

Getting Started with MIX

Version 5.1.3 on Macintosh
Version 5.3.1 on Windows

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chapter 1

Introduction

Welcome to Pro Tools|24 MIX!

Pro Tools|24 MIX and Pro Tools|24 audio cards and interfaces, together with Pro Tools software version 5.1.3 for Macintosh or 5.3.1 for Windows, provide 24-bit hard disk recording, editing, processing, mixing, and I/O capabilities to Pro Tools. This guide tells you how to install Pro Tools|24 MIX and Pro Tools|24 hardware and Pro Tools version 5.1.3 software on Macintosh and Pro Tools version 5.3.1 software on Windows platforms. System and installation tests are provided, as well as a chapter covering the basics of working with Pro Tools (designed for anyone who is new to Pro Tools).

Pro Tools TDM Systems

Pro Tools 5.1.3 for Macintosh and Pro Tools 5.3.1 for Windows support the following systems:

Pro Tools|24 MIX

A core system includes:

- MIX Core card
- Pro Tools software
- Digidesign audio interface (sold separately)

MIXplus

A MIXplus system includes:

- MIX Core card
- MIX Farm card
- Pro Tools software
- Digidesign audio interface (sold separately)

MIX³

A MIX³ system includes

- MIX Core card
- Two MIX Farm cards
- Pro Tools software
- Digidesign audio interface (sold separately)

All Pro Tools|24 MIX systems provide:

- Up to 64 tracks of recording and playback of 24-bit and 16-bit audio files
- TDM digital mixing and DSP plug-in environment
- Non-linear, random-access editing and mix automation
- MIDI recording, playback and editing

Pro Tools|24

A core system includes:

- d24 Audio card
- DSP Farm card
- Pro Tools software
- Digidesign audio interface (sold separately)

A core Pro Tools|24 system provides:

- Up to 32 tracks of recording and playback of 24-bit and 16-bit audio files
- TDM digital mixing and DSP plug-in environment
- Non-linear, random-access editing and mix automation
- MIDI recording, playback and editing

Audio Interfaces

To record and play audio you must have one of the following Digidesign audio interfaces:

888|24 I/O

- ◆ Analog: XLR (balanced or unbalanced) connectors, +4 dBu or -10 dBV
- ◆ Digital: XLR (AES/EBU) or RCA (S/PDIF) connectors

882|20 I/O


- ◆ Analog: 1/4" TRS (balanced or unbalanced) connectors, +4 dBu or -10 dBV
- ◆ Digital: RCA (S/PDIF) connectors


1622 I/O

- ◆ Analog: 1/4" TRS (balanced or unbalanced) connectors. Inputs are variable from +4 dBu to -10 dBV; outputs are selectable between +4 dBu or -10 dBV
- ◆ Digital: RCA (S/PDIF) connectors

Digidesign 24-Bit ADAT Bridge I/O and the Original ADAT Bridge I/O

- ◆ Analog: 1/4" TRS (balanced) connectors, +4 dBu or -10 dBV
- ◆ Digital: XLR (AES/EBU) or RCA (S/PDIF) connectors
- ◆ Optical: Two pairs of EIAJ fiber optic connectors

 *MIX systems do not support HD-series audio interfaces (such as the 96 I/O and the 192 I/O).*

 *Pro Tools|24 MIX and Pro Tools|24 systems also support some older Digidesign audio interfaces, such as the 888 I/O and 882 I/O.*

System Requirements

The CPU, hard disk, monitoring, and MIDI requirements for Pro Tools differ depending on your system configuration and computer platform (Macintosh or Windows). The requirements for each configuration are listed below.

Compatibility Information

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

www.digidesign.com

Computer Requirements

Macintosh

- A Digidesign-qualified Power Macintosh computer with:
 - Minimum 256 MB RAM (Pro Tools application “Preferred” memory allocation set to 70 MB and DAE “Preferred” memory allocation set to 60 MB); virtual memory is not supported
 - Additional RAM is highly recommended if you plan to use other applications concurrently with Pro Tools
 - One unused PCI slot for Pro Tools|24 MIX systems
 - Two unused adjacent PCI slots for Pro Tools|24 MIXplus systems and Pro Tools|24 systems

- Three unused adjacent PCI slots for Pro Tools|24 MIX³ systems
- For higher track counts, 1 unused PCI card slot for a Digidesign-approved SCSI HBA.
- For expanded systems, the expansion chassis card takes the place of the Pro Tools card in the PCI slot and the Pro Tools card is placed in the chassis
- Apple System software version 9.1 or later

A *Mac OS X is not supported.*

- System Utility software (included with Pro Tools):
 - OMS (Open Music System) software version 2.3.8 or later
 - Apple QuickTime System Extension version 4.1.2 or later
 - ATTO ExpressPro-Tools version 2.3.2 or later
- Color monitor required, minimum resolution of 1024 x 768
- A Digidesign-qualified floppy drive, along with the appropriate driver software (included on the Pro Tools Installer CD-ROM) is required to authorize some plug-ins

A *The maximum number of Pro Tools|24 and Pro Tools|24 MIX cards supported in an expansion chassis is seven. However, there may be further restrictions depending on your operating system and the specific model of your expansion chassis. For more information, visit the Digidesign Web site at:*

www.digidesign.com

Windows

- A Digidesign-qualified, single processor Pentium III, or Pentium 4-based (highly recommended) computer:
 - Minimum 256 MB RAM (required for 64-voice performance)
 - Additional RAM is highly recommended if you plan to use other audio or MIDI applications concurrently with Pro Tools
 - One unused PCI slot for Pro Tools|24 MIX systems
 - Two unused adjacent PCI slots for Pro Tools|24 MIXplus systems and Pro Tools|24 systems
 - Three unused adjacent PCI slots for Pro Tools|24 MIX³ systems
 - For higher track counts, 1 unused PCI card slot for a Digidesign-approved SCSI HBA.
 - For expanded systems, the expansion chassis card takes the place of the Pro Tools card in the PCI slot and the Pro Tools card is placed in the chassis
 - VIA Apollo Pro133 chipset (for Pentium III) or Intel 860 or 850 chipset (for Pentium 4)
 - Award BIOS
 - A CD-ROM drive
 - An AGP display card is strongly recommended
 - Windows 2000 Professional Edition with Service Pack 2 or higher
 - QuickTime 5 for Windows 2000
- Color monitor required, minimum resolution of 1024 x 768
- Additional RAM is highly recommended if you plan to use other applications concurrently with Pro Tools

Hard Drive Requirements

Macintosh

For audio recording and storage, all Pro Tools TDM systems require one or more Digidesign-qualified FireWire drives or SCSI drives attached to a qualified PCI SCSI HBA card.

To provide full 64-track, 24-bit, 48 kHz performance, a TDM system must include at least two Digidesign-qualified FireWire hard drives or SCSI hard drives attached to a qualified SCSI HBA (host bus adapter) card.

For 64-track sessions that have substantial edit densities (such as one edit every third of a second across 64 voices) or large amounts of cross-fades, up to four FireWire or SCSI drives may be required, allocated with 16 tracks per drive and two drives per SCSI channel.


Dedicated internal IDE/ATA drives can provide 32-track performance to all TDM systems.

Refer to the Digidesign Web site for compatible hard drives and SCSI HBA cards:

www.digidesign.com


Older Power Macintosh Computers

Power Macintosh 9500 and 9600 computers have two SCSI busses: an internal fast SCSI bus and an external narrow SCSI bus. On these machines, sessions with higher track counts and high edit density require a SCSI HBA card. For optimum performance without a SCSI HBA card, use the internal fast SCSI bus.

 *For higher track counts on Power Macintosh 9500, 9600, and Beige G3 computers, avoid using the external narrow SCSI drive.*


Windows

For optimal audio recording and storage with your Pro Tools TDM system, use one or more Digidesign-qualified FireWire drives or SCSI drives attached to a qualified PCI SCSI HBA card or qualified built-in SCSI HBA connector on the motherboard. Drives should be initialized with Windows Disk Manager as NTFS or FAT32.

 *For optimal disk priming, set the cluster size to 32k using Windows Disk Manager or Partition Magic.*

To provide full 64-track, 24-bit, 48 kHz performance, a TDM system must include at least two Digidesign-qualified FireWire or SCSI hard drives attached to a qualified SCSI HBA (host bus adapter) card.

For 64-track sessions that have substantial edit densities (such as one edit every third of a second across 64 voices) or large amounts of cross-fades, up to four FireWire or SCSI drives may be required, allocated with 16 tracks per drive and two drives per SCSI channel.

 *For best 64-track, 24-bit performance, use 4 hard drives, with audio files distributed among them.*

Pro Tools TDM systems can record and playback up to 32 tracks using ATA 100 (or higher) drives. Pro Tools TDM cannot record to or playback from the system drive.

Refer to the Digidesign Web site for compatible hard drives and SCSI HBA cards:

www.digidesign.com

MIDI Requirements

Both USB and serial MIDI interfaces work effectively with Pro Tools.

PCI-based serial expanders do not work with serial MIDI interfaces on Macintosh systems. Serial MIDI interfaces require a qualified modem-to-serial port adapter. Refer to the Digidesign compatibility page for supported adapters:

www.digidesign.com

Digidesign Registration

Make sure to complete and return the registration card included with your Pro Tools TDM system. Registered users are entitled to one year of free technical support, and will receive periodic software updates and upgrade notices.

About the Pro Tools Guides


PDF versions of many Pro Tools guides are installed automatically with Pro Tools, several of which can be easily accessed from the Help menu in Pro Tools. Additional documentation, including important ReadMe files, can be found in Digidesign/Pro Tools/Release Notes & Documentation. To read the guide online, or print it, you must install *Acrobat Reader* (included on the Pro Tools Installer CD).


Conventions Used in This Guide


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


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

The following symbols are used to highlight important information:

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

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

 *Shortcuts show you useful keyboard or mouse shortcuts.*

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

chapter 2


Macintosh Configuration

To configure your Pro Tools|24 MIX or Pro Tools|24 system for Macintosh, you will need to install Pro Tools hardware and software, verify your TDM system, then launch Pro Tools.

Installing Pro Tools Hardware

Pro Tools TDM Cards

The number of Pro Tools TDM cards will differ depending on your system configuration. Card components for each configuration are listed below.

 *If you are using an Expansion Chassis to add additional cards to your system, refer to the Expanded Systems Guide included with your Pro Tools system.*

Pro Tools|24 and Pro Tools|24 MIX Hardware

Pro Tools|24 and Pro Tools|24 MIX hardware comes in the following configurations:

Pro Tools|24 MIX Includes a single MIX Core card and a 5-node TDM ribbon cable for connecting to other optional TDM-equipped cards.

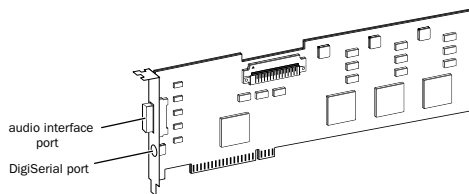
Pro Tools|24 MIXplus Includes a MIX Core card, a MIX Farm card, and a 5-node TDM ribbon cable for connecting the MIX Core to the MIX Farm and other optional TDM-equipped cards.

Pro Tools|24 MIX³ Includes a MIX Core card, two MIX Farm cards, and a 5-node TDM ribbon cable for connecting the MIX Core to the MIX Farm and other optional TDM-equipped cards.

Pro Tools|24 Includes a d24 audio card, a DSP Farm card, and a 5-node TDM ribbon cable for connecting them.

The MIX Core Card

The MIX Core card provides 24-bit, 64-track, 16-channel I/O, direct-to-disk recording and playback to your Pro Tools 24 MIX system, as well as DSP power for its mixing and processing capabilities.



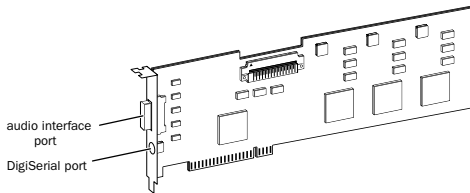
MIX Core card

This card includes a connector for attaching a single 888|24 I/O, 882|20 I/O, 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O audio interface. If you purchase the optional 16-channel peripheral cable adapter, you can attach two 8-channel audio interfaces.

The Digi-Serial port is for connecting a Digidesign Universal Slave Driver (USD), or a 9-pin device for use with the Pro Tools MachineControl option.

The MIX Farm Card

The MIX Farm card provides more DSP power for mixing, processing, and DSP software such as the DigiRack plug-ins included with Pro Tools. It also provides a connector for attaching a single 888|24 I/O, 882|20 I/O, or 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O audio interface. If you purchase the optional 16-channel peripheral cable adapter, you can attach two 8-channel audio interfaces. The DigiSerial port is for connecting a Digidesign Universal Slave Driver (USD), or a 9-pin device for use with the Pro Tools MachineControl option.

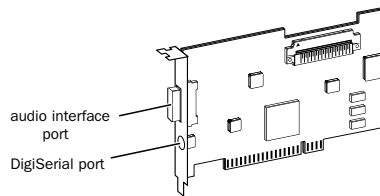


MIX Farm card

The d24 Audio Card

The d24 audio card provides 24-bit, 32-track, 16-channel I/O, direct-to-disk recording and playback capabilities to your Pro Tools 24 system. It also provides a connector for attaching a single 888|24 I/O, 882|20 I/O, or 1622 I/O Audio Interface. If you purchase the optional 16-channel peripheral cable adapter, you can attach two 8-

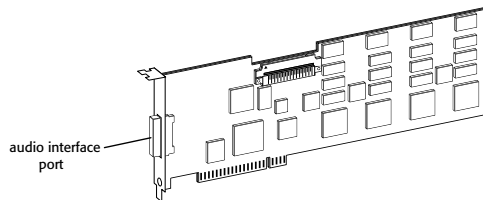
channel audio interfaces. The DigiSerial port is for connecting an optional Digidesign Universal Slave Driver, or a 9-pin device for use with the Pro Tools MachineControl option.



d24 card

The DSP Farm

The DSP Farm provides the power for the Pro Tools 24 system's mixing and processing capabilities. It powers DSP software such as the DigiRack plug-ins included with Pro Tools. It also provides a connector for attaching an 8-channel audio interface.

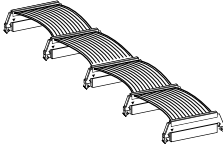


DSP Farm card

⚠ *The 1622 I/O Audio Interface is not supported by the DSP Farm. It must be connected to a MIX Core, MIX Farm, or d24 card. Only one 1622 I/O can be connected to any of these cards. The optional 16-channel peripheral cable adapter is not supported by the 1622 I/O.*

The TDM Ribbon Cable

The TDM ribbon cable is used to connect multiple cards in your Pro Tools system so they can share data along the TDM bus.



TDM Ribbon Cable

A 5-node cable comes with your system. If you plan to use your system with an expansion chassis, you can order a TDM cable with more nodes from your Digidesign dealer.

Installing the Pro Tools Cards

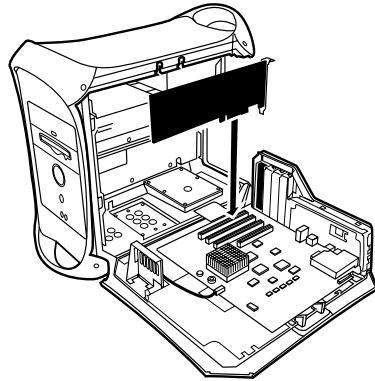
Install the Pro Tools cards:

- 1 Turn off your computer and any peripherals. Leave your computer's power cable plugged in so the computer is grounded.
- 2 Open the computer case. The illustrations in this section show a Blue & White Macintosh G3 and a Macintosh 9600 computer. Even if you are using a different model, the installation should be similar. For additional details on installing a PCI card in your computer, refer to the computer's documentation.

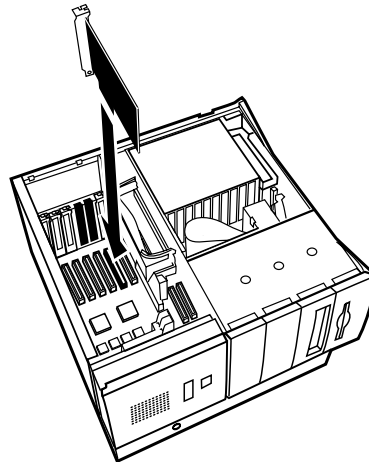
⚠ *Before handling any card, discharge any static electricity that may be on your clothes or body by touching a grounded metal surface, such as the power supply case inside your computer.*

- 3 Remove the metal access port cover behind the expansion slot you want to use by removing the screw (if present) and sliding the cover out from the access port.

- 4 Install the MIX Core or d24 card (clock master with primary audio interface) in the lowest numbered slot in your computer.



Installing a Pro Tools card in a Macintosh G3



Installing a Pro Tools card in a Macintosh 9600

- 5 Install the remaining Digidesign cards in successive slots.

Pro Tools cards must be installed in a specific order that is dependent on the slot numbering of the model of Macintosh you are using.

Group similar cards together (for example, put all MIX Farm cards next to each other).

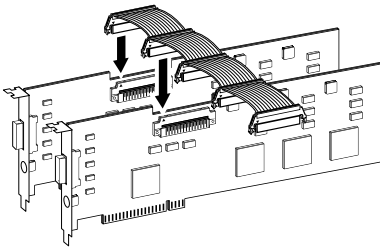
6 If installing a SCSI HBA card, install it in the highest numbered remaining slot.

 Check Digidesign's Compatibility Documents for a list of Digidesign approved computers and supported SCSI driver versions: www.digidesign.com

For 9500 and 9600 computers, the SCSI HBA should reside before the video card.

Connect all TDM cards with the TDM ribbon cable:


1 Connect the first node of the cable to the first TDM card. Make sure the TDM cable is facing the right direction—align the white triangles on the cable plug with the triangle on the card.



Attaching the TDM ribbon cable to MIX Core and MIX Farm cards

2 Push down gently but firmly until the node is fully connected to the card. When the plug is properly seated, the two tabs on the side of the cable's TDM connector will click shut. To detach the ribbon cable, squeeze the tabs on the TDM connector inward.


3 Attach the remaining nodes on the TDM cable to subsequent cards.


 It is OK to have ribbon connectors that go unused. They should reside after the last TDM card.


4 Secure the cards in place with the slot access port screws you removed earlier and close your computer.

Connecting Audio Interfaces

Pro Tools provides you with a choice of the 888|24 I/O, 882|20 I/O, 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O interfaces. These devices supply the inputs and outputs for your system.

 MIX systems do not support HD-series audio interfaces (such as the 96 I/O and the 192 I/O).

 Pro Tools|24 MIX and Pro Tools|24 systems also support some older Digidesign audio interfaces: the 888 I/O and 882 I/O.

 For instructions on connecting a 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O, see the ADAT Bridge I/O Installation Guide.

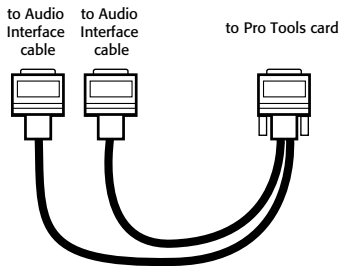
Connect the Pro Tools audio interfaces:

1 Connect the primary audio interface to the primary MIX Core or d24 card with the provided interface cable. The primary audio interface functions as the clock master.

2 Connect additional audio interfaces to subsequent Digidesign audio cards.

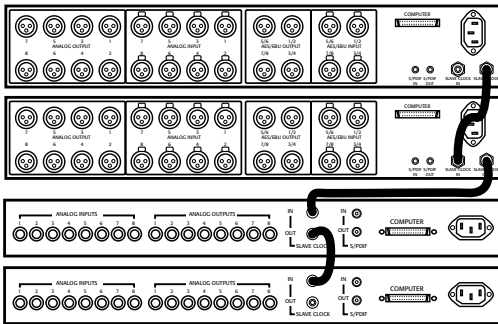
If you are connecting both 888|24 and 882|20 or 1622 I/O Audio Interfaces to your system, for best system performance, connect the 888|24 to your MIX Core or d24 card, followed by any additional 888|24 interfaces to the next highest-priority cards (MIX Farm cards). Then connect the 882|20 or 1622 I/O interfaces to subsequent cards.

You can use Digidesign's 16-channel peripheral cable adapter (optional) to connect two 8-channel audio interfaces to a single MIX Core, d24, or MIX Farm card.



Optional 16-channel peripheral cable adapter

3 If using multiple audio interfaces, connect the Slave Clock Out of the primary interface to the Slave Clock In of the second interface with the provided BNC cable. Connect the Slave Clock Out of the second interface to the Slave Clock In of the next audio interface (and so forth).




Connecting multiple audio interfaces together

Installing Pro Tools Software

The complete Pro Tools software installation process includes:


- Preparing your Apple System software for Pro Tools
- Installing Pro Tools software
- Installing OMS

After software installation is completed, the first time you launch Pro Tools you will be prompted to enter your Pro Tools authorization code and configure hardware. Instructions for this begin in “Checking Your TDM System and Launching Pro Tools” on page 15.

 *If you haven't already installed Pro Tools hardware, do so now. See “Installing Pro Tools Hardware” on page 7 for instructions.*

Apple System Software Settings

To ensure optimum performance with Pro Tools, configure the Apple System software with the following settings for OS 9.1 or later.

 *Mac OS X is not supported.*

To configure the Apple System software for optimum Pro Tools use:

- 1** In the Memory Control Panel do the following:
 - Set the Disk Cache to a Custom Setting of 512 K.
 - Set Virtual Memory to Off.
 - Set the Ram Disk to Off.
- 2** In the Energy Saver Control Panel, set the “inactive” time to Never.

3 In the Appearance Control Panel do the following:

- Click the Fonts tab and set the Large System Font to Chicago. In addition, deselect “Smooth all fonts on screen.”
- Click the Sound tab and select None from the Sound Track pop-up menu.

4 In the Extensions Manager Control Panel do the following:

- Choose Mac OS 9.1 Base (or Mac OS 9.2 Base, Mac OS 9.2.1, or Mac OS 9.2.2) from the Selected Set pop-up menu. This is done to avoid any potential extensions conflicts.
- Click Restart to restart your computer.

To install Pro Tools software:

1 Locate the Pro Tools Installer CD for Macintosh and place it in your CD-ROM drive. Locate and double-click the file named “Install Pro Tools.”


2 Select the hard drive on which to install Pro Tools from the Install Location pop-up menu. For maximum reliability, install Pro Tools on your startup drive.

3 Select the appropriate installer for your Digidesign hardware: Pro Tools|24 MIX, or Pro Tools|24.

4 Several optional items are listed directly below the main installation choices. To install any of these items, select them from the list:

Digidesign Control Panel Add this item if you want to use your Digidesign hardware with Sound Manager-compatible applications. For more information, see Appendix D, “Digidesign Control Panel (Macintosh Only).”

DigiTranslator Enables the exchange of audio and video files, and sequences between OMFI-compatible applications and Pro Tools.

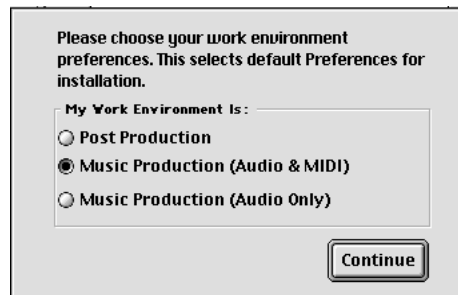
 For more information on DigiTranslator, see the DigiTranslator Guide.

Procrastinator Add this item if you have a Pro Tools|24 MIX system and one or more DSP Farm cards and you want to use the Procrastinator™ extended delay plug-in. This is useful if you plan to open old sessions that use the Procrastinator Plug-In. (Do not select this item if you have a Pro Tools|24 system—Procrastinator is automatically installed for you.)

Machine Control Users Guide Install this document if you also use Digidesign’s MachineControl option for Pro Tools.

5 After selecting from the above options, click Install.

6 Select an initial set of Pro Tools Preferences. These Preference “sets” have been pre-configured to include some of the more popular settings for post production, audio, and audio with MIDI. After selecting a setting, click Continue.



Selecting a Pro Tools Preference

Preference settings can be customized at any time in Pro Tools. See the *Pro Tools Reference Guide* for more information about Preferences.

7 For Pro Tools|24 MIX systems, you are prompted to install the Surround Mixer plug-in. This plug-in is required for mixing, mastering, and monitoring in surround. Select Yes to install Surround Mixer, or No for stereo, then click Continue.



Installing Surround Mixer

8 If you installed Surround Mixer in the previous step, the Installer prompts you to select a Surround Monitor Format. Select Standard Pro Tools if your monitoring is configured for Film Format, or select ProControl for DTS Format, then click Install.



Selecting a Surround Monitor Format

9 When installation is complete, click Restart (to restart your computer), then install OMS.

Allocating Additional Memory to Pro Tools and DAE

Digidesign strongly recommends allocating additional RAM to both the Pro Tools and DAE applications.

To allocate additional memory to Pro Tools:

- 1 If Pro Tools is currently running, Quit Pro Tools.
- 2 In the Finder, choose About This Computer from the Apple menu.
- 3 If you have 3 megabytes or more of memory available (as indicated in the Largest Unused Block portion of this window), go to step 4. If you have less than 3 megabytes of free memory (3,000k), stop here: Do not allocate additional memory to Pro Tools unless you install additional RAM in your computer.
- 4 Locate the Pro Tools application on your hard drive, select it, and choose Get Info from the Finder's File menu.
- 5 Choose Memory from the Show pop-up menu.
- 6 Enter the desired amount of memory *above the minimum requirement* in the Preferred Size field. For example, if the Preferred Size field currently says "30410k" and you wish to allocate an additional 60 megabytes of memory (1 megabyte equals 1024 kilobytes), enter "90410" into the Preferred Size field.
- 7 Close the Get Info dialog.

The next time you start Pro Tools, it will use this new memory allocation.

To allocate additional memory to DAE:

- 1 Start Pro Tools so that DAE can calculate its basic memory allocation.
- 2 Go to the Finder and choose About This Computer from the Apple menu.
- 3 If you have 3 megabytes or more of memory available (as indicated in the Largest Unused Block portion of this window), go to step 4. If you have less than 3 megabytes of free memory (3,000k), stop here: Do not allocate additional memory to DAE unless you install additional RAM in your computer.
- 4 Quit Pro Tools.
- 5 Open the DAE folder inside your System Folder, select DAE, and choose Get Info from the Finder's File menu.
- 6 Choose Memory from the Show menu.
- 7 Enter the desired amount of memory *above the minimum requirement* in the Preferred Size field. For example, if the Preferred Size field currently says "30410k" and you wish to allocate an additional 30 megabytes of memory (1 megabyte equals 1024 kilobytes), enter "60410" into the Preferred Size field.
- 8 Close the Get Info dialog.

The next time you start Pro Tools, DAE will use this new memory allocation.

Installing OMS


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

- Keeps track of which MIDI devices you are using, how they are connected, and which patches they are using
- Enables MIDI hardware to communicate with your music applications
- Provides timing services and inter-application communication

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

To install OMS:

- 1 Insert the Pro Tools Installer CD in your CD-ROM drive.
- 2 Open the OMS Installer folder and double-click the Installer.
- 3 At the Install window, select the Easy Install option, and set the Install Location to your Startup hard drive. Click Install.
- 4 Follow the on-screen installation instructions.
- 5 When the installation is complete, restart your Macintosh.

 If you are a first-time OMS user, see Appendix C, "Configuring OMS (Macintosh Only)" for more information.

Checking Your TDM System and Launching Pro Tools

We strongly urge you to launch the DigiTest diagnostics application before your initial launch to Pro Tools. Doing so ensures that you have all cards recognized in the system, in the proper order, and with valid TDM ribbon cable connections.

DigiTest is located in the Digidesign Utilities folder (see “Running DigiTest” on page 15).

When DigiTest has completed, restart your computer, then launch Pro Tools for the first time.



You should also run DigiTest after making any changes to your hardware setup (such as adding or removing cards, adding or removing audio interfaces, adding or removing synchronization cables, and so on) to verify that your system is correctly configured and functioning properly. After running DigiTest, restart your computer.

Starting Up Your System

Whenever you start your system, you must turn on all of your system components in a specific order.

Start your Pro Tools System in this order:

- 1 Make sure all your equipment (including your CPU) is off.
- 2 For TDM systems with an expansion chassis, turn on the expansion chassis.
- 3 Turn on external hard drives, if any. Wait approximately ten seconds for them to spin up to speed.
- 4 Lower the volume of all output devices, then turn on your Pro Tools audio interfaces.

- 5 Turn on any MIDI interfaces and devices, or synchronization peripherals.

- 6 Turn on your Pro Tools audio interfaces (such as 888|24 I/O). On power up, the status LEDs will flash. Wait at least fifteen seconds for the audio interface to initialize, and the status LEDs to stop blinking and stay lit.

If you launch Pro Tools without turning on your audio interfaces, you will be prompted to turn them on. Allow fifteen seconds for audio interfaces to power-up and the status LEDs to stop blinking and stay lit, before clicking OK.

- 7 Turn on your computer.

Running DigiTest

Run the DigiTest diagnostics application to identify TDM cards and verify that they are correctly installed and working.

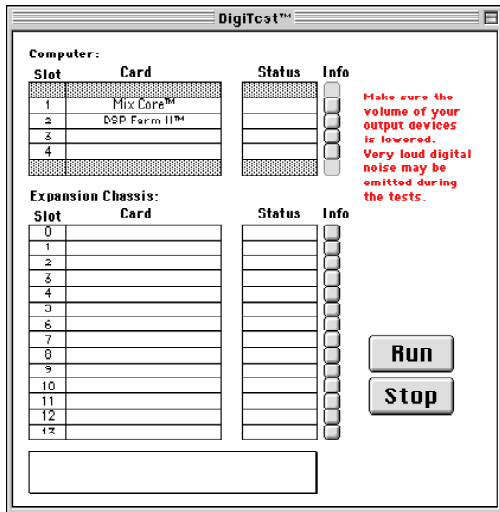
DigiTest is included on the Pro Tools Installer CD and installed with Pro Tools. DigiTest resides in the Digidesign Utilities folder located on your hard drive, under Digidesign/Pro Tools/Pro Tools Utilities.

⚠ *Before you run DigiTest, lower the volume of your monitoring system and all output devices. Additionally, be sure to remove your headphones. Very loud digital noise may be emitted during the test.*

To run DigiTest:

- 1 From the Digidesign Utilities folder, double-click the DigiTest application program. DigiTest opens and lists the supported cards it finds in your system in their corresponding slot location.

If you have several TDM cards and connected MIX-series I/Os, it may take awhile for the main DigiTest screen to appear. This is due to the test scanning for all cards and I/Os connected to the system.



DigiTest window


If a supported card is installed and not listed, check card seating and TDM FlexCable connection. Close DigiTest, power down your system, and reinstall the cards (see “Installing the Pro Tools Cards” on page 9). After power up, begin DigiTest again.

2 From the SlotArrangement menu, select your computer. The number of computer card slots updates in the main window to reflect your computer model.

When you select a computer type, a second window also opens and displays the lowest slot in your computer.

3 If using an expansion chassis, select it from the SlotArrangement menu. The number of Expansion Chassis card slots updates in the main window to reflect your chassis type.

4 From the DigiTest window, click Run.

 *If you haven't done so already, turn down your speakers before running DigiTest. Additionally, be sure to remove your headphones.*

DigiTest begins by checking the arrangement of your cards. If cards are installed in the correct order, DigiTest will automatically continue with the next step and check card functionality.

If cards are not installed in the proper order, DigiTest will stop, inform you that the system is misconfigured, and display error codes in the status box of each card identified as being misconfigured.

The more cards in your system, the longer the test will take. Furthermore, the more I/Os connected to the system, the longer it takes.

For descriptions of error codes, refer to Appendix B, “DigiTest Error Codes.” For test details, click the Info button to the right of the reported error, then click Failures in the pop-up window and change Failures to Detailed.

Refer to the Digidesign Web site for compatibility information:

www.digidesign.com/compato/

Make sure you quit and power down your system, before reconfiguring your cards.

5 After checking card arrangement, DigiTest checks card functionality. The Status box for each tested card will indicate Passed or Failed.

 *DigiTest only reports valid test results for slots which contain Digidesign cards.*

6 If all the Digidesign cards pass, quit DigiTest and restart your computer.

– or –

If any cards fail, you can review test details by clicking the Info button for the corresponding card and slot. Following review, you will need to quit DigiTest, power down your system, and re-install your cards. Verify proper card seating and TDM ribbon cable connection. (See “Installing Pro Tools Hardware” on page 7.)

If a card continues to fail DigiTest, contact Digidesign Technical Support:

tel: 650-731-6100

fax: 650-731-6384

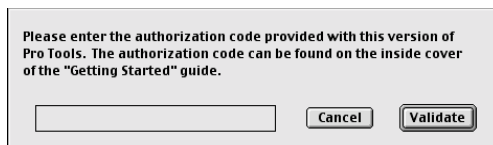
Launching Pro Tools the First Time

Validate Pro Tools Software

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

To validate Pro Tools software:

- 1 Double-click the Pro Tools application in the Pro Tools folder inside the Digidesign folder.
- 2 If OMS was not previously configured, you will be prompted to configure a New Studio Setup. For specific steps, see Appendix C, “Configuring OMS (Macintosh Only).”
- 3 Enter the authorization code in the dialog when prompted, making sure to observe any spaces, then click Validate.



Authorization code validation for Pro Tools

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

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

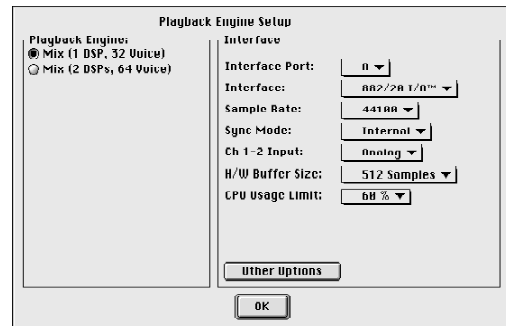
Configuring Pro Tools

Configuring the Playback Engine

The Playback Engine sets the voice count (and voiceable tracks) for your system, and its sessions. Additionally, it lets you customize various System Usage parameters (such as buffers and CPU Usage).

To configure the Playback Engine:

- 1 Choose Setups > Playback Engine.




Playback Engine dialog for Pro Tools TDM system


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

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

3 From the CPU Usage Limit pop-up, select the maximum percentage of CPU resources to allocate to host processing tasks. The default setting is 40%. Select a higher setting if you need more host processing power for RTAS, TDM, and Direct Connect applications.

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

4 From the Playback Engine area, select the amount of voices (and voiceable tracks), for your sessions. The default number of voices on a Pro Tools|24 MIX system is 32 voices (at the default 48 kHz sample rate).

 *Changing the number of voices, along with sample rate, affects DSP usage and your system performance. Please read the following carefully.*


Depending on the current sample rate, and the number of MIX Core and Farm cards in your system, you will have different choices available. For example, each MIX card allows you to use one or two of its DSPs per card for voicing.

Most DSP amounts support three levels of voice numbers:

- Select higher voice numbers when your cards are in your machine, and you aren't running extra PCI cards which may conflict with Digidesign cards. You should also select higher voice numbers when using a chassis to run higher track counts at higher sample rates (such as 64 tracks at 48 kHz) and you want more voices.
- Select medium voice numbers when running cards in an expansion chassis, or when using other PCI cards along with Digidesign cards.
- Select minimum voice numbers if you are running high bandwidth PCI cards (such as video capture).

For voice limits on different MIX systems, refer to the *Pro Tools Reference Guide*.

5 From the Sample Rate pop-up, select the session sample rate.

 *Session sample rate can always be set in the Create a New Session dialog. (See the Pro Tools Reference Guide.)*

6 Click OK, when finished.

Configuring the DAE Playback Buffer

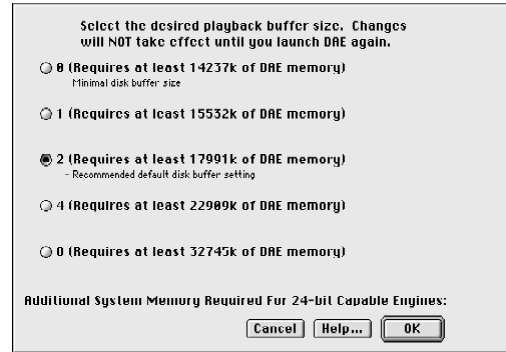
The DAE Playback Buffer Size determines the amount of memory allocated within DAE to manage disk buffers, which affects system performance.

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

- ◆ Allocating a larger buffer size can sometimes allow for a higher density of edits. This can be useful if you experience system performance problems in sessions with a large number of edits in rapid succession. However, choosing a larger buffer size can cause a time lag to occur before playback or recording begins. It can also cause a time lag to occur when you are editing during playback.
- ◆ Allocating a smaller buffer size can sometimes improve playback/recording initiation speed. This can be useful if you are experiencing a time lag when you initiate playback/recording. However, choosing a smaller buffer size can make it difficult for slower hard drives to play or record tracks reliably.

To Configure the DAE Playback Buffer Size:

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

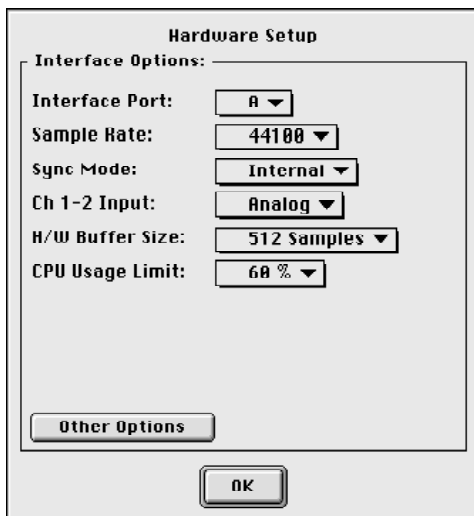


DAE Playback Buffer Size dialog


- 3 Select the desired playback buffer size.
- 4 Click OK.

Configuring Hardware Setup

The Pro Tools Hardware Setup dialog (Setups > Hardware) provides the same Interface Options as the Playback Engine dialog. Clicking the Other Options button will open a dialog specific to the audio interface (for example the Other Options dialog for the 882|20 I/O provides controls for the Output Line Level, Input Line Level, and S\PDIF Compatibility).



Hardware Setup dialog for 882|20 I/O

 For more information on Hardware Setup parameters for each I/O, refer to the peripheral's guide (for example the Digidesign 882|20 I/O Audio Interface Installation Guide).

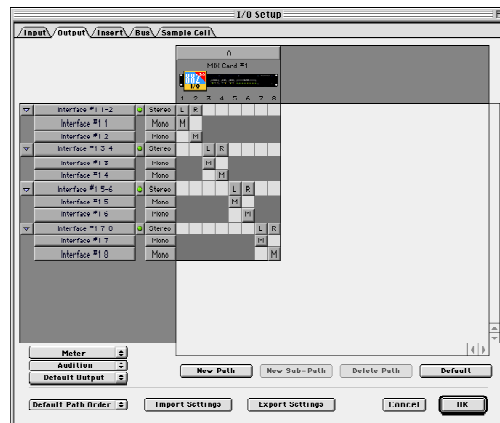
Configuring I/O Setup

The I/O Setup dialog lets you label and map Pro Tools input, output, insert, and bus *signal paths*. The I/O Setup dialog provides a graphical representation of the signal routing for each connected audio interface. Each I/O attached to your system is displayed, with controls to route physical ports to Pro Tools inputs and outputs. If you have a Sample Cell card installed in your TDM system, you can also configure its routings with Pro Tools in the I/O Setup dialog.


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

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

- 1 Choose Setups > I/O Setups in Pro Tools.
- 2 Map and name paths as desired.
- 3 If necessary, redefine formats for I/O channels of any peripherals.



I/O Setup dialog for 882|20 I/O, Output page

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

Windows Configuration

To configure your Pro Tools|24 MIX or Pro Tools|24 system for Windows, you will need to install Pro Tools hardware and software, verify your TDM system, then launch Pro Tools.

Installing Pro Tools


The complete Pro Tools software installation process includes:

- Upgrading to Windows 2000 Professional Edition
- Configuring your computer
- Installing Pro Tools hardware
- Installing Pro Tools software

After hardware and software installation is completed, the first time you launch Pro Tools you will be prompted to enter your Pro Tools authorization code and configure hardware.

Upgrading to Windows 2000 with IBM IntelliStation E Pro Model 6846

If you are using IBM's IntelliStation E Pro Model 6946 and downgraded from Windows 2000 to Windows NT (to be compatible with Pro Tools 5.0.1), you will need to recover Windows 2000 (to be compatible with Pro Tools 5.3.1).

 *Make sure you back up important files before recovering Windows 2000.*

To recover Windows 2000:

- 1 If you have an IDE boot drive, you must disable "Onboard SCSI" in your BIOS before starting the recovery process, as follows:
 - Access "Devices and I/O Ports."
 - Set "Onboard SCSI" to disabled.

When you have completed the following recovery steps fully, you can re-enable "Onboard SCSI."

- 2 Start or restart your computer.
- 3 Press F11 during the message, "To start the IBM product recovery program, press F11." This message appears briefly, so you will need to be quick. If you miss it, allow the E Pro to boot into Windows and restart again.
- 4 Select Full Recovery of Windows 2000 in the "IBM Product Recovery Program."

- 5 Follow the on-screen instructions. You will be warned that the recovery process will erase everything on that drive. The recovery process takes about 40 minutes.
- 6 You now have Windows 2000. Proceed to configuring your computer.

Configuring Your Computer

To ensure optimum performance with Pro Tools, configure your computer before installing the Pro Tools software.

⚠ *Before you make any changes to your computer's system settings, make a backup copy of your Registry (where many of these essential settings are stored). By doing so, you will be able to restore your system's original settings in case of trouble. See your Windows User's Guide for details.*

If your computer does not provide the BIOS configuration options included in this section, or if you do not feel comfortable changing system parameters or deleting drivers, consult with a Windows system administrator, or your computer dealer or manufacturer for assistance.

There are five parts to configuring your computer:

- 1 Configuring your BIOS
- 2 Configuring your SCSI BIOS
- 3 Installing the SCSI drivers
- 4 Setting Application Response
- 5 Disable Driver Signing warning

Configuring Your BIOS

BIOS (Basic Input/Output System) parameters vary depending on the make and model of the computer. Refer to the documentation that came with your computer for more details.

Different BIOS manufacturers often use different names to describe the same system function. Some manufacturers do not provide a particular configuration option at all. Consequently, the names and options that appear in your computer's BIOS may differ from those described in this guide.

To modify your computer's BIOS:

- 1 Start or restart your computer.
- 2 During power up, enter BIOS Setup by pressing the appropriate key on your computer keyboard. On most computers, this is F1, F2, or the Delete key. Refer to the documentation that came with your computer.
- 3 Disable PCI Parity, if present.
- 4 Enable SCSI support, if your computer is equipped with built-in SCSI hardware. SCSI support parameters are typically found on the Devices & I/O Options page of the BIOS setup utility. If you do not have built-in SCSI hardware and using a SCSI host adapter card instead, you do not need to set this setting.
- 5 Disable Power Management, if present.
- 6 Enable PCI Dynamic Bursting, if present.
- 7 Enable PCI Master 0 WS Write, if present.
- 8 Disable PCI Delay Transaction, if present.
- 9 Disable PCI#2 Access #1 Retry, if present.
- 10 Save settings.

11 Exit BIOS setup and restart your computer.



These BIOS settings are not applicable to the Compaq Evo W8000 and the IBM Intel-listation M Pro 6850.

Configuring Your SCSI BIOS

In addition to configuring your BIOS, you must also modify the settings of your built-in SCSI hardware or SCSI adapter card. This allows SCSI hard drives to work properly with Pro Tools. This procedure varies on different computers. Consult your computer's User Guide.

To modify your computer's SCSI BIOS:

- 1** Start your computer. If your computer is already on, restart it.
- 2** During power up, when the text message regarding the SCSI BIOS appears, press the key combination listed on the screen to enter the SCSI BIOS. The SCSI BIOS setup utility appears.
- 3** Consult your SCSI host bus adapter's User Guide to set the following parameters:
 - Maximum Sync Transfer Rate parameter to 20 MB/sec for each SCSI ID and SCSI channel connected to your audio drives.
 - If you are using an ATTO HBA, change the PCI Burst Size to 32 Bytes.
 - If you are using an Adaptec HBA, enable the Host Adapter BIOS option.
- 4** Save these settings.
- 5** Exit SCSI BIOS setup and restart your computer.

Flashing the SCSI ROM

When booting your computer, you will see what version of the ATTO SCSI BIOS is installed on the ROM of the SCSI card. If it is not version 1.66, you will need to flash the SCSI ROM with the ATTO SCSI BIOS 1.66. After you have updated the ATTO SCSI BIOS to 1.66, you will need to update the drivers to version 1.66 as well.

Flashing the ROM on the SCSI card using the ATTO SCSI BIOS:

- 1** Insert a High Density PC formatted floppy disk.
- 2** Copy the DOS folder from the ATTO folder on the Pro Tools Installer CD-ROM to the floppy disk.
- 3** Shut Down your computer.
- 4** Disconnect any hard drives connected to the SCSI card.
- 5** Boot your computer with the floppy disk in the floppy drive.
- 6** Press Ctrl+Z when prompted.
- 7** Press Enter.
- 8** Select Adapter Menu.
- 9** Select Update Flash ROM.
- 10** Press Enter twice.

The SCSI ROM will be updated. This may take a few minutes.

- 11** Select Configure Adapter Channels.
- 12** Set Host Adapter BIOS to Disabled.
- 13** Press the Esc key twice.
- 14** Select Save Parameters and Exit, and press Enter.

Installing the Adaptec SCSI Drivers

Pro Tools requires the use of SCSI host adapters and SCSI drives. For Pro Tools to run at maximum efficiency with these devices, install the Digidesign approved SCSI driver (ATTO or Adaptec, depending on the card you are using).



Check Digidesign's Compatibility Documents for a list of Digidesign approved computers and supported SCSI driver versions:

www.digidesign.com

The full name of the Adaptec drivers for the IBM M Pro is:

- Adaptec
AHA290/291/294x/394x/4944/AIC78xx

If you need to install the Adaptec driver, consult the driver manufacturer's documentation.

The full name of the ATTO driver is:

- ATTO ExpressPCI

Installing the ATTO SCSI Drivers

To install the Windows device driver:

- 1 Start up your computer. Note the version of the ATTO SCSI BIOS when booting. If it is not version 1.66, you will need to flash you SCSI ROM before continuing (see "Flashing the SCSI ROM" on page 23).
- 2 Insert the Pro Tools Installer CD-ROM.
- 3 Launch the System Control Panel.
- 4 Select the Hardware tab.
- 5 Click Device Manager.
- 6 Select SCSI and RAID controllers.
- 7 Double-click the Symbios Logic PCI SCSI Adapter.
- 8 Select the Driver tab.

- 9 Click Update Driver and click Next.
- 10 Select "Search for a suitable driver for my device" and click Next.
- 11 Select "Specify a location" and click Next.
- 12 Click Browse and navigate to the ATTO folder on the Pro Tools Installer CD-ROM.
- 13 Select EXPRESS.INF and click Open.
- 14 Click OK.
- 15 Select Install one of the other drivers and click Next.
- 16 Select ExpressPCI Adapter and click Next.
- 17 Click Finish.
- 18 Click Close.
- 19 If you have a dual-channel SCSI card, repeat steps 7–18 for the second channel.
- 20 Click OK.

Setting Application Response

The final step in configuring your computer is setting your system's Application Response parameter.

To configure Application Response:

- 1 From the Start Menu, choose Settings > Control Panel.
- 2 Double-click on System.
- 3 Click the Advanced tab.
- 4 Click Performance Options.
- 5 Under Application Response select Background Services.
- 6 Click OK, twice.

Disable Driver Signing Warning

Before you begin to physically install your Pro Tools cards, temporarily disable the Driver Signing warning option. This expedites and automates much of the installation process. If you do not temporarily disable the warning, warning messages (that you are installing an unsigned driver) appear after each DSP chip during the detecting Pro Tools phase of installation.

To disable the warning option:

- 1 Turn on your computer.
- 2 Right-click the My Computer icon located on your Windows desktop.
- 3 Choose Properties.
- 4 Select the Hardware Tab.
- 5 In the Device Manager section of the dialog box that appears, click the Driver Signing button.
- 6 In Driver Signing Options, select “Ignore – Install All Files Regardless Of File Signature.”
- 7 Click OK twice.
- 8 Turn your computer off.
- 9 Proceed with physically installing your Pro Tools cards.


Disable Virus-Protection Software

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

Installing Pro Tools Hardware

Pro Tools TDM Cards

The number of Pro Tools TDM cards will differ depending on your system configuration. Card components for each configuration are listed below.

 *If you are using an Expansion Chassis to add additional cards to your system, refer to the Expanded Systems Guide included with your Pro Tools system.*

Pro Tools MIX-Series Hardware

Pro Tools MIX-series hardware comes in three configurations:

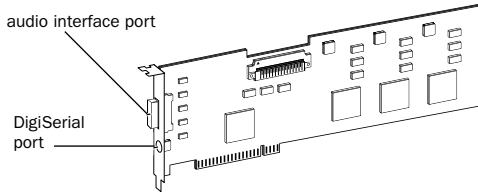
Pro Tools 24 MIX Includes a single MIX Core card and a 5-node TDM ribbon cable for connecting to other optional TDM-equipped cards.

Pro Tools 24 MIXplus Includes a MIX Core card, a MIX Farm card, and a 5-node TDM ribbon cable for connecting the MIX Core to the MIX Farm and other optional TDM-equipped cards.

Pro Tools MIX³ Includes a MIX Core card, two MIX Farm cards, and a 5-node TDM ribbon cable for connecting the MIX Core to the MIX Farm cards and other optional TDM-equipped cards.

The MIX Core Card

The MIX Core card provides 24-bit, 64-track, 16-channel I/O, direct-to-disk recording and playback to your Pro Tool MIX-series system, as well as DSP power for its mixing and processing capabilities.



MIX Core card

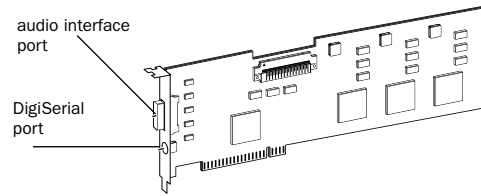
This card includes a connector for attaching a single 888|24 I/O, 882|20 I/O, 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O audio interface. If you purchase the optional 16-channel peripheral cable adapter, you can attach two 8-channel audio interfaces. The Digi-Serial port is for connecting a Digidesign Universal Slave Driver (USD), or a 9-pin device for use with the Pro Tools MachineControl option.

⚠ *If you are using more than one MIX Core card in your system, the last MIX Core card will function as the master. Consequently, the primary audio interface must be connected to the last MIX Core card rather than the first.*

The MIX Farm Card

The MIX Farm card provides more DSP power for mixing, processing, and DSP software such as the DigiRack plug-ins included with Pro Tools. It also provides a connector for attaching a single 888|24 I/O, 882|20 I/O, 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O audio interface. If you purchase the optional 16-channel peripheral cable adapter, you can attach two 8-channel audio in-

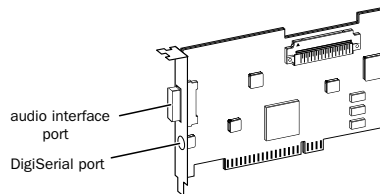
terfaces. The DigiSerial port is for connecting a Digidesign Universal Slave Driver, or a 9-pin device for use with the Pro Tools MachineControl option.



MIX Farm card

The d24 Audio Card

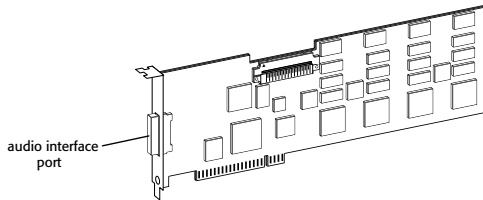
The d24 audio card provides 24-bit, 32-track, 16-channel I/O, direct-to-disk recording and playback capabilities to your Pro Tools 24 system. It also provides a connector for attaching a single 888|24 I/O, 882|20 I/O, 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O audio interface. If you purchase the optional 16-channel peripheral cable adapter, you can attach two 8-channel audio interfaces. The Digi-serial port is for connecting an optional Digidesign Universal Slave Driver, or a 9-pin device for use with the Pro Tools MachineControl option.



d24 card

The DSP Farm

The DSP Farm provides the power for the Pro Tools 24 system's mixing and processing capabilities. It powers DSP software such as the DigIRack plug-ins included with Pro Tools. It also provides a connector for attaching an 8-channel audio interface.

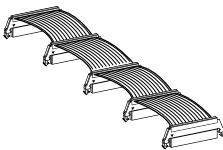


DSP Farm card

⚠ *The 1622 I/O Audio Interface is not supported by the DSP Farm. It must be connected to a MIX Core, MIX Farm, or d24 card. Only one 1622 I/O can be connected to any of these cards. The optional 16-channel peripheral cable adapter is not supported by the 1622 I/O.*

The TDM Ribbon Cable

The TDM ribbon cable is used to connect multiple cards in your Pro Tools system so they can share data along the TDM bus.



TDM Ribbon Cable

A 5-node cable comes with your system. If you plan to use your system with an expansion chassis, you can order a TDM cable with more nodes from your Digidesign dealer.

Installing Pro Tools Cards

To install Pro Tools cards:

- 1 Turn off your computer and any peripherals. Leave your computer's power cable plugged in so the computer is grounded.
- 2 Open the computer case. For additional details on installing a card in your computer, refer to its User's Guide.

⚠ *Before handling any card, discharge any static electricity from your clothes or body by touching a grounded metal surface, such as the power supply case inside your computer.*

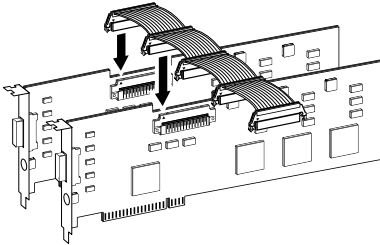
- 3 Remove the metal access port cover behind the expansion slot you want to use by removing the screw (if present) and sliding the cover out from the access port.
- 4 If installing a SCSI HBA card, install it in the lowest or highest PCI slot in your computer.
- 5 Install the MIX Core or d24 card (clock master with primary audio interface) in the next available slot.
- 6 Install the remaining TDM cards in slots adjacent to the MIX Core or d24 card.

Group similar cards together (put all MIX Farm cards next to each other, for example).

- 7 If installing a SCSI HBA card, install it in the highest numbered remaining slot.

Connect all TDM cards with the TDM ribbon cable:


1 Connect the first node of the cable to the first TDM card. Make sure the TDM cable is facing the right direction—align the white triangles on the cable plug with the triangle on the card.




Attaching the TDM ribbon cable to MIX Core and MIX Farm cards

2 Push down gently but firmly until the node is fully connected to the card. When the plug is properly seated, the two tabs on the side of the cable's TDM connector click shut. To detach the ribbon cable, squeeze the tabs on the TDM connector inward.

3 Attach the remaining nodes on the TDM cable to subsequent cards.


 *It is OK to have ribbon connectors that go unused. They should reside after the last TDM card.*


4 Secure the cards in place with the slot access port screws you removed earlier and close your computer.


 *The IBM Intellistation M Pro 6850 may not boot after updating the BIOS or changing the order of Pro Tools cards. Should this problem occur, remove all plug and play cards and you will be able to boot Windows, then shut down and re-install the cards. You should now be able to boot Windows.*

Connecting Audio Interfaces

Pro Tools provides you with a choice of the 888|24 I/O, 882|20 I/O, 1622 I/O, 24-Bit ADAT Bridge I/O, or the original ADAT Bridge I/O audio interfaces. These devices supply the inputs and outputs for your system.

 *MIX systems do not support HD-series audio interfaces (such as the 96 I/O and the 192 I/O).*

 *Pro Tools|24 MIX and Pro Tools|24 systems also support some older Digidesign audio interfaces: the 888 I/O and 882 I/O.*

 *For instructions on connecting a 24-Bit ADAT Bridge I/O or the original ADAT Bridge I/O, see the ADAT Bridge I/O Installation Guide.*

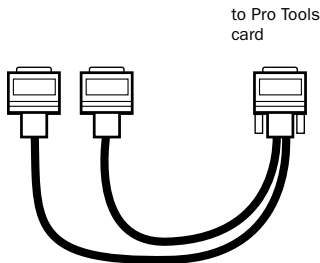
Connect the Pro Tools audio interfaces:

1 Connect the primary audio interface to the Mix Core or d24 card with the provided interface cable. The primary audio interface functions as the clock master.

2 Connect additional audio interfaces to subsequent Digidesign audio cards.

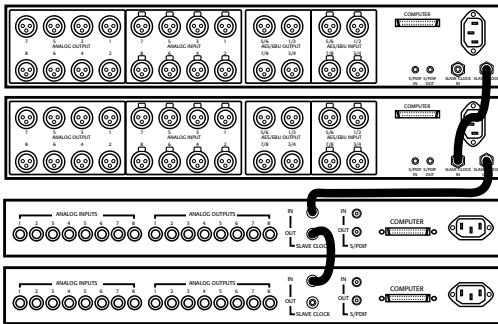
If you are connecting both 888|24 and 882|20 or 1622 I/O Audio Interfaces to your system, for best system performance, connect the 888|24 to the Mix Core or d24 card, followed by any additional 888|24 interfaces to the next highest-priority cards. Then connect the 882|20 or 1622 I/O interfaces to subsequent cards.

You can use Digidesign's 16-channel peripheral cable adapter (optional) to connect two 8-channel audio interfaces to a single MIX Core, d24, or MIX Farm card.



Optional 16-channel peripheral cable adapter

3 If using multiple audio interfaces, connect the Slave Clock Out of the primary interface to the Slave Clock In of the second interface with the provided BNC cable. Connect the Slave Clock Out of the second interface to the Slave Clock In of the next audio interface (and so forth).

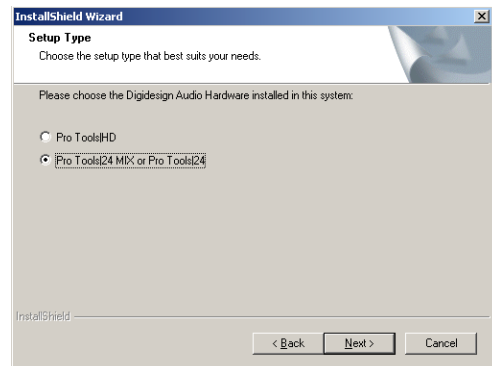


Connecting multiple audio interfaces together

Installing Pro Tools Software

To install Pro Tools software:

- 1** Turn on your computer.
- 2** Start up Windows, logging in with Administrator privileges. If you do not have Administrator privileges or do not know how to set them up, see your Windows User's Guide.
- 3** Wait for the Found New Hardware Wizard dialog to appear and leave it open.
- 4** Place the Pro Tools Installer CD-ROM for Windows in your CD-ROM drive. Locate (in the Pro Tools Installer folder) and double-click the blue icon named "Setup."
- 5** Click Next.
- 6** Click OK to accept the License Agreement.
- 7** Select the hard drive on which to install Pro Tools from the Install pop-up menu. For maximum reliability, install Pro Tools on your startup drive. Click Next.
- 8** Select Pro Tools|24 MIX or Pro Tools|24 for the Digidesign Audio Hardware installation. Click Next.



Selecting Pro Tools|24 MIX or Pro Tools|24 installation

9 We recommend you choose the Typical Install option. However, if you Custom Install, the next window will ask you to choose the options you want to install. To install any of these items, select them from the following list:

Program Files This component contains the Pro Tools executable and all support DLLs.

Plug-Ins This component contains the core plug-ins. These files are required by Pro Tools.

Controllers This component contains the Pro Tools Control Surface Personalities.


Documentation This component contains Pro Tools documentation and release notes.

System Files This component contains DigiDesign System Files. These files are required by Pro Tools.


Pro Tools Utilities This component contains the DigiTest utility and calibration test tones.

Codecs This component contains the Pro Tools Audio Codecs: MP3, RealAudio, and Windows Media.

DigiTranslator Enables the exchange of audio and video files, and sequences between OMFI-compatible applications and Pro Tools.

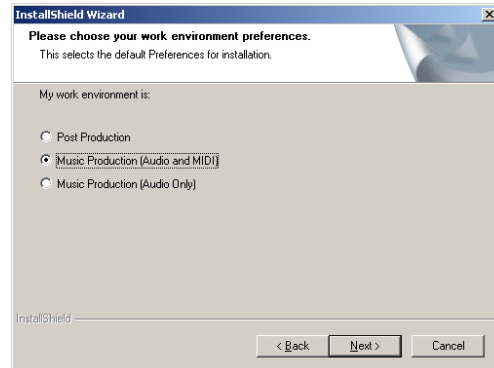
 For more information on DigiTranslator, see the *DigiTranslator Guide*.

Answerbase This component contains standalone Pro Tools multi-lingual information databases. Note that these files require approximately 37 MB of disk space.


 *MacOpener is included on the Pro Tools installer CD-ROM disk and requires a separate installation process.*

10 Click Next.

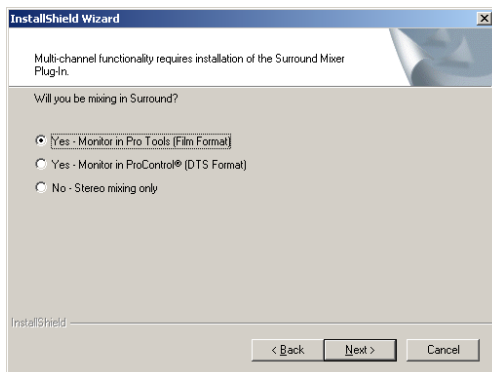
11 Select a “work environment.” This is an initial set of Pro Tools Preferences. These Preference “sets” have been pre-configured to include some of the more popular settings for post production, audio, and audio with MIDI. Click Next.



Selecting a Pro Tools Work Environment

 Preference settings can be customized at any time in Pro Tools. See the *Pro Tools Reference Guide* for more information about Preferences.

12 Select whether to install the Surround Mixer plug-in. This plug-in is required for mixing, mastering, and monitoring in surround. For Surround systems, select Yes – Monitoring Pro Tools Film Format if your monitoring is configured for Film Format, or select Yes – Monitoring in Pro-Control (DTS Format) if using a ProControl dedicated controller. Select No – Stereo mixing only, if your monitoring is configured for Stereo. After making a selection, click Next.



Selecting a Pro Tools Surround Mixer

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

14 If QuickTime is not already installed, you will be prompted to install the “Recommended” QuickTime installer option now (see “Installing QuickTime” on page 31). Follow the on-screen instructions to complete the QuickTime installation process.

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

If you do not follow the steps above or if you cancel any of the steps, your computer may not recognize your Pro Tools cards and you may receive the error message, “Cannot Create DAE Deck.” To resolve this error message, see “Cannot Create DAE Deck Or Error Number 4” on page 33.

Installing QuickTime

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

Using MIDI

Pro Tools in Windows uses your Multimedia Setup to configure MIDI devices and their properties. Refer to your device’s installation and usage documentation to properly configure the device.

Checking Your TDM System and Launching Pro Tools

Before you launch Pro Tools, run the DigiTest diagnostics application located in the Digidesign Utilities folder (see “Running DigiTest” on page 32). DigiTest finds your cards and confirms that they are correctly installed and working.

When DigiTest has completed and you have rebooted your computer, launch Pro Tools for the first time.

Starting Up Your System

Whenever you start your system, you must turn on all of your system components in a specific order.

Start your Pro Tools System in this order:

- 1** Make sure all your equipment (including your CPU) is off.
- 2** For TDM systems with an expansion chassis, turn on the expansion chassis.

3 Turn on external hard drives, if any. Wait approximately ten seconds for them to spin up to speed.

4 Lower the volume of all output devices, then turn on your Pro Tools audio interfaces.

5 Turn on any MIDI interfaces and devices, or synchronization peripherals.


6 Turn on your Pro Tools audio interfaces (such as 888|24 I/O). On power up, the status LEDs will flash. Wait at least fifteen seconds for the audio interface to initialize, and the status LEDs to stop blinking and stay lit.


If you launch Pro Tools without turning on your audio interfaces, you will be prompted to turn them on. Allow fifteen seconds for audio interfaces to power-up and the status LEDs to stop blinking and stay lit, before clicking OK.

7 Turn on your computer.

Running DigiTest

Run the DigiTest diagnostics application to identify TDM cards and verify that they are correctly installed and working.

 *DigiTest is included on the Pro Tools Installer CD and installed with Pro Tools. DigiTest resides in the Digidesign Utilities folder located in your hard drive, in the sub-directory Digidesign/Pro Tools/Pro Tools Utilities.*

 *Before you run DigiTest, lower the volume of all output devices. Very loud digital noise may be emitted during the test.*

To run DigiTest:

1 Turn off Pro Tools.

2 Go to Start > Programs > Digidesign > Pro Tools > DigiTest.


3 Test cards.

- To test only one Digidesign card in your system, click the button that corresponds to this card.

- To test all Digidesign cards at once, press the “Test All Cards” button.

4 When prompted, recycle power on all Pro Tools peripherals. Press Continue.

5 Check the “Test I/O Box.”

 *LEDs on your digital interfaces may light up during this test. This is normal. Continue to test.*

6 Exit DigiTest by clicking on the “close” box on the top right hand corner of the application window.

7 Reboot your computer.

Errors and Undetected Cards

Complete the steps below if:

- There is a problem with a component in your system and an error message has been displayed to the right of the corresponding card’s button in DigiTest.

– or –

- A supported card is installed but not automatically detected during DigiTest.

If a supported card is installed and is not automatically detected:

1 Close DigiTest.

2 Power down your system.

3 Reinstall the cards (see “Installing Pro Tools Cards” on page 27).

4 Check the card seating.

5 Check the TDM ribbon cable connection.

6 Power up.

7 Begin DigiTest again.

For descriptions of all error codes, refer to Appendix B, “DigiTest Error Codes.” For test details, click the Info button to the right of the reported error, then click Failures in the pop-up window and change Failures to Detailed.

If a card continues to fail DigiTest, contact Digidesign Technical Support:

tel: 650-731-6100

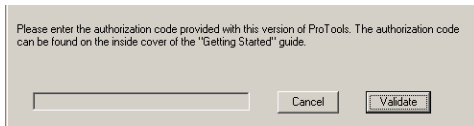
Launching Pro Tools the First Time

Validate Pro Tools Software

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

To validate Pro Tools software:

- 1 Double-click the Pro Tools application in the Pro Tools folder inside the Digidesign folder.
- 2 Enter the authorization code in the dialog when prompted, making sure to observe any spaces, then click Validate.



Authorization code validation for Pro Tools

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

Congratulations! Pro Tools is launched. When Pro Tools is launched for the first time only the menus will appear. To see Edit and Mix windows, a new session must be created. But before you begin working with Pro Tools, you should get acquainted with Pro Tools system settings (see “Configuring Pro Tools” on page 34).

Cannot Create DAE Deck Or Error Number 4

Your computer may not recognize your Pro Tools cards if you did not correctly follow all of the hardware and software installation steps.

If you receive error message number 4 or “Cannot Create DAE Deck,” when you launch Pro Tools, complete the instructions below.

To correct a “Cannot Create DAE Deck” error:

- 1 Turn your computer off.
- 2 Confirm that all your Pro Tools cards are seated correctly and cables are tightly fastened.
- 3 Start your computer and launch Pro Tools. If the error does not re-appear, you do not need to continue with these steps.
- 4 With your computer on, right-click the My Computer icon (located on your Windows desktop).
- 5 Choose Properties > Hardware > Device Manager.
- 6 Expand the Sound, Video and Game Controllers list.
- 7 In Multimedia Devices, you should see an “!” icon next to each Pro Tools DSP chips that is not properly installed.
- 8 Select one of these “!” icons and press Delete. Click OK in the Confirm Device Remove dialog.

9 Repeat the previous step for each of these “!” icons, until they are all removed. Then, click OK.

10 You are ready to install your Pro Tools cards. See “Installing Pro Tools Hardware” on page 25.

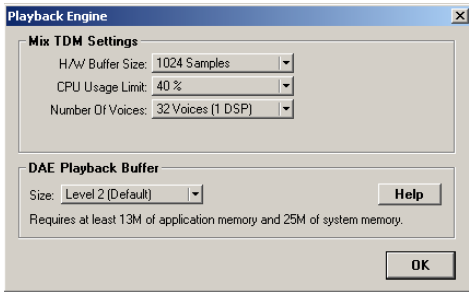
Configuring Pro Tools

Configuring the Playback Engine

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

To configure the Playback Engine:

1 Choose Setups > Playback Engine.



Playback Engine dialog for Pro Tools TDM system

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

3 From the CPU Usage Limit pop-up, select the maximum percentage of CPU resources to allocate to host processing tasks. The default setting is 40%. Select a higher setting if you need more host processing power for RTAS, TDM, and Direct Connect applications.

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

4 From the Number of Voices pop-up, select the amount of voices (and voiceable tracks), for your sessions. The default number of voices on a Pro Tools|24 MIX system is 32 voices.

⚠ *Changing the number of voices affects DSP usage and your system performance. Please read the following carefully.*

Depending on the number of MIX Core, MIX Farm, and DSP Farm cards in your system, you will have different choices available. For example, each MIX card allows you to use one or two of its DSPs per card for voicing.

Most DSP amounts support two levels of voice numbers:

- Select higher voice numbers when your cards are in your machine. You should also select higher voice numbers when using a chassis to run higher track counts at higher sample rates (such as 64 tracks) and you want more voices (such as 32 voices per DSP).
- Select minimum voice numbers when running cards in an expansion chassis, using other PCI cards along with Digidesign cards, or if you are running high bandwidth PCI cards (such as video capture).

For voice limits on different MIX systems, refer to the *Pro Tools Reference Guide*.

5 Set DAE Playback Buffer Size.

6 Click OK, when finished.

DAE Playback Buffer Size

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

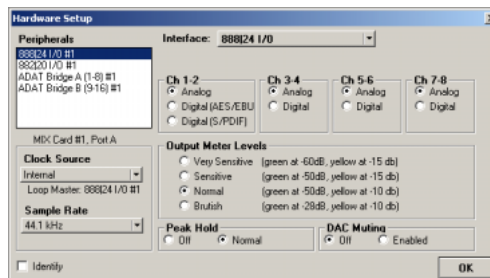
Though DAE automatically selects the optimal playback buffer size for your system, you may want to adjust this parameter to modify your system's performance:

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

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

Configuring Hardware Setup (Audio Interfaces)


Pro Tools MIX peripherals support 8 channels of simultaneous I/O. The peripherals support multiple formats (such as analog, AES/EBU, and so on).



Hardware Setup dialog for 888|24 I/O

The Hardware Setup dialog provides controls for hardware Sample Rate, Clock Source, and operating levels. This dialog will display different controls depending on the audio interface selected in the Interface pop-up menu.

To properly configure connected peripherals for use with Pro Tools, you must select the peripheral, then set the parameters for the selected peripheral—repeating this for each peripheral in your system.

 Use the Up and Down Arrow keys to scroll through each peripheral.

To validate audio interfaces with the Identify button:

- 1 Choose Setups > Hardware in Pro Tools.
- 2 From the Peripherals list, select the Digidesign audio interface connected to the first card in your MIX system. This will be the interface at the top of the list.
- 3 If “no interface” appears in the Peripherals list, use the Interface pop-up menu to manually identify the audio interface.

4 Click on the Identify button, located in the lower left corner of the Hardware Setup dialog, to illuminate all the LEDs on the front panel of the audio interface. If the LEDs do not light, make sure the interface is selected in the Peripherals list, and that it is powered on. If the LEDs continue to not light, review hardware installation and run DigiTest again.

5 Repeat the above steps for additional audio interfaces.

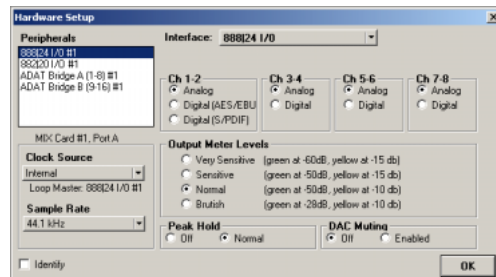
To configure audio interfaces:

- 1 Choose Setups > Hardware in Pro Tools.
- 2 From the Peripherals list, select the Digidesign audio interface connected to the first card in your MIX system. This will be the interface at the top of the list.
- 3 From the Clock Source pop-up menu, select the appropriate clock source for the system. In most cases, you will use Internal. The other choices are for resolving Pro Tools to external clock sources. Depending on your audio interface, Clock Source options can include: AES/EBU, S/PDIF, Optical, AES/EBU 1–8, and Word clock.
- 4 From the Clock Source pop-up menu, select the appropriate clock source for devices attached to your I/O.
- 5 Configure controls specific to your MIX I/O.
- 6 For additional MIX-series I/Os, choose the I/O in the Peripherals list, and repeat the above steps.

Configuring 888|24 I/O Controls

To configure controls specific to an 888|24 I/O:

- With the 888|24 I/O selected in the Peripherals list, you can configure the following options:
 - Channel pairs can be set to Analog or Digital.
 - You can set the sensitivity of the Output Meter Levels.
 - You can set Peak Hold to Off or Normal.
 - You can turn off or enable DAC Muting.

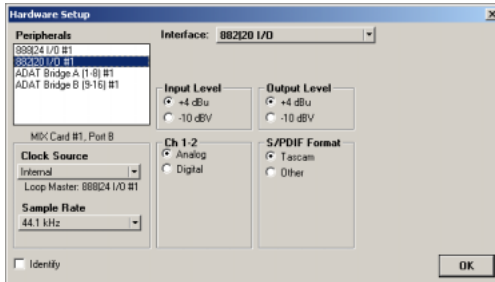


Hardware Setup dialog for 888|24 I/O

Configuring 882|20 I/O Controls

To configure controls specific to an 882|20 I/O:

- With the 882|20 I/O selected in the Peripherals list, you can configure the following options:
 - You can set your Input and Output levels by selecting Reference Level +4 dBu or –10 dBV.
 - Channels 1 and 2 can be set to Analog or Digital.
 - You can set the S/PDIF Format for Tascam DA-30 or Other.

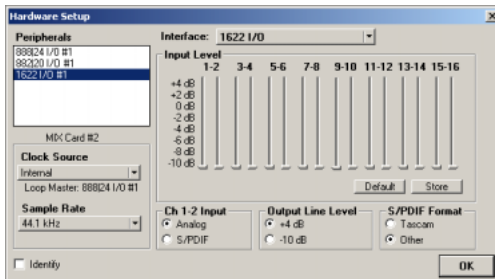


Hardware Setup dialog for 882|20 I/O

Configuring 1622 I/O Controls

To configure controls specific to an 1622 I/O:

- With the 1622 I/O selected in the Peripherals list, you can configure the following options:
 - You can set your Input levels by using channel fader controls with a Reference Level range of +4 dBu to -10 dBV.
 - You can set your Output levels by selecting Reference Level +4 dBu or -10 dBV.
 - Channels 1 and 2 can be set to Analog or Digital.
 - You can set the S/PDIF Format for Tascam DA-30 or Other.



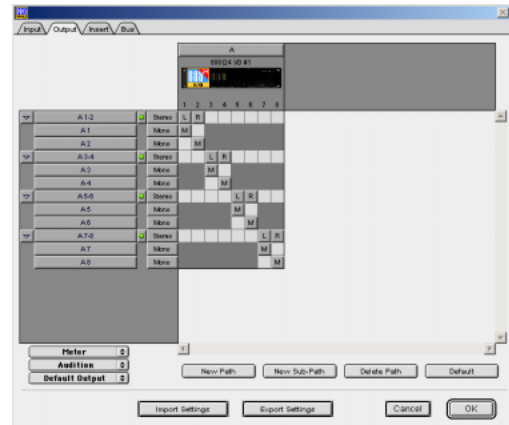
Hardware Setup dialog for 1622 I/O

Configuring ADAT Bridge I/O Controls

For information on configuring the Hardware Settings for the 24-Bit ADAT Bridge I/O or the original ADAT Bridge I/O, please refer to the *ADAT Bridge I/O Guide*.

Configuring I/O Setup

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



I/O Setup dialog with a single 888|24 I/O

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

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

- 1 Choose Setups > I/O Setups in Pro Tools.
- 2 Map and name paths as desired.
- 3 If necessary, redefine formats for I/O channels of any peripherals.

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

chapter 4

Connecting Your Studio

This chapter provides general information on connecting Pro Tools to your system, including digital equipment, effects units, MIDI gear, and SMPTE synchronization devices.


Refer to the *888|24 I/O Guide*, the *882|20 I/O Guide*, the *1622 I/O Guide*, or the *ADAT Bridge I/O Guide* for specific details regarding:

- Front and back panel connectors and indicators
- Technical specifications

Setting Up Your Studio

The following diagrams provide general suggestions for connecting studio gear to your system.

Figure 1 illustrates a typical studio setup, with an 888|24 I/O connected to a mixing console, effects and other equipment.

 *The 888|24 I/O analog audio connectors are balanced XLRs with pin 2 wired hot (or “+”), pin 3 cold (or “-”), and pin 1 ground.*

If you are connecting a balanced system, pin 1 and shield should be connected at the input only (not at the output). This will prevent ground loops between the shield and pin 1 conductor.

If you are connecting an unbalanced signal to the 888|24 I/O inputs or outputs, connect only pin 2 to the “+” signal, and pins 1 and 3 to ground at all inputs only.

Figure 2 illustrates a setup without a mixer, where effects and monitoring gear are connected directly to an 882|20 I/O.

Example Studio Setup with a Mixing Console

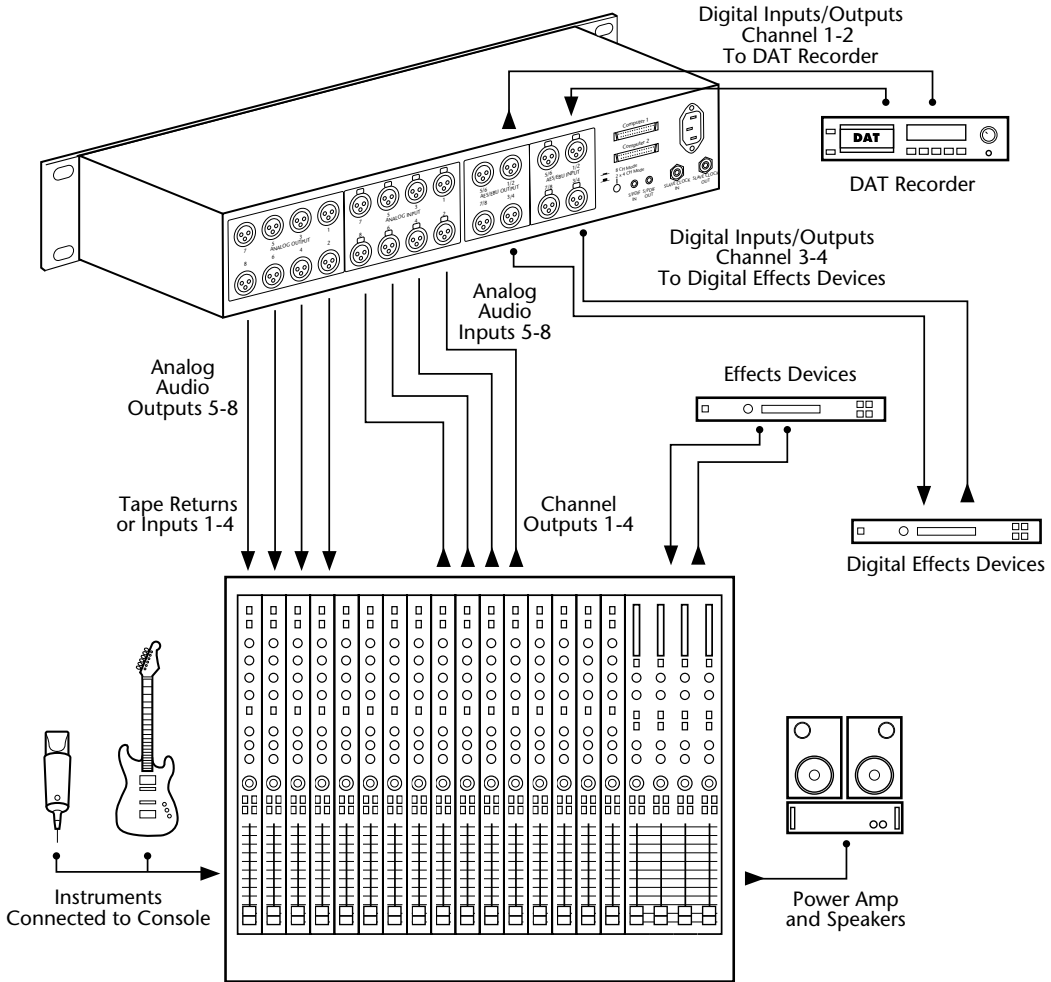


Figure 1. Typical studio configuration using an 888|24 I/O

Example Studio Setup without a Mixing Console

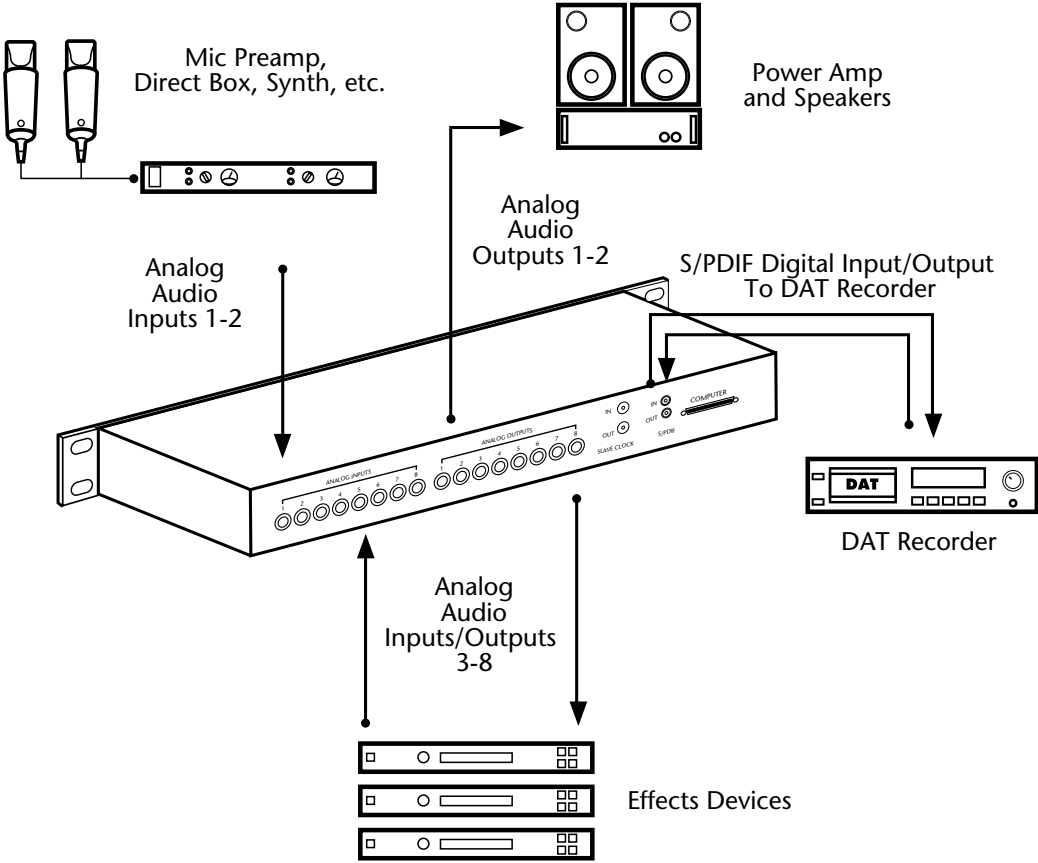


Figure 2. Typical studio configuration without a mixer using an 882|20 I/O


Connecting Equipment with Digital Audio Ins and Outs

Because the 888|24 I/O, 882|20 I/O, 1622 I/O, and 24-Bit ADAT Bridge I/O feature digital inputs and outputs, Pro Tools allows you to digitally record to or from a digital device such as a DAT recorder. The 888|24 I/O and 24-Bit ADAT Bridge I/O provide both AES/EBU and S/PDIF digital audio input and output. The 882|20 I/O and 1622 I/O provide S/PDIF digital audio input and output.

If you plan to use a DAT player, CD recorder, or other digital input and output device with your Pro Tools system, be sure the external device supports either the AES/EBU or S/PDIF format. Your interface's AES/EBU inputs and outputs should only be connected to another AES/EBU device. Likewise, its S/PDIF inputs and outputs should only be connected to another S/PDIF device.

To connect your Pro Tools system to a DAT recorder:

- 1 Connect the digital output (AES/EBU or S/PDIF) of the audio interface to the digital input (AES/EBU or S/PDIF) of the DAT deck. Audio channels 1 and 2 will be sent out of these outputs.
- 2 Connect the digital output (AES/EBU or S/PDIF) of the DAT to the digital input (AES/EBU or S/PDIF) of the audio interface. The DAT recorder will be routed to Pro Tools inputs 1 and 2.

 For information on using an ADAT with Pro Tools, see the ADAT Bridge I/O Guide.

Connecting Effects Units

The 888|24 I/O, 882|20 I/O, 1622 I/O, and 24-Bit ADAT Bridge I/O audio interfaces allow you to connect effects units to your system by using any analog or digital inputs and outputs as Auxiliary Inputs and Outputs for effects sends and returns. Once an effects unit is attached this way, you can send a variable amount of a track's output to the effects unit using a *send fader* in Pro Tools.

Five separate send controls on each Pro Tools track allow you to route audio to any of the available outputs connected to your system or through any of the 32-internal busses in the Pro Tools TDM Mixer. Outputs can be returned to mono or stereo Auxiliary Inputs for automated mixing or processing.

When you are using an effect in this send-type of configuration, make sure the unit's internal mix or balance between direct (unprocessed) and wet (effected) signal is set so that only the processed signal is returned to Pro Tools. On most effect units, a balance setting of 100% (completely wet) is the appropriate setting.

If you've been using an effects unit in an instrument setup, such as a guitar effects rack, you'll probably find the balance to be below 50%. If the unit has separate dry and effect level knobs, turn dry level control off. If you don't do this, the dry, unprocessed signal will be present in an effect's output along with the desired processed sound, and you'll have trouble accurately controlling the effect balance in your final mix.


Connecting Effects Units Digitally

To use your audio interface's inputs and outputs as effects sends & returns to a digital effects device, set your interface to Internal mode (unless it is already synchronized to an external clock source such as a DAT deck). You should then set your digital effects devices to accept an external digital clock so that they will synchronize themselves to Pro Tools. In the Pro Tools Hardware Setup dialog, set the input of the channel pair to which you have connected the digital effects device to Digital, and set the Sync Mode to Internal.

Connecting MIDI Devices


Macintosh

By adding a Macintosh-compatible MIDI interface to your system, you can take advantage of all the MIDI features of Pro Tools, including recording and editing tracks, syncing to MIDI Time Code or MIDI beat clock (this requires an appropriate MIDI interface) and the use of MIDI Controllers.

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

To connect MIDI devices to your system:


- 1 Connect the MIDI interface to your computer according to the MIDI interface's documentation.

 *On 9600, 9500, and Beige G3 Power Macintosh computers, connect the MIDI interface to the modem port. MIDI timing data output through the modem port is more accurate than that output through the printer port.*

- 2 Install any MIDI driver software required by the MIDI interface. (Once you have installed your MIDI interface hardware and software, confirm that it is working properly using the procedure given in the interface's documentation.)


- 3 Connect the MIDI OUT of your MIDI device or controller to the MIDI IN of your MIDI interface.

- 4 Connect the MIDI IN of your MIDI device or controller to the MIDI OUT of your MIDI interface.

 See Appendix C, "Configuring OMS (Macintosh Only)" for information on configuring OMS (Open Music System) software, which is required for Pro Tools and MIDI on the Macintosh.

Windows

By adding a Windows 2000-compatible MIDI interface to your system, you can take advantage of all the MIDI features of Pro Tools, including recording and editing tracks, syncing to MIDI Time Code or MIDI beat clock (this requires an appropriate MIDI interface) and the use of MIDI Controllers.

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

To connect MIDI devices to your system:

- 1 Connect the MIDI interface to your computer according to the MIDI interface's documentation.

2 Install any MIDI driver and/or controller software required by the MIDI interface. (When your MIDI interface hardware and software is installed, confirm that it is working properly. To do so, use the procedure provided with the interface's documentation.)

3 Connect the MIDI OUT of your MIDI device or controller to the MIDI IN of your MIDI interface.

4 Connect the MIDI IN of your MIDI device or controller to the MIDI OUT of your MIDI interface.

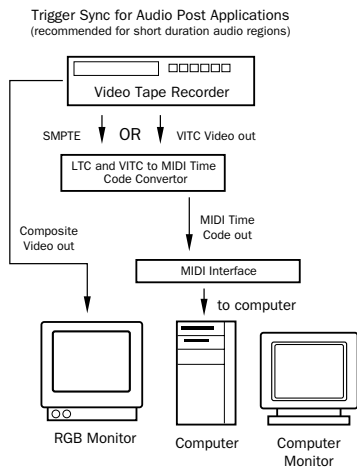
Connecting SMPTE Synchronization Devices

If you intend to synchronize Pro Tools to external devices with SMPTE using MIDI Time Code, your system must be connected properly. This section provides setup suggestions for synchronizing Pro Tools to audio or video tape. For details on SMPTE and synchronization, see the *Pro Tools Reference Guide*.

Pro Tools and Synchronization

Pro Tools supports a type of SMPTE synchronization known as SMPTE Trigger through the use of SMPTE-to-MIDI Time Code converters. This type of synchronization allows Pro Tools to chase and start (or stop) playback and recording while slaved to other systems. With SMPTE Trigger alone, once playback or recording starts, there is no further synchronization, and Pro Tools will play back at a rate determined by the internal clock of the audio interface or selected external clock source.

For fairly short pieces of audio program material, SMPTE Trigger is acceptable, especially if the sync master has a fairly stable transport or is resolved to house sync or a black burst generator. In this case, the master transport and Pro Tools will probably not drift very far apart in such a short period of time.



Synchronization setup using SMPTE Trigger alone

On the other hand, if the audio piece is several minutes long, or if the sync master has an unstable transport (as in the case of a low quality recording deck striped with SMPTE, for example), SMPTE Trigger alone is probably not an acceptable solution, since the two systems may drift apart noticeably over the duration of the source material.

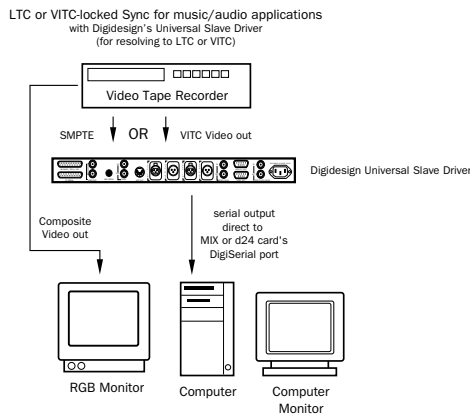
A better alternative is to use Digidesign's SYNC I/O or Universal Slave Driver (USD).

The Digidesign Universal Slave Driver

The Universal Slave Driver (USD) is a multi-purpose synchronization peripheral that provides virtually all of the functions and connections needed to achieve synchronization to a variety of devices.

The USD allows synchronization of Pro Tools to Linear Time Code (LTC), VITC, and Bi-Phase/Tach while resolving to a video house reference or other word clock signals. It supports all major industry-standard clocks and formats and can also act as a standalone MIDI Time Code (MTC) or VITC reader/generator.

In addition, the Universal Slave Driver offers extremely fast lockup, near-sample accurate synchronization, and an exceptionally low-jitter clock. These features provide professional performance and maximum audio fidelity under a wide range of synchronization conditions.



Synchronization setup using a USD

For information on using the Digidesign Universal Slave Driver, see the Digidesign Universal Slave Driver Guide.

SYNC I/O

The SYNC I/O can be used with Pro Tools|24 MIX and Pro Tools|24 systems, as an alternative to the USD. When used with Pro Tools|24 MIX and Pro Tools|24 systems, the SYNC I/O emulates the USD.

For information on using the SYNC I/O, see the SYNC I/O Guide.

chapter 5

Working with Pro Tools

This chapter takes you on a guided tour of Pro Tools, introducing its main windows and features. Also included is a step-by-step overview of basic audio recording (see “Basic Recording” on page 57).

How to Use This Chapter

If you are new to Pro Tools, read this chapter for an overview of how to get started learning to record, edit, automate, and mix using Pro Tools|24 MIX.

All of the features described in this chapter are explained fully in the *Pro Tools Reference Guide*. Refer to that guide, using its index, to find additional information on all Pro Tools features.

Session Basics

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



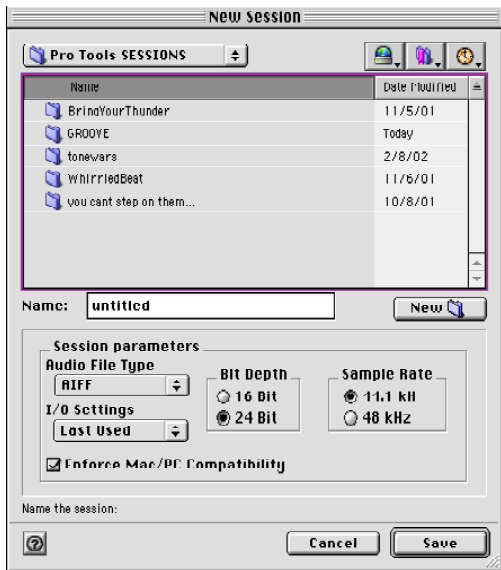
Session folder, containing the session file and its Audio Files and Fade Files folders

Pro Tools remembers audio interface configuration and other system settings and applies them to all new sessions.

Starting a Session

The basic steps to set up a new session are:

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



New Session dialog


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

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

- 5 Type a name for your session.
- 6 Choose Save. The new session opens its Mix, Edit, and Transport windows (see Figure 3 on page 49).

Main Windows

The Mix, Edit, and Transport windows are the main Pro Tools work areas (see Figure 3 on page 49). You can show (or hide) any of these windows by choosing show (or hide) commands in the Windows menu.

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

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

Edit Window Displays tracks 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.

Session Setup Provides status display for important Pro Tools session settings, including sample and frame rate, clock source, and file format. Also includes the Current Time Code counter, and controls for clock reference, positional reference, and other time code features for the Digidesign Universal Slave Driver (USD).

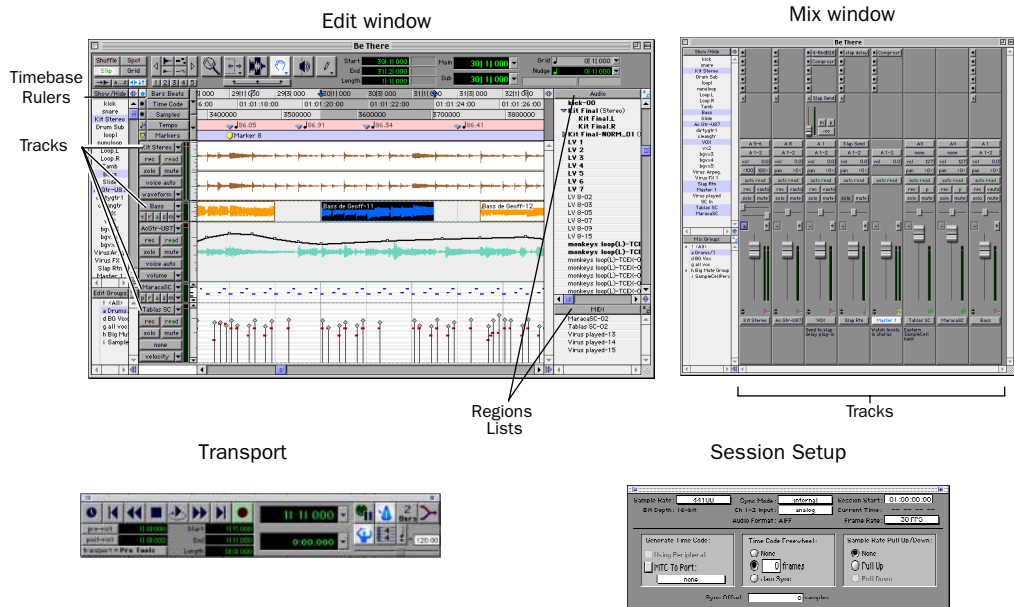


Figure 3. Main session windows (Macintosh shown)

Session Settings

Pro Tools provides several different Timebase Rulers to select the timebase for your session. Timebase Rulers, displayed along the top of the Edit window, include Bars:Beats, Minutes:Seconds, Time Code, Feet.Frames, and Samples. The current Timebase determines the format of your main counters, and provides the basis for the Edit window Grid.

For post production, select either Time Code or Feet.Frames as your session Timebase in the Rulers view.

To select a Timebase Ruler:

- Click the circle next to the displays at the top left side of the Edit window (labeled Bars:Beats, Time Code, Min.:Sec, and so on).

Tempo

You can set a session tempo using the MIDI tempo controls in the expanded Transport window, or using the Tempo ruler.

To define your session tempo:

- Click in the Tempo field in the Transport window, and type in the desired tempo.

To tap in a session tempo:

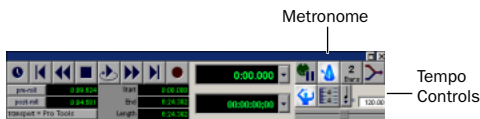
- Choose Display > Transport Window Shows > MIDI Controls.
- In the Transport MIDI controls, turn off the Conductor to enable Manual Tempo mode.
- Use the mouse to click on the Tap button.

Click and Metronome

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

To configure and enable the Pro Tools click:

- 1 Choose MIDI > Click Options.
- 2 Configure the click parameters as needed for your MIDI sound source in the Click/Countoff Options dialog.
- 3 During recording or playback, you can turn the Click on or off using the Click switch in the Transport window, MIDI Controls display.




Transport window, displaying Click and Tempo Controls

Frame Rate and Other Synchronization Settings


To set session frame rate or other synchronization settings:

- 1 Choose Windows > Show Session Setup.
- 2 Set parameters as desired.

 If you are using an Ethernet or MIDI control surface, or an external synchronization peripheral, choose *Setups > Peripherals*, then select *MIDI Controllers* or *Ethernet Controllers*, as appropriate, and enable each device. For more information, refer to the guide for your control surface or the *MIDI Control Surfaces Guide*.

Saving Sessions

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

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

To save a session:

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


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

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

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

System Resources and Settings

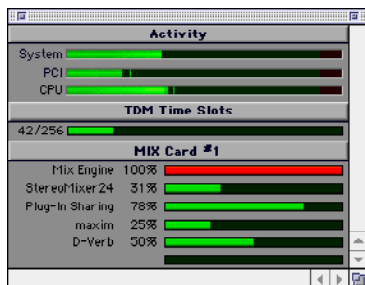
You can customize many Pro Tools system settings in the Playback Engine dialog to optimize system performance.

 For information on configuring the Playback Engine on Macintosh, see “Configuring Pro Tools” on page 17.

For information on configuring the Playback Engine on Windows, see “Configuring Pro Tools” on page 34.

System Usage Window

Displays information on CPU and DSP performance. The System Usage window is especially useful for monitoring your system’s performance when using RTAS or TDM plug-ins.



Meters in the System Usage window (TDM shown)

To view system resources and usage:

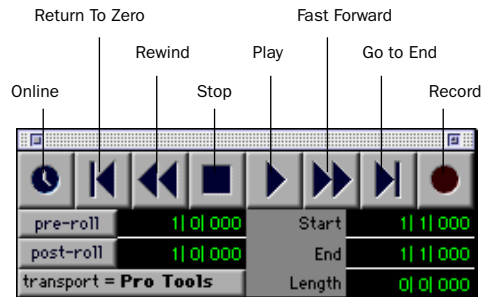
- Choose Windows > Show System Usage.

Transport Controls

The Transport window provides all Pro Tools transport commands. There are different available transport controls that can be displayed or hidden by selecting or deselecting them in the Transport Window Shows sub-menu.

To show the Transport window:

- Choose Window > Show Transport Window.




Transport window

To configure the Transport window:

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

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

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

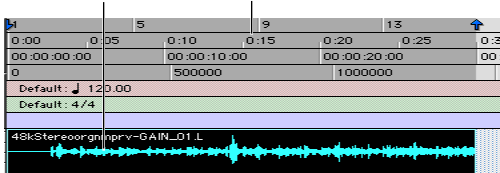
Navigating

Pro Tools 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:

- Click at the desired location with the insert bar.

Click in a track, or on a Timebase ruler

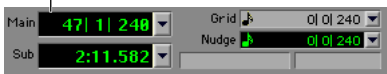


Navigating in the Edit window

To navigate using the counters:

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

Click and enter a location into either counter



Navigating in the Counter

Memory Locations

Memory locations provide another way to navigate within sessions.

To define a memory location:

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

To go to a stored memory location:

- Press the Decimal key on the numeric keypad, followed by the marker number, followed by the Decimal key.

Tracks

Pro Tools lets you create audio and MIDI tracks as needed, for audio and MIDI recording, sub-mixing, 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, stereo, or any of the supported multichannel formats for surround mixing.

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 Tracks.



New Track dialog

2 Specify the number of tracks, track type (Audio Track, Aux Input, Master Fader, or MIDI Track), and mono, stereo, or any of the supported multichannel formats for surround mixing (except for MIDI).

3 Click Create.

Tracks in the Mix window

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



Tracks in the Mix window

Audio Tracks

All audio tracks—whether audio (disk) tracks, Auxiliary Inputs, or Master Faders—share many identical controls. Figure 4 on page 54 shows the Channel controls found in the Mix window for a stereo audio or Auxiliary Input track. Master Fader tracks do not provide all the controls of an audio track, such as Sends, Pan, or Record Enable, Mute and Solo buttons.

MIDI Tracks

MIDI tracks provide track level, solo, and mute, in addition to MIDI input, output, channel, and program (patch) controls. MIDI volume, mute, and pan can also be automated using Pro Tools automation features (see “Mix Automation” on page 66 for more information).

Adjusting the Volume and Panning of a Track

To adjust the volume of a track:

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

To adjust panning of a track:

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

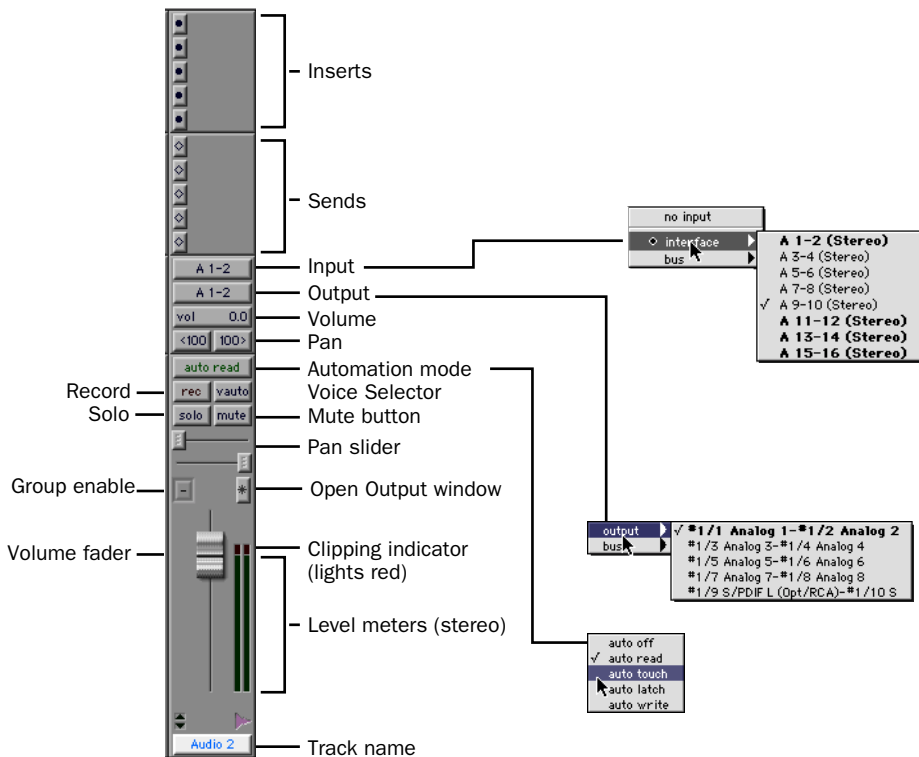
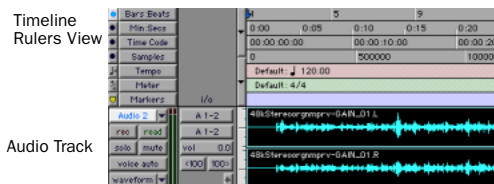


Figure 4. Stereo audio track in the Mix window

Tracks in the Edit Window

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

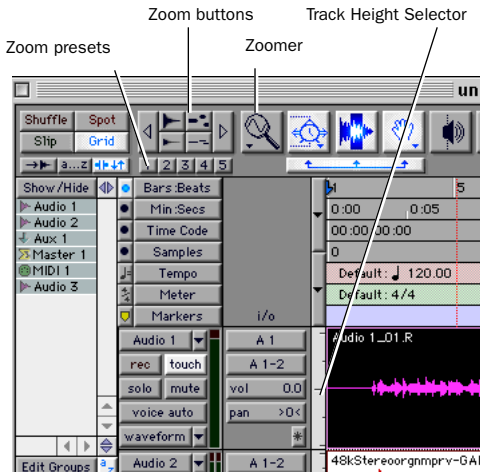
Audio, Auxiliary Input, Master Fader, and MIDI tracks can be automated. (See “Mix Automation” on page 66 for more information.)



Timeline Rulers and a stereo Audio track in the Edit window

Viewing and Zooming

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



Zoom and Track Height tools in the Edit window

To change track height:

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



You can apply many commands, including changing the track height selection, to more than just a single track. Hold down the Option key (Macintosh) or Alt key (Windows) while performing the operation to apply it to all tracks; or hold down both the Shift and Option keys (Macintosh) or Shift and Alt keys (Windows) while performing the 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 switch 1–5.

To store a new Zoom preset definition:

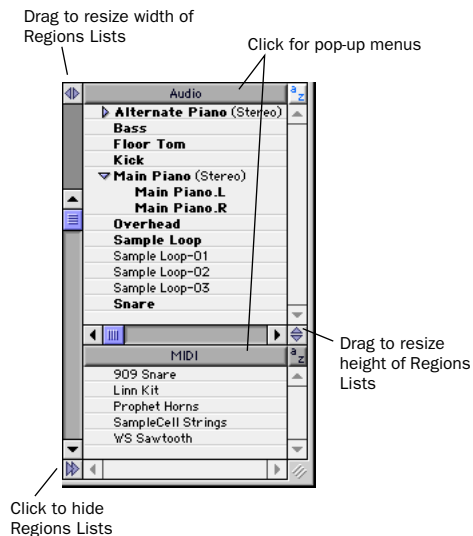
- Command-click a Zoom preset number to store the current horizontal and vertical Zoom to that preset.

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 or Selections, but have Track Height, Zoom Settings, or other options enabled, you can use Memory Locations to zoom in and out using just the numeric keypad.

Regions Lists

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

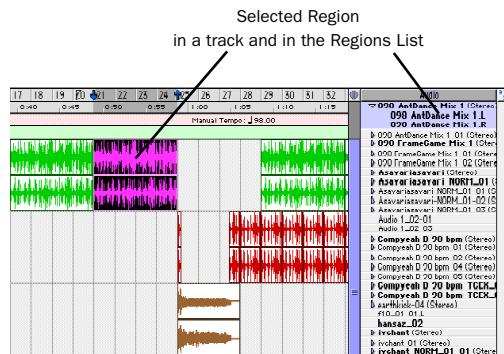


Audio and MIDI Regions Lists

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

Importing Audio

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



Selected audio region on a track and in the Regions List

To import audio files or regions from disk:

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

– OR –

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

To import a CD audio track (Macintosh Only):

- 1 Insert the audio CD into your CD-ROM drive.
- 2 Choose Movie > Import Audio From Other Movie.
- 3 Locate and select the audio track to be imported, then click Convert.

- 4 When the Save dialog appears, click the Options button.
- 5 In the Options dialog, select the sample rate, bit resolution, and stereo format.
- 6 At the bottom of the Options dialog, set the range of the audio track to be imported by adjusting the Start and End times, then click OK.
- 7 To audition a selected file or region before you import it, use the Play and Stop buttons.
- 8 Specify the destination folder for the selected converted audio file and click Save. Pro Tools imports the CD audio track as a QuickTime movie and writes it to your hard drive.
- 9 When the Track Import window appears, click OK.

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

Basic Recording

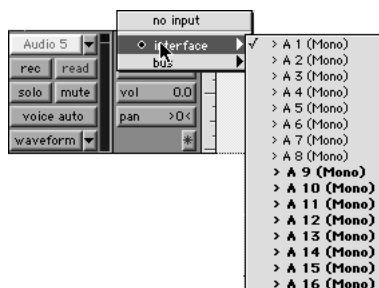
This section describes how to record audio and MIDI tracks in Pro Tools.

Routing Audio to a Track

To route audio to a track:

- 1 Verify the connections to your instruments. Refer to the guide for your audio interface for more information about setting up your studio.

- 2 Create a new track to record on by choosing File > New Track. Select 1 Mono Audio Track and click Create.
- 3 In the Mix window, find the track I/O controls. If it is not already visible, select Display > Mix Window Shows > I/O View. The I/O View is located below the sends and above the solo and mute buttons.
- 4 Click the Input button of the new track.
- 5 From the pop-up menu, select the input you want recorded. For example, specify A 1 if your audio source is plugged into analog input 1. The menu displays the names of the inputs defined in the I/O Setup dialog (see “Configuring I/O Setup” on page 20 for Macintosh and “Configuring I/O Setup” on page 37 for Windows).



Routing an input to a mono track

Setting Levels

Adjust the level of the input at the source (instrument, mic pre-amp, or mixer) to set Pro Tools recording levels. The key to setting proper input levels is to get a signal as loud as possible without creating digital clipping. Signals that get close to the top of the meter in Pro Tools use more of the full bit range (the 24 bits that make up each audio sample). The more

you are able to maximize this bit range, the better the sound quality will be—by setting optimum levels, you will get the least possible noise and distortion.

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

💡 *Increasing gain raises the noise floor. Make sure that the device you have connected is outputting as strong a signal as possible without distorting.*

Recording an Audio Track

To record an audio track:


- 1 Record-enable the desired track, assign its input, and set the input levels appropriately.
- 2 In the Transport window (Windows > Show Transport), click Return To Zero to ensure that you are starting from the beginning of the session. You can also record according to a selection or from the cursor location in the Edit window.
- 3 Click Record in the Transport window to enable recording.
- 4 Click Play or press the Spacebar to record on all record-enabled tracks.
- 5 Start playing your instrument.
- 6 Click Stop in the Transport window or press the Spacebar when you are done recording.

To play back a recorded track:

- 1 Disable the track's Record-enable button.
- 2 Click Play in the Transport window or press the Spacebar to start playback.
- 3 Click Stop in the Transport window or press the Spacebar to stop playback.

Recording To and From Digital Devices

The 882|20 I/O and the 1622 I/O provide S/PDIF (RCA) connectors for digital input and output. The 888|24 I/O also provides AES/EBU (XLR) connectors in addition to S/PDIF. The ADAT Bridge I/O adds optical input and output so that you can digitally transfer as many as eight tracks at a time to or from an ADAT.

 *For information on recording to and from ADAT, see the ADAT Bridge I/O Guide.*

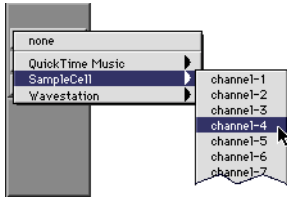
Setting Digital Format and Clock Source

Before recording from a digital source, make sure you have enabled the appropriate Sync Mode (Macintosh) or Clock Source (Windows), and Digital Format in either the Playback Engine or Hardware Setup dialog. For example, if you want to record from a DAT machine connected to your S/PDIF RCA inputs on an 888|24 I/O, select S/PDIF from the Sync Mode (Macintosh) or Clock Source (Windows) pop-up menu. If using multiple audio interfaces, be sure to configure the appropriate one in either the Playback Engine or Hardware Setup dialog.

Recording MIDI

To configure a new MIDI track for recording:

- 1 Choose File > New Track and specify 1 MIDI Track, then click Create.
- 2 In the Mix window, click on the track's MIDI Device/Channel Selector and assign a device and channel from the pop-up menu.



MIDI Device Channel Selector

- 3 If you want, you can assign a default program change to the track by clicking on the Program button in the Mix window and making the necessary selections for program and bank select, and then click Done. Default program changes are sent when playing a track.
- 4 In the Mix Window, record-enable the MIDI track.
- 5 Make sure MIDI > MIDI Thru is selected, then play some notes on your MIDI controller. The MIDI instrument assigned to the track should sound, and the track's meters should register MIDI activity.

To record the new MIDI track:

- 1 Verify that the MIDI track you want to record to is record-enabled and receiving MIDI.
- 2 In the Transport window, click Return To Zero to ensure that recording starts from the beginning of the track. You can also record according to a selection or from the cursor location in the Edit window.

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

– or –

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

– or –

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

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

To play back the recorded MIDI track:

- 1 Disable record-enabled on the MIDI track to take it out of Record-Ready mode.
- 2 In the Transport window, click Return To Zero.
- 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

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

To configure an Auxiliary Input for MIDI monitoring:

- 1 Connect the MIDI instrument's audio output to the appropriate inputs on your audio interface.
- 2 Choose File > New Track and specify 1 mono or stereo Auxiliary Input track, then click Create.
- 3 Click the Input selector of the Auxiliary Input channel and choose the input to which your MIDI instrument is connected.
- 4 Click the Output selector of the Auxiliary Input channel and choose an output.
- 5 Adjust the level of the Auxiliary Input with its volume fader.

Editing

Pro Tools provides many tools for editing audio and MIDI tracks. Editing is done primarily in the Edit window. The Edit window toolbar provides Edit mode and Edit Tool selectors.



Edit modes and tools (Grid mode, SmartTool enabled)

Audio and MIDI editing are typically used to:


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

Edit Modes


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



Edit mode buttons

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

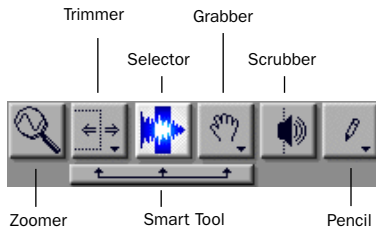
The Edit mode affects the movement and placement of audio and MIDI regions (and individual MIDI notes), how commands like Copy and Paste function, and also how the various edit tools (Trimmer, Selector, Grabber, and Pencil) work.

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


Edit Tools


Pro Tools has seven Edit tools: Zoomer, Trimmer, Selector, Grabber, Scrubber, Pencil, and Smart Tool. Select the desired Edit tool by clicking it in the tool bar along the top of the Edit

window. The Trimmer, Grabber, and Pencil tools have multiple modes. Click and select the desired mode from a pop-up menu for these Edit tools.



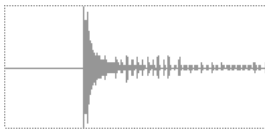
Edit tools in Edit window

 Use the Esc key to toggle through the Edit tools.

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

Editing Regions

Edit tools are used to edit regions in the Edit window. A region is a piece of audio or MIDI data that can also have associated automation data. A region could be a loop, a guitar riff, a verse of a song, a sound effect, a piece of dialog, or an entire sound file. In Pro Tools, regions are created from audio or MIDI files, and can be arranged in audio and MIDI track play-lists.



Audio region

Trimming Regions

The following example demonstrates how you might trim a region to exclude unwanted audio. After having recorded an audio track (for example, a guitar solo), you will have an audio region on that track. If there is some silence at the be-

ginning of the region, and there is some extra audio at the end of the region, you can use the Trimmer tool in Slip mode to shorten the beginning and end of the region as desired.



Audio region on a track

To trim an audio region:

- 1 Select Slip mode.
- 2 Select the Trimmer tool.
- 3 Move the cursor near the beginning of the audio region (notice the cursor changes to a “[”).



Trimming the beginning of a region

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

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



Trimming the end of a region

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



The trimmed region

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

Arranging Regions

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

To create and arrange a rhythm sequence:


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

To create and arrange a rhythm sequence:

- 1 Specify the session meter (MIDI > Change Meter) and tempo (MIDI > Change Tempo).
- 2 Select Grid mode.
- 3 Prepare to record using a MIDI click (see "Click and Metronome" on page 50)
- 4 Record a drum track (see "Recording an Audio Track" on page 58) keeping in mind that you want to use only the best bar (measure). Your recording should fit the grid at the specified tempo and meter.

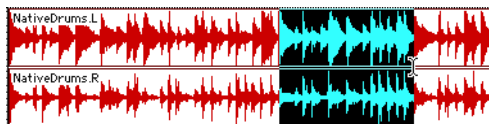
– or –

Import an existing audio file, such as a drum loop from a sample library, and place it on an audio track (see "Importing Audio" on page 56).

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

5 Select the Selector tool.

6 Click and drag on the waveform with the Selector to make the desired selection. Note that the selection snaps to the grid.

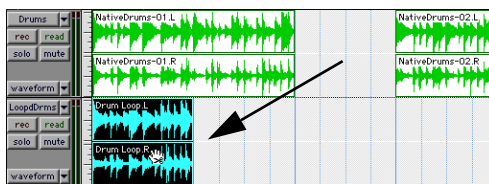


Making a selection in Grid mode

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

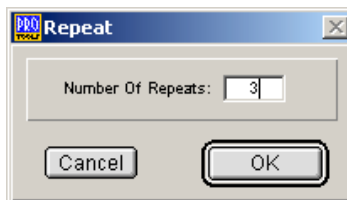
8 From the Grabber pop-up, select the Separation Grabber tool.

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



Dragging a selection with the Separation Grabber tool to a track

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



Repeat dialog

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

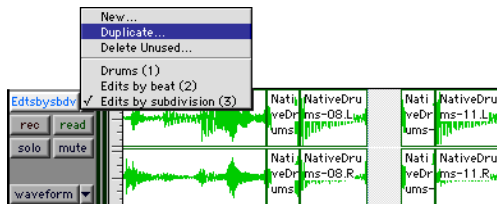
You now have a new rhythm track with a “looped” (repeated) phrase. You can use these editing tools to do much more advanced and involved editing of regions. For example, you could separate beats or “hits” into individual regions and rearrange them in Grid mode as a way of coming up with new and interesting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

Playlists and Non-Destructive Editing

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

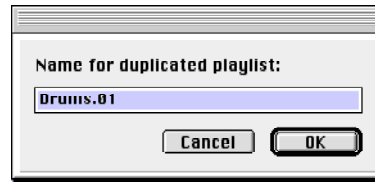
To create multiple playlists for editing:

- 1 Start with a track on which you want to try different edits.
- 2 From the Playlist Selector pop-up menu, choose Duplicate.




Duplicating a playlist

- 3 Name the duplicated playlist and click OK.



- 4 Make your first series of edits as desired.
- 5 Return to the original playlist by selecting it from the Playlist Selector pop-up menu.
- 6 Repeat steps 2–5 as desired.

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

 For detailed information about editing in Pro Tools, see the *Editing and MIDI Editing* chapters of the Pro Tools Reference Guide.


Mixing

Pro Tools provides many familiar channel strip controls for setting track level, pan, solo, and mute (see Figure 4 on page 54). You can also automate your mix or use a control surface to “play” your mix in real-time. Once you have finished preparing your mix, you will probably want to mixdown to a stereo recording. For example, you can record your mix to an external analog or digital deck (such as a cassette or DAT), or you can “bounce” your mix to a stereo file so you can burn it to CD.

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

To view the Mix window:

- Select Windows > Show Mix.

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

Using Channel Strip Controls

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

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

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

Mute Mute a track by clicking the Mute button.

Basic Signal Routing

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

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

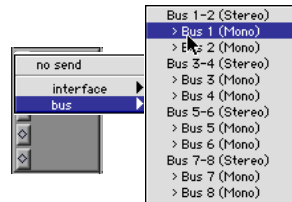
Creating a Send

Pro Tools provides up to five sends per audio track. A send can be mono or stereo, routing to an output or one of 64 internal bus paths (as configured in Setups > I/O Setup).

When you are submixing for reverb, delay, and similar effects processing, use sends to achieve traditional send/return bussing. You can use a real-time plug-in (see “Plug-Ins” on page 66) or a hardware I/O insert (see “Connecting Effects Units” on page 42) as a shared resource for all tracks included in a submix. The wet/dry balance in the mix can be controlled using the track faders (dry level) and Auxiliary Input fader (effect return, or wet, level).


To assign a send on a track:

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



Assigning a send to a mono bus path

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

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

Creating a Return

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



Audio and Auxiliary Input tracks configured for a send and return

To assign a return:

- 1 Choose File > New Track and specify 1 mono or stereo Auxiliary Input track, then click Create.
- 2 Click the Input Selector of the Auxiliary Input track and set it to the bus path you assigned to the sends on the source tracks.
- 3 Click the Output Selector of the Auxiliary Input track and choose an output path (your main mix, or other output).

Master Faders

Master Faders are provided, to be used as output and bus masters. Master Faders can be used for master level, solo, mute, and insert assignment (plug-ins or hardware inserts) of any mono, stereo, or multichannel Output or Bus path. It is recommended that you use a dithering plug-in on a Master Fader when you are mastering your final mix (see “Dithering” on page 68).

The available choices for inputs, outputs, and busses are configured in the I/O Setup window. For more information on the I/O Setup window, see the *Pro Tools Reference Guide*.

To create a Master Fader:

- 1 Choose File > New Track and specify 1 mono, stereo, or multichannel Master Fader track, then click Create.
- 2 In the Mix window, click the Master Fader’s Output Selector and choose the output path that you want to control. You can choose either audio interface outputs or internal busses. If the Master Fader is a stereo fader, you can control the level of a pair of outputs.

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

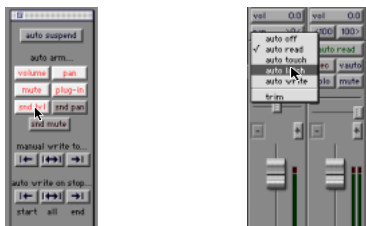
- 1 Choose File > New Track and specify 1 stereo Master Fader track, then click Create.
- 2 Set the outputs of all audio tracks in the session to outputs 1–2 and set the panning of each track.
- 3 Set the output of the Master Fader to your main output path (outputs 1–2).

Mix Automation

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

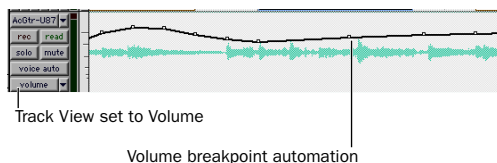
The basic steps for automation recording are:

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




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

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




Volume automation in a track in the Edit window

 Pro Tools also provides Automation Safe mode for protecting plug-in automation from being overwritten, as well as many Automation Preferences to fine-tune performance. See the Pro Tools Reference Guide.

Mixing with a Control Surface

Rather than mixing with a mouse—adjusting one fader at a time—you might find using a MIDI or ethernet control surface (such as Pro Control) for mixing to be much more effective.

 For more information on using Pro Control, see the Pro Control Guide.

For more information on using MIDI control surfaces, see the MIDI Control Surface Guide.

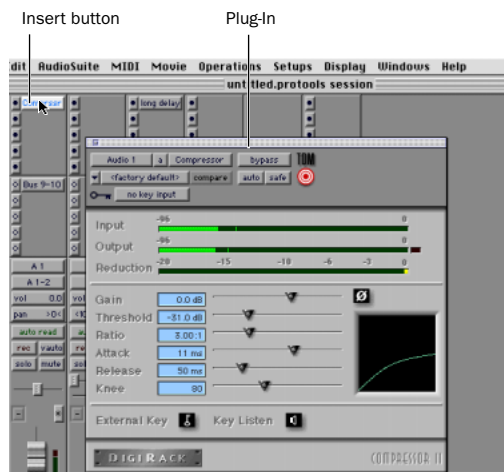
Plug-Ins

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

Plug-ins function either in real-time or in non-real-time. TDM and RTAS plug-ins are non-destructive effects, which are inserted on tracks to process audio in real-time—just like an external,

hardware processor (during playback). AudioSuite plug-ins, on the other hand, are destructive effects that process audio files on disk in non-real-time.


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



Compressor plug-in

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

- 1 Make sure the Inserts View is shown in the Mix or Edit window.
- 2 Click the Insert Selector on the track and select the plug-in that you want to use.

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

Bounce to Disk

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

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

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

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

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

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


Time Stamp Information Bounced material is automatically time stamped so that you can drag it into a track and place it at the same location as the original material.

To Bounce to Disk:

- 1 Choose File > Bounce to Disk.
- 2 Select any mono, stereo, or multichannel output or bus path as the source for the bounce.
- 3 Select the File Type (such as AIFF), Format (such as mono or stereo), Resolution (such as 16-bit), and Sample Rate (such as 44.1 kHz).
- 4 Click Bounce.

Dithering

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

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

Connecting SCSI Drives

SCSI hard drives function as the recommended recording media for Pro Tools TDM systems; it is there that Pro Tools sessions and audio files are kept.

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

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

SCSI Requirements

High-Performance SCSI Drives and SCSI Host Bus Adapters


For 64-track, 24-bit, at 44.1 or 48 kHz performance, a TDM system must include at least three Digidesign-qualified SCSI hard drives attached to a qualified SCSI HBA (host bus adapter) card.

For 64-track sessions that have substantial edit densities (such as one edit every third of a second across 64 voices) or large amounts of cross-fades, up to four SCSI drives may be required, allocated with 24 tracks per drive and two drives per SCSI channel.

SCSI drives must provide a data transfer rate of at least 9 MB per second of sustained throughput.

Refer to the Digidesign Web site for compatible hard drives and HBA cards:

www.digidesign.com/compato/

 *Software RAID is not supported for audio drives.*

SCSI Cables

Use shorter SCSI cables to improve reliability. Table 1 provides guidelines for maximum cable lengths according to SCSI type.

In the following table, the maximum cable length includes all cables used in the chain, not just point-to-point connections.

Table 1: Maximum cable length and number of drives supported according to SCSI type

SCSI type and transfer rate	maximum cable length	maximum # of drives
Fast SCSI 10 MB/sec	3 meters	8
Wide SCSI 20 MB/sec	3 meters	16
Ultra SCSI 20 MB/sec (8-bit narrow)	3 meters	5
Ultra SCSI 40 MB/sec (16-bit wide)	3 meters	5
Ultra SCSI 20 MB/sec (8-bit narrow)	1.5 meters	6–8
Ultra SCSI 40 MB/sec (16-bit wide)	1.5 meters	6–8
Ultra2 SCSI Low Voltage Differential (LVD) 80 MB/sec	1.2 meters	16

Disk Space for Audio Tracks

A single mono audio track recorded at 24-bit resolution at a CD-fidelity sampling rate of 44.1 kHz requires about 7.5 MB of hard drive space per minute. The same track recorded at 16-bit resolution requires about 5 MB per minute. Stereo tracks require about twice as much hard drive space.

Using these guidelines:

- 64 mono tracks of 44.1/48 kHz, 24-bit audio takes up about 500 MB of hard drive space per minute.
- 64 mono tracks of 44.1/48 kHz, 16-bit audio takes up about 350 MB of hard drive space per minute.

Distribute Audio Across Multiple Drives

For best recording and playback performance, don't record and play back all audio files in a session from the same drive. Instead, use Pro Tools Disk Allocation features to distribute audio files between multiple drives. See the *Pro Tools Reference Guide* for details.

Separate Video and Audio Files

If you are working with QuickTime, movie files must reside on a different SCSI bus than audio files. If audio files reside on disks connected to a SCSI HBA card, video data should reside on drives connected to a different SCSI bus.

Dual-Channel SCSI HBA Cards

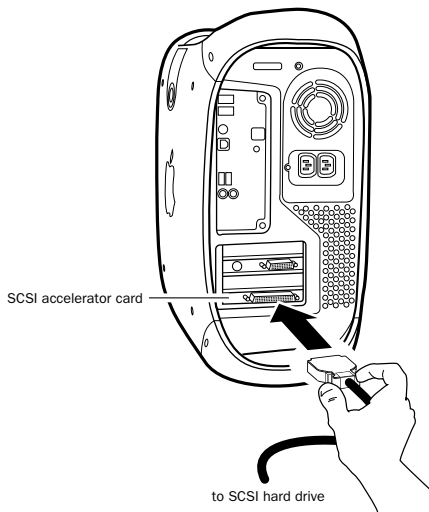
If you use a dual-channel SCSI HBA card, equally allocate audio files to drives connected to each of the two busses on the card for optimal performance.

If using video files, make sure to put your video files on one bus and audio files on the other bus.

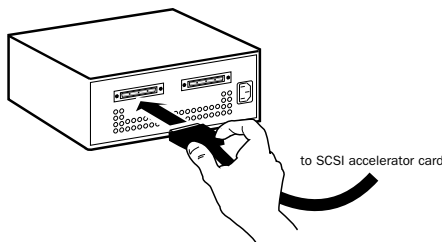
Connecting SCSI Drives

To connect an external SCSI drive:

- 1 Turn off power to both the computer and the hard drive.
- 2 Attach a SCSI cable from the SCSI port of the hard drive to the SCSI port of the SCSI HBA card or computer depending on your system's SCSI requirements.
- 3 Secure the cable's connectors to the hard drive and computer. Loose cables can cause data loss.
- 4 Connect additional drives by daisy-chaining from one drive to another. Keep cable lengths to a minimum (see Table 1).
- 5 Verify that the last SCSI device connected is properly terminated. (See "SCSI Termination" on page 71.)
- 6 Attach power cables to the hard drives.



Connecting a SCSI cable to a SCSI HBA card



Connecting an external SCSI hard drive

SCSI Termination

Your computer's SCSI chain must be properly terminated or your system will not function correctly. Only the last device on the chain should be terminated using the termination type recommended by the hard drive manufacturer.

The drive should use either an external terminator plug or have its internal terminators enabled. If you are using a terminator plug, Digidesign recommends that you purchase and use an *active* terminator.

⚠ Do not enable internal termination and install an external terminator plug on the same drive. This will cause SCSI errors. See your hard drive's documentation for information regarding which type of termination it uses.

Quick Formatting a SCSI Drives

Macintosh Requirements

On Macintosh systems, SCSI hard drives used for audio recording on TDM systems must be formatted (or initialized) for either the HFS or HFS+ file system. Drive partitions of up to 2 terabytes (2000 gigabytes) can be used.

TDM systems require that you use the ExpressPro-Tools software from ATTO (included with Pro Tools) for all drive formatting and partitioning; only one disk utility should be used for all drives in a system.

Windows Requirements

SCSI hard drives used for audio recording on TDM systems must be formatted for the FAT32, or NTFS files system. Under Windows 2000, NTFS drive partition sizes are only bound by the physical size of the drive, whereas FAT32 drive partitions have a limit of 32 GB.

The following restrictions apply:

- The drive letter cannot be A: or B:.
- It must be a normal fixed hard drive (the function GetDriveType must return DRIVE_FIXED).
- The file system must be FAT32, NTFS, or HFS (w/ MacOpener installed).
- The user must be logged in as administrator
- The drive must have valid signature.
- DAE is not compatible with Windows 2000 dynamic disks. Only basic disks work with Pro Tools on Windows 2000. Note that the Windows 2000 Disk Administrator in some cases makes new disks dynamic by default. Use the revert to basic disk option to change this.
- Stripe sets are currently not supported.

TDM Windows systems require that you use Microsoft Windows Disk Administration software for drive formatting and partitioning. Use only one disk utility for all drives in a system.



Pro Tools for Windows 2000 allows you to connect Macintosh-formatted hard drives and play sessions created on Pro Tools for Macintosh when using MacOpener from DataViz. An installer for the demo version of MacOpener is included as an installation option for Pro Tools.

Initializing a Macintosh Drive

To initialize a new drive:

- 1** Turn on your hard drives, computer, and any other peripherals.
- 2** Use ATTO's ExpressPro-Tools software version 2.3.2 to initialize and partition any new hard drives.



Refer to the ExpressPro-Tools User's Manual.



If you have existing FWB-formatted drives, don't install the ExpressPro-Tools extension; this can cause a conflict. This extension is not required to use the ExpressPro-Tools software (to format new drives).


Formatting a Windows Drive

To format a new drive:

- 1** Turn on your hard drives, computer, and any other peripherals.
- 2** Use Microsoft's Disk Management software, located in the Administrative Tools control panel under Computer Management > Storage.


Refer to your Microsoft Windows manual or Windows help for information on how to use the Disk Management software.

General Hard Drive Maintenance Information

 *If using Macintosh drives on Windows systems, refer to “Using Macintosh Drives on Windows Systems” on page 75.*

Formatting Drives

There are two different types of formatting: high-level formatting and low-level formatting.

 *Digidesign does not recommend low-level formatting.*

High-Level Formatting (Initialization)

High-level formatting, or *initializing* a drive replaces the drive’s directory, volume partition map and drivers. Information about the drive is created and drivers that communicate this information to the host CPU are installed. The drive itself is not erased, nor is verification performed.

When is High-Level Formatting Necessary?

It is generally necessary to high-level format a hard drive in one of the following cases:

- ◆ If a new drive is being prepared for use on a computer for the first time and the drive is not already high-level formatted.
- ◆ If you suspect that the directories containing the drive’s information have become corrupted.
- ◆ If a drive is being changed from one platform to another. For example if you are switching from a Macintosh to a Windows-based system, or from a Windows to a Macintosh-based system, the drive must be high-level re-formatted for the new operating system.

Low-Level (Physical) Formatting

Low-level formatting means completely erasing the hard drive and rewriting each sector address on the drive. In low-level formatting, the sector and track addresses, error-correction codes, and other details are written on the platters of the hard drive in the form of a magnetic pattern. A low-level format permanently erases all data on the drive.

When is Low-Level Formatting Necessary?

Virtually all hard drives come pre-formatted from the manufacturer. Low-level formatting is generally unnecessary except in rare circumstances. They are:

- ◆ If you want to change the Block Size of the drive. This is not recommended by Digidesign. Digidesign systems only recognize 512-byte blocks.
- ◆ If you want to perform permanent deletion of data.
- ◆ If you want to clean a drive that is being migrated from one operating system to another (for instance, from UNIX to Macintosh).

Should you decide low-level formatting is necessary, keep in mind that it can take up to three hours or more (depending on the size of the drive). Avoid power interruptions and computer bus resets during the format operation or permanent damage to the drive could occur. In addition, leave the drive powered on for at least 30 minutes prior to formatting so that the drive has time to make any necessary thermal adjustments or recalibrations.

Partitioning Drives

Partitioning divides a physical drive into multiple, unique volumes, almost as if you were creating virtual hard drives. Partitioning is usually performed when the drive is high-level formatted (Macintosh) or initialized (Windows).

▲ *Mac OS 7.6.1 and above allows drives larger than 4096 MB to be seen as whole volumes. Drives must be initialized with ExpressPro-Tools (or another utility) that recognizes the 2 terabyte limit. Single files cannot exceed 2048 MB in size.*

▲ *Windows 2000 allows drives formatted with the NTFS or FAT32 file systems to be seen as whole volumes. Single Pro Tools audio files cannot exceed 2048 MB in size.*

Seek Times on Partitioned Drives

Seek times are actually faster on partitioned drives (assuming that reads and writes are performed on a single partition), since the heads only have to seek within the partition boundaries, rather than the whole capacity of the drive.

In addition, smaller partitions perform faster than larger partitions. However, this comes at the expense of contiguous storage space. When you partition a drive, you will need to find the compromise that best suits your performance and storage requirements.

▲ *Avoid distributing audio files within a session over different partitions on the same drive since this will adversely affect drive performance.*

Avoiding File Fragmentation

For maximum recording and playback efficiency, data should be written to your hard drive in a contiguous fashion—minimizing the seek requirements to play back the data. Unfortunately, your computer can't always store the sound files in this way and must write to disk wherever it can find space.

In multitrack recording, audio tracks are written in discrete files, spaced evenly across the disk. While fragmentation of individual files may be zero, the tracks may be far enough apart that playback will still be very seek-intensive. Also, the remaining free space on the disk will be discontinuous, increasing the likelihood of file fragmentation on subsequent record passes.

Increased fragmentation increases the chance of disk errors, which can interfere with playback of audio, and result in performance errors.

💡 *On Windows, fragmentation is less likely to occur on drives formatted with higher cluster sizes (such as 32k, which is strongly recommended for optimal performance with Pro Tools). On Windows 2000, use Windows Disk Administrator to format FAT32, and use Partition Magic to format NTFS.*

▲ *On Macintosh, if Norton Utilities is used, it must be Norton Utilities v4.0 or later to ensure compatibility with HFS+ drives.*

Optimizing (Defragmenting) Drives

To prevent fragmentation, you can optimize your drive, which rearranges your files into a contiguous format. Most optimizing software lets you run a check on a drive to find out the percentage of fragmentation. If your drive shows moderate to heavy fragmentation, you should consider optimizing it.

If you use your system for intensive editing, or if you frequently delete audio or fade files from your hard drive, you may need to optimize your drives on a weekly basis, or even every few days, since it doesn't take long for even a large hard drive to become fragmented.

⚠ *On Windows 2000, it is not possible to defragment NTFS formatted drives that have a cluster size larger than or equal to 4k. This is not an issue with FAT32 formatted hard drives.*


Backing Up Data Before Optimizing

Since your files will be rewritten by the optimization process, always make a backup copy of the data on your hard drive before you optimize it. You should also use a hard drive utility to find and repair any problems before optimizing data. If there is any damage to your hard drive's directories prior to optimizing, serious data loss may result.

Using Macintosh Drives on Windows Systems

Pro Tools for Windows lets you record and play back sessions directly from a Macintosh-formatted (HFS or HFS+) drive connected to a Windows system. This functionality requires that all Macintosh session and audio files be stored on Macintosh-formatted drives.

To mount HFS or HFS+ drives on a Windows system, you must use the MacOpener™ software utility by DataViz. An installer for the demo version of MacOpener is included as an installation option for Pro Tools.

 *For details on sharing sessions between Macintosh and Windows systems, see the Pro Tools Reference Guide.*

Installing the MacOpener Utility

To Install MacOpener:

- 1 Quit Pro Tools if it is open.
- 2 Locate the macopener executable (.exe) file on the Pro Tools Installer CD-ROM and double-click it to launch the installer.
- 3 Follow the on-screen instructions to install MacOpener.
- 4 When installation is complete, restart your computer.

Enabling the MacOpener Driver

When you are finished installing MacOpener, the MacOpener driver must be enabled to mount HFS and HFS+ drives.

To enable the settings on the MacOpener Driver:

- 1 Choose Start > Programs > MacOpener > MacOpener Driver Preferences.
- 2 Under Driver Settings, select Enable MacOpener Driver.
- 3 Under Extension Mapping, select Do not add the PC extension to the Mac file name.

Mounting HFS Drives

If the MacOpener utility is installed and enabled, no additional steps are required to mount HFS drives. They appear as normal system drives after you connect them and restart your computer.

Formatting and Maintaining HFS and HFS+ Drives

Although you can use MacOpener to format HFS and HFS+ drives from a Windows machine, it is not recommended for use with Pro Tools. We recommend that you connect the drives to a Macintosh computer (if possible) and use the ExpressPro-Tools software from ATTO (included on the Mac Pro Tools CD-ROM).

appendix b

DigiTest Error Codes

DigiTest Error Codes

Code	Description
Err3	Cards from different Pro Tools systems are incorrectly mixed.
Err4	Cards marked with this error are installed in the wrong order.
Err5	Too many cards of this type are installed in the system. Refer to the Digidesign Web site for compatibility information: www.digidesign.com/compato/
Err6	A card is installed in a reserve slot. For example, a Digidesign card is installed in the slot reserved for the Expansion Chassis Host Interface card.
Err1010	Too many MIX Core cards installed. The maximum number of MIX Core cards allowed is 7.
Err1011	Too many MIX Farm cards installed. The maximum number of MIX Farm cards allowed is 7.
Err1012	Too many total MIX cards installed. The maximum number of total MIX cards allowed is 7.
Err1020	Too many d24 Core cards installed. The maximum number of d24 Core cards allowed is 2.
Err1021	Too many MIX I/O cards installed. The maximum number of MIX I/O cards allowed is 2.

DigiTest Error Codes

Code	Description
Err1022	Too many total d24 cards installed. The maximum number of total d24 cards allowed is 2.
Err1220	SCSI Accelerator card is installed in the wrong slot.
Err1221	Expansion Chassis Host Interface card is installed in the wrong slot.
Err1301	A Core card is not installed. At least one Cord card is needed.
Err1310	A DSP Farm card is not installed. At least one DSP Farm card is needed.

appendix c

Configuring OMS (Macintosh Only)

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

- Keeps track of which MIDI devices you are using, how they are connected, and which patches they are using
- Enables MIDI hardware to communicate with your music applications
- Provides timing services and inter-application communication

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

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

Configuring a New Studio Setup (First-Time OMS Users Only)

Before configuring OMS, make sure your MIDI interfaces and devices are connected according to the manufacturer's instructions and turned on.

To configure a New Studio Setup in OMS:

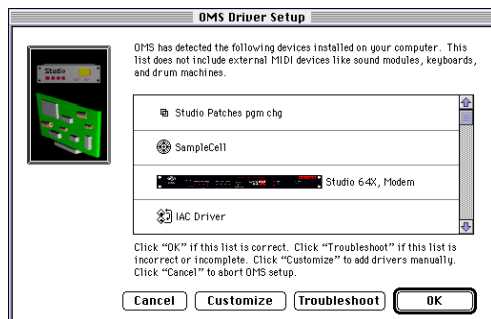
- 1 Launch the OMS Setup application. If OMS has not yet been configured, you'll be prompted to configure a New Studio Setup. Click OK.
- 2 Select whether your MIDI interface is connected to the Modem or Printer port. If using a USB or PCI-based MIDI interface, leave both ports unchecked. Click Search.



Ports for OMS Driver Search

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

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



OMS Driver Setup

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



Undefined OMS device

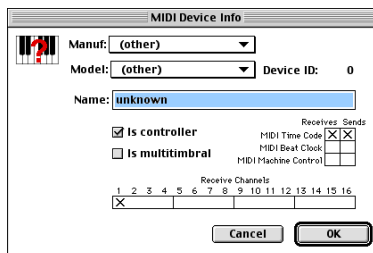
Devices not recognized by OMS appear with a red question mark and are named based on the interface or port to which they are connected. These devices can be defined as necessary within the OMS Setup application (see “Defining MIDI Devices in OMS” on page 80).

4 Click OK to save your Studio Setup document.

Defining MIDI Devices in OMS

To define a MIDI device in OMS Setup:

- 1** Double-click the device’s icon in the Studio Setup window.
- 2** In the MIDI Device Info dialog, select the Manufacture and Model for the device from the pop-up menus. If the device is not listed, leave the Model set to “other” and enter a name for the device.



Defining a MIDI device

3 Select the receiving channel for the device. If receiving multiple channels, select the option for “Is Multitimbral.”

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

5 Click Ok.

Disabling SerialDMA in OMS

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

To disable SerialDMA in OMS:

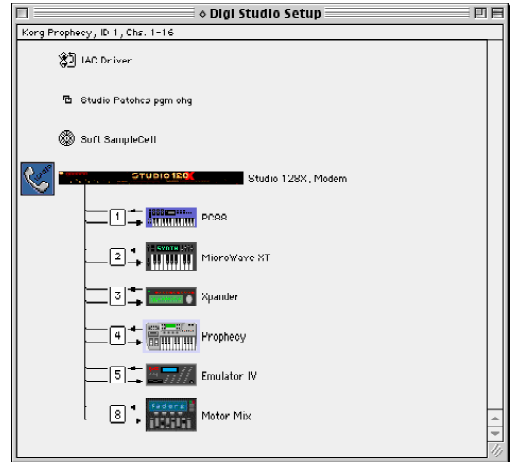
- 1 Double-click the OMS Setup application.
- 2 Choose Edit > Preferences.
- 3 Deselect “Use Apple SerialDMA Driver When Available,” and click OK.
- 4 Quit OMS Setup

Machine Control and the IAC Driver

If you are planning to use MIDI Machine Control (MMC) for Pro Tools synchronization with other MMC-capable devices or applications, you must rename the OMS IAC Driver and remove the infinity symbol (“∞”) from its name. If you do not do this, MMC will not function properly.

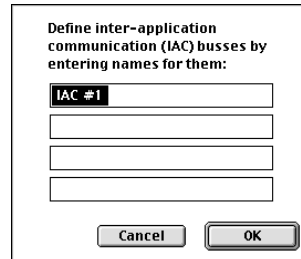
To edit the IAC driver’s name:

- 1 Double-click the OMS Setup application.
- 2 In the Studio Setup window, double-click the IAC driver.



Studio Setup window with IAC Driver

- 3 Rename “∞ IAC bus #1” to “MMC” and click OK.



Renaming the IAC Driver

- 4 Quit OMS Setup.

appendix d

Digidesign Control Panel (Macintosh Only)

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



Digidesign®

Digidesign Control Panel

To configure the Digidesign Control Panel:

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



Digidesign Control Panel

- 2 Click the Setup Hardware button in the Digidesign Control Panel. The Hardware Setup dialog will open.
- 3 Configure the Hardware Setup dialog as desired. The Other Options dialog will vary according to your primary audio interface.

To use your Digidesign hardware with Apple Sound Manager:

- 1 Choose Apple menu > Control Panels > Sound.
- 2 Select the Output tab.
- 3 Select Digidesign.



Apple Sound Control Panel



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

Digidesign WaveDriver (Windows Only)

Introduction

The Digidesign WaveDriver is a two-channel, multimedia sound driver for Digidesign's TDM systems. This WaveDriver allows third-party audio applications to record and/or play through channels 1–2 of the first peripheral connected to your d24 or Mix Core card. It is compatible with Windows 2000 (Service Pack 1 and Service Pack 2).

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

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

Also included is the DigiGain volume control application. DigiGain allows control over the WaveDriver's master output volume, and input and record monitoring levels. DigiGain has no

effect on recording or playback in Pro Tools or any other application that communicates with Digidesign hardware using Digidesign Direct I/O.

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

Installing the WaveDriver


Before installing the driver please make sure of the following:

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

The WaveDriver shares several files with Pro Tools. These shared files are installed with Pro Tools, not the WaveDriver. After installing Pro Tools, restart Windows. Your audio interface must be connected and turned on to successfully install the Digidesign WaveDriver.

Disable System sounds before installing the WaveDriver

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


 *With the WaveDrivers set for 0dB, your audio interface will output the system sounds at >110dB!*

To disable system sounds:

- 1** From the Start menu, choose Settings > Control Panel > Sounds.
- 2** To disable all system sounds, under the Scheme pull-down menu select No Sounds.
– or –

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

- 3** Click Apply, then OK.
- 4** Restart Windows.

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

Remove previously installed Digidesign WaveDrivers

If you have previously installed an earlier version of the WaveDriver, you must completely remove it before installing this new driver. For more information, see “Removing the WaveDriver” on page 87.

Installation Instructions

To install the Digidesign WaveDriver:

- 1** Install Pro Tools.
- 2** Launch any Pro Tools session to verify that Pro Tools is working correctly.
- 3** Quit Pro Tools and restart your computer.
- 4** From the Start menu, choose Settings > Control Panel.
- 5** Click on Add/Remove Hardware.
- 6** Click on Next.
- 7** Select “Add/Troubleshoot a device.” Wait while Windows searches for devices.
- 8** Select “Add a new device” and click on Next.
- 9** Select “No, I want to select the hardware from a list” and click Next.
- 10** Select “Sound, video and game controllers” and click Next.
- 11** Click “Have Disk...”
- 12** Browse to the location of the driver, select the “oemsetup.inf” file, and click “Ok.”
- 13** Click Next.
- 14** If “Digital Signature” warning dialog appears, click Yes.
- 15** Click Next.

16 If message appears which states “The file ‘directio.dll’ on Digidesign WaveDriver is needed.” Browse to the location of the driver, select the “directio.dll” file, and click OK.

The Digidesign WaveDriver Settings dialog will automatically open.

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

18 Click on the A: No Interface tab.

19 Select the Peripheral Type for the peripheral you have connected to your d24 or Mix card.

▲ *The WaveDriver may only be used with the first peripheral connected to your master/core card. If your d24 or Mix Core card is connected to two peripherals using an optional Digidesign 16-channel peripheral cable adapter, select the Peripheral Type for the peripheral connected to “A.” If you have multiple Pro Tools cards connected to multiple peripherals, select the Peripheral type for the “A” peripheral connected to your d24 or MIX Core card. Use the Identify checkbox in the I/O Setup dialog to verify which peripheral you are configuring for use with the WaveDriver.*

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

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

22 Click OK to close the WaveDriver Settings dialog.

23 Restart Windows when prompted.

Removing the WaveDriver

To remove the WaveDriver:

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

2 Click the “Add/Remove Hardware” Icon.

3 Click Next.

4 Select “Uninstalled/Unplug a device” and click Next.

5 Select “Uninstall a device” and click Next.

6 Select “Digidesign WaveDriver” from the list and click Next.

7 Select “Yes, I want to uninstall this device” and click Next.

8 Click Finish.

▲ *If you wish to return Pro Tools to its original, pre-WaveDriver, state you must completely uninstall Pro Tools using the “Add/Remove Software” control panel, then reinstall Pro Tools. For detailed installation instructions, see Chapter 3, “Windows Configuration.”*

How to Change WaveDriver Settings

To change settings for the WaveDriver:

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

2 Double-click the “System” icon.

3 Click the Hardware tab.

4 Click the Device Manager button.

5 Expand the “sound, video, and game controllers” section.

- 6 Double-click the “Digidesign WaveDriver.”
- 7 Select the Properties tab.
- 8 Expand “Audio Devices.”
- 9 Double click “Digidesign WaveDriver.”
- 10 In the Digidesign WaveDriver Properties dialog, click the Settings button.
- 11 You should now see the WaveDriver Settings Dialog (see Figure 5 on page 88).

WaveDriver Settings Dialog

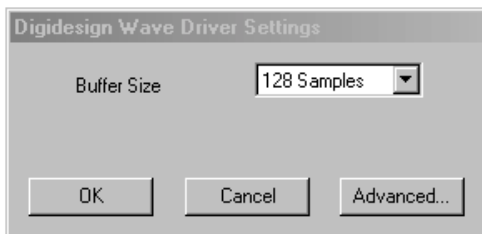


Figure 5. Digidesign WaveDriver Settings dialog

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

- When running Pro Tools with the Active in Background option enabled.
- When running Pro Tools and the Convert and Import dialog is open.
- When playing or recording in another audio application.
- When using another audio application such as Acid or Cakewalk that has an option to keep the WaveDriver “open” even when you are not playing or recording. (You must close the audio application before you can open the WaveDriver Settings dialog.)

Buffer Size Control

When you play a file from a client audio application, the client application divides the file into little chunks (buffers) and sends each of these to the WaveDriver. The WaveDriver copies the client applications buffers to the d24 or MIX system’s own buffers in a double-buffering scheme. The Buffer Size control in this dialog allows you to set the size of each of the two buffers the WaveDriver uses on the d24 or MIX Core card. You may choose from the following buffer sizes:

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

Small buffers have the advantage of low latency in the record monitor path. (Latency is the time delay between a signal entering the audio inputs and leaving the outputs during recording.)

Larger buffers have the advantage of making audio dropouts during playback and recording less likely. In some audio applications, notably Sound Forge, performing various tasks such as maximizing or minimizing windows will interrupt the WaveDriver and create glitches in the audio. Choosing Medium or Large buffers can help alleviate this problem.

Pressing the OK button will cause settings to be saved in the registry when you shut down or reboot Windows. Pressing Cancel restores settings to what they were before this dialog was opened. The OK and Cancel buttons in this dialog have no effect on whether settings are saved or restored in the I/O Setup and Other Options dialogs.

I/O Setup Dialog

Click the Advanced button in the WaveDriver Settings to open the I/O Setup dialog:

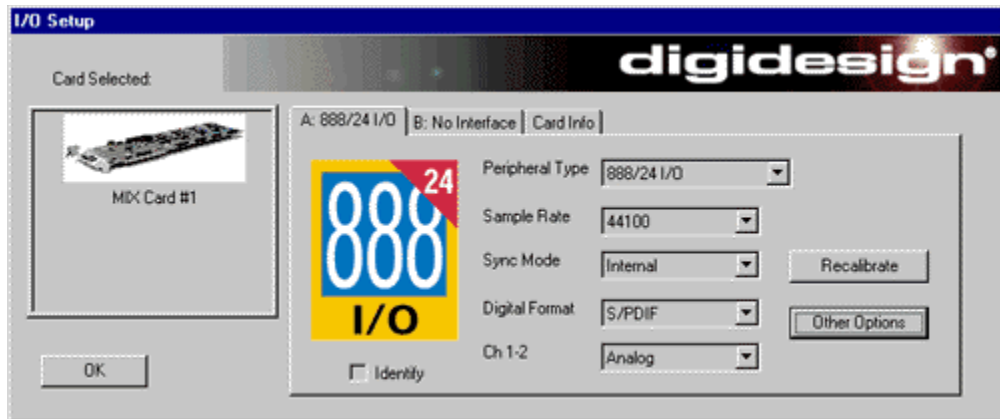


Figure 6. I/O Setup dialog

A: No Interface tab

Peripheral Type

Please choose the (“A”) peripheral you have connected to your d24 or MIX Core card.

Sample Rate

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

Sync Mode

Sync mode may be set to Internal or Digital and is Internal by default.

Digital Format

If your peripheral is an 888|24 I/O or an 888 I/O, this control may be set to AES/EBU or S/PDIF and is AES/EBU by default. If your peripheral is an 882|20 I/O, an 882 I/O, or a 1622 I/O, this control will be set to S/PDIF and will be grayed out.

Ch 1–2 (Format)

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

Identify Check Box

This control enables you to verify which peripheral you are configuring for use with the WaveDriver. Checking this box causes all the meters on the connected peripheral to light up.

Other Options Button and Recalibrate Button

The behavior of these buttons depends on the peripherals you have connected. Refer to the documentation for your specific audio interface.

B: No Interface tab

If you have two peripherals connected to your d24 or MIC Core card, you may select and configure the “B” peripheral using the controls under this tab. These settings will only be relevant to Pro Tools, and not the WaveDriver. For more detail, see “Installing the WaveDriver” on page 85.

Card Info tab

Bus, Slot Number

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

Installing DigiGain

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

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

Before installing DigiGain

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

Installation Instructions

To install DigiGain:

- 1 Insert the Pro Tools Installer CD.
- 2 Locate DigiGain.exe on the CD, and copy to the Desktop.

Removing DigiGain

To remove DigiGain:

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

How to Use DigiGain

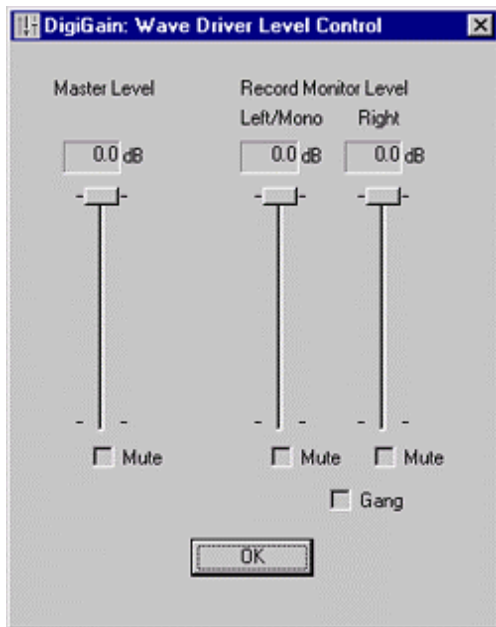



Figure 7. DigiGain WaveDriver Level Control

Master Level

This slider adjusts the output volume of channels 1–2 on your Digidesign audio interface.


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

Master Mute

The master mute option is enabled, output of channels 1–2 of your audio interface will be muted.

Record Monitor Level

These sliders adjust the output monitoring level of the left and right recording channels.

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

Record Monitor Mute

The Mute buttons under the Record Monitor Level sliders individually mute the left and right recording streams.

Gang

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

OK Button

Clicking on the OK button saves the volume settings. Volume settings are stored in a registry key. This allows you to maintain the same volume level upon the next reboot or startup of the system.

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