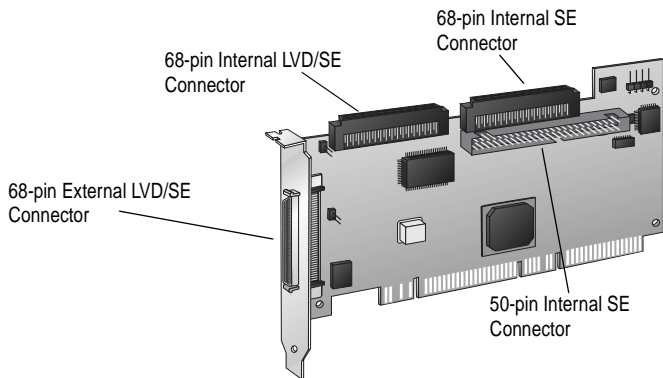


# INTRODUCTION

The Adaptec SCSI Card 29160 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. You can also connect legacy SCSI devices to the 68-pin and 50-pin internal Single-Ended (SE) connectors.



Although the Adaptec SCSI Card 29160 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.

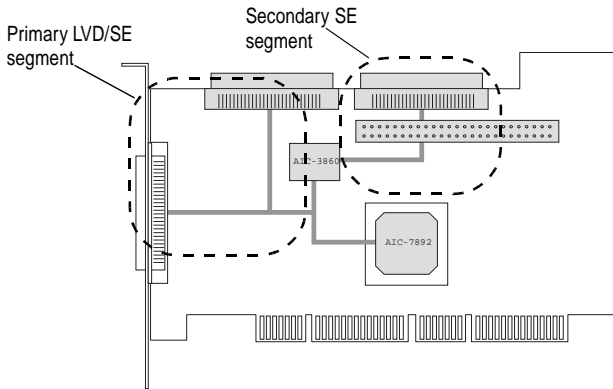
This installation guide explains how to

- Install the Adaptec SCSI Card 29160
- Set up SCSI devices
- Connect SCSI devices

**NOTE** The Adaptec SCSI Card 29160 is designed for computer system original equipment manufacturers (OEMs). Use this product with the original computer system designed by the OEM; each OEM tailors their product specifications for their specific design needs. Adaptec assumes no responsibility for incompatibility or consequential damages if you use the Adaptec SCSI Card 29160 in another computer system. All product support and services are provided by the OEM.

## Bus Segments on the Adaptec SCSI Card 29160

The Adaptec SCSI Card 29160 features Adaptec SpeedFlex™ technology. SpeedFlex technology ensures that you get the best performance from your Ultra160 and Ultra2 SCSI devices by electronically isolating the primary LVD/SE segment from the secondary SE segment on the SCSI bus. This allows the Adaptec SCSI Card 29160 to support newer Ultra160 and Ultra2 SCSI devices at speeds up to 160 MBytes/sec on the primary LVD/SE segment while at the same time supporting Ultra (legacy) devices at speeds up to 40 MBytes/sec. on the secondary SE segment. The following figure shows the two SCSI segments



**NOTE** If you attach Wide Ultra or Ultra SCSI devices to the LVD/SE connector(s), the data transfer rate for all attached Ultra160 and Ultra2 SCSI devices will drop to Ultra SCSI performance levels. However, if you attach *only* Ultra160 and Ultra2 SCSI devices to the LVD/SE connector(s), data will be transferred at the maximum possible rate (80 MBytes/sec for Ultra2 devices and 160 MBytes/sec for Ultra160 devices).

# INSTALLING THE ADAPTEC SCSI CARD 29160

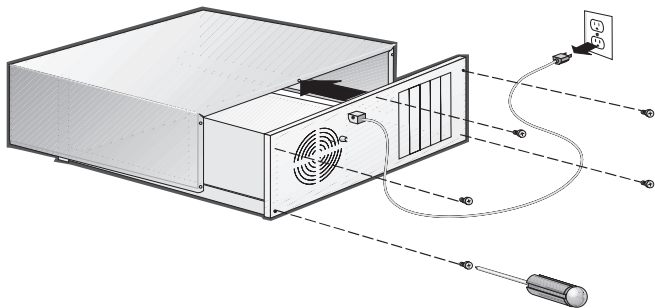
## STEP 1

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

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

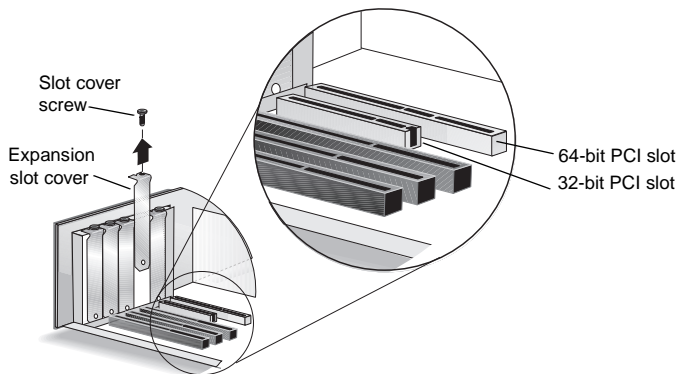
## STEP 2

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. (The expansion slot must be compliant with PCI Rev. 2.1 or higher and must support Bus Mastering.) Save the slot cover screw for use in Step 4.

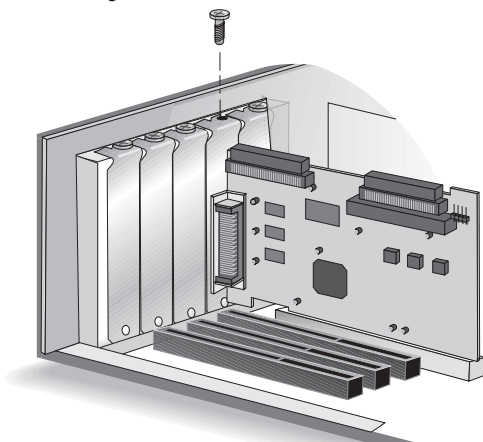


Computers may have vertical or horizontal expansion slots. Refer to your computer manual to locate the PCI slots. If your computer is a tower model, lay it on its side to make it easier to install the Adaptec SCSI Card 29160.

**WARNING** Be careful when inserting the Adaptec SCSI Card 29160 in a PCI slot. Some 32-bit slots will not accommodate it, and the card may break if you force it into the slot.

#### STEP 4

Insert the Adaptec SCSI Card 29160 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

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

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

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

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

## *Check the SCSI IDs*

The Adaptec SCSI Card 29160 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.

The Adaptec SCSI Card 29160 is preset to SCSI ID 7 and should not be changed. If your computer will 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*

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

# CONNECTING SCSI DEVICES

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

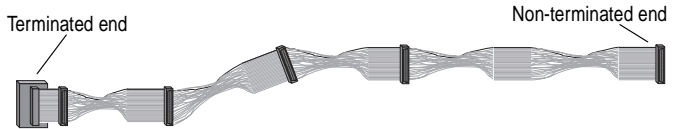
## *Connecting Internal Ultra160 and Ultra2 Devices*

Connect internal Ultra 160 and Ultra2 SCSI devices to the internal LVD/SE connector on the Adaptec SCSI Card 29160. To do this, use a 68-pin internal LVD cable like the one shown in Step 1 below. Follow these steps to connect the devices:

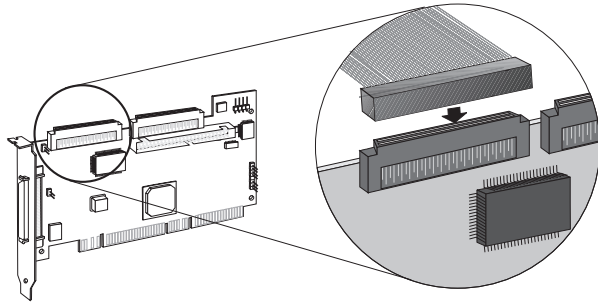
**NOTE** We recommend that you keep your Ultra160 and Ultra2 SCSI devices separate from your Ultra SCSI devices. This allows the newer Ultra160 and Ultra2 SCSI devices to transfer data at their maximum speed. (See *Bus Segments on the Adaptec SCSI Card 29160* on page 2.)

**STEP 1**

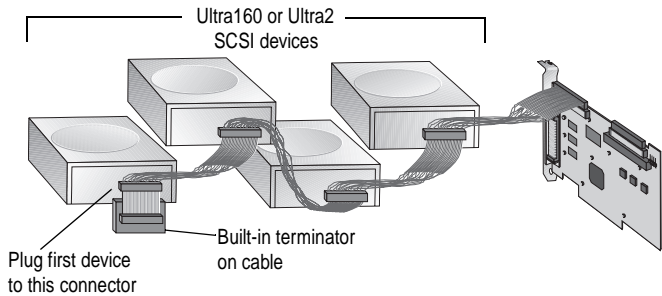
Locate a 68-pin internal LVD SCSI cable, which may have either twisted wires as shown below or flat, laminated wires.

**STEP 2**

Plug the non-terminated end of the cable to the internal LVD/SE connector.

**STEP 3**

Plug the internal Ultra2 or Ultra160 SCSI 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 Wide SCSI Devices

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

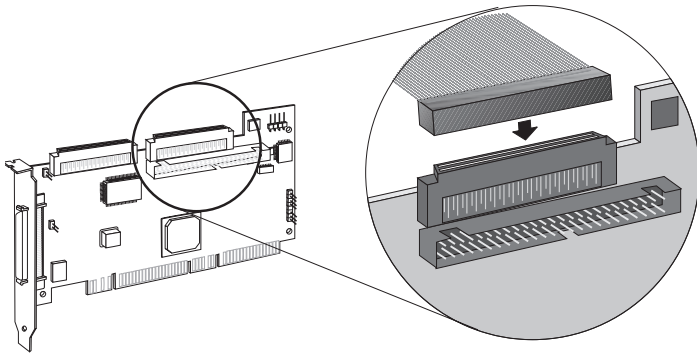
### STEP 1

Locate a 68-pin internal Wide SCSI cable.



### STEP 2

Plug one end of the cable to the Wide SCSI connector on the Adaptec SCSI Card 29160.



### STEP 3

Plug the other end of the cable to a *terminated* Ultra/Fast Wide SCSI device.

### STEP 4

If you have other Ultra/Fast Wide SCSI devices, attach them to the connectors between the two ends of the cable. Be sure these other devices are *un-terminated*.

### STEP 5

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

## Connecting Internal Ultra/Fast Narrow Devices

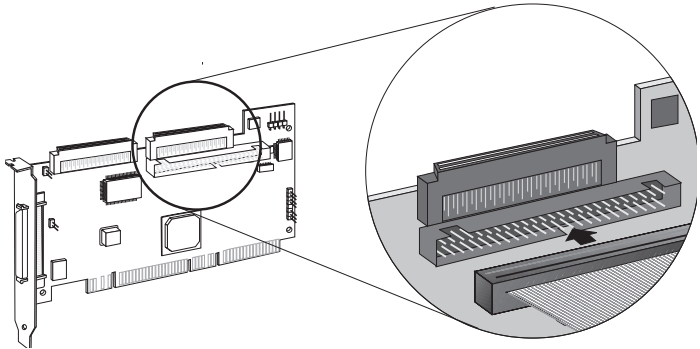
Connect internal Ultra/Fast Narrow SCSI devices that have standard 50-pin connectors to the 50-pin internal SE Narrow SCSI connector. To do this, use a 50-pin internal Ultra Narrow SCSI cable. Follow these steps to connect the devices:

### STEP 1

Locate a 50-pin internal Ultra Narrow SCSI cable.

### STEP 2

Plug one end of the cable to the 50-pin internal SE Narrow SCSI connector on the Adaptec SCSI Card 29160.



### STEP 3

Plug the other end of the cable to a terminated Ultra/Fast Narrow SCSI device.

### STEP 4

If you have other Ultra/Fast Narrow SCSI devices, attach them to the connectors between the two ends of the cable. Be sure these other devices are *un-terminated*.

### STEP 5

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



## Connecting External SCSI Devices

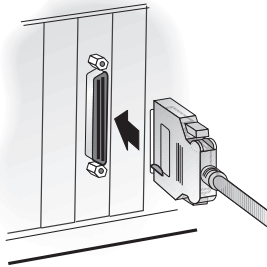
Connect external Ultra2 and Ultra160 SCSI devices to the 68-pin external LVD/SE SCSI connector. Each external device will require a 68-pin external LVD SCSI cable.

**NOTE** We recommend that you connect *only* Ultra160 and Ultra2 SCSI devices to the external SCSI connector. If you also attach older Ultra SCSI devices, the data transfer speed of the Ultra160 and Ultra2 SCSI devices will drop to the speed of the older devices. (See *Bus Segments on the Adaptec SCSI Card 29160* on page 2.)

Follow these steps to connect the external devices:

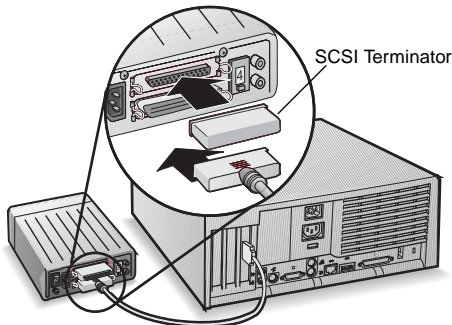
### STEP 1

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



### STEP 2

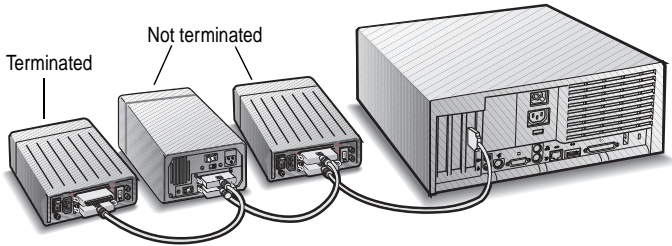
Connect the other end of the external SCSI cable to a SCSI connector on the back of an external SCSI device.



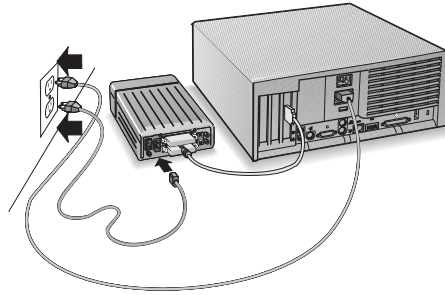
If you are installing only one external device, terminate the device and skip to Step 4.

**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.



# ADAPTEC SCSI CARD DRIVER SOFTWARE

**NOTE** To use the Adaptec SCSI Card 29160, driver software must be installed for your operating system. Installation of the driver software varies depending on how and where you purchased the Adaptec SCSI Card 29160.

## *Pre-loaded Adaptec Drivers*

If the Adaptec SCSI Card 29160 was included as part of a computer system you purchased, then the appropriate Adaptec driver has already been pre-installed by the computer manufacturer and you do not need to install it.

## *Embedded Adaptec Drivers*

Some operating systems have embedded driver support for the Adaptec SCSI Card 29160. 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.

## TROUBLESHOOTING

If you have any problems while installing the Adaptec SCSI Card 29160, 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 29160 User's Guide* for more information.)
- Is the SCSI bus properly terminated?

If you are still unable to resolve a problem, contact the system manufacturer for help.

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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 B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.
- Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

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 B

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 B digital device, pursuant to the Australian/New Zealand standard AS/NZS 3548 set out by the Spectrum Management Agency.



#### Canadian Compliance Statement

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

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



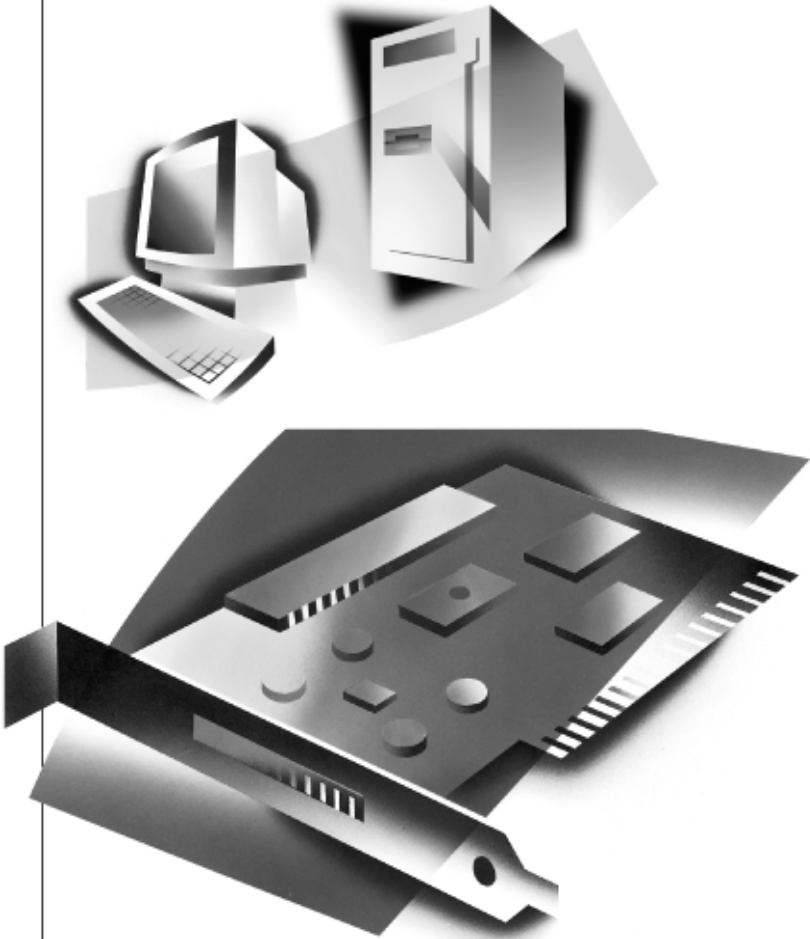
#### Japanese Compliance



**We move the information that  
moves your world.™**



# INSTALLATION GUIDE (OEM)



ADAPTEC SCSI CARD 29160  
ULTRA160 SCSI CONTROLLER