” on page 75.*

## Installing the Demo Session

The Pro Tools LE Installer CD includes a demo session that you can use to verify that your system is working.


 *Before installing the demo session to your audio drive, make sure the drive is configured as described in “Formatting an Audio Drive” on page 11.*

### To install the demo session:


- 1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. Locate and double-click Setup.exe, in D (CD-ROM drive):\Additional Files\Pro Tools LE Demo Session Installer.
- 2 Set the install location to your audio drive and click Install.
- 3 When installation is complete, click OK.

## Installing MacOpener

With MacOpener you can record and play audio from NTFS or FAT32-formatted hard drives on Windows-based Pro Tools systems.


 *Avoid using MacOpener on HFS-formatted drives (use NTFS or FAT32 instead). Use the Save Session Copy In command in Pro Tools to copy the session material to a Windows audio drive formatted using NTFS or FAT32.*


With MacOpener you can open Pro Tools sessions created on a Macintosh. To share Pro Tools sessions between Macintosh and Windows system, select the “Enforce Mac/PC Compatibility” option when creating the session, or when saving a session copy.

 *While SDII files can be exported or converted on import, they cannot be used within Pro Tools sessions on Windows.*

**To install and configure the MacOpener demo included with Pro Tools:**

- 1 Insert the Pro Tools Installer CD into your CD-ROM drive.
- 2 Locate and double-click the MacOpener installer file in the MacOpener Demo folder located at D (CD-ROM drive):\Additional Files\MacOpener Demo Installer. Follow the on-screen instructions to install the MacOpener. After installation is complete, restart your computer.
- 3 Choose Start > Programs > MacOpener > MacOpener Driver Preferences.
- 4 Verify that the MacOpener Driver is enabled. Under Driver Settings, select “Enable MacOpener Driver.”
- 5 Under Extension Mapping, select “Do not add the PC extension to the Mac file name.”
- 6 Click OK to quit the MacOpener Driver Preferences.
- 7 Choose Start > Programs > MacOpener > Mac Lic.exe. When installation is complete, close the installer.

 *All formatting and maintenance of HFS/HFS+ drives should be carried out when the drive is connected to a Macintosh.*

 *For more information about MacOpener and its performance limitations, see the Pro Tools Reference Guide.*


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## Launching Pro Tools LE

When launching Pro Tools LE the first time, you are prompted to enter an authorization code to validate your software. The authorization code is located on the inside cover of the *Getting Started with Digi 002 Rack Guide*.

### To validate Pro Tools LE software:

- 1 Double-click the Pro Tools LE shortcut on your desktop (or the application in the Pro Tools folder inside the Digidesign folder).

 *If you get a warning dialog about updating the Digi 002 Rack firmware, follow the on-screen instructions to perform the firmware update. See “Updating Digi 002 Rack Firmware” on page 14.*

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

## Updating Digi 002 Rack Firmware

When you launch Pro Tools software, it automatically checks the version of the unit’s firmware, and prompts you to update it if a newer version is available.

If you update your unit’s firmware, let the update complete before disconnecting or turning off your system.

When the download and reprogramming process is complete, you may get a message that Pro Tools cannot communicate with Digi 002 Rack. In this case, wait up to 30 seconds. If the message does not go away, disconnect then reconnect Digi 002 Rack and click OK.

---

## Configuring Pro Tools LE System Settings

You can adjust the performance of your system by changing system settings that affect its capacity for processing, playback, and recording.

In most cases, the default settings for your system provide optimum performance, but you may want to adjust them to accommodate large or processing-intensive Pro Tools sessions.

### Hardware Buffer Size

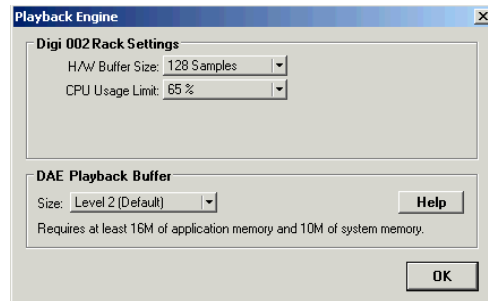
The Hardware Buffer Size (H/W Buffer Size) controls the size of the hardware cache used to handle host processing tasks such as Real-Time AudioSuite (RTAS) plug-ins.

- ◆ Lower Hardware Buffer Size settings reduce monitoring latency, and are useful when you are recording live input.
- ◆ Higher Hardware Buffer Size settings allow for more audio processing and effects, and are useful when you are mixing and using more RTAS plug-ins.

**⚠** *In addition to causing slower screen response and monitoring latency, higher Hardware Buffer Size settings can affect the accuracy of plug-in automation, mute data, and timing for MIDI tracks.*

### To change the Hardware Buffer Size:

- 1 Choose Setups > Playback Engine.



Playback Engine dialog for Digi 002 Rack

- 2 From the H/W Buffer Size pop-up menu, select the audio buffer size, in samples.
- 3 Click OK.

### CPU Usage Limit

The CPU Usage Limit controls the percentage of CPU resources allocated to Pro Tools host processing tasks.

- ◆ Lower CPU Usage Limit settings limit the effect of Pro Tools processing on other CPU-intensive tasks, such as screen redraws, and are useful when you are experiencing slow system response, or when running other applications at the same time as Pro Tools.
- ◆ Higher CPU Usage Limit settings allocate more processing power to Pro Tools, and are useful for playing back large sessions or using more real-time plug-ins.

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

With Pro Tools LE, the maximum CPU Usage Limit is 99 percent for single-processor or multi-processor computers. (The 99 percent setting dedicates one entire processor to Pro Tools.)

### To change the CPU Usage Limit:

- 1 Choose Setups > Playback Engine.
- 2 From the CPU Usage Limit pop-up menu, select the percentage of CPU processing you want to allocate to Pro Tools.
- 3 Click OK.

### DAE Playback Buffer Size

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

- ◆ Lower DAE Playback Buffer Size settings can improve playback and recording initiation speed. However, a lower setting can make it difficult for slower hard drives to play or record tracks reliably.
- ◆ Higher DAE Playback Buffer Size settings can allow for a higher density of edits in a session. However, a higher setting 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.

### To change the DAE Playback Buffer Size:


- 1 Choose Setups > Playback Engine.
- 2 From the DAE Playback Buffer pop-up menu, select a buffer size.
- 3 Click OK.

## Pro Tools Hardware Settings

Using the Hardware Setup dialog, you can select the default sample rate and clock source for your system, and configure the digital inputs for your system.

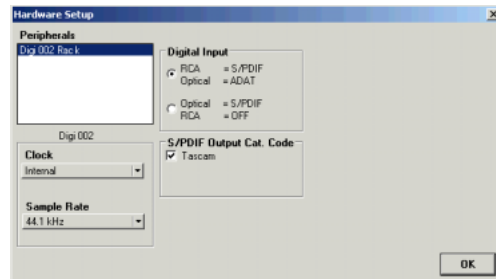
### Default Sample Rate

The Sample Rate setting appears as the default sample rate when you create a new session. (This setting is available in the Hardware Setup dialog only when no session is open.)

 You can change the sample rate when creating a new Pro Tools session by selecting a different sample rate in the New Session dialog. (Refer to the Pro Tools Reference Guide for details.)

### To change the default Sample Rate:

- 1 Make sure that no Pro Tools is session open.
- 2 Choose Setups > Hardware Setup.



Hardware Setup dialog for Digi 002 Rack

- 3 Select the sample rate from the Sample Rate pop-up menu.
- 4 Click OK.




## Clock Source

Using the Hardware Setup dialog, you can select the clock source for the system. If you are recording directly into Pro Tools, you will usually use the Internal setting. If you are transferring material from an external digital device, select the corresponding clock source. (See “Recording a Digital Source” on page 17.)

### To select the Clock Source:

- 1 Choose Setups > Hardware Setup.
- 2 Choose the clock source from the Clock Source pop-up menu.
- 3 Click OK.


 *Your digital input device must be connected and powered on for Pro Tools to synchronize to it. If your input device is not powered on, leave the Clock Source set to Internal.*


### Recording a Digital Source

If you are recording from an optical or S/PDIF device, you will need to select a Clock Source. In most cases, you will synchronize the Pro Tools clock to the external device.

### To configure Pro Tools LE for a digital source:

- 1 Connect an ADAT or Optical S/PDIF format device to the Optical In connector, or an RCA S/PDIF format device to the RCA S/PDIF In connector on the back of the Digi 002.
- 2 Choose Setups > Hardware Setup.
- 3 Make sure the correct digital input option is selected for your setup. When you select RCA S/PDIF, the Optical ports are available for standard ADAT Optical (or “Lightpipe”) input. When you select Optical S/PDIF, the RCA digital input connector is inactive.
- 4 From the Clock Source pop-up menu, select Internal if you are synchronizing the external device to Digi 002 Rack. If you are synchronizing the Pro Tools clock to the external device, select ADAT, RCA (S/PDIF) or Optical (S/PDIF), depending on where you connected your digital device.

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

 *Your digital input device must be connected and powered on. If your input device is not powered on, leave the Clock Source set to Internal.*

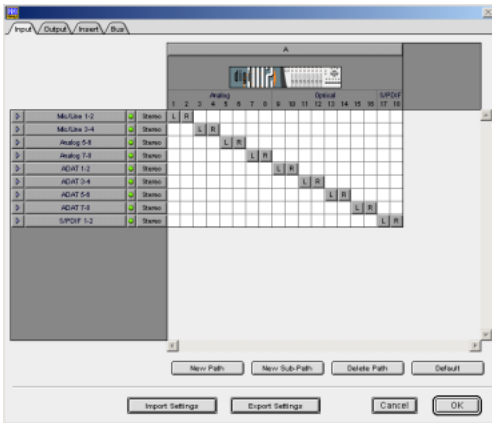
## Configuring I/O Setup

Using the I/O Setup dialog, you can label Pro Tools LE input, output, insert, and bus *signal paths*. The I/O Setup dialog provides a graphical representation of the inputs, outputs, and signal routing of the Digi 002 Rack.

Pro Tools LE has default I/O Setup settings that will get you started. Use the I/O Setup dialog only if you want to rename the default I/O paths.

### To rename I/O paths in I/O Setup:


- 1 Choose Setup > I/O Setups.




*I/O Setup dialog for Digi 002 Rack, Input tab*

- 2 Click the Input, Output, Insert, or Bus tab to display the corresponding paths.
- 3 To change the name of a path or subpath, double-click directly on the Path Name, type a new name for the path, and press Return.

- 4 Click OK when finished.

 Refer to the *Pro Tools Reference Guide* (or choose *Help > Pro Tools Reference Guide*) for more information on renaming I/O paths.

 After configuring Pro Tools LE and your system, you should save an image of your system using Norton Ghost. Norton Ghost lets you save and recall known good configurations of your system and settings, which can help you recover if you encounter any problems in the future.

## Other Pro Tools Settings

The following settings are explained in detail in the *Pro Tools Reference Guide*:

**DigiBase Volume Designators** Use the Workspace browser to designate hard drives and volumes as Record, Play and Record, or Transfer volumes. These settings determine the function of each volume in your system. For more information, see the *DigiBase Guide*.

**Disk Allocation** Choose Setup > Disk Allocation to assign hard drives and volumes as the storage (recording) location for Pro Tools tracks. Tracks record data to their assigned volume as configured in the Disk Allocation dialog.

## chapter 3

# Macintosh Configuration

Installation of the Digi 002 Rack on a Macintosh includes:

- Configuring Apple System Software settings. (See “Apple System Settings for Mac OS X” on page 19.)
- Installing Pro Tools LE Software. (See “Installing Pro Tools LE” on page 20.)
- Restarting your computer.
- Connecting the Digi 002 Rack unit to your computer. (See “Connecting Digi 002 Rack to the Computer” on page 21.)
- Making audio and MIDI connections to the Digi 002 Rack. (See Chapter 5, “Connecting Your Studio” for details.)

---

## Apple System Settings for Mac OS X

To ensure optimum performance and compatibility, configure the following settings for Mac OS X before you install Pro Tools LE software.

**⚠** *Do not use the Mac OS X automatic Software Update feature, as it may upgrade your system to a version of Mac OS that has not yet been qualified for Pro Tools. For details on qualified versions of Mac OS, refer to the latest compatibility information on the Digidesign Web site ([www.digidesign.com](http://www.digidesign.com)).*

### To configure Mac OS X for Pro Tools:

- 1** Make sure you are logged into an administrator account where you want to install Pro Tools LE. For details on Administrator privileges in Mac OS X, refer to your Mac OS X documentation.
- 2** Choose System Preferences from the Apple Menu and click Energy Saver.
- 3** Click the Sleep tab and turn off the Energy Saver feature by setting the sleep feature to Never.
- 4** Return to the System Preferences and click Software Update.

- 5 Deselect “Automatically check for updates when you have a network connection.”
- 6 Close the Software Update dialog box.

---


## Installing Pro Tools LE

### To install Pro Tools LE on Mac OS X:

- 1 Make sure you are logged in as an Administrator for the account where you want to install Pro Tools. For details on Administrator privileges in Mac OS X, refer to your Apple Mac OS X documentation.
- 2 Insert the Pro Tools LE Installer CD-ROM in your CD-ROM drive. Double-click “Install Pro Tools LE.”
- 3 Enter your Administrator password and click OK to authenticate the installation.
- 4 Select your Startup hard drive as the install location and click Install.
- 5 When installation is complete, click Restart.

– or –

Click Continue to install any additional software or documentation, and restart your computer when you are finished.

 *If you plan to use any MIDI devices with Pro Tools, configure your MIDI setup with the Apple Audio MIDI Setup (AMS) utility. See Appendix B, “Configuring AMS (Mac OS X Only)” for details.*

## Removing Pro Tools LE on Mac OS X

If you need to remove Pro Tools LE from your computer, you can use the Installer CD-ROM.

### To remove Pro Tools LE from your computer:

- 1 Make sure you are logged in as an Administrator for the account where Pro Tools LE is installed. For details on Administrator privileges in Mac OS X, refer to your Mac OS X documentation.
- 2 Insert the Pro Tools LE Installer CD-ROM in your CD-ROM drive. Double-click “Install Pro Tools LE.”
- 3 Enter your Administrator password and click OK to authenticate the installation.
- 4 In the Installer window, select Uninstall from the pop-up menu, and click Uninstall.
- 5 Click Quit to close the Installer window.

---

## Installing the Demo Session

### (Optional)

The Pro Tools LE Installer CD-ROM includes a demo session that you can use to verify that your system is working.

### To install the demo session:

- 1 Insert the Pro Tools LE Installer CD in your CD-ROM drive. Locate and double-click the demo session installer icon.
- 2 Select your audio drive as the install location and click Install.
- 3 When installation is complete, click Quit.

---

## Connecting Digi 002 Rack to the Computer

After installing Pro Tools LE software and restarting your computer, connect the Digi 002 Rack to the computer before launching Pro Tools LE.

**⚠** *When connecting Digi 002 Rack to your computer the first time, your computer should be off. If your computer is on, power it down, before connecting Digi 002 Rack to your computer.*

### To connect Digi 002 Rack to your computer:

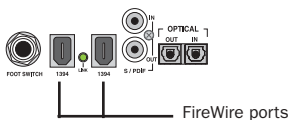
**1** Plug the Digi 002 Rack into a standard AC receptacle, using the AC power cable included with the unit.

Digi 002 Rack is auto power-selecting (100V to 240V) and will work automatically when plugged into an AC power receptacle in any country.

**2** Power on the Digi 002 Rack unit by pushing in the power switch on the front panel. After a short power-up sequence the Sample Rate LED and Monitor Mute switch illuminate to indicate the unit is on.

**3** Locate the FireWire cable that came with your Digi 002 Rack.

**4** Plug one end of the FireWire cable into one of the ports marked “1394” on the back panel of the Digi 002 Rack. Either port will work.



Digi 002 Rack FireWire ports (back panel)

**5** Do one of the following, depending on your system configuration:

- Plug the other end of the FireWire cable into an available FireWire port on your computer.
- Plug the other end of the FireWire cable into an available FireWire port on a FireWire hard drive connected to your computer. (See “Connecting FireWire Drives” on page 21.)

---

## Connecting FireWire Drives

Connect FireWire hard drives directly to a FireWire port on your computer. Do not connect a FireWire hard drive to the second FireWire port on the rear panel of Digi 002 Rack because Digi 002 Rack FireWire ports do not pass audio data when the unit is powered off.

### To connect a FireWire hard drive:

■ If your computer has more than one FireWire port, connect the FireWire hard drive to one FireWire port on the computer, and connect Digi 002 Rack to another FireWire port on the computer.

– or –

■ If your computer has only one FireWire port, connect the FireWire hard drive directly to your computer and then connect Digi 002 Rack to an available FireWire port on the drive.

**⚠** *While it is possible to connect a FireWire hard drive to an available port on Digi 002 Rack, if the Digi 002 Rack unit is powered off, any mounted FireWire drives will lose their data connection with the computer, which may result in hard drive errors or data loss.*

## 4-pin FireWire Cable

Digi 002 Rack includes a 6-pin to 6-pin FireWire cable. Some Windows based laptops include a 4-pin FireWire port. To use Digi 002 Rack with these computers, a 4-pin to 6-pin cable is required. Purchase this cable (model #CS625) through your authorized Digidesign dealer or online through the DigiStore ([www.digidesign.com](http://www.digidesign.com)).

**▲** *This cable can also be purchased at computer supply stores. Maximum supported cable length for FireWire (IEEE-1394) is 14 feet (4.3 meters).*

## Connecting Other FireWire Devices to Digi 002 Rack

The second FireWire port on the Digi 002 Rack unit is available for daisy-chaining FireWire devices such as digital cameras or digital video recorders. Even when it is powered off, Digi 002 Rack supplies power from the computer through its FireWire ports, letting you recharge batteries in other FireWire devices.

---

## Launching Pro Tools LE

When launching Pro Tools LE the first time, you are prompted to enter an authorization code to validate your software. The authorization code is located on the inside cover of the *Getting Started with Digi 002 Rack Guide*.

### To validate Pro Tools LE software:

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

**▲** *If you get a warning dialog about updating the Digi 002 Rack firmware, follow the on-screen instructions to perform the firmware update. See “Updating Digi 002 Rack Firmware” on page 22.*

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

## Updating Digi 002 Rack Firmware

When you launch Pro Tools software, it automatically checks the version of the unit’s firmware, and prompts you to update it if a newer version is available.

If you update your unit’s firmware, let the update complete before disconnecting or turning off your system.

When the download and reprogramming process is complete, you may get a message that Pro Tools cannot communicate with Digi 002 Rack. In this case, wait up to 30 seconds. If the message does not go away, disconnect then reconnect Digi 002 Rack and click OK.

---

## Configuring Pro Tools LE

### Pro Tools System Settings

Pro Tools LE allows you to adjust the performance of your system by changing system settings that affect its capacity for processing, playback, and recording.

In most cases, the default settings for your system provide optimum performance, but you may want to adjust them to accommodate large or processing-intensive Pro Tools sessions.

## Hardware Buffer Size

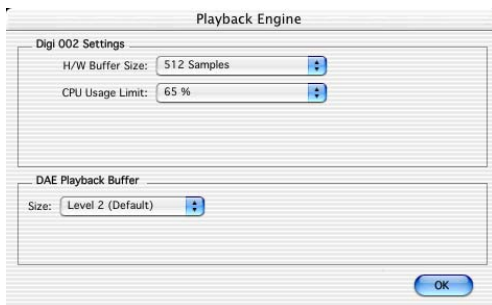
The Hardware Buffer Size (H/W Buffer Size) controls the size of the hardware cache used to handle host processing tasks such as Real-Time AudioSuite (RTAS) plug-ins.

- ◆ Lower Hardware Buffer Size settings reduce monitoring latency, and are useful when you are recording live input.
- ◆ Higher Hardware Buffer Size settings allow for more audio processing and effects, and are useful when you are mixing and using more RTAS plug-ins.

**⚠** *In addition to causing slower screen response and monitoring latency, higher Hardware Buffer Size settings can affect the accuracy of plug-in automation, mute data, and timing for MIDI tracks.*

### To change the Hardware Buffer Size:

- 1 Choose Setups > Playback Engine.
- 2 From the H/W Buffer Size pop-up menu, select the audio buffer size, in samples.



*Playback Engine dialog for Digi 002 Rack*

- 3 Click OK.

## CPU Usage Limit

The CPU Usage Limit controls the percentage of CPU resources allocated to Pro Tools host processing tasks.

- ◆ Lower CPU Usage Limit settings limit the effect of Pro Tools processing on other CPU-intensive tasks, such as screen redraws, and are useful when you are experiencing slow system response, or when running other applications at the same time as Pro Tools.
- ◆ Higher CPU Usage Limit settings allocate more processing power to Pro Tools, and are useful for playing back large sessions or using more real-time plug-ins.

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

With Pro Tools LE, the maximum CPU Usage Limit is 99 percent for single-processor or multi-processor computers. (The 99 percent setting dedicates one entire processor to Pro Tools.)

### To change the CPU Usage Limit:

- 1 Choose Setups > Playback Engine.
- 2 From the CPU Usage Limit pop-up menu, select the percentage of CPU processing you want to allocate to Pro Tools.
- 3 Click OK.

## DAE Playback Buffer Size

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

- ◆ Lower DAE Playback Buffer Size settings can improve playback and recording initiation speed. However, a lower setting can make it difficult for slower hard drives to play or record tracks reliably.

◆ Higher DAE Playback Buffer Size settings can allow for a higher density of edits in a session. However, a higher setting 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.

#### To change the DAE Playback Buffer Size:

- 1 Choose Setups > Playback Engine.
- 2 From the DAE Playback Buffer pop-up menu, select a buffer size.
- 3 Click OK.

## Pro Tools Hardware Settings

Using the Hardware Setup dialog, you can select the default sample rate and clock source for your system, and configure the digital inputs on the Digi 002 Rack.

### Default Sample Rate

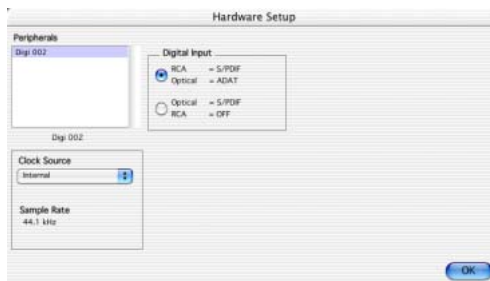
The Sample Rate setting appears as the default sample rate when you create a new session. (This setting is available in the Hardware Setup dialog only when no session is open.)

💡 *You can change the sample rate when creating a new Pro Tools session by selecting a different sample rate in the New Session dialog. (Refer to the Pro Tools Reference Guide for details.)*

#### To change the default Sample Rate:

- 1 Make sure that no Pro Tools session is open.

- 2 Choose Setups > Hardware Setup.



Hardware Setup dialog for Digi 002 Rack

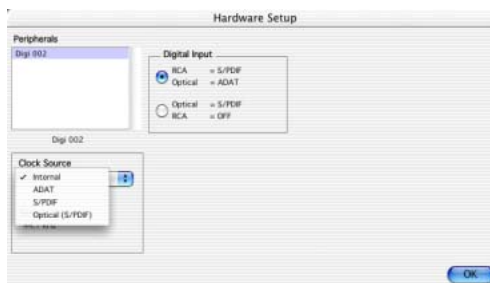
- 3 Choose the sample rate from the Sample Rate pop-up menu.
- 4 Click OK.

### Clock Source

Using the Hardware Setup dialog, you can select the Clock Source for the system. If you are recording directly into Pro Tools, you will usually use the Internal setting. If you are transferring material from an external digital device, select the corresponding clock source. (See “Recording a Digital Source” on page 25.)

#### To select the Clock Source:

- 1 Choose Setups > Hardware Setup.



Selecting a clock source for Digi 002 Rack

- 2 Select a clock source.



3 Click OK.

**A** *Your digital input device must be connected and powered on for Pro Tools to synchronize to it. If your input device is not powered on, leave the Clock Source set to Internal.*

### Recording a Digital Source

If you are recording from an Optical or S/PDIF device, you will need to select a Clock Source. In most cases, you will synchronize the Pro Tools clock to the external device.

#### To configure Pro Tools LE for a digital source:

**1** Connect an ADAT or Optical S/PDIF format device to the Optical In connector, or an RCA S/PDIF format device to the RCA S/PDIF In connector on the back of the Digi 002.

**2** Choose Setups > Hardware Setup.

**3** Make sure the correct digital input option is selected for your setup. When you select RCA S/PDIF, the Optical ports are available for standard ADAT Optical (or “Lightpipe”) input. When you select Optical S/PDIF, the RCA digital input connector is inactive.

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

**4** From the Clock Source pop-up menu, select Internal if you are synchronizing the external device to Digi 002 Rack. If you are synchronizing the Pro Tools clock to the external device, select ADAT, RCA (S/PDIF) or Optical (S/PDIF), depending on where you connected your digital device.

**A** *Your digital input device must be connected and powered on. If your input device is not powered on, leave the Clock Source set to Internal.*

### Ignore Buffer Underrun Errors (-6086)

#### (Pro Tools 6.1 for Digi 002 and Digi 002 Rack on Mac OS X Only)

Buffer Underrun Error messages can occur during a session if more buffer time is required for processing audio and applying real-time effects than what is currently available. These messages interrupt both playback and recording, prompting you to increase the H/W Buffer Size. In most cases, this is not a problem. But with lengthy recording passes, for example, you may prefer to ignore these messages, and not interrupt the recording session.

The Pro Tools Ignore Buffer Underrun Errors (-6086) feature in the H/W Setup dialog provides options for ignoring these messages during playback and recording. When enabled, Pro Tools sends an audible pop to the Digi 002 or Digi 002 Rack hardware outputs, instead of displaying a buffer underrun error message. These pops are not written to disk.

#### To ignore Buffer Underrun Errors (-6086)

**1** Choose Setups > Hardware Setup.

**2** From the Ignore Buffer Underrun Errors (-6086) section, do the following:

**3** Select During Playback to ignore -6086 error messages during playback.

**4** Select the During Record to ignore -6086 error messages during recording.

**5** Click OK.

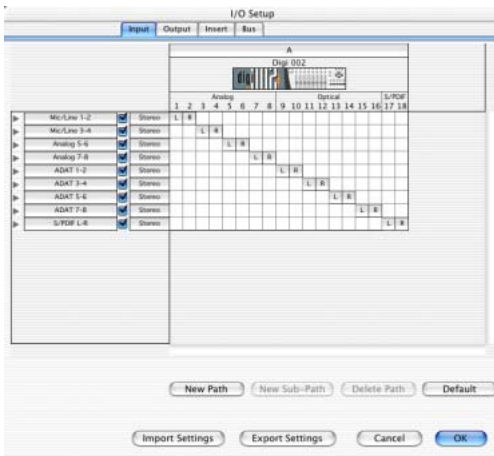
## Configuring I/O Setup

Using the I/O Setup dialog, you can label Pro Tools LE input, output, insert, and bus *signal paths*. The I/O Setup dialog provides a graphical representation of the inputs, outputs, and signal routing of the Digi 002 Rack.

Pro Tools LE has default I/O Setup settings that will get you started. Use the I/O Setup dialog only if you want to rename the default I/O paths.


### To rename I/O paths in I/O Setup:

- 1 Choose Setups > I/O Setups.



### I/O Setup dialog for Digi 002 Rack, Input tab

- 2 Click the Input, Output, Insert, or Bus tab to display the corresponding paths.
- 3 To change the name of a path or subpath, double-click directly on the Path Name, type a new name for the path, and press Return.
- 4 Click OK when finished.

 Refer to the *Pro Tools Reference Guide* for more information on renaming I/O paths.

## chapter 4

# Digi 002 Rack Overview

This overview describes the controls, connectors, and indicators on the front and back panels of the Digi 002 Rack.

## The Digi 002 Rack Front Panel

The Digi 002 Rack front panel includes controls for Inputs 1–4, options for routing outputs and monitoring alternate input sources, and indicators for session sample rate, connections status, and MIDI data.

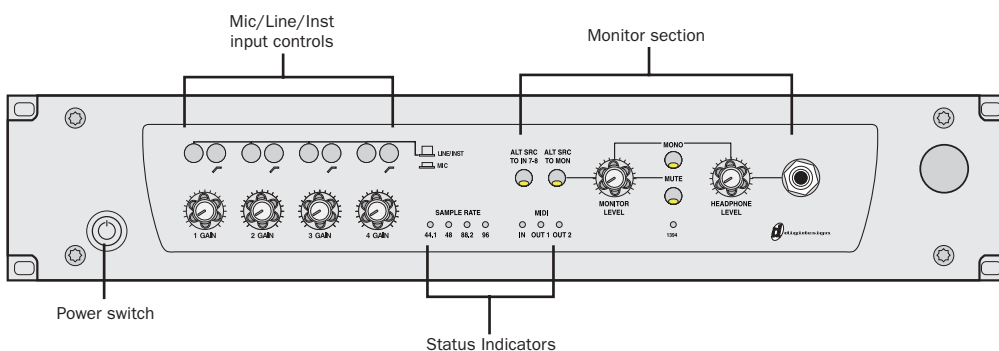


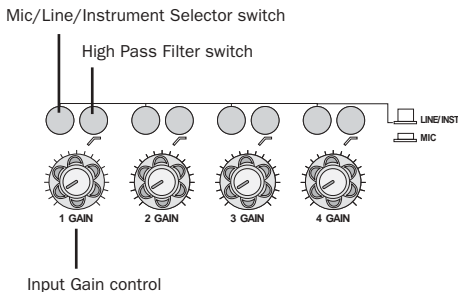
Figure 2. Digi 002 Rack front panel

## Mic/Line/Instrument Input Controls

Digi 002 Rack is equipped with four high-quality preamplifiers with adjustable gain and phantom power (switchable in pairs, for Inputs 1–2 and Inputs 3–4). The phantom power switches are on the back panel of Digi 002 Rack.

Inputs 1–4 accept microphone, instrument (direct in) or line-level signals. Inputs 5–8 accept line-level signals only.

These inputs appear as “Mic/Line 1–4” in the default Pro Tools I/O Setup.



### Digi 002 Rack input controls for Inputs 1–4

Inputs 1–4 have the following controls:

**Mic/Line/Instrument Selector** This switch toggles the input between microphone or line (instrument) operating levels.

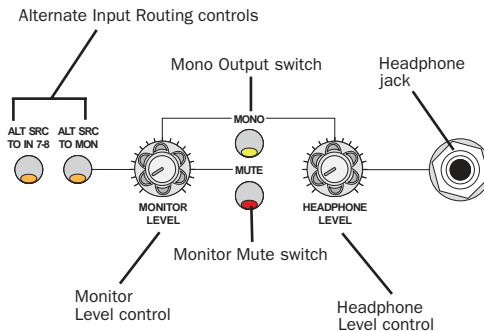
**High Pass Filter Switch** This switch enables a high pass filter (75 Hz, 12 dB/octave rolloff) on the input, for filtering out rumble or AC hum.

**Input Gain Control** This knob adjusts gain for the input, with a range of +15 dB to +60 dB of gain.

**⚠ Engage the Mic Selector only if you have an XLR cable plugged in to the mic connector. Leaving the switch engaged with nothing connected may introduce low-level noise.**

## Monitor Controls

The Monitor controls of Digi 002 Rack provide several options for routing outputs and monitoring alternate input sources.



Digi 002 Rack monitor and headphone controls

## Alternate Input Routing Controls

In addition to its 8 standard analog inputs, Digi 002 Rack provides a separate –10 dBV input pair for a device such as a CD player or tape deck.

**Alt Src to 7–8** This switch routes the –10 dBV input pair directly to Inputs 7 and 8 of Pro Tools, and does not send it to the Monitor Outputs. This allows you to route the input signal directly into Pro Tools without the need to repatch any cables.

When Alt Src to 7–8 is enabled, analog inputs 7–8 (1/4-inch TRS connectors on the back panel of Digi 002 Rack) are disabled.

**Alt Src to Mon** This switch routes the –10 dBV input pair directly to the Monitor and Headphone Outputs on Digi 002 Rack.

## Monitor and Headphone Level Controls

**Monitor Level Control** Digi 002 Rack provides a pair of Monitor Outputs that mirror its Main Outputs (or outputs 1–2), which correspond to outputs 1–2 in Pro Tools. This knob controls the volume of those Monitor Outputs.

**Headphone Level Control** The Headphone Output on Digi 002 Rack also mirrors outputs 1–2 in Pro Tools, and is independent of the Monitor Outputs. This knob controls the volume of the independent Headphone Output.

**Monitor Mute Switch** This switch mutes the Digi 002 Rack Monitor Outputs only, and has no effect on the Main Outputs or the Headphone Output. Monitor Mute is automatically engaged when you power up the Digi 002 Rack unit.

**Mono Output Switch** This switch temporarily combines the output signals 1 and 2 in both the Monitor Outputs and the Headphone Output. This is helpful for checking phase relationships of stereo material. The Mono Output switch has no effect on the Main Outputs.

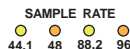
**Headphone Jack** This jack accepts a standard 1/4-inch stereo headphone connector.

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## Status Indicators

### Session Sample Rate Indicators

The Session Sample Rate LEDs indicate the sample rate of the current Pro Tools session.



*Digi 002 Rack Sample Rate LEDs*

### Pro Tools Connection Status Indicator

This status LED, marked “1394,” indicates that communication has been established between Digi 002 Rack and Pro Tools LE software through FireWire.



*Connection Status LED*

### MIDI Data Indicators

The MIDI Data LEDs indicate the presence of MIDI data on the Digi 002 Rack MIDI In or MIDI Out ports.



*MIDI Data LEDs*

## Digi 002 Rack Back Panel

The Digi 002 Rack back panel houses all the audio, MIDI, and computer connectors for the unit. The function of each connector and their associated switches are explained in this section.

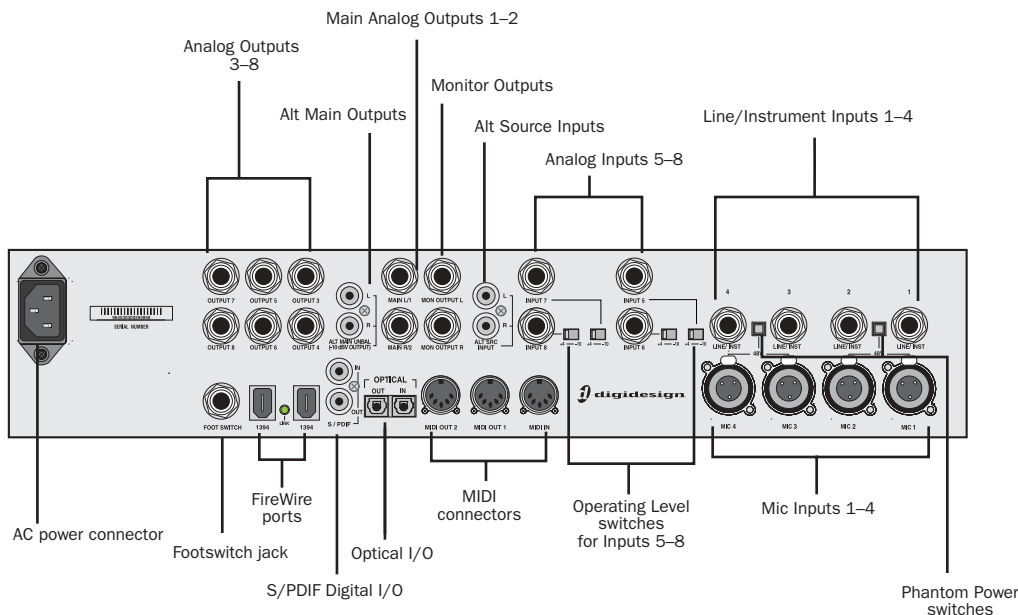


Figure 3. Digi 002 Rack back panel

### Operating Levels and Headroom

All Digi 002 Rack audio inputs and outputs are set 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.

The maximum input and output of Digi 002 Rack using balanced TRS cables on any of the +4 dBu, 1/4-inch connectors is +18 dBu (6.15 Vrms).

### Sample Rate and Resolution Support

The Analog-to-Digital and Digital-to-Analog converters on all Digi 002 Rack analog inputs and outputs, as well as the S/PDIF Digital I/O ports, support sample rates of 44.1, 48, 88.2, and 96 kHz. The Optical I/O ports support sample rates of 44.1 and 48 kHz in ADAT Optical mode, and sample rates up to 96 kHz in Optical S/PDIF mode.

All analog and digital inputs and outputs on Digi 002 Rack support up to 24-bit resolution audio.

## Analog Inputs

### Mic Inputs 1–4

These are balanced, three-conductor XLR connectors for microphone-level analog inputs. Gain is controlled by the corresponding Input Gain control on the front panel of Digi 002 Rack.

### Line/Instrument Inputs 1–4

These are balanced, 1/4-inch TRS jacks for line-level or instrument-level analog audio input connections. Operating levels for these line/instrument inputs are fixed at +4 dBu. Gain is controlled by the corresponding Input Gain knob on the front panel of Digi 002 Rack.

Unbalanced connections are also possible with the use of standard 1/4-inch mono plugs.

**⚠** *Digidesign does not recommend the use of unbalanced cables. Unbalanced connections may introduce noise into your audio system. Whenever possible, use balanced cables to make connections to Digi 002 Rack.*

### Phantom Power Switches

These switches apply 48V phantom power to Inputs 1–2 and Inputs 3–4 channel pairs respectively, for microphones that require phantom power 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 C3000) *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 damaged by it. Always turn off phantom power and wait at least 30 seconds before connecting a ribbon microphone.*

### Analog Inputs 5–8

These are balanced, 1/4-inch TRS jacks for line-level analog audio input connections.

Operating levels for each of these line-level inputs is switchable between +4 dBu and –10 dBV, using the Operating Level switches immediately to the right of the input jacks.

While Inputs 5–8 do accept unbalanced connections, this may result in a noisier signal than a balanced-to-balanced connection. If the devices you are connecting to Digi 002 Rack have balanced outputs, be sure to use balanced cables for optimal signal-to-noise performance.

### Alt Source Inputs

These are unbalanced, two-conductor RCA-connectors for connecting alternate audio sources such as CD players or tape decks. The signal from these inputs can be routed directly to the Monitor Outputs (for monitoring) or to Inputs 7–8 (for direct input into Pro Tools) from the front panel of Digi 002 Rack. Operating levels for these inputs are fixed at –10 dBV.

## Analog Outputs

### Monitor Outputs

These are balanced, 1/4-inch TRS jacks for line-level analog audio output connections. These outputs correspond to Outputs 1–2 in Pro Tools, allowing you to route mixes to a studio monitoring system. Operating levels for these outputs are fixed at +4 dBu.

Monitor Output level is controlled by the Monitor Level knob on the front panel of Digi 002 Rack.

### Main Analog Outputs 1–2

These are balanced, 1/4-inch TRS jacks for line-level analog audio output connections. Operating levels for these outputs are fixed at +4 dBu.

While the Main Analog Outputs do accept unbalanced connections, this may result in a noisier signal than a balanced-to-balanced connection. If the devices you are connecting to Digi 002 Rack have balanced inputs, be sure to use balanced cables for optimal signal-to-noise performance.

### Alt Main Analog Outputs 1–2

These are unbalanced, two-conductor RCA connectors for direct output to devices such as stereo receivers or tape decks. Operating levels for these inputs are fixed at –10 dBV.

## Analog Outputs 3–8

These are balanced, 1/4-inch TRS jacks for line-level analog audio output connections. Operating levels for these outputs are fixed at +4 dBu. Unbalanced connections are also supported with the use of standard 1/4-inch mono plugs.



*If you plan on connecting Analog Outputs 3–8 to –10 dBV gear, you may want to place a transformer-based line level attenuator between the Digi 002 Rack output and the input of the destination device to compensate for level differences.*

## Digital I/O

### 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. These S/PDIF input and output 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.

Digi 002 Rack supports *consumer mode* S/PDIF output format (IEC-958 Type 2) at sample rates of 44.1 kHz and 48 kHz, and *professional mode* S/PDIF output format (IEC-958 Type 1) at sample rates of 88.2 kHz and 96 kHz. For information on which S/PDIF formats are supported by your S/PDIF-compatible gear, refer to the manufacturer's documentation.



## Optical I/O

These are a pair of TOS-link style connectors for ADAT Optical (8 channels of I/O) or S/PDIF Optical (2 channels of I/O) devices. You can choose between these Optical I/O formats in the Pro Tools Hardware Setup dialog. When transferring material in one of these formats to Pro Tools, be sure to select the appropriate Optical I/O format as the Clock Source in the Hardware Setup dialog.

The Optical I/O ports support sample rates of 44.1 and 48 kHz in ADAT Optical mode, and sample rates up to 96 kHz in Optical S/PDIF mode. The Optical I/O ports support 24-bit, 20-bit and 16-bit resolutions in both modes.

The Optical I/O ports use a standard optical “lightpipe” cable.

### About Lightpipe-Compatible Devices

Lightpipe is an industry standard, eight-channel optical digital audio connection developed by Alesis. Lightpipe is found on many devices, including Optical (ADAT) decks, modular digital multitracks (MDMs), sound cards, stand-alone A/D or D/A converters, and digital consoles.

## MIDI Connectors

With one MIDI input and two MIDI outputs, Digi 002 Rack can function as a MIDI interface with 16 channels of MIDI input and 32 channels of MIDI output.

A MIDI driver for these MIDI ports is installed when you install Pro Tools LE and recognized automatically by Windows Multimedia (Windows), and Audio MIDI Setup (Macintosh). These connectors accept standard 5-pin MIDI cables.

## IEEE-1394 (FireWire) Ports

These two ports on the back of Digi 002 Rack, marked “1394” in reference to their IEEE specification, are commonly known as *FireWire* ports. These provide connections to the computer and other FireWire devices.

FireWire offers a high rate of data transfer and reliability that makes it ideal for audio applications. FireWire devices can be daisy-chained together without the need for terminators.

When the FireWire connection between the computer and Digi 002 Rack is established, the Link LED, located between the FireWire ports, is lit.

### Connecting Digi 002 Rack and FireWire Hard Drives

The FireWire ports on Digi 002 Rack do not pass audio data when it is powered off, so if you daisy-chain FireWire devices from your computer, it is best to connect FireWire hard drives directly to your computer and not to Digi 002 Rack. This will prevent hard drive errors and data loss in case the Digi 002 Rack unit is powered off.

### Connecting other FireWire Devices to Digi 002 Rack

The second FireWire port on the Digi 002 Rack unit is available for daisy-chaining FireWire devices such as digital cameras or digital video recorders. Even when it is powered off, Digi 002 Rack supplies power from the computer through its FireWire ports, allowing you to recharge batteries in other FireWire devices.

## **Footswitch Jack**

This connector allows footswitch control of QuickPunch audio punch-in and punch-out, and MIDI punch-in and punch-out recording features. Both continuous on/continuous off and instantaneous on/off pedals with a 1/4-inch TRS connector are supported. For more information, see “QuickPunch Recording” on page 60.

## **Power Switch and AC Power Connector**

The AC power connector on Digi 002 Rack accepts a standard modular AC power cable.

Digi 002 Rack is auto power-selecting (100V to 240V) and will work automatically when plugged into an AC power receptacle in any country.

## chapter 5

# Connecting Your Studio

This chapter explains how to connect your Digi 002 Rack to a monitoring system, digital recorders, and other studio devices, and how to connect audio sources for recording.

Your studio setup will differ depending on the type of work you do and the equipment in your studio. The illustrations that follow show two possible setups. Figure 4 shows Digi 002 Rack as the hub of a small recording and mastering studio. Figure 5 shows Digi 002 Rack as part of a small composing workstation.

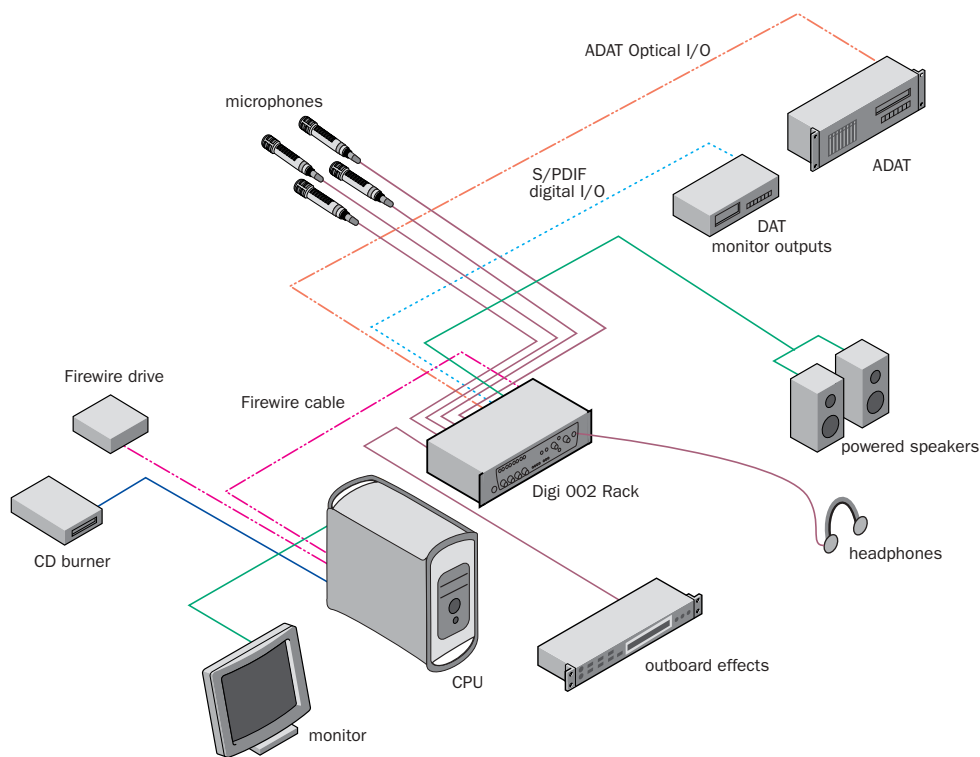


Figure 4. Digi 002 Rack project studio configuration on a desktop computer

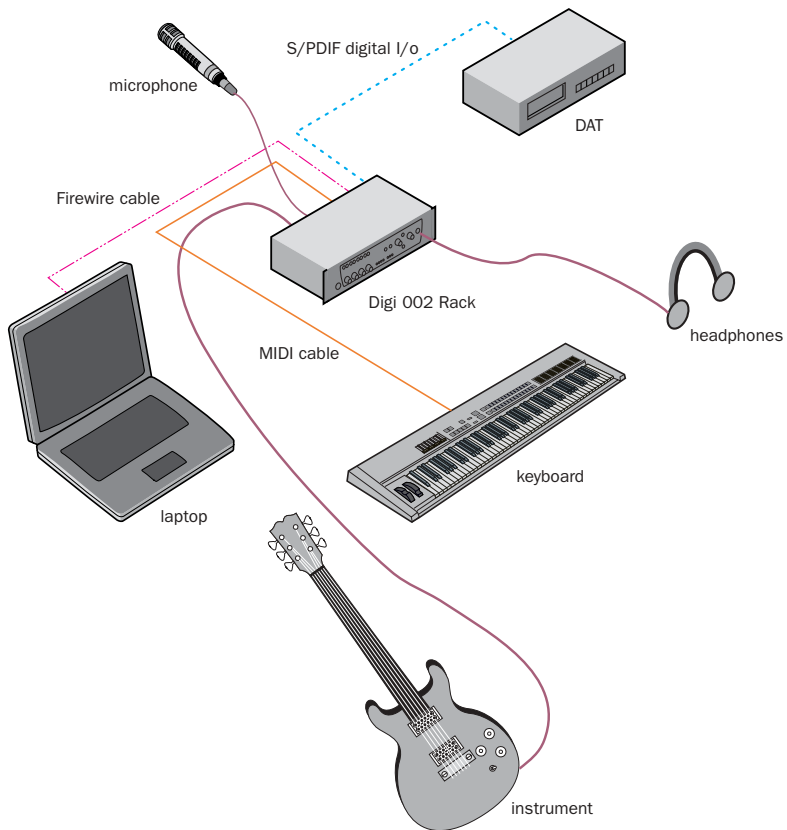


Figure 5. Digi 002 Rack micro studio configuration on a laptop computer

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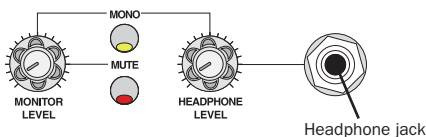
## Monitoring Audio

You can use Digi 002 Rack with a variety of audio monitoring setups, including a power amplifier and speakers, self-powered speakers, and headphones.

The Digi 002 Rack Monitor Outputs and Headphone Output mirror the output signal on Main Outputs 1–2.

**Monitor Mute** When you power up Digi 002 Rack, the Monitor Outputs are automatically muted. To unmute the Monitor Outputs, press the Mute switch on the front panel of the Digi 002 Rack.

Monitor Output levels and Headphone Output levels are adjusted separately using the level controls on the front panel of the Digi 002 Rack.



**Monitor Level controls (front panel)**

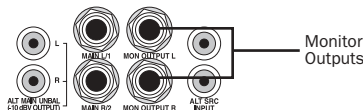
### To connect headphones:

- 1 Connect headphones to the Headphone jack on the Digi 002 Rack. The Headphone input accepts a stereo 1/4-inch plug. If your headphones have a smaller mini-plug, you can purchase an adapter from your local dealer. For best results, use high-quality, closed-ear headphones.
- 2 Adjust headphone volume with the Headphone Level knob.

**⚠** *The Digi 002 Rack Headphone Output can produce very loud output levels. Prolonged exposure can cause hearing damage. Adjust headphone volume carefully.*

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

- 1 Connect 1/4-inch cables to the left and right Monitor Outputs on the back of the Digi 002 Rack.
- 2 Connect the other end of the cables to the left and right power amp inputs, or to the left and right self-powered speakers.



**Monitor Outputs (back panel)**

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## Connecting Audio Sources to Digi 002 Rack

You can connect both analog and digital audio signal sources to Digi 002 Rack.

**⚠** *Before making any audio connections to Digi 002 Rack, turn down Monitor and Headphone levels or mute the Monitor Output to prevent damage to your monitoring system.*

### Analog Audio Connections

Digi 002 Rack has eight analog inputs, plus two additional inputs for alternate analog sources, such as a tape deck or CD player.

## Microphone-Level Signals

Analog audio signals are output by microphones, synths, mixers, and instruments with magnetic pickups. Of these sources, microphones and magnetic pickup instruments (such as electric guitars) output the quietest signals, and generally require the most amplification.

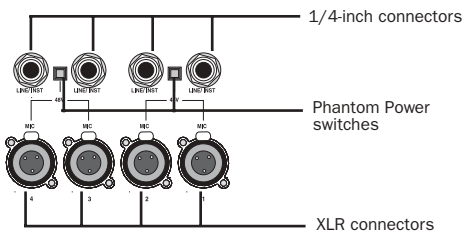
Digi 002 Rack includes preamps for these sources on Inputs 1–4, with adjustable gain and available 48-volt phantom power. These inputs have both XLR and 1/4-inch connectors; the XLR inputs are specifically for connecting microphones, and the 1/4-inch inputs are for connecting instrument outputs.

## Line-Level Signals

Keyboards, preamps, and mixers output line-level audio, which varies with each device between the –10 dBV and +4 dBu standards.

You can connect line-level devices to any of Digi 002 Rack’s Inputs 1–8, as follows:

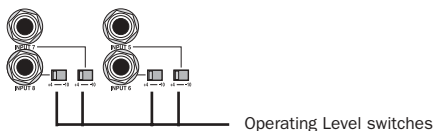
**Inputs 1–4** Inputs 1–4 have both XLR and 1/4-inch TRS connectors. The XLR connectors are for connecting microphones only. The 1/4-inch TRS connectors are for connecting line-level devices or instruments. Since these inputs have adjustable gain, they are especially useful for devices that output low-level signals.



Mic/Line Inputs 1–4 (back panel)

**⚠** The XLR connectors on Inputs 1–4 are wired specifically to match the impedance of microphones. Do not use these XLR connectors for line inputs; use the 1/4-inch connectors instead.

**Inputs 5–8** These inputs accept 1/4-inch balanced or unbalanced connections, and can be switched between –10 dBV and +4 dBu operation.



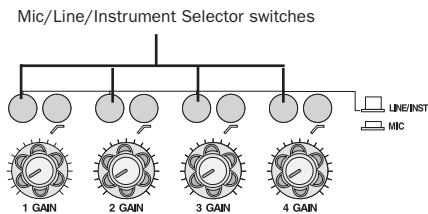
Line Inputs 5–8 (back panel)

## Making Analog Audio Connections

To connect an analog audio source to Digi 002 Rack, do the following for your type of input:

**Microphones** Plug a microphone directly into any of the available XLR Microphone Inputs 1–4 on the back panel of the Digi 002 Rack.

- Press the Mic/Line/Instrument Selector switch (located on the front panel of Digi 002 Rack) for the corresponding input so that it is in the “Mic” position.



Mic/Line/Instrument Selector switches (front panel)

- If your microphone requires phantom power, press the Phantom Power switch (labeled 48V) on the back panel for the corresponding input pair.

**⚠** *Although phantom power can be used safely with most microphones, ribbon microphones can be damaged by it. You should always turn off phantom power and wait at least 30 seconds before connecting or disconnecting a ribbon microphone.*

**Instruments Without Preamps** Plug instruments that output low-level signals (such as electric guitars) directly into any of the available 1/4-inch TRS Inputs 1–4 on the back panel of the Digi 002 Rack. Since these inputs have adjustable gain, they are especially useful for devices that output low-level signals

- Press the Mic/Line/Instrument Selector switch (located on the front panel of Digi 002 Rack) for the corresponding input so that it is in the “Line/Inst” position. Inputs 1–4 are designed for input signals with a nominal operating level of +4 dBu. Adjust the Input gain knob as necessary when setting recording levels to optimize input gain.

**Line-Level Devices** Plug line-level sources (such as a synthesizer, or a microphone or guitar that has been amplified by an outboard preamp) into any of the 1/4-inch analog inputs on the back of Digi 002 Rack.

- For Inputs 1–4, press the Mic/Line/Instrument Selector switch (located on the front panel of Digi 002 Rack) for the corresponding input so that it is in the “Line/Inst” position. Inputs 1–4 are designed for input signals with a nominal operating level of +4 dBu. (The Input gain knob should be turned down all the way for +4 dBu devices at unity gain.)

- For Inputs 5–8, choose either a –10 dBV or +4 dBu operating level for the corresponding input using the switch on the Digi 002 Rack back panel. For information on the appropriate operating level for your input device, refer to the manufacturer’s specifications.

## Digital Audio Connections

Digi 002 Rack provides up to 10 digital inputs and outputs, including:

- Optical input and output for eight channels of ADAT input or two channels of Optical S/PDIF input
- Two channels of S/PDIF digital input and output (RCA connectors)

### ADAT Format

The ADAT format was developed by Alesis for use in their ADAT multitrack recorders. Each ADAT optical connection provides eight 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 002 Rack (see “Connecting an ADAT to Digi 002 Rack” on page 42). The Optical I/O connectors accept optical cables.

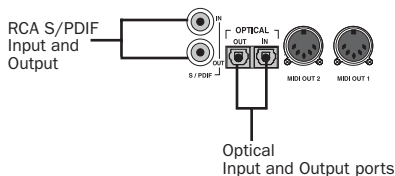
When set for ADAT format, these Optical ports support 44.1 kHz or 48 kHz sample rates only.

### 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 connector or to the S/PDIF RCA connector on the back panel of the Digi 002 Rack (see “Connect-

ing a Digital Deck (DAT)” on page 42). The Optical connectors accept standard optical “light-pipe” cables; the RCA connectors accept standard RCA cables.

Both the RCA and Optical ports accept S/PDIF signals at sample rates up to 96 kHz.



#### Digital connectors (back panel)

**⚠** 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.

## Using External Effects Devices

The Digi 002 Rack 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 002 Rack. 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 the return by connecting its analog outputs to available inputs on Digi 002 Rack.

When you 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 each input of the external signal processor to an available analog output on the Digi 002 Rack.
- 2 Connect each output of the external signal processor to an available analog input on the Digi 002 Rack.




*If you plan to use the external device as an Insert in Pro Tools, connect it to inputs and outputs of the same number (for example, Input 5 and Output 5) of Digi 002 Rack.*

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

- 1 Connect the digital inputs and outputs of the external signal processor to the appropriate digital connectors (the S/PDIF RCA connectors or the Optical ports) on Digi 002 Rack.
- 2 In Pro Tools, choose **Setup > Hardware Setup**.
- 3 Under **Digital Input**, select one of the following options:
  - If the external effects device is connected to the S/PDIF RCA jacks, select “RCA = S/PDIF.”
  - If the external effects device is a S/PDIF device and connected to the Optical ports, select “Optical = S/PDIF.”
  - If the external effects device is an ADAT Optical compatible device, select “Optical = ADAT.”
- 4 Choose **Internal** from the **Clock Source** pop-up menu.



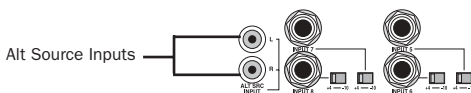
5 Click OK.

 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.

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## Monitoring and Recording from Alternate Sources


Digi 002 Rack provides a pair of additional inputs for monitoring and recording from an external sound source such as a CD player or tape deck. This alternate input is equipped with standard RCA connectors and is designed for input signals with a nominal operating level of -10 dBV.



*Alternate Source Input connectors (back panel)*

**To monitor an alternate sound source through the Digi 002 Rack Monitor Outputs:**

- 1 Connect the outputs of the external device to the left and right Alternate Source Inputs on the back panel of Digi 002 Rack.
- 2 Press the “Alt Src to Mon” switch on the front panel of Digi 002 Rack to route the signal to the Monitor Output.
- 3 Adjust Monitor Output or Headphone Output levels to audition the input.

 To monitor an external device through the Alternate Source Inputs, Digi 002 Rack must be powered on.

**To record an alternate sound source directly into Pro Tools:**

- 1 Connect the outputs of the external device to the left and right Alternate Source Inputs on the back panel of Digi 002 Rack.
- 2 Press the “Alt Src to 7–8” switch on the front panel of Digi 002 Rack to route the signal directly to Inputs 7–8 in Pro Tools.

When the “Alt Src to 7–8” switch is engaged, Inputs 7 and 8 on the Digi 002 Rack back panel are inactive. Also, because the signal can be monitored from Pro Tools, it no longer passes directly to the Monitor Outputs.

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## Mirroring the Main Outputs

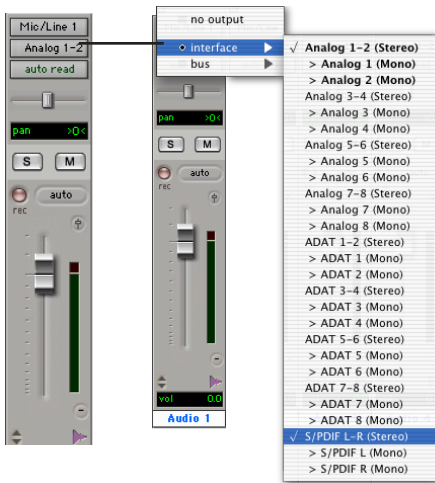
You can send any pair of Digi 002 Rack outputs (such as outputs 1–2) to the S/PDIF digital outputs at the same time by assigning the stereo mix to multiple output destinations in Pro Tools LE. This is commonly known as *mirroring* the outputs.

Output mirroring is useful for recording to multiple media, creating separate monitoring mixes, or for output to digital effects processors.

**To mirror the Digi 002 Rack Main Outputs on the S/PDIF outputs:**

- 1 Open the Pro Tools session whose channel outputs you want mirror.
- 2 In the Mix window, click the Output Selector of any audio or Auxiliary Input track to select the main output destination, for example, Analog 1–2.
- 3 Hold the Control key and click the same Output Selector again, then select a second output for the same track (for example S/PDIF L-R).

The newly selected destination is indicated by an additional check mark in the output pop-up menu, and a plus sign in the Output Selector.



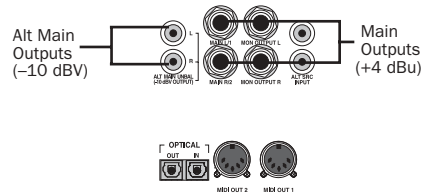
Choosing multiple output destinations for a track

## Connecting a Recorder for Mixdowns

After you record and mix your sessions using Digi 002 Rack, you may want to mix them down to a DAT, audio cassette, or other stereo 2-track recording device.

## Connecting an Analog Deck

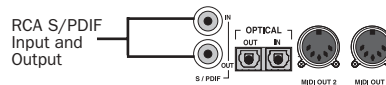
- ◆ If your recorder operates at  $-10$  dBV level, connect its inputs to the Alt Main Outputs on the back of the Digi 002 Rack. These outputs are RCA connectors.
- ◆ If your recorder operates at  $+4$  dBu level, connect its inputs to the Main Outputs 1–2 on the back of the Digi 002 Rack. These outputs are 1/4-inch jacks. You may need adapter cables if your mixdown deck has RCA inputs.



Alt Main and Main Outputs (back panel)

## Connecting a Digital Deck (DAT)

If you have a DAT or other digital device that can 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 002 Rack.



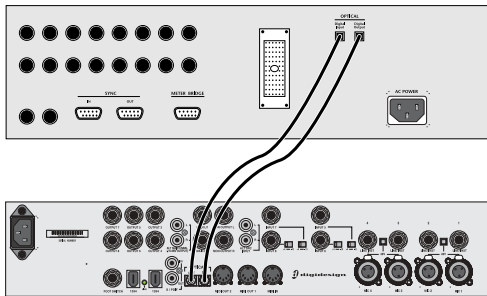
S/PDIF Input and Output

## Connecting an ADAT to Digi 002 Rack

To connect an ADAT to Digi 002 Rack:

- 1 Connect the Optical output on the ADAT to the Optical In port on the Digi 002 Rack.

**2** Connect the Optical input on the ADAT to the Optical Out port on the Digi 002 Rack. (When the Digi 002 Rack is on, its Optical Out port emits a red light.)



*Connecting an ADAT to Digi 002 Rack*

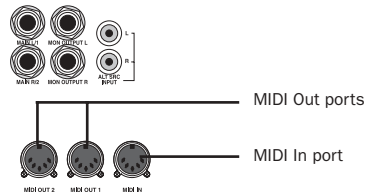
## MIDI Connections

Using the Digi 002 Rack built-in MIDI ports, a MIDI keyboard controller and MIDI instruments, 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.

### To connect MIDI devices to Digi 002 Rack:

**1** Using standard 5-pin MIDI cables, connect the MIDI Out port of the MIDI device or controller to the MIDI In port of your Digi 002 Rack.

**2** Connect the MIDI In port of your MIDI device or controller to either of the two MIDI Out ports of the Digi 002 Rack.



*MIDI In and Out ports (back panel)*

**3** Connect the audio outputs of your device to available audio inputs of the Digi 002 Rack.



## chapter 6

# Working with Pro Tools LE

This overview of Pro Tools LE software introduces its main windows and features, and also includes a step-by-step overview of audio recording (see “Basic Recording” on page 55).

All features described in this chapter are explained fully in the *Pro Tools Reference Guide*. You can view an electronic PDF version of the Reference Guide by choosing it from the Pro Tools Application menu. Refer to that guide and its index for more information on Pro Tools LE features.

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## 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.

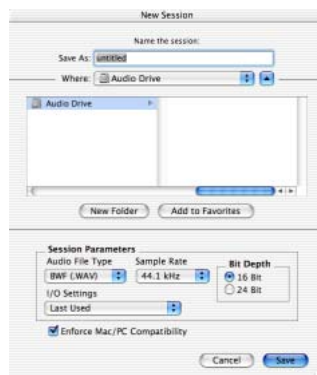


Session file, Audio Files and Fade Files folders

## Starting a Session

**To create a new session:**

- 1 Launch Pro Tools LE.
- 2 Choose File > New Session.
- 3 In the New Session dialog, set the sample rate, bit depth, and other options for the new session.




### New Session dialog

- 4 Select where you want to save your session. If you are using external hard drives with your Pro Tools system, make sure you select the appropriate drive in the New Session dialog.
- 5 Type a name for your session.
- 6 Click Save. The new session opens its Mix, Edit, and Transport windows (see Figure 6 on page 46).

## Main Windows

The Mix, Edit, and Transport windows are the main Pro Tools work areas. You can show any of these windows by choosing them from the Windows menu.

 Press **Control+Equals (=)** in Windows or **Command+Equals (=)** on Macintosh to switch between the Edit and Mix windows.

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

**Edit Window** Displays tracks in the session along the Timeline, for editing of 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.

**Workspace** The Workspace browser is a DigiBase feature. For more information see the *DigiBase Guide*.

## Rulers

Pro Tools LE provides several different rulers to select as the timebase for your session. Timebase Rulers, displayed along the top of the Edit window, include *Bars:Beats*, *Minutes:Seconds*, and *Samples*. The current timebase determines the format of the Main counter, and provides the basis for the Edit window Grid.

### To select a Timebase Ruler:

- Click the name of the ruler at the top left side of the Edit window (*Bars:Beats*, *Minutes:Seconds*, or *Samples*).



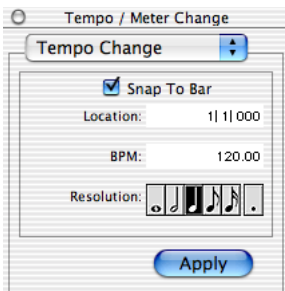
Figure 6. Main session windows

## Setting a Tempo

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

### To insert a tempo event:

- 1 Choose Windows > Show Tempo/Meter.
- 2 At the top of the Tempo/Meter Change window, choose Tempo Change from the pop-up menu.

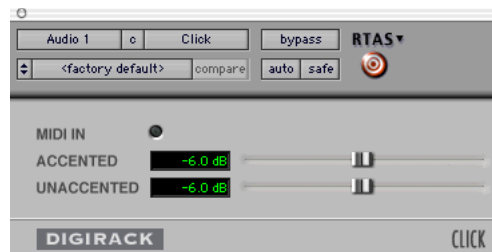


*Tempo/Meter Change window*

- 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 a different note value (such as an eighth-note rather than the default quarter-note), select a note value.
- 5 Click Apply to insert the new tempo event.

## Using the Click Plug-In

The Click plug-in creates an audio click during session playback that you can use as a tempo reference when performing and recording. The Click plug-in receives its tempo and meter data from the Pro Tools application, enabling it to follow any changes in tempo and meter in a session.



*Click plug-in*

### Click Parameters

**MIDI In LED** Illuminates each time the Click plug-in receives a click message from the Pro Tools application, indicating the click tempo.

**Accented** Controls the output level of the accented beat (beat 1 of each bar) of the audio click.

**Unaccented** Controls the output level of the unaccented beats of the audio click.

### To use the Click plug-in:


- 1 Choose MIDI > Click to enable the Click option (or enable the Click button in the Transport window).
- 2 Create a mono Auxiliary Input and insert the Click plug-in.
- 3 Select a click sound preset.

4 Choose MIDI > Click Options and set the Click and Countoff options as desired.

**⚠** *The Note, Velocity, Duration, and Output options in this dialog are for use with MIDI instrument-based clicks and do not affect the Click plug-in.*



Click Options dialog

 Refer to the Pro Tools Reference Guide for more information on configuring Click options.

5 Begin playback. A click is generated according to the tempo and meter of the current session and the settings in the Click Options dialog.

## Using an External MIDI Click

Pro Tools also provides a MIDI Click option that lets you use an external MIDI device to play a click. This feature can be turned on and off 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 with the Metronome button in the MIDI Controls display of the Transport window. (To show MIDI Controls in the Transport, choose Display > Transport Window Shows and select MIDI Controls.



Click and Tempo Controls in the Transport window

## Saving Sessions

As you build a session by adding tracks and changing session controls, you will want to save your work. Pro Tools provides three ways to save sessions.

### To save a session:

- Choose File > Save Session, Save Session As, or Save a Session Copy In.

**Save Session** Saves the currently open session file, leaving it open for you to continue working.



**Save Session As** Creates a duplicate session file with the name you choose, and leaves the duplicate open for you to continue working. 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** Saves copies of the session file and 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 change specific Pro Tools system settings to optimize system performance.

### Playback Engine Dialog

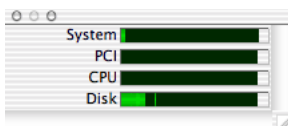
You can adjust system buffer sizes and allocate CPU processing power to Pro Tools using the Playback Engine dialog.

#### To configure system resources:

- Choose Setups > Playback Engine. For more information, see Chapter 2, “Windows Configuration,” or Chapter 3, “Macintosh Configuration,” as appropriate.

### System Usage Window

The System Usage window displays information on CPU load, DSP usage, and (on Macintosh systems only) overall disk performance, allowing you to gauge your system’s processing capacity.



Meters in the System Usage window

#### To view system resources and usage:

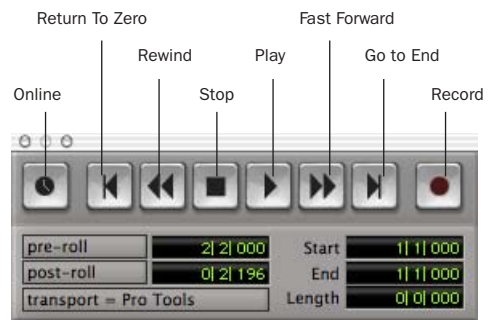
- Choose Windows > Show System Usage.

## Transport Controls

The Transport window provides access to all Pro Tools LE transport commands. Different transport controls can be displayed or hidden in this window.

#### To show the Transport window:

- Choose Window > Show Transport Window.



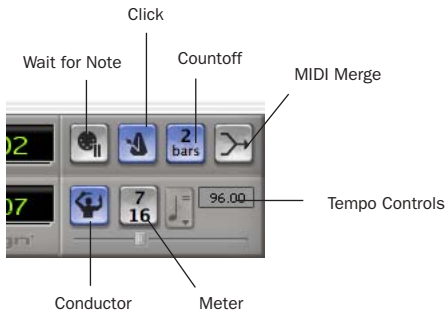
#### Transport window

#### To configure the Transport window:

- Choose Display > Transport Window Shows and select view options.

In standard view, the Transport window provides Play, Stop, and other standard transport controls. The Expanded Transport window provides pre- and post-roll, start, end, and length indicators for Timeline selection, as well as the Transport Master selector.


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.

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

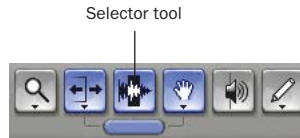
 Pro Tools LE starts playing from the location of the cursor, or from the beginning of the current selection. The current setting of the Link Edit and Timeline Selection command in the Operations menu also affects playback. See the Pro Tools Reference Guide for more information.

## Navigating a Session

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

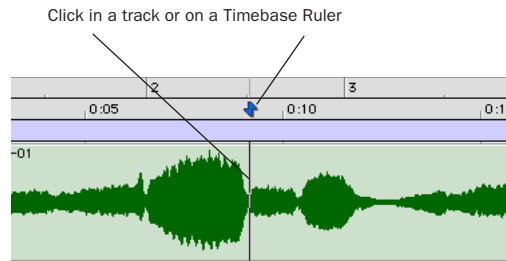
**To navigate to a location in the Edit window:**

- 1 In the Operations menu, make sure Link Edit and Timeline Selection is enabled.
- 2 Enable the Selector tool at the top of the Edit window by clicking it.



**Edit tools in Edit window**

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



**Clicking with the Selector in the Edit window**


**To navigate using the counters:**

- 1 Click in the Main counter and enter a location using your computer keyboard.

2 Press Return.



*Navigating with the Counter*

 Press the \* key on the numeric keypad as an alternative to clicking in the counter.

## Memory Locations

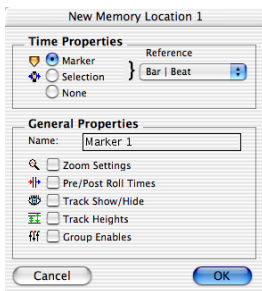
Memory Locations provide another way to navigate within sessions. Memory Locations appear as markers under the Timebase Rulers.

**To define a memory location:**

1 Press Enter on the numeric keypad while stopped or during playback (or click the Markers icon).

In the New Memory Location window, 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 status.

2 Choose settings for the memory location and click OK.



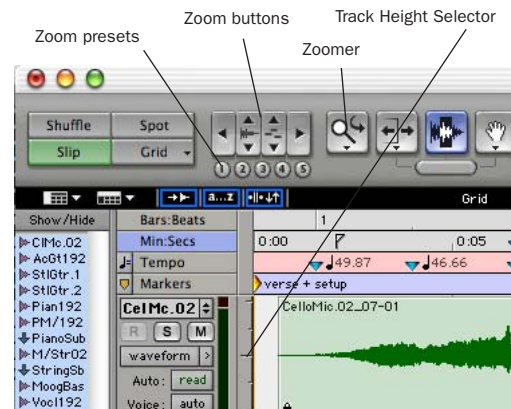
*New Memory Location window*

**To go to a stored memory location:**

- 1 Choose Windows > Show Memory Locations.
- 2 In the Memory Locations window, click the name of the memory location.

## 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 track height from the pop-up menu.

 You can apply many commands, including track height selection, to more than just a single track. Hold down the Alt key (Windows) or Option key (Macintosh) while performing an operation to apply it to all tracks. Hold down both the Shift and Alt keys (Windows) or Shift and Option keys (Macintosh) while performing an operation to apply it to all selected tracks.

### To Zoom in on any area of a track in the Edit window:

- 1 Click to select the Zoomer.
- 2 Click or drag with the Zoomer to zoom in horizontally for a track or Ruler.

### To zoom in or out incrementally:

- Click the appropriate Zoom button:
  - Left Arrow (Horizontal Zoom Out)
  - Right Arrow (Horizontal Zoom In)
  - Waveform and MIDI buttons, to increase or decrease vertical zoom of the appropriate track type (audio or MIDI)

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 use a stored Zoom preset:

- Click the appropriate Zoom preset 1–5.

### To store a new Zoom preset definition:

- Command-click a Zoom preset number to store the current horizontal and vertical Zoom to that preset.

### 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 nor 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.

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## Tracks

You can create audio and MIDI tracks for audio and MIDI recording, submixing, routing, automating, and editing.

Pro Tools provides 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 Tracks** Record and play back audio to and from hard disk, monitor audio input when record-enabled, and edit audio regions

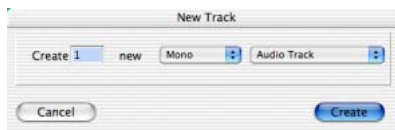
**Auxiliary Inputs** Audio mixer channels, used for input, routing, and submixing

**Master Faders** Provide master channel controls and options for any output or bus path

**MIDI Tracks** Record, play back, and edit MIDI data

### To create a new track:

- 1 Choose File > New Track.

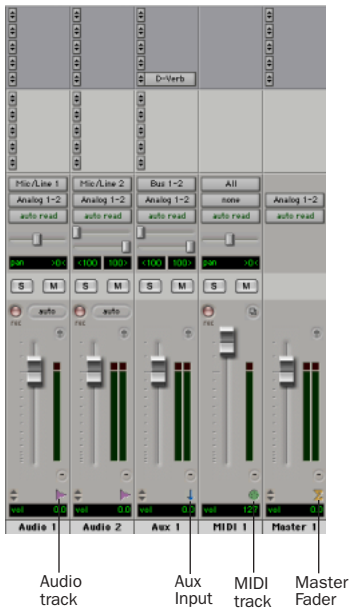


*New Track dialog*

- 2 Specify the number of tracks, track type, and mono or stereo (for all types except MIDI).

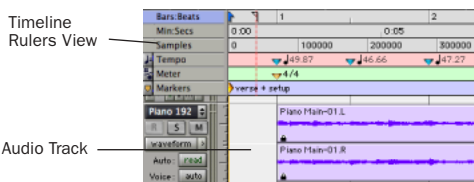
- 3 Click Create.

In the Mix window, audio tracks, Auxiliary Inputs, Master Faders, and MIDI tracks appear as vertical channel strips. Track type is indicated by the Track Type icons just below the faders.



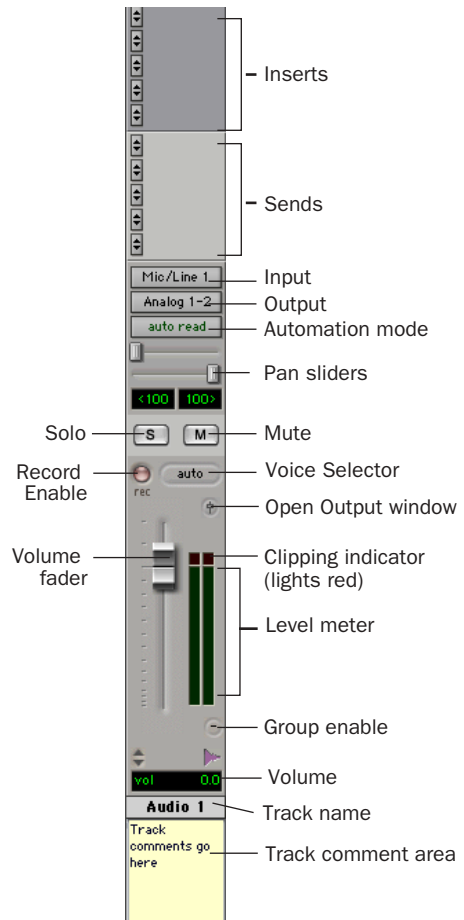
### Tracks in the Mix window

In the Edit window, tracks are displayed horizontally along the Timeline. The area in which audio appears for each track is the Playlist.



### Timeline Rulers and a stereo audio track in the Edit window

Audio tracks, Auxiliary Inputs, Master Faders, and MIDI tracks can be automated.



### Stereo audio track in the Mix window

## Audio Tracks

Audio tracks, Auxiliary Inputs, and Master Faders share many identical controls. Master Faders provide all the same features as audio tracks and Auxiliary Inputs, with the following exceptions:

**Input Selector** A Master Fader's output assignment determines its input, or source (always outputs 1-2 on Digi 002 Rack).

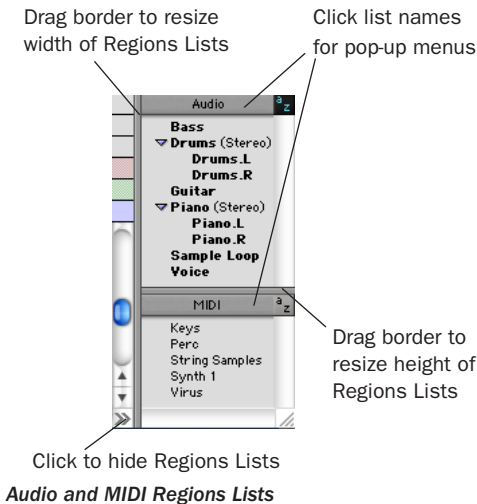
**Sends** Master Faders do not provide sends. To send an output to another destination, use an Auxiliary Input.


## MIDI Tracks

MIDI tracks provide volume, 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 67 for more information).

## 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. Audio regions can also be auditioned from the Regions Lists by Option-clicking the audio region name. The Regions List pop-up menus provide features for managing regions and files (such as sorting, selecting, importing, or exporting files).



 For more information on Regions Lists, refer to the Pro Tools Reference Guide.

## Importing Audio


You can import existing audio files into Pro Tools LE from disk. On Macintosh systems, you can also import tracks from an audio CD. This is very useful if you have audio files already recorded to disk or if you are working with CD-based sample libraries that you want to use in a new session.

### To import audio files or regions from disk:

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

– or –

- Choose Import Audio from the Audio Regions List pop-up menu to import files and regions to the Audio Regions List only.


 For more information on importing audio into sessions, refer to the Pro Tools Reference Guide.

### To import a CD audio track:

- 1 Insert an 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 Open.
- 4 In the Track Import Window, click OK.
- 5 Navigate to a destination for the imported audio, and click Choose.

Pro Tools converts the CD audio track to the session's audio file format, bit depth, and sample rate, and saves it on your hard drive.

The imported audio file appears in the Audio Regions List. From there you can drag the region to a track in your session.

 *DigiBase provides additional importing options. See the DigiBase Guide for more information.*

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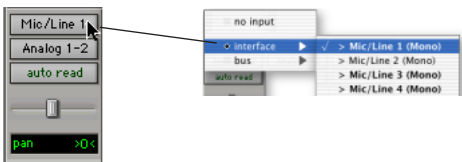
## Basic Recording

You can record both audio and MIDI tracks with Pro Tools LE.

## Routing Audio to a Track

**To route audio to a track:**

- 1 Verify the connections to your instruments. Refer to Chapter 5, “Connecting Your Studio” for more information about connecting instruments to Digi 002 Rack.
- 2 Create a new track to record on by choosing File > New Track. Specify 1 Mono Audio Track and click Create.
- 3 In the Mix window, click the Input Selector on the new track.




### Routing an input to a mono track

From the pop-up menu, select the input you want to record. For example, select Mic/Line 1 if your audio source is plugged into the Mic 1 or Line/Inst 1 jack on the back of Digi 002 Rack. (This input is listed as Mic/Line 1, or as the name defined in the I/O Setup dialog.)

## Setting Digi 002 Rack Input Levels

Input levels for Mic/Line 1–4 are adjustable using the gain knobs on the front panel of the Digi 002 Rack. Input levels for all other inputs on Digi 002 Rack cannot be adjusted in Pro Tools, and need to be set at the source.

The key to setting input levels is to get the peak of the signal as loud as possible while retaining sufficient headroom to avoid 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. In addition, by setting optimum levels, you'll get the lowest possible noise and distortion.

 *Set levels to avoid digital clipping. Clipping occurs when you feed a signal to an audio device that is louder than the circuitry can accept, resulting in distortion. Digital clipping is indicated by the red clip light at the top of the Pro Tools on-screen meters.*

**To adjust input gain on Mic/Line inputs 1–4:**

- 1 Connect an audio source to the appropriate input connector on the back panel of Digi 002 Rack. Microphones should be plugged into to an XLR connector. Line inputs or instruments should be plugged into a 1/4-inch TRS connector.
- 2 Press the Mic/Line/Instrument Selector switch on the front panel of the Digi 002 Rack to match the type of device you connected.
- 3 If you connected a microphone that requires phantom power, apply phantom power now by pressing the 48V switch on the back panel of the Digi 002 Rack.
- 4 Choose File > New Track and specify 1 Mono Auxiliary Input track, then click Create.

5 Set the track input to the correct Digi 002 Rack input channel (Mic/Line 1–4).

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

7 Adjust the input gain for the channel using the gain knob on the front panel of the Digi 002 Rack. Increase or decrease gain until you are able to achieve maximum peak levels in the Auxiliary Input track meter without clipping. Typically such peak levels are in the yellow area of the meter.

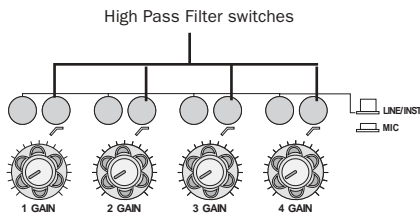
## Optimizing Gain Structure

In order to maximize the dynamic range and signal-to-noise ratio of your recording, you'll want to apply the correct gain at each stage of your audio chain.

- ◆ With microphones, place the mic close enough to the source to maximize input levels, but far enough away to avoid proximity effect, then set the input gain on Digi 002 Rack.
- ◆ With line inputs and instrument direct inputs, raise the input level to achieve as strong a signal as possible without excessive noise, then set the input gain on Digi 002 Rack.

## Mic/Line High-Pass Filters

Mic/Line Inputs 1–4 include a high-pass filter set at 75 Hz. This filter can be useful for filtering out low-end rumble from a noisy recording environment, microphone handling, or AC noise.



High Pass Filter switches (front panel)

## Recording an Audio Track

### To record an audio track:

1 Click the Record Enable button for a track, assign its input, and set the input levels appropriately. See “Routing Audio to a Track” on page 55 and “Setting Digi 002 Rack Input Levels” on page 55 for more details.

2 Choose Windows > Show Transport to display the Transport window. Click Return To Zero to start recording 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 Record your performance.

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

### To play back a recorded track:

1 Click the track’s Record Enable button a second time to take it out of Record mode.

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

Digi 002 Rack provides both S/PDIF (RCA) digital input connectors and Optical connectors for transfer of digital audio.

### 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. For more information, see “Recording a Digital Source” on page 17 for Windows or “Recording a Digital Source” on page 25 for Macintosh.

### Recording To and From an ADAT


You can use Digi 002 Rack 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.

#### 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.
- 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 Route the output of up to eight audio tracks in Pro Tools to the Optical outputs on Digi 002 Rack.
- 4 Verify that Pro Tools LE is referencing its Internal Clock Source in the Hardware Setup dialog.
- 5 Start recording on the ADAT, then click Play in the Transport window in Pro Tools LE. When playback is complete, stop both systems.

 For detailed information on connecting an ADAT to your system, see “Connecting an ADAT to Digi 002 Rack” on page 42.

## 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 to be shorter when you are recording and monitoring through Digi 002 Rack, and longer when you are trying to achieve higher track counts with more plug-ins.

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 002 Rack, 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.

**Low Latency Monitoring**

Pro Tools LE includes a feature called Low Latency Monitoring for Digi 002 Rack systems. This feature allows you to use a built-in mixer in the Digi 002 Rack unit to record and monitor up to 18 inputs (8 analog, 8 ADAT, and 2 RCA-S/PDIF) with extremely low latency. This mode is useful for recording multiple instruments at the same time.

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:**

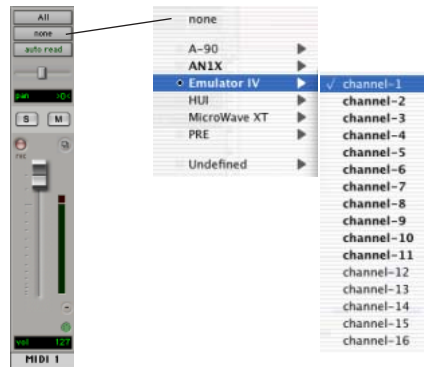
- Select Operations > Low Latency Monitoring.

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 MIDI track for recording:**

- 1 Choose MIDI > Input Devices and make sure your input device is selected in the MIDI Input Enable window, then click OK.
- 2 Choose File > New Track and specify 1 MIDI Track, then click Create.
- 3 In the Mix window, click on the track's MIDI Device/Channel Selector and choose the destination (assignment) for that MIDI track by choosing a MIDI interface port, a channel, or a device from the pop-up menu (choices vary depending on the operating system and Pro Tools version).



*MIDI Device/Channel Selector (Macintosh)*

- 4 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.

**5** In the Mix Window, record-enable the MIDI track.

**6** 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 onto a 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 start recording 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.

**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, then 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 a recorded MIDI track:**

**1** Click the Record Enable button to take the MIDI track out of Record 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.

#### **Monitoring MIDI Instruments Without a Mixer**

To monitor your MIDI instrument's analog output, you can use an Auxiliary Input. 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 Digi 002 Rack.


**2** Choose File > New Track and specify 1 mono or stereo Auxiliary Input, 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** Adjust the level of the Auxiliary Input with its volume fader.

## QuickPunch Recording

With QuickPunch recording you can 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 connect a footswitch to Digi 002 Rack:

- 1 Turn off the Digi 002 Rack unit.
- 2 Plug the footswitch into the Footswitch connector on the back panel of Digi 002 Rack.
- 3 Power on the Digi 002 Rack unit.




### Footswitch jack (back panel)

 **Footswitch polarity is detected by Digi 002 Rack firmware when you power up the unit. Make sure the footswitch is connected and not pressed when turning on the Digi 002 Rack.**

### To punch in with QuickPunch when recording audio:

- 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 back 32 tracks, or you can punch in on up to 16 tracks while playing back 24 tracks.
- 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).

Note 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 **Ctrl+Spacebar** (Windows) or **Command+Spacebar** (Macintosh) 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.



*Edit modes and tools (Slip mode, Smart Tool enabled)*

Audio and MIDI editing are typically used to:


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

### Edit Modes


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



*Edit mode buttons*

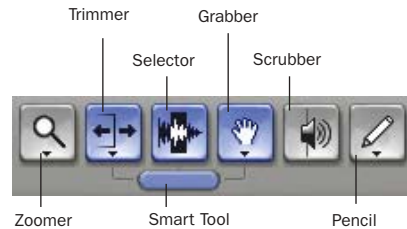
 You can also press F1 (Shuffle), F2 (Slip), F3 (Spot), and F4 (Grid) to set the Edit mode.

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 modes, refer to the Pro Tools Reference Guide.


### Edit Tools

Pro Tools LE has seven Edit tools: Zoomer, Trimmer, Selector, Grabber, Scrubber, Pencil, and Smart Tool. Select an Edit tool by clicking it in the Edit window. The Zoomer, Trimmer, Grabber, and Pencil tools have multiple modes, which you can select from a pop-up menu when you click the tool.



*Edit tools in Edit window*

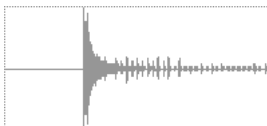
 Press the Escape key to toggle through the Edit tools.

 For detailed descriptions of the Edit Tools, refer to the Pro Tools Reference Guide.

### Editing Regions

The Edit tools in Pro Tools LE 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. For example, a region could be a loop, a guitar riff, a verse of a song, a sound ef-

fect, 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

After recording an audio track, an audio region is created on that track. If there is some silence at the beginning of the region, or there is some extra audio at the end of the region, you can use the Trimmer tool in Slip mode to shorten the beginning or end of the region.



**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 extend a region using the Trimmer tool if there is audio data beyond the current boundaries of the region. If extending the region's beginning, drag to the left; if extending the region's end, 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:

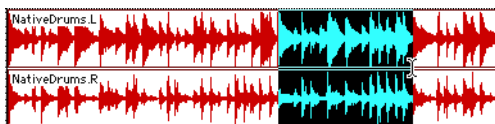
- 1 Open or create a session in Pro Tools LE.
- 2 Specify the session meter (MIDI > Change Meter) and tempo (MIDI > Change Tempo).
- 3 Select Grid mode.
- 4 Prepare to record using a MIDI click (see “Using an External MIDI Click” on page 48).

**5** Record a drum track (see “Recording an Audio Track” on page 56) 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).

**6** Drag on the waveform with the Selector to make a one-bar selection. Note that the selection snaps to the specified grid.

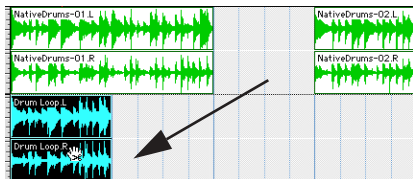


*Making a selection in Grid mode*

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

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

**9** With the Separation Grabber tool, drag the selection to the beginning of the new audio track. A new region is created and appears at the beginning of the new track.



*Dragging a selection with the Separation Grabber tool*

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



*Repeat dialog*

**11** In the Repeat dialog, enter a number of repeats, and click OK.

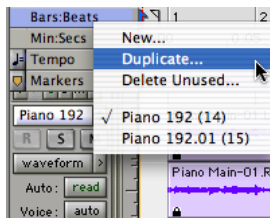
You now have a new rhythm track with a *looped* (repeated) phrase. You can use these editing tools to do much more advanced and involved editing of regions. For example, you could separate beats or *hits* into individual regions and rearrange them in Grid or Shuffle mode as a way of coming up with new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

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

6 Repeat steps 2–5 for any further edits.

In this way, you can try out different edits of a track, and switch back and forth between playlists for comparison.


---

## Mixing

The Pro Tools mix environment provides many familiar channel strip controls for setting volume, pan, solo, and mute. Mixer and I/O controls can be shown in both the Mix and Edit windows.

### To view the Mix window:

- Select Windows > Show Mix.

 Press **Control+Equals (=)** in Windows or **Command+Equals (=)** on Macintosh to switch between the Edit and Mix windows.

### Using Channel Strip Controls

**Volume** Increase or decrease the track level by dragging its Volume fader up or down.

**Pan** Pan a track left or right in the mix by dragging its Pan slider left or right.

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

**Mute** Mute a track by clicking its Mute button.

## Basic Signal Routing

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

You can use these signal routing features to set up virtually any mixer architecture for your projects, including sends and returns for effects processing and submixing.

## Send and Return Submixing for Effects Processing

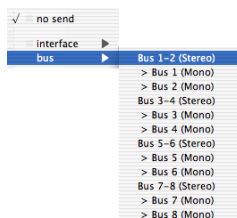
When you are submixing for reverb, delay, and similar effects processing, you can use sends and Auxiliary Inputs to achieve traditional send/return bussing. You can use a real-time plug-in (see “Plug-Ins” on page 66) as a shared resource for all tracks included in a submix. The wet/dry balance in the mix can be controlled using the track faders (dry level) and Auxiliary Input fader (wet, or effect return level).

### 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 16 internal bus paths.

### To assign a send on a track:


- 1 Make sure Sends View is enabled in the Mix window (Display > Mix Window Shows > Sends View).
- 2 Click the Sends button on an audio track and choose a path from the pop-up menu.



### Assigning a send to a stereo bus path

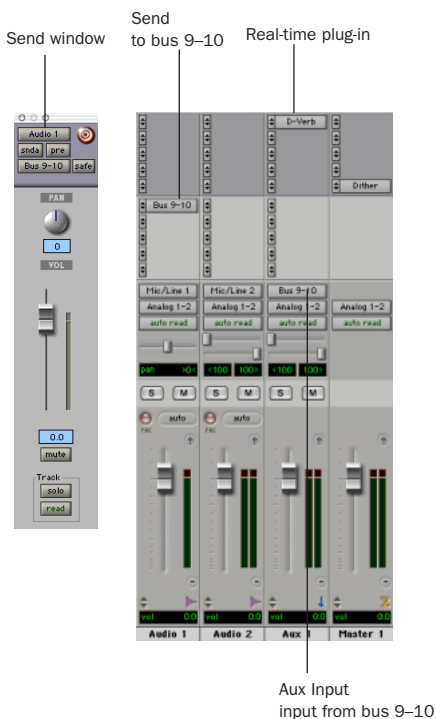


**3** Set the output level of the send. You can set the send level to zero by Alt-clicking (Windows) or Option-clicking (Macintosh) the send fader. Or Option-clicking (Macintosh) the send fader.

 You can configure the default level for new sends to be  $-\infty$  or at unity gain (0 dB) by enabling or disabling the Sends Default To “ $-\infty$ ” option under the Operation Preferences.

### Creating a Return

Auxiliary Inputs 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

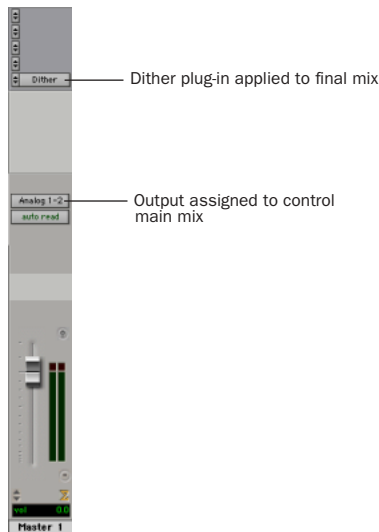
### To create a return:

- 1 Choose File > New Track and specify 1 mono or stereo Auxiliary Input, then click Create.
- 2 Click the Input Selector of the Auxiliary Input 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 and choose an output path.

### Master Faders

Master Faders are used as output and bus masters, and can control any mono or stereo output or bus path in a session. You can then use the controls on the Master Fader to control the volume, solo and mute, or apply inserts to those paths.

When you are mastering your final mix, it is recommended that you use a dither plug-in on the Master Fader controlling your main outputs (for more information on dither, see the *Pro Tools Reference Guide*).



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 outputs or internal busses.

### To use a Master Fader as a master stereo 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).

---

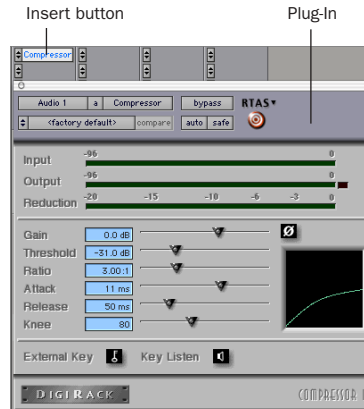
## Plug-Ins

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 are destructive effects that process and create new audio files on disk in non-real-time. (AudioSuite plug-ins can also be used non-destructively, leaving the original, unprocessed audio file on disk.)

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 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.

Pro Tools LE includes a complete set of DigiRack plug-ins. Many more are available from Digidesign and its Development Partners.

 For more information about plug-ins, refer to the *DigiRack Plug-Ins Guide*, the *Digidesign Plug-Ins Guide*, and the *Pro Tools Reference Guide*.

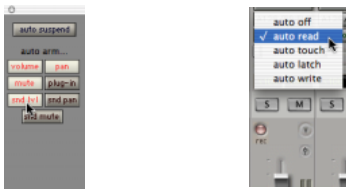
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## Mix Automation

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

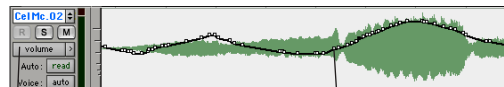
### To write automation:

- 1 In the Automation Enable window (Windows > Show Automation Enable), enable an automation *type* (volume, pan, send level, send pan, send mute, or any plug-in automation).
- 2 Select an automation *mode* for the tracks to be automated (Write, Touch, or Latch mode).
- 3 Start playback and begin writing automation by adjusting faders and other controls during playback. Pro Tools LE remembers all moves performed on enabled parameters.



Enabling automation (left) and choosing a track Automation mode (right)


Once written, automation can be re-written 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

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

---

## Final Mixdown

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 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 continue until it reaches the end of the session.

### **To Bounce to Disk:**

- 1 Choose File > Bounce to Disk.
- 2 Select any mono or stereo output or bus path as the source for the bounce.
- 3 Select the File Type (such as WAV), Format (such as mono or stereo), Resolution (such as 16-bit), and Sample Rate (such as 44.1 kHz).
  - To create a mixdown that can be written to an audio CD, be sure to select WAV, stereo interleaved, 16-bit, 44.1 kHz.
- 4 Click Bounce.


### **Using Dither on Mixdown**

Use a dither plug-in when using the Bounce To Disk command, or when mastering to an external device. Bounce to Disk does *not* automatically apply dither. To dither a bounce file, insert an included Digidesign Dither plug-in, or another dither 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 (which is better for dither applications).

 *For more information on using dither, refer to the Pro Tools Reference Guide.*

# Windows System Optimizations

When installing Pro Tools on Windows XP, there are many system variables that affect performance. If you have followed all the Windows configuration instructions in Chapter 2, “Windows Configuration” and are still experiencing problems, try the following troubleshooting suggestions.

 *Norton Ghost is highly recommended, as it lets you save your system in a working state and easily revert to that state should you accidentally disable anything that your computer needs.*

## Troubleshooting and Advanced Settings

### Blue Screen at Startup

If after installing Pro Tools LE and QuickTime, your computer crashes with a blue screen, use Add/Remove Programs to uninstall Pro Tools LE and QuickTime, and repeat the installation instructions in “Installing Pro Tools LE” on page 12.

### Advanced Settings

The following system optimizations may help Pro Tools perform better on some systems. It is recommended that you only try these optimizations if necessary, as they may disable or adversely affect the functionality of other programs on your system.

### Disabling Network Cards

If applicable, disable any networking cards (other than a 1394 “FireWire” card that you might use to connect an external drive to your system).

#### To disable a network card:

- 1 Right-click My Computer and choose Manage.
- 2 Under System Tools, select Device Manager.
- 3 In the Device Manager window, double-click Network adapters, then double-click the Network Adapter card you want to disable.
- 4 Under the General tab, choose “Do not use this device (disable)” from the Device Usage pop-up menu, and click OK.
- 5 Close the Computer Management window.

## Processor Scheduling

### To Adjust Processor Scheduling Performance:

1 Choose Start > Control Panel.

2 In Classic View, click System.

– or –

In Category View, click Performance and Maintenance, then click System.

3 Click the Advanced tab.

4 Under the Performance section, click the Settings button.

5 Select the Advanced tab.

6 Under the Processor scheduling section, select the “Adjust for best performance of background services” option.

7 Under the Memory Usage section, select the System cache option.

8 Click OK twice. You will need to restart your computer for the changes to take effect.

### Startup Items

The fewer items in use by your computer, the more resources are available for Pro Tools LE. Some startup applications may be consuming unnecessary CPU resources, and should be turned off.

Be very careful when disabling startup items, including (but not limited to) the following:

- Portable media serial number (required for applications that utilize a copy protection key)
- Plug and play
- Event log
- Cryptographic services
- DHCP Client, TCP/IP Net BIOS, and other networking-related items (unless the computer has no network or internet connection, in which case these items can be disabled)



*Norton Ghost is highly recommended, as it lets you save your system in a working state and easily revert to that state should you accidentally disable anything that your computer needs.*

### To Disable System Startup Items:

1 From the Start menu, choose Run.

2 Type “msconfig” and click OK. The System Configuration Utility opens.

3 Under the General tab, choose Selective Startup.

4 Deselect Load Startup Items and click OK.

5 Click Restart to restart the computer.

6 After restarting your computer, a System Configuration message dialog is displayed. Check to see if Pro Tools performance has increased before you deselect the “don't show this message again” option. If performance has not changed, run “msconfig” and return your computer Selective Startup back to Normal Startup. Alternatively, try disabling start up items and non-essential processes individually.

## appendix b

# Configuring AMS (Mac OS X Only)

Pro Tools recognizes the ports on your MIDI interface as generic ports. With Mac OS X, you use Apple's Audio MIDI Setup (AMS) utility to identify external MIDI devices connected to your MIDI interface and configure your MIDI studio for use with Pro Tools.

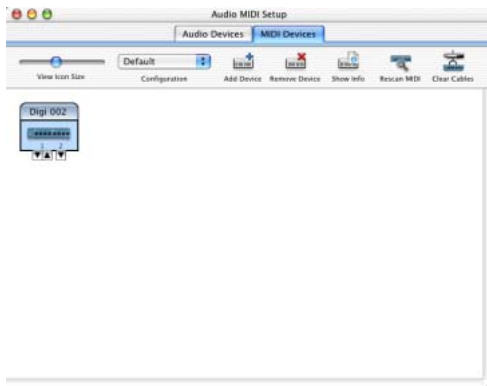
### To configure your MIDI studio in AMS:

1 Launch Audio MIDI Setup (located in Applications/Utilities).

– or –

In Pro Tools, choose Setups > Edit MIDI Studio Setup.

2 Click the MIDI Devices tab. AMS scans your system for connected MIDI interfaces. If your MIDI interface is properly connected, it appears in the window with each of its ports numbered.

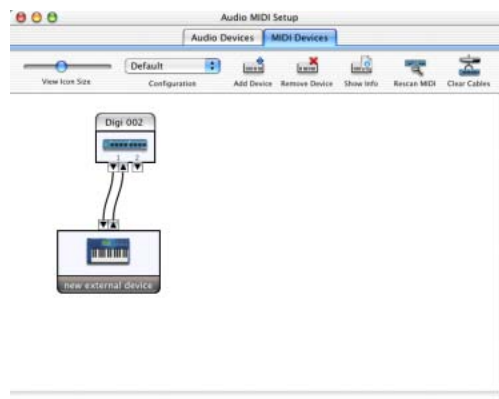


Audio MIDI Setup (MIDI Devices tab)

3 For any MIDI devices connected to the MIDI interface, click Add Device. A new external device icon with the default MIDI keyboard image will appear.


4 Drag the new device icon to a convenient location within the window.

5 Connect the MIDI device to the MIDI interface by clicking the arrow for the appropriate output port of the device and dragging a connection or “cable” to the input arrow of the corresponding port of the MIDI interface.



Making MIDI input and output connections

6 Click the arrow for the appropriate input port of the device and drag a cable to the output arrow of the corresponding port of the MIDI interface.

 To remove a connection, select the cable and press Delete. To delete all connections, click Clear Cables.

7 Repeat steps 3–6 for each MIDI device in your MIDI setup.

### To configure an external MIDI device:

1 Select the external device icon and click Show Info (or double-click the new device icon).




External Device Icon

2 Select a manufacturer and model for the new device from the corresponding pop-up menus. (If the Manufacturer and Model pop-up menus do not provide a name for your particular device, you can type a name.)

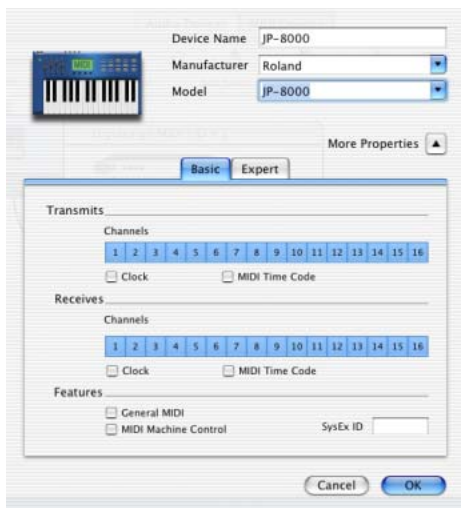


Naming a new MIDI device

 AMS refers to one or more files with the suffix “.middev” in the directory Root/Library/Audio/MIDI Devices for Manufacturer and Model names. Pro Tools installs two such files that contain information for many commercially available MIDI devices, “Legacy Devices.middev” and “Digidesign Devices.middev.” If the Manufacturer or Model names for any of your external MIDI devices are not available in the AMS Manufacturer and Model pop-up menus, you can add them by editing any of the current .middev files in any text editor (such as TextEdit).



**3** Click the More Properties arrow to expand the dialog, then enable the appropriate MIDI channels (1–16) for the Transmits and Receives options. (These determine which channels the device will use to send and receive MIDI.)




**Enabling MIDI channels**

**4** Click the device image. The window expands to show images for various MIDI devices (such as keyboards, modules, interfaces, and mixers). Select an icon for your device.



**Selecting a device icon**

 *To use your own custom icons, you can place TIFF image files in /Library/Audio/MIDI Devices/Generic/Images, and they will appear as choices in the AMS device window.*

**5** Click OK.

The device names you enter appear as MIDI input and output choices in Pro Tools.



## appendix c

# Digidesign ASIO Driver (Windows XP Only)

---

## Introduction

The Digidesign ASIO Driver is a multichannel, multimedia sound driver that allows third-party audio software that support the ASIO standard to record and play back through Digi 002 Rack hardware.



*Check the Digidesign Web site ([www.digidesign.com](http://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 supported by the hardware and ASIO client software used.

---

## Compatibility

Digidesign can only assure compatibility and provide support for hardware and software it has tested and approved.

For a list of applications that support the ASIO Driver, refer to the latest compatibility information available on the Digidesign Web site ([www.digidesign.com/compto](http://www.digidesign.com/compto)).

---

## Installing the ASIO Driver

The ASIO Driver is installed by default when you install Pro Tools.

## Removing the ASIO Driver

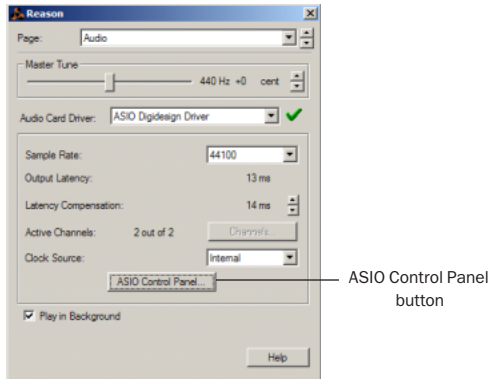
If you need to remove the ASIO Driver from your computer, complete the following steps.

### To remove the ASIO Driver:

- 1 Choose Start > Control Panel.
- 2 Double-click the Add or Remove Programs icon.
- 3 From the Currently installed programs list, select your version of Pro Tools.
- 4 Click the Change/Remove button.
- 5 Modify your installation by deselecting the Digidesign ASIO Driver option only.

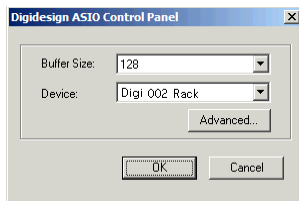
## Changing ASIO Driver Settings

Changing ASIO Driver settings is done in your third party ASIO software. Refer to the documentation that came with that software. For example, with Propellerhead Reason, click on the ASIO Control Panel button (shown below).



Using Propellerhead Reason

## ASIO Driver Control Panel



Digidesign ASIO Control Panel

The Digidesign ASIO Driver Control Panel cannot be accessed under the following circumstances:

- When Pro Tools is running.
- When playing or recording with audio software that does not support the ASIO Driver.

- When using a third-party audio software that has an option to keep the ASIO Driver “open” even when you are not playing or recording. (You must close the audio software before you can open the ASIO Driver Control Panel.)

## Buffer Size Control

When you play a file from a client audio application, the client application divides the file into small packets or *buffers*, and sends each of these to the ASIO Driver. The ASIO Driver copies the client software’s buffers to your Digidesign hardware’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 ASIO Driver uses on Digidesign hardware. You can select from the following buffer sizes:

- 128 samples
- 256 samples
- 512 samples
- 1024 samples
- 2048 samples

◆ Small buffers reduce 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 reduce audio dropouts during playback and recording.

In some third-party audio applications, performing certain tasks will interrupt the ASIO Driver and may result in clicks and pops during audio playback or recording. Choose a medium or large buffer (256, 512, or 1024) to avoid this problem.

Changing the Buffer Size for the ASIO Driver does not affect the H/W Buffer Size settings in the Pro Tools Playback Engine dialog.

## **Device**

The Device Type is always set to your installed Pro Tools hardware.

## **Advanced Button**

The Advanced button opens the Hardware Setup dialog for your Digidesign system.



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