

DigiDrive Guide

FireWire

Version 1.0

Digidesign

2001 Junipero Serra Boulevard
Daly City, CA 94014-3886 USA
tel: 650-731-6300
fax: 650-731-6399

Technical Support (USA)

650-731-6100
650-856-4275

Product Information (USA)

650-731-6102
800-333-2137

International Offices

Visit the Digidesign Web site
for contact information

Web Site

www.digidesign.com



digidesign

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chapter 1

Using This Guide

Thank you for purchasing DigiDrive® FireWire. DigiDrive FireWire drives are optimized for use with Digidesign Pro Tools and are ideal for recording, playback, and storage of Pro Tools sessions and audio files.

About This Guide

The information in this guide is a supplement to the hard drive installation instructions found in the setup guide that came with your Digidesign system.

This guide contains DigiDrive-specific installation and configuration instructions and other information as follows:

Chapter 2, “DigiDrive FireWire Overview” describes the front and rear panels of the DigiDrive and its controls and indicators. It also includes information on rack-mounting options, handling recommendations, and configuration requirements.

Chapter 3, “Installation” provides step-by-step instructions for connecting DigiDrive FireWire drives to your Digidesign system.

Chapter 4, “Performance Guidelines” documents performance guidelines for FireWire hard drives.

Chapter 5, “Formatting and Maintaining DigiDrive FireWire Drives on Mac OS” covers management and troubleshooting issues specific to the Macintosh, including how to handle, check, and erase a DigiDrive and how to resolve basic problems that might occur during installation and operation.

Chapter 6, “Formatting and Maintaining DigiDrive FireWire on Windows 2000” covers management and troubleshooting issues specific to Windows 2000, including how to create partitions, create drives, how to format drives, and how to resolve basic problems that might occur during installation and operation.

Appendix A, “Specifications” provides physical dimension, environmental, power, and power cord specifications for the DigiDrive FireWire drive.

If You Need Help

If you are having trouble setting up and configuring the DigiDrive, try the following:

- 1 Retry the action, carefully following the instructions given for that task in this guide.
- 2 Check the documentation that came with your hardware for maintenance or hardware-related issues.

3 See the additional technical resources on the web at:

<http://www.digidesign.com/support/techsupport.html>

Digidesign has both product information and technical support on-line via the World Wide Web. In addition, there are many user forums which Digidesign encourages, but does not sponsor. For the most current, accurate information about Digidesign products, please browse Digidesign-sponsored forums at the Digidesign Web site (www.digidesign.com).

chapter 2

DigiDrive FireWire Overview

The DigiDrive FireWire drive supports the IEEE 1394 high-speed serial bus specification, commonly known as *FireWire*, for data storage and retrieval.

DigiDrive FireWire drives use innovative, patented QuietDrive™ sound-dampening technology, making them some of the fastest and quietest drives available today.

FireWire Features

FireWire and other IEEE 1394 implementations provide:

- A simple common plug-in serial connector on the back of your Pro Tools workstation and on many different types of peripheral devices
- A thin serial cable
- A high-speed rate of data transfer that accommodates audio editing and other multimedia applications
- HotPlug and plug-and-play capability
- The ability to daisy chain devices together in a number of different ways without terminators or complicated setup requirements

DigiDrive FireWire Features

The DigiDrive FireWire drive is designed to rack mount in an industry-standard 19-inch rack when used with the rack-mount option. Multiple drives can also be stacked on top of one another to occupy a minimum amount of desk space.

DigiDrive FireWire drives have a 3.5-inch form factor and support these performance features:

DigiDrive features

Feature	Description
Data Transfer Rate	up to 400 Mb/s
Bus termination required	No
Bus type	Serial (IEEE 1394)
Cable type	Twisted pair (six wires: two power and two twisted-pair sets)
Network topology	Daisy-chain

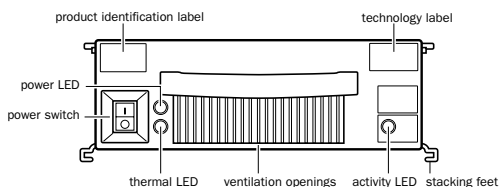
The drive enclosure provides the cooling, power, and cabling connections.

Controls and Indicators

The front of the DigiDrive FireWire drive has controls and indicators for turning on the drive and determining its operating status. The back panel contains an AC power connector, ventilation openings to promote air flow for cooling, and connectors for the FireWire interface cables.


Front Panel

The label on the left side of the front panel shows the drive's capacity and type (for example, FireWire, 80-GB capacity).



DigiDrive FireWire drive front panel

The label on the right side of the front panel, and the red translucent handle, indicate that this model provides a FireWire interface. These indicators distinguish the DigiDrive FireWire drive from other models such as the DigiDrive SCSI drive.


 *The DigiDrive FireWire drive front panel displays the Apple FireWire logo on the technology label. DigiDrives without the FireWire logo do not support IEEE 1394 functions.*

The front panel Power switch turns the drive's internal power supply on and off. The ventilation openings provide air flow for the drive while it is operating. Do not block these openings. Keep them clear of dust.

Three LEDs indicate the status of the drive. These LEDs indicate the following:

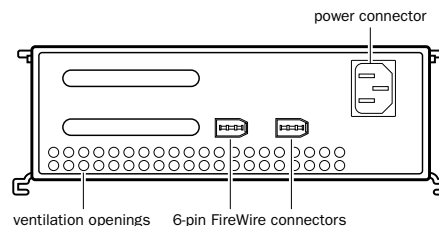
DigiDrive LEDs

LED	Description
Power LED	The green LED is on when the drive is turned on.
Activity LED	The yellow LED is on when the drive is turned on and flickers as data is transferred to and from the drive.
Thermal LED	The red LED is on when the thermal overload circuitry on the board senses that the temperature inside the DigiDrive FireWire drive is too high. The LED may light for the following reasons: <ul style="list-style-type: none">• Air flow through the drive is blocked.• The internal fan has failed.• Outside ambient temperature is too hot.

 *Operating the DigiDrive FireWire drive for extended periods of time with the thermal indicator on reduces the life expectancy of the drive and may void its warranty.*

Back Panel

The DigiDrive FireWire drive back panel has two 6-pin IEEE 1394 FireWire connectors and a power connector. Use the FireWire cables to connect drives to your Pro Tools workstation. An internal fan pushes air through the enclosure (using the ventilation openings), from front to back, to cool the drive. The power connector is for attaching a power cable.



DigiDrive FireWire drive back panel

Rack Mounting Option

Digidesign offers an optional rack-mounting kit (Digidesign model number MH163) that allows you to mount a pair of DigiDrives in a rack. The kit supports two drives mounted side-by-side, occupying two rack units in an industry-standard sized rack.

DigiDrives are designed so that all controls and indicators are accessible when mounted. Instructions for mounting the drives are included with the kit.

Handling the DigiDrive

Though DigiDrives are ruggedly constructed, their internal mechanisms can be damaged if handled carelessly. Follow these tips for care and handling of your DigiDrive to help ensure a long operating life.

⚠ *Do not open a DigiDrive enclosure. There are no user-repairable parts inside. Opening the enclosure voids your warranty and your right to have the drive mechanism repaired without charge.*

When a DigiDrive is off:

- ◆ Don't drop a DigiDrive when moving it.
- ◆ Keep the area around the DigiDrive free of dust and dirt.
- ◆ If stacking DigiDrives, limit stack height to four drives to reduce the likelihood of the stack tipping over.

When a DigiDrive is on:

- ◆ Do not shake or jar the drive. This can damage the read/write heads or the magnetic coating on the drive platters.

- ◆ Do not turn off the power to a drive while its icon is visible on the Macintosh desktop. This could cause directory structure problems and create incomplete files.

- ◆ Do not turn off the power to a drive while an application is reading or writing data to the drive. This could cause directory structure problems and create incomplete files.

- ◆ Never disconnect cables while the drives are running. Shut down the system and turn off the drives before disconnecting cables.

Configuration Requirements

The FireWire cabling standard requires that each DigiDrive FireWire drive be within 14.76 feet (4.5 meters) of the next bus connector. The maximum total bus length cannot exceed 236 feet (72 meters).

Digidesign has qualified configurations containing a maximum of two DigiDrive FireWire drives daisy-chained to a Pro Tools workstation using Digidesign supplied cables.

The latest compatibility information is available online at www.digidesign.com.

chapter 3

Installation

This chapter explains how to connect a DigiDrive FireWire drive to your computer.

Unpacking the DigiDrive FireWire Drive

Unpack the DigiDrive FireWire drive and check the contents of the package to ensure that all parts are included. The package should contain:

- One DigiDrive FireWire drive
- One power cable
- One Digidesign 12-inch, FireWire daisy-chain cable
- This guide
- Registration card

After unpacking the DigiDrive FireWire drive, set up and connect it as described in this chapter. Later you will use the disk management tools provided by your computer's operating system to prepare the DigiDrive FireWire drive for use with Pro Tools.

Stacking DigiDrives

If you have more than one DigiDrive you may want to stack them so that they take up a minimal amount of desk space. DigiDrives have interlocking brackets attached to their sides to allow stable and secure stacking.

The interlocking stacking brackets allow three methods of stacking:

Gravity Stacking

Gravity stacking allows you to place one drive on top of another. An indentation in the base of the interlock stacking brackets increases stability when compared to simply stacking drives without the bracket. This method is only recommended when temporarily stacking a DigiDrive from one system to another.

Temporary Interlock

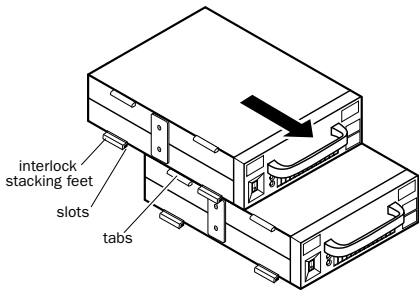
Temporary interlock provides a more secure method of stacking DigiDrives. Grooves in the interlocking stacking brackets stabilize the drives. An indentation in each groove settles the drive in the correct position.

To temporarily interlock DigiDrives:

- 1 Place the first (bottom) DigiDrive on a stable surface.

2 Position a second DigiDrive slightly over and behind the first drive.

3 Slide the top DigiDrive forward so the slots in the four top drive interlock stacking brackets slide over the four tabs on the bottom drive interlock stacking brackets.



Interlocking DigiDrives

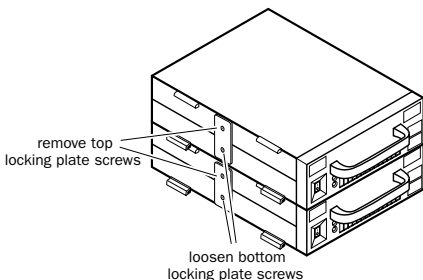
Permanent Interlock

Permanent interlock is a more long-term method of stacking DigiDrives. After interlocking the drives, a locking plate is positioned so that the top and bottom drives are secured in place.

To permanently interlock DigiDrives:

1 Perform steps 1, 2, and 3 as described in “Temporary Interlock” on page 7.

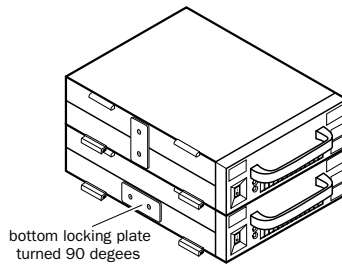
2 Remove the top locking plate screw on both sides of each drive.



DigiDrive locking plates

3 Loosen the bottom locking plate screw on both sides of each drive.

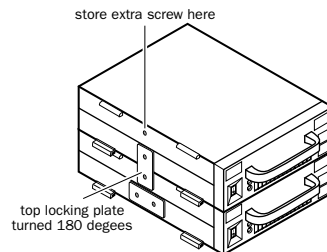
4 Swing the locking plate on each side of the bottom drive 90 degrees (to a horizontal position) and tighten the locking plate screw.



Bottom drive locking plate

5 Swing the locking plate on the top drive 180 degrees so that the upper hole in the top locking plate aligns with the upper hole in the bottom drive.

6 Replace the screw into the top hole in the bottom drive so that the top and bottom drives are secured to each other.



Secured DigiDrives

7 Replace the remaining screw into the top hole in the top drive.


8 Repeat steps 5 through 7 for the other side of the top drive.

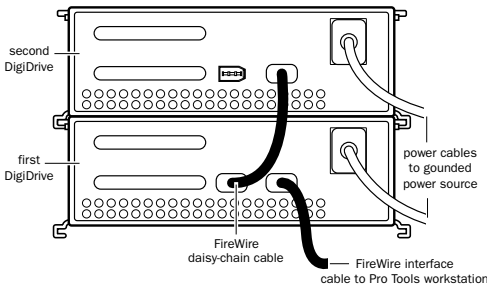
9 Repeat this entire procedure if stacking a third and fourth drive.

When more than four drives are used, consider creating two drive stacks.

Connecting Cables


When connecting a DigiDrive FireWire drive to your computer, connect the FireWire cable between the FireWire connectors on the rear of the drive and your computer. Refer to the illustration.

 See the documentation supplied by your computer manufacturer for the location of the FireWire connector on your computer.



Connecting FireWire cables

The FireWire standard supports *hot-pluggable* installation of FireWire devices. This means that you do not have to turn off your computer before connecting the FireWire cables.

 To avoid possible disk errors and file corruption, always quit Pro Tools and make sure the DigiDrive is not in use before disconnecting it from the computer.


Configuration Requirements

Keep in mind the following when configuring DigiDrive FireWire drives:

- The FireWire cable between the Pro Tools workstation and the first drive (or between any two ports) cannot exceed 14.76 feet (4.5 meters).
- The total FireWire cable from the system to the last drive cannot exceed 236 feet (72 meters).
- A 12-inch (30.5 cm) FireWire cable ships with each DigiDrive FireWire drive to daisy-chain the drives.
- Either FireWire connector on the drive can be used to connect to the system and other drives.
- Maximum compatibility is achieved when your system has dual FireWire ports. Daisy-chain DigiDrive FireWire drives to one port and use the other port for cameras and video decks.
- DigiDrive FireWire drives do not require a terminator.

Connecting DigiDrive FireWire Drives to Other Computers

After you have formatted your DigiDrive FireWire drives, you can move the drives from one system to another without turning the computers off. However, both computers must use the same operating system for which you have formatted the DigiDrive.

 See “Formatting DigiDrives” on page 13 and “Creating Primary Partitions and Formatting Drives” on page 20 for information on formatting DigiDrives.

Hot Plug Removal


Make sure the DigiDrive FireWire drive is not being accessed by a software application before disconnecting it from your computer. (The drive’s yellow Activity LED flickers when the drive is accessed.)

To disconnect a DigiDrive FireWire drive from a Windows 2000-based computer while the computer is running:

- 1 Click the HotPlug/Eject icon on the right side of the taskbar. A pop-up menu appears with a list of attached DigiDrive FireWire drives.
- 2 From the pop-up menu, choose the DigiDrive FireWire drive you want to remove.
- 3 Turn off the DigiDrive FireWire drive and disconnect it from the computer.

To disconnect a DigiDrive FireWire drive from a Macintosh computer while the computer is running:

- 1 On the Macintosh Desktop, drag the DigiDrive FireWire drive icon to the Trash.

 *If you do not drag the DigiDrive icon to the Trash before disconnecting the drive from the Macintosh, a system error may occur.*

- 2 Turn off the DigiDrive FireWire drive and disconnect it from the computer.

Hot Plug Addition

The DigiDrive FireWire drives can be connected to a computer without turning the computer off.

To connect a DigiDrive FireWire drive to a computer while the computer is running:

- 1 Quit Pro Tools and make sure all currently open applications are idle.
- 2 Plug the power cord into the DigiDrive FireWire drive.
- 3 Connect the FireWire cable between the DigiDrive FireWire drive and the computer.
- 4 Turn on the DigiDrive FireWire drive. The drive’s icon appears after several seconds.

On Windows systems, the DigiDrive FireWire drive appears on the taskbar as a HotPlug/Eject icon.

On Macintosh systems, the DigiDrive FireWire drive icon appears on the desktop.

Performance Guidelines

Performance Guidelines

Pro Tools systems have strict hard drive requirements. The recording and playback performance of your system depends on several factors.

Factors affecting system performance:

- ◆ **Hard drive performance.** The faster the drive's seek time, the better. The data transfer rate required for 32-track, 24-bit performance (at a sample rate of 44.1 kHz) is 4.04 MB per second of sustained throughput. This rate must be reflected in the performance of one or more of the drives and SCSI subsystems in your computer to achieve this level of performance.
- ◆ **CPU speed.** The faster the CPU, the better. Overall system performance can affect track count.
- ◆ **Size of your DAE Playback Buffer.** See the *Pro Tools Reference Guide* for an explanation of DAE Playback Buffer size and its effect on system performance.
- ◆ **Edit density** (the number of edits per second) affects the number of different files that a drive must seek. Sessions with high edit density are more demanding on hard drives than sessions with lower edit density. For this reason, drive performance may depend on the session you are playing. While there is no specific definition of high or low edit density, most Pro Tools users

will work with low to moderate edit density sessions. However, extensive use of crossfades, or certain processing such as using Beat Detective can create high levels of edit density in a session.

If you suspect that you are receiving poor drive performance due to high edit density, use the Consolidate command for heavily edited tracks. This will reduce the number of seeks required.

In general, you can obtain the following performance goals with the following setups:

To achieve up to 24 simultaneous tracks of 16- or 24-bit audio with heavy edit density you will need:


- ◆ One or more DigiDrive FireWire drives connected to your FireWire ports.

If your sessions have high-density edits (for example, 3 edits per second across all tracks, all with crossfades), you will need to distribute your audio files over more than one hard drive to allow for increased demand on drive seek capability.

To achieve up to 48 simultaneous tracks of 16- or 24-bit audio with high edit density you will need:


- ◆ Two or more DigiDrive FireWire drives connected to your FireWire ports.

Digidesign testing has shown that certain operating systems will not support more than two FireWire drives connected to a Pro Tools workstation. For the latest compatibility information and performance requirements, check online at www.digidesign.com.

 *For details on allocating tracks to drives, refer to the Pro Tools Reference Guide.*

Additional Hard Drive Performance Tips:

- Use two drives. You can improve performance by allocating audio files between multiple DigiDrive FireWire drives.
- Avoid distributing audio files within a session over different partitions on the same drive. This will slow drive performance.

 *Round Robin Disk Allocation is not supported with partitioned hard drives.*

- Minimize cable length. The IEEE 1394 FireWire cabling standard requires that each FireWire drive be within 14.76 feet (4.5 meters) of the next bus connector. The maximum total bus length cannot exceed 236 feet (72 meters). Note that cable length includes the cabling inside the drive enclosures themselves—which can be up to 12 inches in length.
- Do not spread sessions across different types of drives. For example, if your session has audio on a FireWire drive, you cannot also have audio for that session on a SCSI drive or an internal drive. Spreading audio across different types of drives (and therefore different data busses) will cause errors.

chapter 5

Formatting and Maintaining DigiDrive FireWire Drives on Mac OS

To use your DigiDrive FireWire drive on a Macintosh computer, you must first format it. Once you have done this, you can keep your DigiDrive in peak operating condition by performing maintenance operations and checks on a regular basis.

To help you do this, this chapter contains the following sections:

- ◆ Formatting DigiDrives
- ◆ Initializing DigiDrives
- ◆ Diagnosing and Treating Problems
- ◆ Troubleshooting

Formatting DigiDrives

Once you have connected your DigiDrive FireWire drive to the Macintosh system, you must format it. DigiDrive FireWire drives will not appear on your computer's desktop until properly formatted.

Mac OS 9 (including 9.04, 9.1, and 9.2.1) allows you to create a single partition on your DigiDrive FireWire drive.

To format a DigiDrive FireWire drive on a Macintosh operating system:

- 1 Start up your Macintosh computer.

- 2 Turn on the DigiDrive FireWire drive power switch.

- 3 When the Initialization dialog box appears, type a name for the DigiDrive FireWire drive.

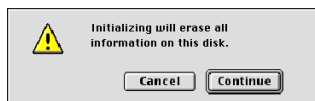


Initializing a DigiDrive

- 4 From the Format menu, choose Apple HFS+ and Click Initialize.

⚠ Drives formatted with standard HFS may have problems copying files over 2 GB.

- 5 When the Warning dialog appears, click Continue.



Warning dialog

Once the drive is initialized, the DigiDrive FireWire drive icon appears on the desktop with the name you typed.

Initializing DigiDrives

At some point you may want to initialize your DigiDrive to remove all data stored on it. Initializing re-creates the partition map and directory structure, improving overall drive performance. It is best to initialize drives when you are between projects, or when the media files and other data on the drives are no longer needed.

To initialize a DigiDrive:

- In the Finder, select the DigiDrive icon, then choose Erase Disk from the Finder's Special menu.



Initializing a drive destroys all the data on the drive. Make sure you back up all important data on the drive to another medium (such as CD-ROM) before you initialize the drive.

Diagnosing and Treating Problems

When problems occur with a drive, they are often problems with the file system written on the drive. The file system consists of data structures that hold critical information about the files stored on a drive. Some of these data structures allow your drive to be recognized as a Macintosh volume.

Periodic use of utilities such as Disk First Aid™ and Norton Disk Doctor™ will maintain the file system and its data structures on your DigiDrive and help ensure optimum, trouble-free performance.

⚠ *Make sure that your disk maintenance software specifically supports FireWire (IEEE 1394) drives. Using incompatible software can cause permanent loss of data. Norton Disk Doctor, for example, must be version 6.0 or later.*

File system errors tend to increase over time. They should be fixed as soon as you discover them. File system errors are generally caused by system crashes, improper system shutdowns, and power failures. They should not be interpreted as a precursor to a mechanical drive failure.

Following are examples of common file system structure errors that Norton Disk Doctor can diagnose and, in most cases, fix without damaging data:

- ◆ Master directory block errors
- ◆ Alternate master directory block errors
- ◆ Leaf node errors
- ◆ Header node errors
- ◆ Volume bit map errors
- ◆ Files with bad creation dates

Every drive has a directory or index that informs the system where files reside. If the directory becomes damaged or corrupted, the system will not be able to locate the files.

Using Disk First Aid

Disk First Aid is a drive directory structure repair tool from Apple Computer, Inc. included with each Macintosh. This tool can find and repair many basic directory structure problems and help keep your drives functioning properly.

Use Disk First Aid when your system reports drive errors or when files on the drive cannot be opened or used by Digidesign software applications. You may also wish to use Disk First Aid regularly to prevent drive problems before they occur.

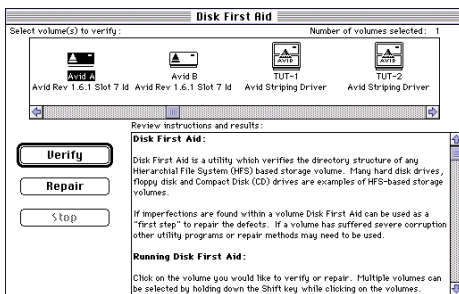
You can usually find a copy of Disk First Aid in one of the following locations:

- ◆ The Utilities folder on your system drive
- ◆ The system software CD-ROM included with your Macintosh computer

Repairing DigiDrives with Disk First Aid

To repair a DigiDrive:

- 1 Launch the Disk First Aid application.



Disk First Aid

- 2 Select the drive you want to verify and repair by clicking on the drive icon in the Drive Selection window.

- 3 Verify and repair the selected drive by clicking the Repair button. Disk First Aid scans the directory structures, reports any problems, repairs the selected drive (if possible), and reports the results.

- 4 If Disk First Aid reports that the selected drive cannot be verified or repaired, follow the steps in “If Drive Status Cannot Be Verified” on page 15.

- 5 Choose Quit from the File menu when you are finished.

If Drive Status Cannot Be Verified

If Disk First Aid is unable to verify or repair a DigiDrive:

- 1 If possible, copy all media files and other data files to another drive.

- 2 Try using Norton Disk Doctor to repair the drive. See “Using Norton Disk Doctor” on page 15.

If you are still experiencing problems or are unable to repair the drive, contact Digidesign Technical Support for additional assistance.

Using Norton Disk Doctor

Norton Disk Doctor is a third-party application for diagnosing and repairing drive problems. Norton Disk Doctor provides more comprehensive coverage of drive problems than Disk First Aid, and can repair directory structure and file problems that Disk First Aid cannot repair. You should run Norton Disk Doctor regularly to help prevent drive problems before they occur.

A Use Norton Disk Doctor version 6.0 or higher with DigiDrive FireWire drives. Earlier versions do not support FireWire drives.

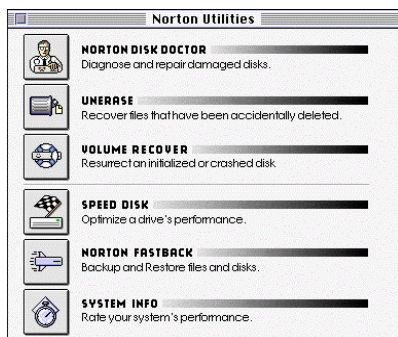
Copy Norton Utilities® onto one or more of the drives on your system before you continue with the following sections. You may want to copy Norton Utilities into the Utilities folder with Disk First Aid for convenience.

⚠ *You should perform a custom installation of the Norton Utilities to copy only the Repair and Recovery utilities and the Startup Disk Builder. Other functions in the Norton Utilities can cause conflicts with Digidesign software.*

Repairing DigiDrives with Norton Disk Doctor

To repair a DigiDrive:

1 Launch Norton Utilities.



Norton Utilities Main menu

2 Select Norton Disk Doctor.

3 Follow the instructions in the *Using the Norton Utilities* manual for drive repair and recovery.

4 Attempt to repair all problems noted by Norton Disk Doctor. Follow any special instructions or recommendations that Norton Disk Doctor provides.

5 When Norton Disk Doctor is finished, click Show Report to see a listing of the problems that were found with the drive, or click Done to return to the Norton Disk Doctor window.

6 Repeat steps 3 and 5 to make sure the problems were fixed.

7 Choose Quit from the File menu when you are finished.

💡 *After using Norton Disk Doctor and Disk First Aid for drive repair and recovery, back up your data and reinitialize your drive as soon as possible.*

Troubleshooting

In some cases, you may have problems with a DigiDrive that you can correct on your own. Following are solutions to common problems.

DigiDrive Does Not Turn On

If a DigiDrive does not turn on after you press the power switch:

1 Make sure the AC power cord is securely connected to the drive enclosure.

2 Make sure the drive is plugged into a power strip or a wall outlet.

3 If the drive is plugged into a power strip, make sure the power strip is plugged into a wall outlet and that the power strip is turned on.

After you turn on the drive, the green power LED on the front of the drive is lit.

DigiDrive Does Not Appear on the Desktop

If a DigiDrive icon does not appear on the desktop:

- 1** Make sure the drive turns on. Follow the instructions in “DigiDrive Does Not Turn On” on page 16 if the drive does not turn on.
- 2** Make sure all the cables are properly connected. For cable and setup information, see “Connecting Cables” on page 9.
- 3** Once you've made sure that the drive is turned on and properly connected, try restarting the computer.

DigiDrive Produces Errors

If a DigiDrive is producing errors or is acting erratically:

- 1** Run Disk First Aid to repair any directory problems.
- 2** Run Norton Disk Doctor to fix any bad block, folder, and file problems.
- 3** Use Norton Utilities to rebuild the drive's desktop (the files that maintain the record of what is on the drive).
- 4** Contact Digidesign Technical Support if you need additional assistance.

Computer Fails to Start Up

If your computer fails to start up:

- 1** Make sure all Digidesign cards and SCSI accelerator cards are properly seated.
- 2** Check that all SCSI devices on the bus have a unique SCSI ID. Duplicate SCSI IDs cause system problems.
- 3** Make sure all SCSI and FireWire cables are properly connected.
- 4** Check that the SCSI bus is properly terminated.
- 5** If the computer still does not start up or if it hangs, disconnect all drives and try to start up the computer. If the computer then starts up, a drive, cable, or a SCSI terminator may be defective.
- 6** See the setup guide that came with your computer for additional troubleshooting information.
- 7** Contact Digidesign Technical Support if you need additional assistance.

chapter 6

Formatting and Maintaining DigiDrive FireWire on Windows 2000


To use your DigiDrive on a computer running a Windows operating system, you must first format and partition the drive. Once you have done this, you can keep your DigiDrive in peak operating condition by performing maintenance operations and checks on a regular basis.

To help you do this, this chapter contains the following sections:

- ◆ Windows Drive Maintenance Software
- ◆ Partitioning Drives
- ◆ Creating Primary Partitions and Formatting Drives
- ◆ Creating an Emergency Repair Disk
- ◆ Keeping Your Hard Drive Tuned Up
- ◆ Troubleshooting

Windows Drive Maintenance Software

Windows allows you to create multiple partitions on a single drive as a way to manage projects and files. This section helps to clarify the function of partitioning a drive and other features related to drive performance.

 *Pro Tools does not support extended partitions or logical drives on the DigiDrives.*

The following list provides some information concerning partitions and disk devices on Windows systems:

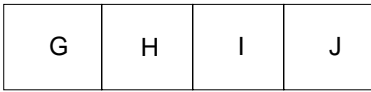
- ◆ You can partition your drive as one primary partition, having the partition represented by a drive letter.



One partition (Drive G)

One partition per physical drive

- ◆ Each partition is assigned a drive letter and cannot be further subdivided.



Four partitions (Drives G–J)

Maximum partitions per physical drive

Choosing a File System

Windows 2000 supports the NTFS file system. Because NTFS offers security, improved file recovery, and integrated compression, you may want to use NTFS for partitions that will store system or applications data. However, it is strongly recommended that you use FAT 32 to format DigiDrive partitions intended to store digital sound data.

Partition Size

Windows applications do not require specific partition sizes or file systems, so a wide range of partitioning schemes are possible. In general, smaller partitions offer somewhat better performance, but the smaller the partition, the smaller the maximum file size. The largest FAT 32 partition allowed under Windows 2000 is much larger than the DigiDrive.

Partitioning Drives

The Windows 2000 operating system allows you to create multiple partitions or logical drive assignments as a way to manage projects and files. You can partition your drive as one large partition or multiple partitions varying in size. Each partition is assigned a drive letter.

The Windows 2000 operating system defines two types of disk drives:

- *Basic* disk drives allow disks to be divided into partitions. This type of drive is normally used for stand-alone disk drives in the Windows 2000 operating system.

A Use *Basic* disk type for DigiDrive FireWire drives.

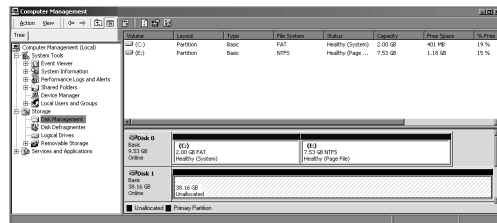
- *Dynamic* disk drives allow disks to be divided into volumes. Disk drives must be dynamic if you want to stripe, mirror, or use disk drives in the RAID style.

Creating Primary Partitions and Formatting Drives

You may not have the same partitions and disk configuration given in the following procedure. However, examples in the procedure will help you understand the Windows 2000 Computer Management window.

To create a primary partition and format a drive:

- 1 Start your system and log in to an account with administrative privileges.
- 2 Right-click the My Computer icon and choose Manage from the pop-up menu. The Computer Management window opens.



Computer Management window

3 Click the Disk Management folder.



For more information on the Computer Management window, click the Help icon in the toolbar of the Computer Management window.

4 Beneath the disk name (at the left of the disk), the display indicates whether the disk is “Basic” or “Dynamic.” Pro Tools does not support Dynamic disks. If the disk is dynamic, right-click the drive name and choose Upgrade To Basic.

5 Place the mouse cursor over the DigiDrive, right-click, and select the “Create partition” option. The Create Partition Wizard window opens and explains the function of the wizard.

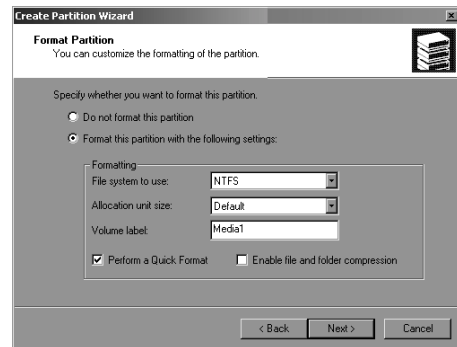
6 Click Next. The wizard leads you through partitioning and formatting of the selected unallocated section of your disk.

7 In the Select Partition Type window, select Primary, and click Next.

8 In the Partition Size window, select Maximum to make the complete unallocated space a partition, and click Next. To make a smaller partition, divide the maximum number by the number of partitions you want to make, for a maximum of four partitions per disk. You need to run the wizard for each partition.

9 In the Assign Drive Letter window, assign the partition an unused drive letter or use the letter automatically selected by the wizard.

10 In the Format Partition window, select the “Format this partition with the following settings” option.



Format Partition window

11 Choose FAT 32 from the File System to Use pop-up menu.

12 Choose Default from the “Allocation unit size” pop-up menu.

13 Type a label you want for the volume that easily identifies the volume in the “Volume label” text box.

14 Select the Perform a Quick Format option.

15 Click Next.


16 The Completing the Create Partition Wizard window opens and provides a list of your selections.

17 Verify your selections and click Finish (this might take a minute to complete).

18 Repeat this procedure to partition and format any unallocated disk sections.

Creating an Emergency Repair Disk


The Repair Disk utility saves all of your current system settings to an Emergency Repair Disk. You can then use this disk to restore your computer if files become damaged.


 *Create and update an Emergency Repair Disk each time you make significant changes to your hardware or software setup.*

Store the repair disk until needed. If you have a problem, search for Emergency Repair Disk in the Windows Help.

To create a repair disk in Windows 2000:

- 1 Go to Start > Programs > Accessories > System Tools. Click Backup.
- 2 In the Tools menu, click Create an Emergency Repair Disk. Follow the instructions that appear on your screen.
- 3 Check “Back up the registry to the repair disk.”

 *You will need a blank, PC-formatted, 1.44 MB floppy disk to create an Emergency Repair Disk*

 *The repair process relies on information that is saved in the systemroot\repair folder. Do not change or delete this folder.*

Saving the Disk Configuration

This operation saves configuration information about currently defined drive letters.

To learn how to create a configuration floppy disk in Windows 2000, see your *Windows 2000 Help Guide*.

Keeping Your Hard Drive Tuned Up

Keeping your hard drives in good operating condition is essential. Following are steps that you can take to ensure that your DigiDrive continues to provide optimum performance.

Avoiding File Fragmentation

What is fragmentation? In multitrack recording, audio tracks are written in discrete files, spaced evenly across the disk. If the space required to write a discrete file is not available in a single contiguous block, the file is broken up into several file fragments. This distribution of files and file fragments in blocks spread out over the surface of hard drive disks causes playback to become increasingly seek-intensive. The decrease in performance due to this process is continuous and progressive. As you add new sound files and edit existing files, the hard drive becomes increasingly fragmented.

Defragment your drives To correct fragmentation and to prevent this gradual decrease in hard drive performance, use one of the hard disk maintenance utilities (for example Symantec’s Norton Speed Disk and Executive Software’s Diskkeeper). These utilities will allow you to reassemble file fragments and reorganize discrete files so they are contiguous.

How often? 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 disk to become fragmented.



While Symantec and Executive Software both claim that the use of their products does not endanger the integrity of hard drive data, you should always back up your data before defragmenting or reorganizing files and directories on your hard drive. Use a disk repair utility (such as Norton Utilities) to find and correct file system errors prior to defragmentation. Make sure the disk repair utility supports FireWire (IEEE 1394) drives, or permanent data loss may occur.

Correcting Disk-related Errors

With continued use, a hard drive's file system can become corrupted. The best defense against this corruption is regular use of a disk repair utility, such as Norton Utilities.

If you are getting disk errors that cannot be resolved through the use of the disk repair utilities the most decisive way to resolve file system corruption is to back up your data, reformat the drive, and restore the data.



The term "reformat" refers to a high-level format, as performed by Windows 2000's Disk Management utility. This process erases all data and recreates the file system, but does not affect low-level sector and track information.

Troubleshooting

In some cases, you may have problems with a DigiDrive that you can correct on your own. Following are solutions to common problems.

DigiDrive Does Not Turn On

If a DigiDrive does not turn on after you press the power switch:

- 1** Make sure the AC power cord is securely connected to the drive enclosure.
- 2** Make sure the drive is plugged into a power strip or a wall outlet.
- 3** If the drive is plugged into a power strip, make sure the power strip is plugged into a wall outlet and that the power strip is turned on. After you turn on the drive, the green power LED on the front of the drive is lit.

DigiDrive Produces Errors

If a DigiDrive is producing errors or is acting erratically:

- Check the Event viewer for drive-specific errors. The Event viewer is located under Disk Management for Windows 2000.

For information on using the Event viewer, see your Windows operating system documentation.

Computer Fails to Start Up

If the computer fails to start up:

- 1** Check that all SCSI devices on the bus have a unique SCSI ID. Duplicate SCSI IDs cause system problems.
- 2** Make sure all SCSI and FireWire cables are properly connected.
- 3** Check that the SCSI bus is properly terminated.
- 4** If the computer still does not start up or if it hangs, disconnect all SCSI and FireWire drives and try to start up the system. If the computer then starts up, a drive, cable, or SCSI terminator may be defective.
- 5** Refer to the setup guide that came with your computer for additional troubleshooting information.
- 6** Contact Digidesign Technical Support if you need additional assistance.

appendix a

Specifications

The following sections provide dimensions and weights, and environmental, power supply, and power cord specifications for the DigiDrive FireWire drive.

Dimensions and Weights

Dimensions and weights

Topic	Specification
Width: without interlock stacking brackets with interlock stacking brackets	7.50 in (190.5 mm) 8.18 in (207.7 mm)
Height without interlock stacking brackets with interlock stacking brackets	2.69 in (68.3 mm) 3.12 in (79.2 mm)
Depth without interlock stacking brackets with interlock stacking brackets	9.85 in (250.2 mm) 9.85 in (250.2 mm)
Weight without interlock stacking brackets with interlock stacking brackets	4.4 lb (2 kg) 4.5 lb (2.1 kg)

Environmental Specifications

Environmental specifications

Topic	Specification
Room temperature	95°F (35°C) maximum
Operating humidity	5% to 90% noncondensing
Storage temperature	-40°F to 149°F (-40°C to 65°C)
Storage humidity	5% to 95% noncondensing

⚠ *Operating the drive at room temperatures higher than recommended will cause the drive to age prematurely and void your warranty.*

Power Supply Specifications

Power supply specifications

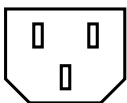
Topic	Specification
Voltage	100 to 240 V ac autosensing
Frequency	50 to 60 Hz
Watts	10 W (typical) 30 W (maximum)

Power Cord Specifications

Choose the power cord according to the country destination; it must comply with local safety requirements. Use the guidelines in the following sections to replace the original power cord.

CEE-22 Power Cord Requirements

The female receptacle of the cord set, shown below, must comply with CEE-22 requirements.



Receptacle (CEE-22)

United States and Canada Power Cord Requirements

In the United States and Canada, the male plug is a NEMA 5-15P style and is UL listed and CSA certified. SVT cord can be used with desktop or stackable units; all other equipment requires SJT cord. Only SJT-type cord sets can be used for units that rest on the floor.

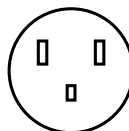
United States and Canada power cord requirements

Cord Type	Size of Conductors in Cord	Maximum Current Rating of Unit
SJT	16 AWG	12 A
SVT	18 AWG	10 A
SVT	17 AWG	12 A

Select the cord set according to the current rating of your unit. See Table 5 for the selection criteria for power cords in the United States and Canada.

European Countries Power Cord Requirements

In Europe, use only an H05VV-F, <HAR>, VDE, PVC, 3 x 1.00 mm 2 power cord (“NEMA 5-15P Style Plug”). Für den Gebrauch in Deutschland muß ein Netzkabel des TypsH05VV-F, <HAR>, PVC, Größe, 3 x 1.00 mm 2verwendet werden.



NEMA 5-15P style plug

United States and Canada Power Cord Requirements

In the United States and Canada, the male plug is a NEMA 5-15P style and is UL listed and CSA certified. SVT cord can be used with desktop or stackable units; all other equipment requires SJT cord. Only SJT-type cord sets can be used for units that rest on the floor.

European power cord requirements

Cord Type	Size of Conductors in Cord	Maximum Current Rating of Unit
SJT	3 x 1.00 mm ²	10 A
SVT	(not applicable)	(not applicable)

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