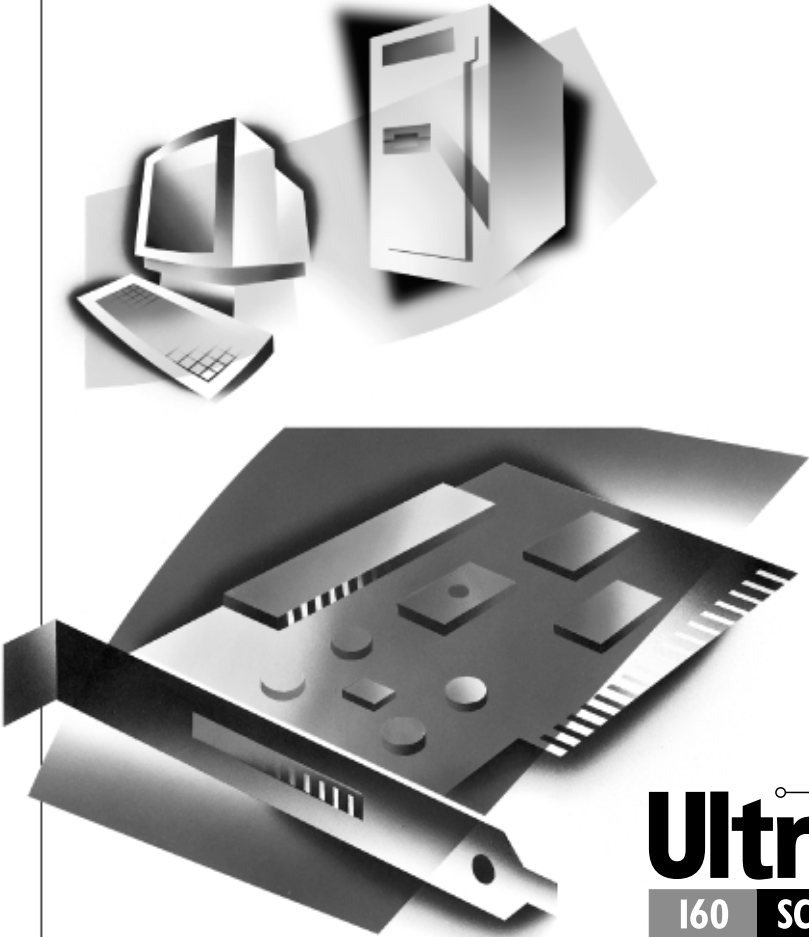




INSTALLATION GUIDE



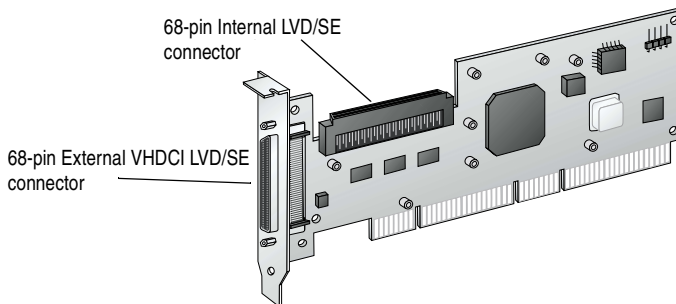
Ultra
160 SCSI

ADAPTEC SCSI CARD 29160LP
ULTRA160 SCSI CONTROLLER

INTRODUCTION

The Adaptec SCSI Card 29160LP Ultra160 SCSI controller enables you to connect up to 15 SCSI devices—such as hard disk drives, scanners, and CD-ROM drives—to any Intel-based computer with 32-bit or 64-bit PCI expansion slots. You can connect newer Ultra160 and Ultra2 SCSI devices to the two 68-pin Low Voltage Differential/Single-Ended (LVD/SE) connectors.

CAUTION If you connect singled-ended devices along with Ultra160 or Ultra2 SCSI devices, the data transfer speed of the Ultra160 or Ultra2 SCSI devices drops to the slower single-ended transfer rate. Although the Adaptec SCSI Card 29160LP is a 64-bit PCI card, it also works in a 32-bit PCI slot. When installed in a 32-bit PCI slot, the card automatically runs in the slower 32-bit mode.



This installation guide explains how to:

- Install the Adaptec SCSI Card 29160LP
- Set up SCSI devices
- Connect SCSI devices
- Install Adaptec SCSI Card driver software

CHANGING THE BRACKET

The Adaptec SCSI Card 29160LP chips have a bracket designed to fit in low-profile rack-mount server.

If you plan to use this card in a standard-height system, you will need to change the bracket.

See the *Adaptec SCSI Card 29160LP Technical Reference* for more information.

INSTALLING THE ADAPTEC SCSI CARD 29160LP

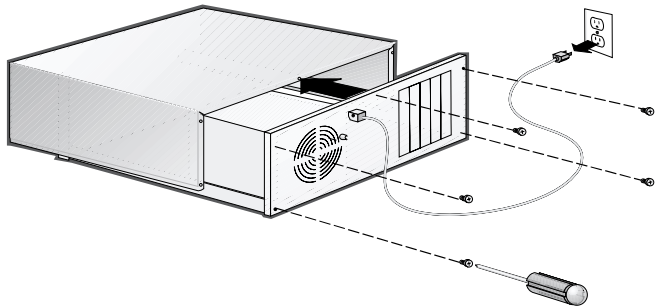
STEP 1

Discharge any static electricity build-up before handling the SCSI card by touching a grounded metal object (such as the exposed metal parts on the back of your computer).

WARNING Turn OFF power to the computer and disconnect the power cord.

STEP 2

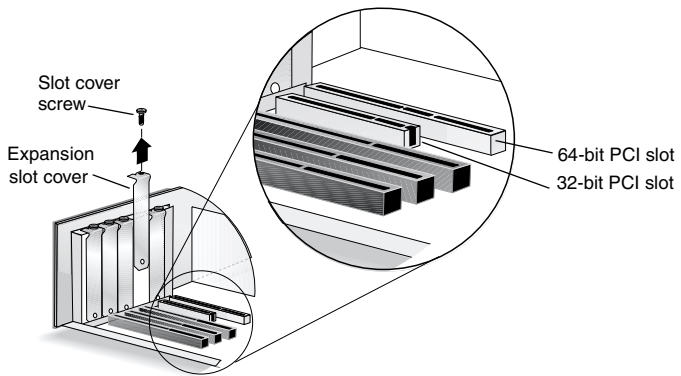
After you turn off your computer and unplug the power cord, remove the cover from the computer.



STEP 3

Locate an unused 64-bit PCI expansion slot and remove the expansion slot cover. If the computer does not have a 64-bit slot, you can install the card in a 32-bit PCI slot.

Select an expansion slot that is compliant with PCI Rev. 2.1 or higher, and that supports Bus Mastering. Save the slot cover screw for use in Step 4.

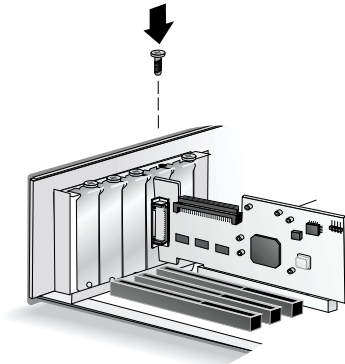


Computers may have vertical or horizontal expansion slots. Refer to your computer manual to locate the PCI slots. If your computer is a tower model, place it on its side to make it easier to install the Adaptec SCSI Card 29160LP.

WARNING Be careful when inserting the Adaptec SCSI Card 29160LP into a PCI slot. Some 32-bit slots do not accommodate 64-bit cards, and the card or slot may break if you use force.

STEP 4

Insert the Adaptec SCSI Card 29160LP into the PCI expansion slot. Press down firmly until the card clicks into place; then replace the slot cover screw. When installed properly, the card should appear level with the expansion slot, as shown below.



SETTING UP SCSI DEVICES

You may need to do several things to your SCSI devices before you connect them to the Adaptec SCSI Card 29160LP:

- Check the SCSI IDs.
- Set the termination.
- Connect the power cables.

Since setup can vary from device to device, always refer to the documentation supplied with the device for specific instructions.

Below are some guidelines for setting SCSI IDs and termination on your devices. Refer to the *Adaptec SCSI Card 29160LP User's Reference* for more information on these topics.

Check the SCSI IDs

The Adaptec SCSI Card 29160LP and each device you connect to it must have a unique SCSI ID number ranging from 0 to 15. No two devices can have the same number.

NOTE The Adaptec SCSI Card 29160LP is preset to SCSI ID 7 and should not be changed.

If you want to configure your computer to boot from a SCSI hard disk, make sure the SCSI ID of that hard disk is set to 0. Most SCSI hard disks are preset to SCSI ID 0 at the factory. The SCSI IDs for internal devices are usually set with jumpers; SCSI IDs for external devices are usually set with a switch on the back of the device.

Terminate the Ends of the SCSI Bus

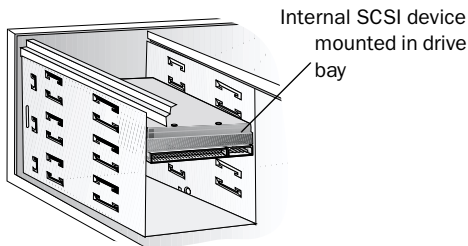
To ensure reliable communication on the SCSI bus, the device at the end of the cable, or the end of the cable itself, must have proper termination installed (or enabled). Terminators must be removed, or termination must be disabled, on devices between the ends of each cable.

Terminate LVD (Ultra160 and Ultra2) SCSI Devices

LVD SCSI devices are automatically unterminated. If you have internal LVD SCSI devices, a special 68-pin internal LVD cable is required to connect the devices. Internal LVD cables usually have an LVD or Auto switching terminator built into the end of the cable. With this type of cable, it is not necessary to terminate individual internal LVD SCSI devices. If your cable does not have a terminator built in, you must add a terminator to the end of the cable.

Mount the Devices

If you have internal SCSI devices, mount each device in an available drive bay inside your computer, as shown below. Refer to your computer and device documentation for instructions on installing devices inside your computer.



CONNECTING SCSI DEVICES

You can connect up to 15 SCSI devices to the Adaptec SCSI Card 29160LP. Before connecting devices, be sure to review *Setting Up SCSI Devices* on page 4.

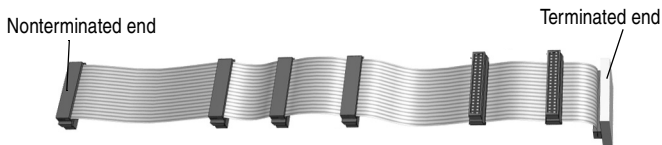
Connecting Internal SCSI Devices

Connect internal SCSI devices to the internal LVD/SE connector. To do this, use a 68-pin internal LVD cable similar to the one shown in Step 1 below. Follow these steps to connect the devices:

NOTE If you connect single-ended SCSI devices along with Ultra160 or Ultra2 SCSI devices, the data transfer speed drops to the slower single-ended rate.

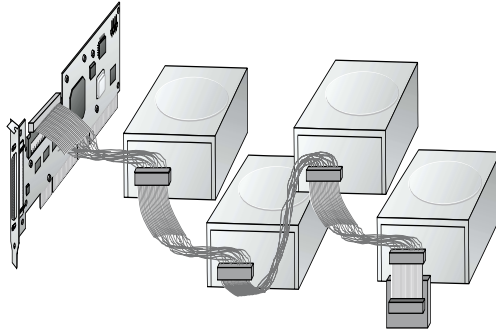
STEP 1

Locate a 68-pin internal LVD SCSI cable, which has flat, laminated wires, as shown below.

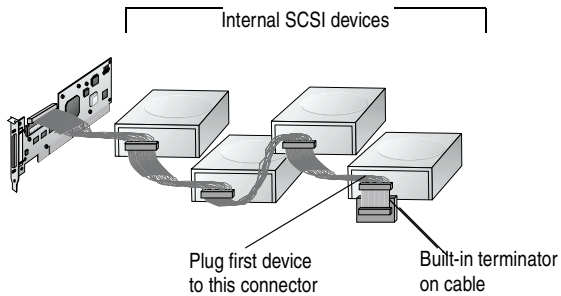


STEP 2

Plug the nonterminated end of the cable to the internal LVD/SE connector.

**STEP 3**

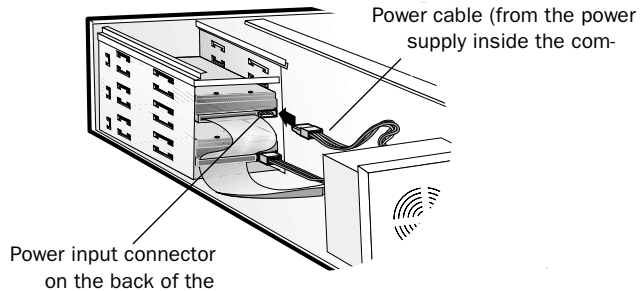
Plug the internal devices to the other cable connectors, starting with the connector at the terminated end of the cable.



NOTE Internal Ultra2 and Ultra160 SCSI devices come from the factory with termination disabled and cannot be changed. Proper SCSI bus termination is provided by the terminator at the end of the LVD SCSI cable.

STEP 4

Connect a power cable from your computer's internal power supply to each internal SCSI device.



Connecting External SCSI Devices

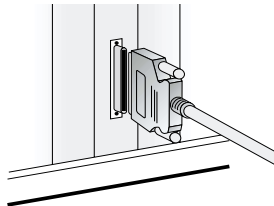
Connect external SCSI devices to the 68-pin external VHDCI LVD/SE SCSI connector. Each external device requires a 68-pin external LVD SCSI cable.

NOTE We recommend that you connect *only* Ultra160 and Ultra2 SCSI devices to the external SCSI connector. If you also attach slower Ultra SCSI devices, the data transfer speed of the Ultra160 and Ultra2 SCSI devices drops to the speed of the slower devices.

Follow these steps to connect external SCSI devices:

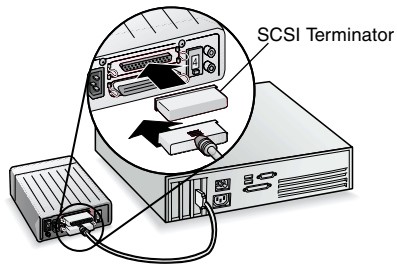
STEP 1

Connect one end of the external LVD SCSI cable to the external LVD/SE connector on the Adaptec SCSI Card 29160LP.



STEP 2

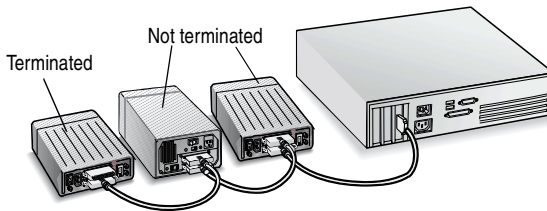
Connect the other end of the external SCSI cable to a SCSI connector on the back of an external SCSI device.



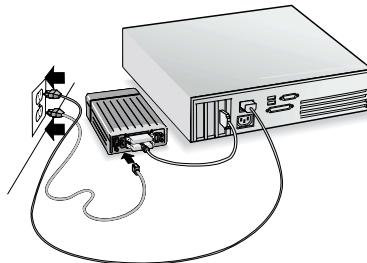
If you are installing only one external device, terminate the device and skip to Step 4.

STEP 3

Connect other external devices by cabling each device to the previous one, as shown below. Terminate only the device at the end of the chain.

**STEP 4**

Connect power cables to all external devices and to the computer.



STEP 5

Double-check for proper SCSI bus termination.

CAUTION Using a single-ended terminator will cause the SCSI bus to run in single-ended mode. LVD termination must be used to obtain Ultra2 transfer rates.

ADAPTEC SCSI CARD DRIVER SOFTWARE

To use the Adaptec SCSI Card 29160LP, the card's driver software must be installed for your operating system (for example, Windows[®] 98, Windows 2000, Windows NT[®], Novell NetWare, and so forth). The Ultra160 Family Manager Set contains driver software for many of the popular operating systems.

Refer to the *Ultra160 Family Manager Set User's Guide* and *Adaptec SCSI Card 29160LP User's Reference* for instructions on either installing driver software when installing your operating system, or installing driver software when the operating system is already installed.

NOTE Operating system versions released after November 1999, may have embedded driver support for the Adaptec SCSI Card 29160LP. To determine if the card is supported by the operating system you are using, read the operating system manual or contact the operating system vendor for information. Visit Microsoft's Web site <<http://www.microsoft.com>> for more information regarding hardware compatibility.

TROUBLESHOOTING

If you have any problems while installing the Adaptec SCSI Card 29160LP, check the following items first:

- Are all SCSI devices powered on?
- Are all SCSI cables and power cables properly connected?
- Does each device on the SCSI bus have a unique SCSI ID?
- Does the total SCSI cable length exceed the maximum allowable length? See the *Adaptec SCSI Card 29160LP User's Guide* for more information about cable length limits.
- Is the SCSI bus properly terminated?

If you are still unable to resolve a problem, refer to the *Adaptec SCSI Card 29160LP User's Reference*, or the Adaptec Web site at <http://www.adaptec.com> for additional troubleshooting information.

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Regulatory Compliance Statements

Federal Communications Commission Radio Frequency Interference Statement

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 A 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

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.



European Union Compliance Statement

This Information Technology Equipment has been tested and found to comply with the following European directives:

EMC Directive 89/336/EEC

EN 50081-1 (1992)

EN55022 (1994) Class A

EN 50082-1 (1992)

EN61000-4-2 (1998)

EN61000-4-3 (1998)

EN61000-4-4 (1995)



Australian/New Zealand Compliance Statement

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to the Australian/New Zealand standard AS/NZS 3548 set out by the Spectrum Management Agency.



Canadian Compliance Statement

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

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Japanese Compliance (Voluntary Control Council Initiative)

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective action.



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