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How to Use This Manual

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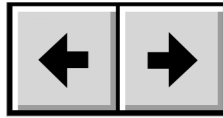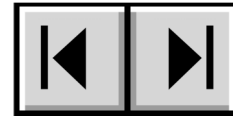
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Printing:

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Federal Communications Commission Radio Frequency Interference Statement (FCC)

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:
- Reorient or relocate the receiving antennas.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the reseller or an experienced radio/TV technician for help.

Shielded cables and I/O cards must be used for this equipment to comply with the relevant FCC regulations. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canada Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Manufacturer's Declaration for CE Certification

We, LaCie, solemnly declare that this product conforms to the following European standards:
Class B EN60950, EN55022, EN50082-1, EN60555-2
With reference to the following conditions:
73/23/EEC Low Voltage Directive   89/336/EEC EMC Directive

2. Introduction

Congratulations on the purchase of your new LaCie Hard Drive. This hard drive will give you a unique combination of compatibility and convenience, as well as generous storage capacity. LaCie Hard Drives are ideal for professionals and home users, and for various applications such as databases, desktop publishing, digital content creation and digital audio/video. For even greater flexibility, your LaCie external hard drive is also cross-platform, which enables you to use it on both Macs and PCs.

The LaCie Hard Drive was designed to allow you to use your desk-space efficiently. Included with your LaCie Hard Drive is a drive stand, so you can stand the drive vertically, freeing up even more valuable space. Engineered to be rack mountable, you can quickly and easily integrate the LaCie Hard Drive into your standard 19-inch computer equipment racks, using the LaCie rackmount kit (sold separately).

With all it can do for you, we're confident that your LaCie FireWire Hard Drive will quickly become an important tool in your day-to-day business and personal computing.

This manual will help you to:
• Install your new device properly
• Get your drive up and running
• Quickly learn how to operate it

2.1 Icons Used in This Manual

Italicized paragraphs feature an icon describing the type of information being given.

 Important Note   **Technical Information or News**

 Warning! (This icon indicates potential hazard).

Precautions
Always follow the basic precautions to use your LaCie Hard Drive safely and correctly. Respecting these guidelines will help to avoid the possibility of personal injury to yourself or others, as well as to prevent damage to your device and other computer equipment. For a complete list of precautions, please see of this manual.

Warranty
LaCie accepts no liability for any loss of data during the use of this device, or for any of the problems caused as a result. Under no circumstances does LaCie guarantee the reliability of the hard drive.

Manual Updates

LaCie is constantly striving to give you the most up-to-date, comprehensive User's Manuals available on the market. It is our goal to provide you with a friendly, easy-to-use format that will help you quickly install and utilize the many functions of your new device.

If your manual does not reflect the exact configurations of the product that you purchased, please check our Web site for the most current version available. You can access our manuals at: www.lacie.com/support/manuals

1.2 What is SCSI?

SCSI (Small Computer System Interface) is an industry standard used to connect peripherals to your computer through a standard hardware interface, using standard SCSI commands. Currently, there are three generations of the SCSI interface: SCSI (SCSI-1), SCSI-2 (SCSI wide, and SCSI fast and wide), and SCSI-3, which is made up of at least 14 separate standards documents.

For a more detailed discussion of SCSI, please refer to chapters 5 (Technical Information) and 8 (Appendix – SCSI Questions and Answers).

The SCSI Icon

This icon will help you easily identify the SCSI interface. It appears on some SCSI cables and next to the SCSI port connectors on certain computers.

1.3 LaCie Storage Utilities Software

The LaCie Storage Utilities CD is a hybrid CD-ROM that has the Mac version, Silverlining Pro, and the PC version, Silverlining 98, on the same CD. Mac users will be able to only view and use the Mac portion, and PC users will be able to only view and use the PC version.

Mac Users Using Mac OS 8.6 and 9.x

Please see the Silverlining manual for instructions on how to use this software. This manual is located on your LaCie Storage Utilities CD in PDF format.

Mac Users Using Mac OS 10.x

Use the formatting and partitioning capabilities in the Apple Disk Utility. Please refer to your Mac OS 10.x documentation or online help for instructions.

PC Users Using Windows 2000 and Windows XP

Use the formatting and partitioning capabilities that are included with your operating system. Please see page 14 for more details.

PC Users Using Windows 98 Second Edition (SE) and Windows Me

You have the option of using Silverlining 98, included with your drive, or using the formatting and partitioning capabilities in your operating system. Please see page 15 for more details.

2. Getting To Know Your LaCie Hard Drive

What can your external hard drive do?
• Store and exchange data between several computers.
• Back up your computer's internal hard drive.
• Store files created by your various applications.

2.1 Minimum System Requirements

Hardware Requirements:
• Mac or PC equipped with SCSI card or built-in SCSI interface.

System Requirements:
• Mac OS 8.6, 9.x, and OS 10.1.2
• Windows 95, Windows 98, Windows NT, Windows 98 Second Edition (SE), Windows 2000, Windows Me and Windows XP
• Intel Pentium II/350MHz-compatible processor or greater; minimum
• 64MB RAM

2.2 LaCie SCSI Hard Drive – Views

Front View

without stand

with stand
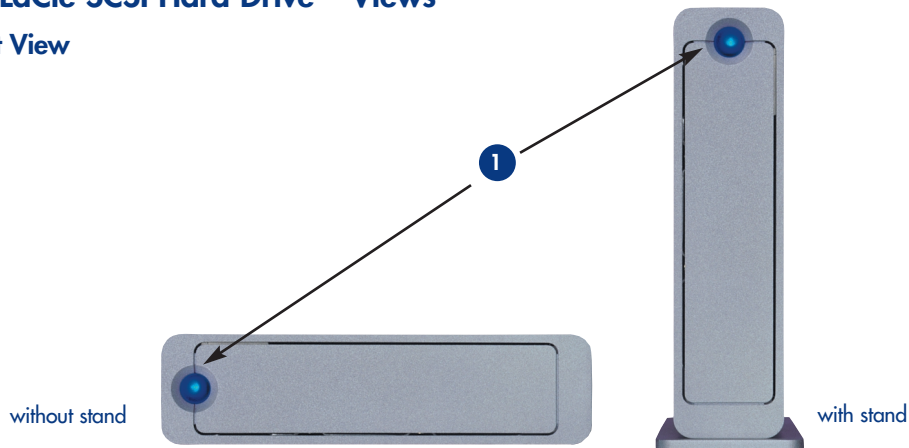
1 – On/off button / Power LED
Push the button to power the drive on. The LED remains lit to show that the drive is on, and blinks to indicate disk activity.

Back View

1 – Power supply connector
This is where you plug in the AC adapter supplied with the drive.

2 – SCSI connectors
Where you plug in the SCSI cable furnished with the drive.

3 – Ventilation outlet
Helps to keep your drive cool during operation. Be sure
not to block this opening when using your drive.

4 – Lock slot
This slot is used to connect a Kensington™-type anti-theft system for
maximum protection. Refer to your anti-theft system documentation
for details on how to connect the lock.

5 – Rackmount grooves
Used for mounting the drive's stand (see the Attaching the Drive Stand section for instructions), and for mounting your drive
with the rackmount kit (sold separately).

6 - SCSI ID switch

7 – Serial number sticker
This is where you will find your LaCie drive's serial number. Write down the serial number and keep it in a safe place,
because you will need to provide the number in the event you have to call LaCie Technical Support for any reason in regards
to the drive's performance. The serial number would also come in handy if your drive is lost or stolen.
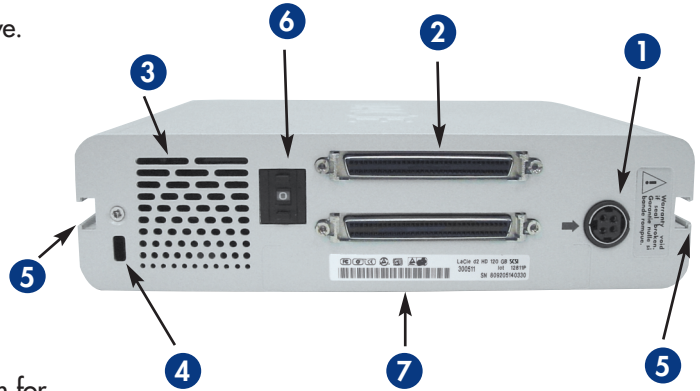
Side View

1 – rackmount grooves
Used for mounting the drive's stand (see the Attaching the Drive
Stand section for instructions), and for mounting your drive in the
rackmount kit (sold separately).
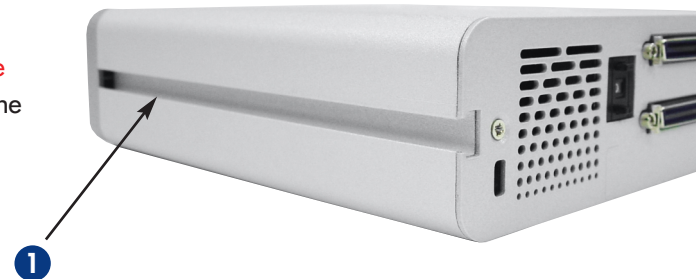
2.3 Attaching the Drive Stand

You can use your LaCie drive in its upright position after installing the stand.

1) From the rear of the drive, slide the stand rail into the side groove of your LaCie drive as shown.

2) Slide the stand forward until its rail touches the rear of the drive.

3) Tighten the two socket screws from the underside of the stand, using the hex key provided, until the stand is firmly in place.

4) When the stand is mounted, your drive should look like this:

2.4 SCSI Cables and Connectors

LaCie SCSI Hard Drives are supplied with a 68-pin to 68-pin cable (Ultra 320 LVD version – Wide SCSI). If the SCSI cable supplied with your LaCie d2 Hard Drive does not meet your requirements, please contact your computer supply specialist, who will be able to help you choose the right SCSI cable for your particular setup and applications.
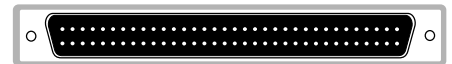
68-pin SCSI connector (Wide SCSI only)

3. Setting Up Your LaCie Hard Drive

Connecting the Power Supply

To operate the drive, you must use the AC adapter supplied with it. This adapter may feature a locking mechanism that will prevent the power cord from accidentally being unplugged while your drive is operating.

Warning! *Use only the AC adapter supplied with your LaCie drive. Using any other power cable may cause damage to the device and void your warranty.*

You may use your LaCie drive when in a foreign country, thanks to its autoswitching 100-240 Volt power supply. To be able to use this feature, you may need to purchase an appropriate adapter. Consult LaCie Technical Support for assistance in choosing the right adapter. LaCie accepts no responsibility for any damage to the drive resulting from the use of an inappropriate adapter. Using an adapter other than one authorized by LaCie will void your warranty.

Connecting the AC Adapter to the Hard Drive

1) Insert the round, four-pin metallic plug of the AC cable into the power input located at the rear of the drive.

2) If the power supply has the locking mechanism, with the metallic plug correctly inserted in the connector, slide the locking mechanism towards the drive. When you hear a faint click, the power cable has been locked in place.

3) Connect the wall-side plug to a power socket. Your drive should now turn on automatically when you connect it to a FireWire port on your computer.

Disconnecting the AC Adapter From the Hard Drive

1) Turn the drive off and wait for it to spin down (+/- 10 sec.).

2) Hold the drive steady with one hand and take hold of the metallic power plug with the other. If necessary, gently slide the locking mechanism back away from the drive until the round, 4-pin metallic plug is visible, then remove the plug from the connector.

Warning! *When removing the AC adapter from your drive, pull only on the black plastic locking mechanism and not on the cable itself. Pulling on the cable will not unlock the plug, and may damage the adapter. Always remove the AC adapter before transporting your LaCie drive. Failure to remove the adapter may result in damage to your drive and will void your warranty.*

3.1 Installing Your LaCie Hard Drive

There are five main steps to this installation process:
3.1.1 - SCSI Card Verification
3.1.2 - Setting the SCSI ID Number
3.1.3 - Connecting the Drive to the Computer
3.1.4 - Drive Recognition
3.1.5 - Software Installation

3.1.1 - SCSI Card Verification

Mac Users:
To verify that your SCSI card has been installed correctly and is recognized, go to "Apple Menu" > "Apple System Profiler" > "Devices and Volumes" tab. Your SCSI bus should be listed. If it does not appear, contact the card manufacturer.

Windows Users:
To verify that your SCSI card has been installed correctly and is recognized, go to "Control Panel" > "System" > (For Windows 2000 and XP, the tab is "Hardware">) Device Manager tab. Double-click on SCSI Controllers. If an " X" or "!" symbol appears next to the icon for the SCSI adapter card, this means that it has not been installed correctly. If it has not been installed correctly, try reinstalling it or contact the card manufacturer. For more information on the installation and configuration of SCSI cards, please contact the card manufacturer.

3.1.2 - Setting the SCSI ID Number

Before connecting your LaCie Hard Drive to your computer, you need to set the unit's SCSI ID number and, if necessary, terminate the drive.

Each device in your SCSI chain needs a unique ID number, either from 0 to 6 for Narrow SCSI, or any number between 0-6 and 8-15 for LVD/Wide SCSI (ID 7 is generally reserved for your computer's SCSI controller). Press the top or bottom button of the SCSI ID selector switch to increase or decrease the SCSI ID number.

Important Note: *The SCSI ID number for each device on the chain must be unique. Make sure that your LaCie Hard Drive's SCSI ID number is not the same as any other device in the chain.*

Terminating the Drive
Terminators prevent SCSI signals from being reflected off the last device in the chain, and they help to regenerate the SCSI signal. If your drive is not the last device in the SCSI chain, there is no need to connect an external terminator.

Your LaCie Hard Drive requires an external terminator. This terminator should be attached to the open connector on the back of the drive if your hard drive is the only SCSI device connected to your computer, or if it is the last device in your chain of SCSI peripherals.

3.1.3 - Connecting the Drive to the Computer

1) Power down your computer.
2) Connect your drive's power supply cable to the main power outlet.
3) Connect one end of your SCSI cable to the SCSI port on your computer, or to a drive in your SCSI chain, if more than one SCSI peripheral is connected. Connect the other end of the SCSI cable to either of the SCSI connectors on your LaCie drive. If, due to connector incompatibility, you are unable to connect the cable supplied with your LaCie drive to the SCSI port on your computer, or to the other devices in your SCSI chain, please contact your computer supply retailer to obtain an appropriate SCSI cable.
4) Power up your LaCie drive and all other peripherals in the SCSI chain first, then power on your computer.

Important Note: *Always power on the devices in your SCSI chain before powering on your computer. This ensures recognition by the computer's operating system. Never connect or disconnect any devices in your SCSI chain while the computer is powered on. Always turn off your computer before connecting or disconnecting peripherals or powering off the peripherals.*

3.1.4 - Drive Recognition

Mac Users
Use the "Apple System Profiler" to check that your LaCie drive is recognized correctly. The drive should also mount to the Mac desktop if it has been installed correctly.

Windows Users
Windows 98 SE and Me – After the operating system has loaded, open the "Control Panel" and double-click on the "System" icon. Select the "Device Manager" tab and double-click on hard disk. If the drive has been installed correctly, it should be listed here.

Windows NT – After the operating system has loaded, open the "Control Panel," double-click on "SCSI Adapter" and click on the "Devices" tab.

Windows 2000 and XP – After the operating system has loaded, open "System," double-click on "Control Panel," select the "Hardware" tab, and click the "Device Manager" button in "System Properties." If an "X" or "!" symbol appears next to the icon for the LaCie drive, it has not been installed correctly. If this occurs, try reinstalling your SCSI card and drivers or contact LaCie Technical Support.

3.1.5 - Software Installation

Mac Users

Important Note: *Mac OS 10.x Users – Do not install Silverlining Pro! At the time of publication of this manual (July 2002), Mac OS 10.x does not support Silverlining Pro. You will need to use the formatting and partitioning capabilities in Apple Disk Utility. Please refer to your Mac OS 10.x documentation or online help for instructions.*

To install Silverlining Pro for use on Mac OS 8.6 and 9.x, proceed as follows:
1) Insert the LaCie Storage Utilities CD in your computer's internal CD/DVD drive.
2) Open the CD icon and double click "LaCie Installer."
3) The Silverlining Utilities screen appears. Click on "Continue."
4) The "About to Install" screen appears. Read the following information and click on "Continue."
5) The "License Agreement" screen appears. Click on "Agree."
6) The "Installation" screen appears.
7) Check the "Silverlining Pro" box.
8) Click on the "Install" button. After installation, a message will appear to confirm that the installation was successful.
9) Click on "Restart" to use your hard drive immediately.
10) The drive should then automatically mount onto the desktop. An icon with the name "LaCie Hard Drive" (or similar) should be visible.
11) Once the drive is visible, format the drive, then you can use it in the same way that you use your computer's internal hard drive.

If you get a message instructing you to initialize your hard drive, select "Mac OS extended/HFS+" in the format local menu and click "Initialize."

Please refer to the Silverlining Pro manual for further details on Silverlining Pro and how to use it.

PC Users

ⓘ **Important Note:** *Windows 2000 and Windows XP Users – Do not install Silverlining 98. At the time of publication of this manual (July 2002), Windows 2000 and Windows XP do not support Silverlining 98. You will need to use the formatting and partitioning capabilities in the Disk Management Utility. For more information, please refer to the following section Formatting and Partitioning Your LaCie Hard Drive.*

To install Silverlining 98 proceed as follows:
1) Insert the LaCie Storage Utilities CD in your computer's internal CD/DVD drive.
2) Open "My Computer" and double-click on the "LaCie Utilities" icon.
3) From the "LaCie Utilities" window, open the "Silverlining 98" folder.
4) Double-click on the "Setup" icon.
5) After a few moments, the Silverlining 98 installation program screen appears. Click "OK."
6) The next screen allows you to select the installation destination. To start the installation in the default folder, simply click the icon representing the computer.
7) Follow the messages on screen, confirming each stage by clicking "OK" or "Next" until the "Installation Completed" message is displayed.
8) Once your drive is visible in "My Computer" or "Windows Explorer," you will need to format the drive, then you can use it in the same way that you use your computer's internal hard drive.

Please refer to the Silverlining 98 manual for further details on Silverlining 98 and how to use it.

4. Formatting and Partitioning Your LaCie Hard Drive

Once you have set-up your LaCie Hard Drive, you can reformat or partition it to suit your needs.

4.1 Mac Users
• Mac OS 8.6 and 9.x – Install and use LaCie Silverlining Pro, which is included with your drive.
• Mac OS 10.x – Use the "Apple Disk Utility" application, which is native to the operating system.

For instructions on installing and using Silverlining Pro, please refer to the Silverlining manual, located on your Silverlining Pro CD, in PDF format.

For instructions on using the Mac OS 10.x "Apple Disk Utility" application, please refer to your Mac OS 10.x documentation or online help.

4.2 PC Users
• Windows 98 SE and Me – Install and use LaCie Silverlining 98, which is included with your drive.
• Windows 2000 and XP – Use the "Disk Management Utility," which is native to the operating system.

For instructions on installing and using Silverlining 98, please refer to the Silverlining manual, located on your Silverlining 98 CD, in PDF format.

Formatting and Partitioning Using Windows 2000 and Windows XP
The process of formatting and partitioning a drive on a computer running Windows 2000 or Windows XP consists of two steps: (1) installing a signature on the drive, and (2) partitioning/formatting the drive. These steps will erase anything that is on the disk.

1) Connect the drive to the computer via the FireWire port.

2) Right-click "My Computer" and click "Manage."

3) From the "Computer Management" window, select "Disk Management" (located below the "Storage" group).

4) If this is the first time the drive is being formatted, Windows 2000 will launch the "Write Signature Wizard" ("Write Initialize Wizard" in Windows XP). Click "Next."

5) Windows will list the new drive(s) attached. If you are formatting a single drive, only one drive should be visible. Select the checkbox next to the drive and click "Next."

6) Click "Finish" to exit the Wizard.

7) Now, with the disk management window open, a new drive will be visible. Right-click on the available space and select "Create Partition..."

8) This will bring up the "Create Partition Wizard." Click "Next."

9) Select "Primary Partition." Click "Next."

10) Here you must specify partition size. It is recommended that you leave the partition set to the maximum available size, unless you want multiple partitions on the same drive. Click "Next."

11) Select "Assign drive letter" and select the desired letter for the drive. Click "Next."

12) Select "Format this partition…" and then select a file system:

FAT32
FAT32 is a file system that is compatible with Windows 98 SE, Windows Me, Windows 2000 and Windows XP; however, it has limitations. In Windows 2000 and Windows XP, you will not be able to create a partition greater than 32GB.

NTFS
NTFS is a newer file system that is compatible only with Windows NT, Windows 2000 and Windows XP. It has fewer limitations than FAT 32 and will enable a partition to be created that is larger than 32GB.

Important Note: *Please refer to Chapter 5. Technical Information, section 5.2 FAT 32 vs. NTFS, , for a more detailed discussion on the differences between the two systems.*

13) Click "Next."

14) Click "Finish."

15) "Disk Management" will create the partition and begin formatting the drive. Once completed, close "Disk Management" and your new drive will be ready for use.

Formatting and Partitioning Using Windows 98 SE and Windows Me

Important Note: *Users utilizing Windows 98 SE should only follow these steps if you do not plan on installing and running Silverlining 98.*

To install a drive on a computer running **Windows 98 SE and Windows Me**, the drive needs to be assigned a letter, and then formatted. Be sure to start the process with the drive disconnected.

1) Right-click "My Computer." Select "Properties."

2) Click the "Device Manager" tab.

3) Ensure that "View devices by type" is selected. Expand the menu next to "Disk Drives" by clicking the "plus" sign, and current hard drives connected to the computer will be listed. Next, connect the hard drive and click "Refresh." A new drive should be listed. Double-click on the new drive.

4) Click the "Settings" tab.

5) If selected, deselect the "Int 13 unit" option, and select "Removable." With the removable box checked, you will be able to assign the drive a new letter below (be sure you select a letter that is not already in use by another drive).

6) Click "OK."

7) In most cases, Windows 98 SE and Windows Me will warn you that you have made changes to the hardware settings, and will ask if you want to shut down your computer. Click "Yes."

8) Power the computer back on.

9) After Windows reboots, open up "My Computer."

10) Right-click on the new drive (with the letter it was assigned), and select "Format." Proceed to format the drive (time will vary depending on the drive size).

5. Technical Information

5.1 User Advice When Using SCSI

The following technical information relates to your LaCie Hard Drive and gives some practical advice:

Power Save

The LaCie Hard Drive manages power consumption. If the system's power save feature supports it, the drive will spin down during the power save mode. When the system comes out of power save, the drive will take a few seconds to spin up to full power before it can be accessed.

Multiple SCSI Devices

External devices must be powered on before booting the computer — even if they are not to be used. They MUST be left on until the computer has been shut down.

SCSI basics

This section provides a brief description of the SCSI technology and lays down a few basic rules for using SCSI peripherals as stand-alone devices or in a chain.

There are two main categories of SCSI: Narrow SCSI and Wide SCSI.

Narrow SCSI – This is the term used for 8-bit SCSI. You can connect up to 7 peripherals on a narrow SCSI bus. Narrow SCSI peripherals have either 25 or 50 pin connectors.

Wide SCSI – This is the term used to describe 16-bit SCSI. Wide SCSI allows you to connect up to 15 peripherals on a bus, and also offers higher data transfer rates than narrow SCSI. Wide SCSI peripherals almost always feature 68-pin connectors.

There are three types of SCSI devices on the market today, which are defined by the signaling method (the way the signal is transferred over the SCSI bus): SE, HVD and LVD.

SE (Single-ended) – The most common SCSI interface in use today. Single-ended uses half of the cable wires for data/control and the other half as a common ground point. Its advantages include its low cost, and suitability for a wide variety of applications, including hard drives, CD and DVD drives, as well as scanners and printers. LaCie Narrow hard drives are single-ended.

HVD (High Voltage Differential) – HVD has three main advantages over SE: It is possible to have longer overall bus lengths [up to 25 meters (m)], higher data transfer rates and more devices per bus. However, HVD is a much more costly solution, is not as widely deployed as SE and is a fading technology since the advent of Low Voltage Differential.
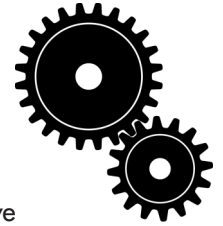
Warning! *Your LaCie drive is not compatible with HVD devices or buses! Never connect your LaCie drive to an HVD bus or peripheral. Doing so may damage your drive and/or system, and will void your warranty.*

LVD (Low Voltage Differential) – This latest addition to the SCSI interface, which became important with Ultra2 SCSI, combines all of the advantages of SE and HVD. LVD has rapidly become the de facto standard in high-performance SCSI. Its benefits include increasingly lower cost, more and more widespread use, enhanced reliability, higher data transfer rates, compatibility with the newest high-speed hard drives, longer cable lengths than SE (up to 12 m), and backwards compatibility with older SCSI technologies.

The following table shows the different types of SCSI implementations:

Category	Narrow (8 bit)	Wide (16 bit)	Wide (16 bit)	Wide (16 bit)	Wide (16 bit)
SCSI types	Fast SCSI	Ultra Wide SE	Ultra2 Wide (LVD)	Ultra 160 (LVD)	Ultra 320 (LVD)
Transfer rate	10MB/s max	40MB/s max	80MB/s max	160MB/s max	320MB/s max
# of devices	8 max	16 max	16 max	16 max	16 max
Cable length	3 m max	1.5 m max	12 m max	12 m max	12 m max
Connectors	25 or 50-pin	68-pin	68-pin	68-pin	68-pin

Fundamental SCSI rules
Follow these seven basic rules when setting up your SCSI peripheral or chain.

1) Give each SCSI peripheral a unique ID number.
    Each device in your SCSI chain needs a unique ID number, either from 0 to 6 for Narrow SCSI, or any number between 0-6 and 8-15 for Wide SCSI (ID 7 is generally reserved for your computer's SCSI controller). No two devices in the same chain may have the same ID number, but the order in which the devices are connected in the bus does not matter. For example, the device with ID 2 could be physically located at the end of the chain, while the device with ID 6 is connected directly to the SCSI port of your computer.

2) Always terminate your SCSI chain.
    The last device in your SCSI chain must be terminated. Even if you have only one SCSI peripheral in your chain, you must terminate it. Single-ended SCSI devices may have an internal terminator (using an on/off switch) or may require an external terminator.

Warning! *LVD devices always require external termination. Consult your computer supplies specialist for a terminator that meets your needs.*

3) Avoid mixing LVD and SE devices in the same SCSI chain.
    For performance reasons, it is important to not mix LVD and SE devices on the same chain. An all-LVD or all-SE chain will generally perform more reliably than a mixed chain. While it is technically possible to mix LVD and SE devices on the same SCSI chain, doing so will limit the performance of all devices on the chain to SE levels. An all-LVD chain will enable you to achieve the ultra-fast transfer rates that LVD has to offer. For more information on mixed SCSI chains, please refer to 9. Appendix 1 – SCSI Questions and Answers.

4) Respect the maximum allowable cable length for your SCSI chain.
    In order to ensure optimum performance, you must respect the maximum allowable length for your SCSI chain. The maximum allowable length of the chain depends on the type of devices (SE, LVD or mixed) connected to it. Consult the table above, or contact your computer supply specialist for more details.

5) Never mix HVD devices with SE or LVD devices.
    HVD devices require a special controller and are not compatible with LVD or SE devices. If you connect an HVD device to an SE or LVD device, none of the devices will work properly. Furthermore, you may damage the devices or your computer system.

6) Turn on all of your SCSI peripherals before turning on your computer.
    Before turning on your computer, always power on all of the devices in your SCSI chain. Otherwise, the computer will not recognize the devices. Also, never leave any unpowered devices in your SCSI chain. If there is an unpowered device in your chain, the other peripherals may not work correctly.

Warning! *Always power down the computer before powering off your SCSI devices. Failure to so can result in the corruption of the hard drive's directory.*

7) Turn off your computer and SCSI peripherals before disconnecting them from the chain.
    Do not disconnect any SCSI peripherals from your computer or chain before turning off the computer and all of the SCSI devices. Doing so may damage the peripherals and/or the computer system.

5.2 FAT 32 vs. NTFS

There are basically two file system formats: FAT 32 and NTFS. Performance is very similar between the two systems, and the following information will hopefully make choosing one or the other a little easier.

FAT 32

FAT is an acronym for File Allocation Table, which dates back to the beginnings of DOS programming. Originally, FAT was only 16 bits, but after the second release of Windows 95 it was upgraded to 32 bits, hence the name FAT 32. In theory, FAT

32 volume sizes can range from less than 1 MB all the way to 2TB. It is the native file system of Windows 98 and Windows Me, and is supported by Windows 2000 and XP. When FAT 32 is used with Windows 2000 and XP, though, volume size is limited to 32GB (by the Windows partition utility, i.e. Disk Manager), and the individual file size is limited to 4GB.

NTFS

This acronym stands for New Technology Filing System, and it is the native file system for Windows NT, Windows 2000 and XP. NTFS offers several features that are not available with FAT 32; i.e. file compression, encryption, permissions, and auditing, as well as the ability to mirror drives and RAID 5 capabilities. The minimum supported volume size for NTFS is 10MB, with a "practical" maximum of 2TB (although, theoretically there is no "real" limit to volume size), with no limit to file size. Volumes created in NTFS can only be directly accessed (not through shares) by Windows NT, Windows 2000 and XP, without resorting to help from third-party products.

Guidelines for Choosing FAT 32 or NTFS

Use FAT 32 if:
• You will be dual booting with an Operating System other than Windows NT or Windows 2000.
• You want to access the stored volumes on any Operating System other than Windows NT, Windows 2000 or XP.
• You may need the ability to dual boot down the line. Once you have converted a volume from NTFS to FAT 32, there is no going back. You can convert from FAT 32 to NTFS, but not the other way around.

Use NTFS if:
• You want to encrypt files, assign permissions to files, or want to audit files for access.
• You will be formatting partitions larger than 32GB.
• You need to store individual files that are larger than 4GB.
• You need a filing system that can be mirrored or structured like a RAID 5 configuration.

5.3 Mac OS Standard vs. Mac OS Extended

There are basically two file systems for the Mac OS: Mac OS Standard (HFS) and Mac OS Extended (HFS+).

Mac OS Standard

Mac OS Standard refers to the file system used by Mac OS 8.0 and earlier. This was the original Hierarchical File System employed by Apple, and was used before computers really began to see dramatic increases in hard disk drive sizes. In HFS, the disk is divided into a maximum of 65,536 equal-sized blocks, with these blocks being the destination point of data stored by the Mac.

Initially, these spaces were small, due to the lack of size in hard drives (i.e. hard drives smaller than 1GB), but as hard drive space increased, the file system became inefficient. With HFS, even the smallest file on any disk has to occupy at least one block. For example, if you had a 4GB hard drive and divided it by 65,536, that would equal roughly 64K, and that would be the smallest block size under HFS. So, if you had a file that was only 4K, it would still have to occupy 64K.

Mac OS Extended

Mac OS Extended refers to the file system used by Mac OS 8.1 and later. HFS+ represents an optimization of the older HFS file system by using hard disk space more efficiently. As hard disk capacity increased over the years, Apple realized that they needed to improve the space-saving capabilities of their file system. Building off of HFS, they increased the number of blocks from 65,536 to 4.29 billion. With HFS+, you are no longer limited by block size. Now, for example, if you have a 4K file, it will only take up 4K of space.

Guidelines for Choosing Mac OS Standard or Mac OS Extended

This is actually a fairly easy decision. You should only use Mac OS Standard if you are creating a volume smaller than 32MB, you are using a Mac with a 680X0 processor or you are creating a file structure that will need to be used by Macs using Mac OS 8.0 or earlier. Otherwise, you should select Mac OS Extended.

6. Troubleshooting

In the event that your LaCie Hard Drive is not working correctly, please refer to the following checklist to find out where the problem is coming from. If you have gone through all of the points on the checklist and your drive is still not working correctly, please have a look at the FAQs that are regularly published on our Web site – www.lacie.com. One of these FAQs may provide an answer to your specific question. You can also visit the drivers pages, where the most recent software updates will be available.

If you need further assistance, please contact LaCie Technical Support (see for details).

Problem	Questions to Ask	Possible Solutions
The drive is not recognized.	Is the drive formatted?	Make sure the drive has been formatted.
	Is the SCSI host adapter recognized correctly by the Operating System (OS)?	**Windows 98 SE & Me Users:** Go to Start > Settings > Control Panel > System > Device Manager > SCSI Controller > click on the + sign next to the controller icon, and you should see the device listed. **Windows 2000 Users:** Go to Start > Settings > Control Panel > System > Hardware tab > Device Manager button > SCSI Controller > click on the + sign next to the controller icon, and you should see your device listed. **Windows XP Users:** Go to Start > Control Panel > Performance and Maintenance > System > Hardware tab > Device Manager button > SCSI Controller > click on the + sign next to the controller icon, and you should see your device listed. **Mac Users:** Open Apple System Profiler and click on the Devices and Volumes tab. You should see your device listed below the SCSI branch. If you cannot see the device, recheck the cables and the other troubleshooting solutions listed here.
	Does an icon for the drive appear on the computer?	Check for an icon on the Desktop (on a Mac) or in My Computer (on a PC).

Problem	Questions to Ask	Possible Solutions
The drive is not recognized.	Are both ends of the SCSI cable connected and properly seated?	Check both ends of the SCSI cable. If the drive is still not recognized, turn off the computer, then turn off your peripheral(s). Disconnect the cables, reconnect them and turn on your peripheral(s) and computer again. If the drive is still not recognized, shut down your computer and try again.
	Has the correct drive installation procedure been followed?	Review the installation procedure described in Chapter 3: Setting Up Your LaCie Hard Drive. **On a PC**, from the Start menu, go into Settings > Control Panel > System > Device Manager tab > (For Windows 2000 and XP, the tab is Hardware >) Hard Disk to verify that the drivers have been installed and enabled. Your new drive should be listed. **On a Macintosh**, use the Extensions Manager to verify that the drivers have been installed and are enabled. The check box next to the driver should be enabled (checked). If the necessary drivers are not present, install or reinstall them.
	Is there a conflict with other device drivers or extensions?	Contact LaCie Technical Support.
	Does your computer's configuration meet the minimum system requirements for use with this drive?	Check section 2.1 Minimum System Requirements.
	Are you powering on the SCSI peripherals before the computer?	You must power on all peripherals connected to your computer before turning on the computer. Otherwise, the SCSI peripherals will not be recognized.
	Is the drive's SCSI ID number the same as that of another device on the SCSI chain?	Check the ID numbers of all devices in your SCSI chain and change them if necessary.

Problem	Questions to Ask	Possible Solutions
The drive is not recognized.	Is the terminator on the LaCie drive set correctly?	Check the terminator. It should be attached for an LVD/Wide drive only if it is the last device in your SCSI chain. Otherwise, it should not be attached.
	Are the pins and holes in the SCSI connectors straight and not deformed?	Turn off your computer and SCSI peripherals and check the cables and connectors. Replace the cables if necessary.
	Are you using the correct SCSI driver?	Make sure you are using the most recent drivers supplied by the manufacturer of the SCSI card. Contact the SCSI card manufacturer or LaCie Technical Support for more details.
The drive is working slowly.	Is the drive part of a SCSI chain?	Isolate the drive and see if performance improves.
The LVD drive seems to be working slowly.	Is the LVD drive connected to a Narrow SCSI port, or is part of a mixed LVD-SE chain?	If it is, then this drop in performance is normal. When connected to Narrow or SE buses or chains, the performance of LVD drives drops to match the performance of the Narrow/SE bus. See Appendix 1 for more details.
	Are you using LVD cables and terminators?	If you are not using LVD cables and terminators, non-LVD cables and terminators will slow down the performance of an LVD drive by constricting the speed to non-LVD standards.
The SCSI card is not recognized.	Is the SCSI card driver installed correctly and enabled?	**Windows 98 SE & Me Users:** Go to Start > Settings > Control Panel > System > Device Manager > SCSI Controller > click on the + sign next to the controller icon, and you should see the device listed.

Problem	Questions to Ask	Possible Solutions
The SCSI card is not recognized.	Is the SCSI card driver installed correctly and enabled?	**Windows 2000 Users:** Go to Start > Settings > Control Panel > System > Hardware tab > Device Manager button > SCSI Controller > click on the + sign next to the controller icon, and you should see your device listed. **Windows XP Users:** Go to Start > Control Panel > Performance and Maintenance > System > Hardware tab > Device Manager button > SCSI Controller > click on the + sign next to the controller icon, and you should see your device listed. **Mac Users:** Open Apple System Profiler and click on the Devices and Volumes tab. You should see your device listed below the SCSI branch. If you cannot see the device, recheck the cables and the other troubleshooting solutions listed here.

7. Contacting Customer Support

Before You Call Technical Support
1) Read the manuals and review the Troubleshooting section.
2) Try to isolate the problem. If possible, make the drive the only external device on the CPU, and make sure all cables are correctly and firmly attached.

If you have asked yourself all of the pertinent questions in the troubleshooting checklist, and you still can't get your LaCie drive to work properly, call us directly using the number below. Before calling, make sure that you are in front of your computer and that you have the following information on hand:

1) Your drive's serial number
2) Computer brand and model
3) Operating system and version (Mac OS or Windows)
4) Amount of memory installed
5) Names of CD or DVD drives installed on your computer
6) Names of any other devices installed on your computer

Technical Support Help Hours

Australia
• Monday through Friday,
   9:30am – 5:30pm EST
Contact Us At:
Technical Support:
• (61)2 9669 6900 phone
• support.au@lacie.com

Belgium
• Monday through Friday
   9 AM – 5PM
Contact Us At:
Technical Support:
• 32 (0)2 639 14 71
• support.be@lacie.com

Canada
• Monday through Friday,
   9:30AM – 5:30PM EST
Contact Us At:
Technical Support:
• (416) 530 2545 phone
• (416) 530 2546 fax
• support.ca@lacie.com

Denmark
• Monday through Friday,
   9 AM – 5PM
Contact Us At:
Technical Support:
• 45 70 27 65 43
• support.nordic@lacie.com

France
• Monday through Friday,
   9 AM – 5PM
Contact Us At:
Technical Support:
• 33(0)1 69 32 84 23
• support.fr@lacie.com

Germany
• Monday through Friday,
   9 AM – 5PM
Contact Us At:
Technical Support:
• 49 (0)211 30 121 111
• support.de@lacie.com

Technical Support Help Hours - continued

Italy
- Monday through Friday,
  9 AM – 6PM

Contact Us At:

Technical Support:
- 39 02 89 14 09 20
- support.it@lacie.com

Spain
- Monday through Friday,
  9 AM - 2PM and 4PM - 7PM

Contact Us At:

Technical Support:
- 34 91 323 8311
- supporte@lacie.com

United Kingdom & Ireland
- Monday through Friday
  9 AM – 5PM

Contact Us At:

Technical Support:
- 44 (0) 20 7872 0872
- support.uk@lacie.com

Japan
- Monday through Friday
  9 AM – 5PM

Contact Us At:

Technical Support:
- 81 3 5733 2205
- support.jp@lacie.com

Sweden, Norway, and Finland
- Monday through Friday, 9 AM – 5PM

Contact Us At:

Technical Support:
- 46 (0)8 411 60 02
- support.nordic@lacie.com

USA
- Monday through Friday,
  6 AM – 6 PM PST

Contact Us At:

Technical Support:
- 503-844-4503 phone
- 503-844-4505 fax
- support@lacie.com

The Netherlands
- Monday through Friday
  9 AM – 5PM

Contact Us At:

Technical Support:
- 31 (0)713 326 833
- support.nl@lacie.com

Switzerland
- Monday through Friday
  9 AM – 5:30PM

Contact Us At:

Technical Support:
- 41 (0) 61 386 80 45
- support.ch@lacie.com

7.1 Warranty

LaCie warrants your hard drive against any defect in material and workmanship, under normal use, for the period designated on your warranty certificate. In the event this product is found to be defective within the warranty period, LaCie will, at its option, repair or replace the defective hard drive.

This warranty is void if:
• The drive was operated/stored in abnormal use or maintenance conditions;
• The drive is repaired, modified or altered, unless such repair, modification or alteration is expressly authorized in writing by LaCie;
• The drive was subjected to abuse, neglect, lightning strike, electrical fault, improper packaging or accident;
• The drive was installed improperly;
• The serial number of the drive is defaced or missing;
• The broken part is a replacement part such as a pickup tray, etc.
• The tamper seal on the hard drive casing is broken.

LaCie will not, under any circumstances, be liable for direct, special or consequential damages such as, but not limited to, damage or loss of property or equipment, loss of profits or revenues, cost of replacement goods, or expense or inconvenience caused by service interruptions.
Under no circumstances will any person be entitled to any sum greater than the purchase price paid for the drive.

To obtain warranty service, call LaCie Technical Support. You may be asked to furnish proof of purchase to confirm that the drive is still under warranty.

All drives returned to LaCie must be securely packaged in their original box and shipped with postage prepaid.

Register online for free technical support: www.lacie.com/register.htm

8. Appendix 1 – SCSI Questions and Answers

For the new user, SCSI terminology can be a little daunting. The table below was designed to help you get a clearer understanding of what the different SCSI names mean and their performance characteristics.

Before you read the chart, let's define what we mean by Standard, Protocol and Industry names:

• Standard - The broadest category, featuring general guidelines given by the various industry groups and standards associations. There are three SCSI standards: SCSI-1, SCSI-2 and SCSI-3.

• Protocols – Sub-categories of SCSI standards with defining specific characteristics and features. "Narrow" and "Wide", for example, tell us about the bus width of a particular type of device.

• Industry names – Names used by computer hardware manufacturers to describe SCSI devices to potential buyers.

Standard	Protocols	Industry Names	Bus Width	Signaling	Throughput
SCSI-1	"Regular" SCSI	SCSI-1, SCSI	Narrow (8-bit)	SE/HVD	Up to 5MB/s
SCSI-2	Wide SCSI	Wide SCSI-2	Wide (16-bit)	SE/HVD	to 10MB/s
	Fast SCSI	Fast SCSI-2	Narrow (8-bit)	SE/HVD	to 10MB/s
	Fast Wide SCSI	Fast Wide SCSI-2	Wide (16-bit)	SE/HVD	to 10MB/s
					to 20MB/s
SCSI-3	Ultra SCSI	Fast-20 SCSI	Narrow (8-bit)	SE/HVD	to 20MB/s
	Wide Ultra SCSI	Fast-20 Wide SCSI/Ultra Wide SCSI	Wide (16-bit)	SE/HVD	to 40MB/s
	Ultra2 SCSI	Fast-40 SCSI/Narrow Ultra2 SCSI	Narrow (8-bit)	LVD	to 40MB/s
	Wide Ultra2 SCSI	Wide Fast-40 SCSI/Ultra2 SCSI/Ultra2 Wide SCSI	Wide (16-bit)	LVD	to 80MB/s
	Ultra3 SCSI	Fast-80 SCSI	Wide (16-bit)	LVD	to 160MB/s
	Ultra 160 SCSI	Ultra 160/m SCSI	Wide (16-bit)	LVD	to 160MB/s
	Ultra 160+ SCSI		Wide (16-bit)	LVD	to 160MB/s
	Ultra320 SCSI	Ultra4 SCSI/Fast-160 SCSI	Wide (16-bit)	LVD	to 320MB/s

What issues are involved when mixing Narrow SCSI and Wide SCSI devices on the same SCSI chain?

The simplest SCSI configurations use only Narrow devices, or only Wide devices. In this type of configuration, you choose the correct cable, connect all of the devices in a bus topology, and place the appropriate type of termination at both ends of the bus. In this case, termination is relatively straightforward because all of the devices have the same width.

Sometimes, however, you may need to mix Narrow and Wide devices on a single SCSI channel. This is becoming increasingly common as the newest hard drives are Wide only, but many other kinds of devices are still produced for the Narrow interface.

The best solution for mixing Wide and Narrow devices is to use a host adapter that has built-in support for separate segments or channels for Wide and Narrow devices. Using this sort of host adapter will enable you to set up the Wide and Narrow devices separately, using a Narrow cable and terminator for the Narrow segment (or channel), and Wide hardware for the Wide segment (or channel).

When configured properly, the host adapter handles the mixing of the devices. This sort of adapter is preferred because Narrow devices generally use single-ended signaling, while modern Wide devices require LVD for maximum performance. The two cannot be mixed on the same bus segment without the LVD devices dropping down to single-ended mode. Thus, this type of host adapter enables you to use the LVD devices to their full potential.

If you do not have a host adapter with separate support for Narrow and Wide devices, you will have to mix them on the same SCSI chain. This more complicated way of mixing introduces several issues to be taken into account:

• **Adapters**: You will have to use either a Wide or Narrow cable, depending on whether the host adapter you are using is Wide or Narrow. Then, whichever drives are the opposite width, will need an adapter so they fit onto the cable. For example, if you have a Wide cable connected to a Wide host adapter and several Wide devices, to add a Narrow device to this chain, you will need an adapter for the Narrow device to let it plug into the Wide cable. Narrow devices generally use 25-pin or 50-pin connectors, whereas Wide devices generally use 68-pin connectors.

• **Performance**: If you put a Wide device on a Narrow SCSI channel, you will cut its potential maximum performance, because it will only be able to send data at the Narrow SCSI channel rate. Conversely, putting Narrow devices on a Wide channel will not double the Narrow channels performance.

• **Device Addressing**: Narrow devices cannot see or access device IDs over 7. If you are going to use Narrow devices on a Wide host adapter, set the host adapter's device ID to something between 0 and 7, or the device won't work (we recommend that you leave the host adapter's ID at 7).

• **Termination**: This is the biggest issue with mixing devices. Here is the problem: when you have a Wide SCSI bus and you connect Wide (16-bit) devices to Narrow (8-bit) devices, there are an extra 8 data bits present on the bus. If you just connect the Narrow data signals and leave the Wide signals "hanging," then that part of the bus will not be terminated! The same is true for connecting Wide devices to Narrow buses: many Wide devices, when connected to a Narrow bus, won't work correctly if the high bits are not dealt with. As a result, the Wide data signals must be terminated when bus widths are mixed. Some adapters that are used to mix devices can terminate these Wide data signals. Connectors that automatically terminate the extra "Wide" signals include high byte termination. Ask your computer supply specialist for the adapters that meet your specific needs.

Can I mix Single-ended (SE) devices and Low-Voltage Differential (LVD) devices on the same SCSI chain?
This is possible, because LVD devices are backwards compatible, meaning they can be used with SE buses. The LVD devices will simply be reduced to the maximum speed and cable length limitations of the SE bus.

For example, if you connect an Ultra2 (LVD) Wide hard drive (with a theoretical maximum throughput of 80MB/s and maximum cable length of 12 m) to an Ultra Wide (SE) bus (whose theoretical maximum throughput is 40MB/s and maximum cable length 1.5 m), the Ultra2 hard drive will operate in Ultra Wide mode (at a maximum of 40MB/s, with a maximum cable length of 1.5 m). Therefore, the LVD device will not be used to its full potential.

To add a SE peripheral to an LVD bus and preserve the data throughput and cable length of LVD, you can use a SCSI expander called an LVD to SE converter. This converter divides the SCSI domain into two bus segments – one segment will operate at the LVD data throughput and cable length and the other bus segment will operate at the single-ended data throughput and cable length.

What issues are involved when connecting a device using a more recent SCSI protocol (for example Ultra3) to an older host adapter (for example, Ultra2)?

In general, when new SCSI protocols are designed they feature backwards compatibility, meaning that they are compatible with most of the previous protocols. This case is no exception. An Ultra3 drive attached to an Ultra2 host adapter will simply operate in Ultra2 LVD mode, with the reduced transfer rates of Ultra2. If you connect that same Ultra3 drive to an even older host adapter (SCSI-2, for example), it will simply operate in the fastest mode the older adapter is capable of handling (Fast-10 SE mode in the case of a SCSI host adapter) with the cable length limitations of the older host adapter. Essentially, the host adapter and drive will negotiate for the best speed that they both have in common.

What is termination?

SCSI passes signals between devices over SCSI cables that act as transmission lines. The transmitting device, the cabling and the receiving device must all be impedance matched in order to accomplish maximum transfer of energy (signals) from end to end. If not, upon encountering a change of impedance, part of the signal will be reflected back to the transmitting device. If those reflected signals arrive at the transmitter after it has switched to the receive mode, it will think the reflected signal is the signal it is looking for. Not recognizing the reflected signals will cause that device to issue a SCSI re-send or perhaps even shut down the bus.

Termination (or terminators) is used to provide a better impedance match, reducing these reflections to a minimum. Many Single-ended SCSI devices feature internal termination that works by means of an on/off switch at the back of the peripheral. Other SE devices may require an external terminator. LVD peripherals always require external termination. Contact your computer supply specialist for advice on which type of terminator to use.

Where should I place the terminator?

On external SCSI peripherals, the terminator must be enabled (internal) or placed (external) on the last device on the bus.

Should I use passive or active terminators?

We recommend that you use active terminators. Passive, single-ended terminators are okay on a Slow SCSI bus (max data

throughput of 5Mb/s), but you are better off using active terminators on all SCSI single-ended applications. LVD SCSI devices must have external active terminators.

What are device IDs, priority and arbitration? How do they affect the performance of the devices in my SCSI chain?
Each SCSI device is addressed on the bus via a specific ID number. For Narrow SCSI (which allows up to 8 total devices, including the SCSI controller), these are numbered 0 through 7; for Wide SCSI (16 devices) the numbering is 0 through 15.

The priority that a device has on the SCSI bus is based on its ID number. For the first 8 IDs, higher numbers have higher priority: i.e., 7 is the highest and 0 the lowest. For Wide SCSI, the additional IDs, from 8 to 15, also have the highest number as the highest priority; but the entire sequence is a lower priority than the numbers from 0 to 7. So the overall priority sequence for Wide SCSI is 7, 6, 5, 4, 3, 2, 1, 0, 15, 14, 13, 12, 11, 10, 9, 8.

If you have just one SCSI peripheral connected to your computer, priority is not an issue. The priority levels are used to guide the arbitration process. In a nutshell, arbitration is the process by which different devices decide which one can have control of the bus. If more than one device wants control at the same time, the higher-priority device will "win," while the lower-priority device will have to wait for its turn.

If you have several peripherals in your SCSI chain, you will typically want to set the slower devices (scanners, tape drives) to the higher-priority IDs, to ensure that they are not crowded off the bus by the faster devices. But, if you have any devices that absolutely cannot tolerate delays in receiving their stream of data –such as a CD-RW or a video encoder - they should be given top priority on the bus. Many people also like to make the host adapter the highest-priority device on the bus, which is why host adapters often have a default SCSI ID of 7.

For even more detailed information on the specifics of SCSI, LaCie encourages you to visit the following Internet sites:
http://www.scsita.org
http:/www.scsifaq.org

9. Glossary

Buffer- RAM cache that is faster than the data that is being delivered. Buffers are used so data may be stored and delivered to the receiving item, as it is needed.

Bus- Electronic links that enable data to flow between the processor, RAM and extension cables (peripherals).

Configuration- When talking about a PC, configuration is understood to be the sum of the internal and external components of the system, including memory, disk drives, the keyboard, the video subsystem and other peripherals, such as the mouse, modem or printer. The configuration also implies software: the operating system and various device managers (drivers), as well as hardware settings and options set by the user via configuration files.

Controller- This is a component, or an electronic card (referred to in this case as a "controller card"), which enables a computer to communicate with certain peripherals. The controller manages the operation of the peripheral associated with it and links the PC bus to the peripheral via a ribbon cable inside the PC. An external controller is an expansion card which fills one of the free slots inside your PC and enables a peripheral (CD-ROM drive, scanner or printer) to be connected to the computer.

Data Stream- The flow of data that accomplishes a task, usually related to moving data from storage to computer RAM or between storage devices.

Digital- Discrete information that can be reduced to zero bits or one bit.

Driver (peripheral manager)- A software component which enables the computer system to communicate with a peripheral. Most peripherals will not operate correctly — if at all — if the appropriate drivers are not installed on the system.

Folder- A list created on a disk to store files. Creating folders and subfolders enables you to organize the storage of your files in a logical, hierarchical manner so that you can find and manage them more easily.

GB (GigaByte) – This value is normally associated with data storage capacity. Basically, it means a thousand million or a billion bytes. In fact, it equals 1,073,741,824 bytes (or 1,024 x 1,024 x 1,024).

Hardware- Physical components of a computer system, including the computer itself and peripherals such as printers, modems, mice, etc.

Hub- A device which links several peripherals together onto the same bus. Active hubs, which regenerate and retransmit signals down the cable, require a power supply. Passive hubs only interconnect various components.

Interface- Junction between two items of hardware or software enabling them to exchange information by adopting common physical/logical rules.

KB (KiloByte)- Basically, this means 1,000 bytes, but it is actually 1,024 bytes.

KB/s- Kilobytes per second. A means of measuring throughput

Mb (Megabit) – Equivalent to 1,000,000 bits..

MB (Megabyte)- Basically means one million bytes, but is actually 1,024 Kilobytes or 1,024 x 1,024 bytes, which equals 1,048,576 bytes.

Mb/s – Megabits per second. A means of measuring throughput. 480Mb/s is equal to 60MB/s.

MB/s- Megabytes per second. A means of measuring throughput.

Medium- Physical material, like paper, disk or tape, used to store computer data.

Operating System (OS)- Software that controls the assignment and use of hardware resources such as memory, processor time, disk space and peripherals. An operating system is the basis on which software (applications) runs. Windows 98, Windows NT, Mac® OS and UNIX are among the most common.

Peripheral- A generic term applied to printers, scanners, mice, keyboards, serial ports, graphics cards, diskette drives and other computer subsystems. This type of peripheral often relies on its own control software, known as a peripheral driver.

Port, hardware- A connection component (USB or IEEE 1394, for example) which enables a microprocessor to communicate with a compatible peripheral.

Port, software- A memory address which identifies the physical circuit used to transfer information between a microprocessor and a peripheral.

Software- In a nutshell, software is a set of instructions for the computer. A set of instructions to perform a particular task is called a program. There are two main types of software: system software (operating system such as Mac OS or Windows) which controls the operation of the computer, and application software (programs such as Word or Excel) which enables users to perform tasks such as word processing, spreadsheet creation, graphics, etc.

Storage- In computers, any equipment on/in which information may be kept. PCs generally use disk units and other external

10. Health and Safety Precautions

Only qualified persons are authorized to carry out maintenance on this device.
• Read this User's Guide carefully, and follow the correct procedure when setting up the device.
• Do not open your hard drive or attempt to disassemble or modify it. Never insert any metallic object into the drive to avoid any risk of electrical shock, fire, short-circuiting or dangerous emissions. Your hard drive contains no user-serviceable parts. If it appears to be malfunctioning, have it inspected by a qualified LaCie Technical Support representative.
• Never expose your device to rain, or use it near water, or in damp or wet conditions. Never place objects containing liquids on the drive, as they may spill into its openings. Doing so increases the risk of electrical shock, short-circuiting, fire or personal injury.
• Make sure that the computer and hard drive are electrically grounded. If the devices are not grounded, there is an increased risk of electrical shock.

General Use Precautions:
• Do not expose the hard drive to temperatures outside the range 5° C to 45° C (41° F to 104° F). Doing so may damage the drive or disfigure its casing. Avoid placing your drive near a source of heat or exposing it to sunlight (even through a window). Inversely, placing your drive in an environment that is too cold or humid may damage the unit.
• Always unplug the hard drive from the electrical outlet if there is a risk of lightning or if it will be unused for an extended period of time. Otherwise, there is an increased risk of electrical shock, short-circuiting or fire.
• Use only the power supply shipped with the device.
• Do not use the hard drive near other electrical appliances such as televisions, radios or speakers. Doing so may cause interference which will adversely affect the operation of the other products.
• Do not place the drive near sources of magnetic interference, such as computer displays, televisions or speakers. Magnetic interference can affect the operation and stability of your hard drive.
• Do not place heavy objects on top of the drive or use excessive force on it.
• Never use excessive force on your drive. If you detect a problem, consult the "Troubleshooting" section in this manual.
• Protect your hard drive from excessive exposure to dust during use or storage. Dust can build up inside the device, increasing the risk of damage or malfunction.
• Never use benzene, paint thinners, detergent or other chemical products to clean the outside of the drive. Such products will disfigure and discolor the casing. Instead, use a soft, dry cloth to wipe the device.

> **Note:** *The drive's warranty may be void as a result of the failure to respect the precautions listed above.*