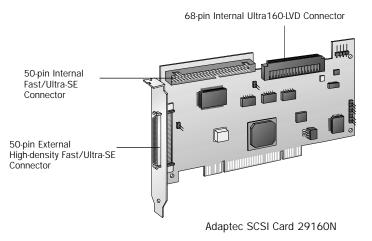# INTRODUCTION

With the Adaptec SCSI Card 29160N PCI-Ultra 160 SCSI controller, you can connect up to 15 SCSI devices, such as hard disk drives, scanners, CD-ROM drives, and tape drives, to any IBM-compatible computer with PCI expansion slots. The following figure shows the SCSI connectors on the Adaptec SCSI Card 29160N.
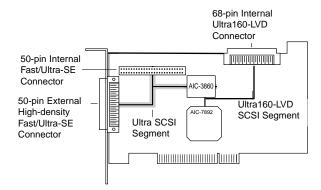
68-pin Internal Ultra160-LVD Connector

50-pin Internal
Fast/Ultra-SE
Connector

50-pin External
High-density Fast/Ultra-SE
Connector

Adaptec SCSI Card 29160N

This installation guide provides instructions for
- Installing the Adaptec SCSI Card 29160N
- Setting up SCSI devices
- Connecting SCSI devices
- Installing driver software

NOTE **The Adaptec SCSI Card 29160N 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 29160N in another computer system. All product support and services are provided by the OEM.**

1

Bus Segments on the Adaptec SCSI Card 29160N

The Adaptec SCSI Card 29160N features Adaptec SpeedFlex™ technology. SpeedFlex technology ensures that you get the most performance from your Ultra160 SCSI devices by electronically isolating the Ultra160 SCSI segment from the Ultra SCSI segment on the SCSI bus. With the SpeedFlex advantage, the Adaptec SCSI Card 29160N can support Ultra160 SCSI devices at speeds up to 160 MBytes/sec while simultaneously supporting Ultra (legacy) devices at speeds up to 40 MBytes/sec.

68-pin Internal
Ultra160-LVD
Connector

50-pin Internal
Fast/Ultra-SE
Connector

50-pin External
High-density
Fast/Ultra-SE
Connector

AIC-3860

AIC-7892

Ultra SCSI
Segment

Ultra160-LVD
SCSI Segment

NOTE **If you attach any Wide Ultra or Ultra SCSI devices to the Ultra160-LVD connector, the data transfer rate for all devices can run at various speeds. However, if you attach only Ultra160 and LVD SCSI devices to the Ultra160-LVD connector, all devices will operate at their maximum possible data transfer rate. That is, Ultra2 devices will operate at a maximum of 80 MBytes/sec and Ultra160 devices at a maximum of 160 MBytes/sec.**
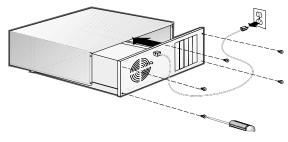
INSTALLING THE ADAPTEC SCSI CARD 29160N

STEP 1
Discharge any static electricity build-up before handling your SCSI card by touching a grounded metal object (like the exposed metal parts on the back of your computer).

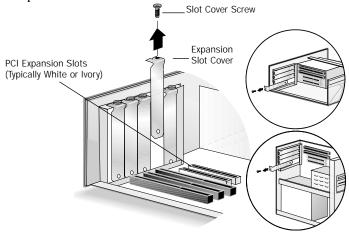**WARNING** **Turn OFF power to the computer and disconnect the power cord.**

STEP 2
After you turn off your computer and unplug the power cord, remove the cover from the computer.
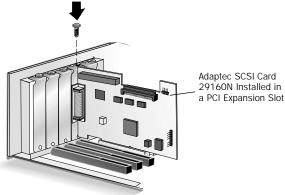

STEP 3
Locate an unused PCI expansion slot and remove the expansion slot cover. (The expansion slot must be compliant with PCI Rev. 2.1 or higher and must support Bus Mastering.) Save the slot cover screw for use in Step 4.

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 allow for easier installation of the Adaptec SCSI Card 29160N.

Slot Cover Screw

Expansion Slot Cover

PCI Expansion Slots
(Typically White or Ivory)

3

STEP 4 Insert the Adaptec SCSI Card 29160N into the PCI expansion slot; press down firmly until it clicks into place, then replace the slot cover screw.

Adaptec SCSI Card
29160N Installed in
a PCI Expansion Slot

SETTING UP SCSI DEVICES

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

- Set 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 29160N User's Reference* for additional information on SCSI IDs and termination.

NOTE **If you refer to the device's documentation for installation instructions, be sure to return to this document to continue with installation of the software driver.**

4

Check the SCSI IDs

The Adaptec SCSI Card 29160N 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 29160N is preset to ID 7 and should not be changed. If you boot from a SCSI hard disk, make sure the hard disk SCSI ID is set to 0 or 1. Most SCSI hard disks come from the factory preset to ID 0. The IDs for internal devices are usually set with jumpers; 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 a total of 15 SCSI devices to the Adaptec SCSI Card 29160N. Before connecting devices, be sure to also review *Setting Up SCSI Devices* on page 4.
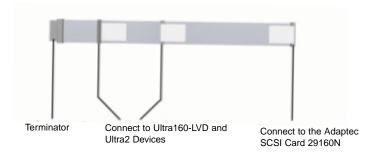
Internal Ultra 160-LVD SCSI Connector (68-pin)

Connect internal LVD and Ultra 160-LVD devices using the internal Ultra160-LVD 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 your internal LVD and Ultra160 devices:

> **NOTE** **We recommend that you keep your Ultra160-LVD devices separate from your Ultra devices. Connecting an Ultra device to the Ultra 160-LVD SCSI connector forces the Ultra160-LVD SCSI segment and any attached devices to drop down to Ultra SCSI performance levels. (See *Bus Segments on the Adaptec SCSI Card 29160N* on page 2.)**

STEP 1 Locate the 68-pin internal LVD SCSI cable, as shown below:

Terminator   Connect to Ultra160-LVD and   Connect to the Adaptec
                    Ultra2 Devices   SCSI Card 29160N
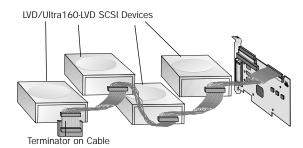
6

STEP 2 Plug the non-terminated end of the cable to the Ultra160-LVD connector on the Adaptec SCSI Card 29160N.

68-pin Internal LVD SCSI Cable

68-pin Internal Ultra160-LVD SCSI Connector

STEP 3 Plug the remaining cable connectors to your internal LVD SCSI or Ultra160-LVD devices.
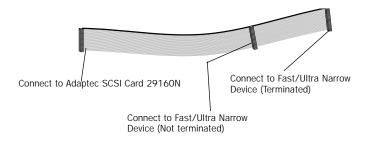
LVD/Ultra160-LVD SCSI Devices

Terminator on Cable

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

7
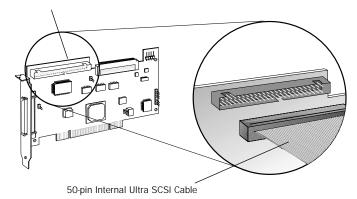
Internal Fast/Ultra-SE SCSI Connector (50-pin)

SCSI or Ultra Narrow SCSI devices have standard 50-pin connectors. To connect these internal devices, you will need a 50-pin internal Ultra SCSI cable, similar to the one shown in Step 1 below. Follow these steps to connect your standard internal Fast SCSI or Ultra Narrow devices:

STEP 1 Locate the 50-pin internal Ultra SCSI cable.

Connect to Adaptec SCSI Card 29160N

Connect to Fast/Ultra Narrow Device (Terminated)

Connect to Fast/Ultra Narrow Device (Not terminated)

STEP 2 Plug the long end of the cable to the 50-pin internal Fast/Ultra-SE SCSI connector.
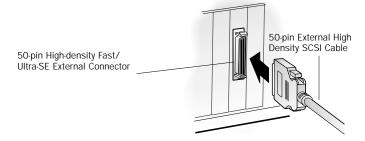
50-pin Internal Fast/Ultra-SE SCSI Connector

50-pin Internal Ultra SCSI Cable

STEP 3 Plug the other end of the cable to a terminated Fast SCSI or Ultra Narrow SCSI device.

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STEP 4   To connect a second Fast SCSI or Ultra Narrow
SCSI device, plug the middle
connector of the cable to
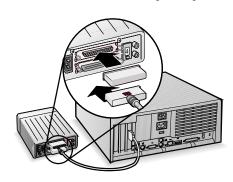the device. The
device must not be
terminated.

Unterminated SCSI Device

Terminated SCSI Device

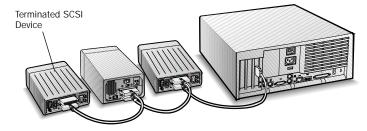## *External Fast/Ultra-SE SCSI Connector (50-pin)*

Use the external Fast/Ultra-SE SCSI connector to connect your standard external SCSI devices that have 50-pin connectors. For each external device, you will need to obtain a 50-pin external SCSI cable. Follow these steps to connect your standard external devices:

50-pin High-density Fast/
Ultra-SE External Connector

50-pin External High
Density SCSI Cable

STEP 1   Connect one end of the external SCSI cable to the 50-pin high-density external connector on the Adaptec SCSI Card 29160N.

STEP 2   Connect the other end of the external SCSI cable to a SCSI connector on the back of the external SCSI device. If you are installing only one external device, terminate the device and skip to Step 4.
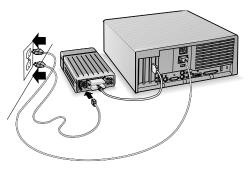
9

STEP 3 Connect other external devices by connecting each device to the previous one until all devices are connected. The device at the end of the chain must be the only external device that is terminated.

Terminated SCSI
Device

STEP 4 Connect power cables to all internal and external devices and to the computer.

INSTALLING DRIVER SOFTWARE

NOTE **To use the Adaptec SCSI Card 29160N, 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 29160N.**

Pre-loaded Adaptec Drivers

If the Adaptec SCSI Card 29160N was included as part of a computer system you purchased, the system already has the appropriate Adaptec driver pre-installed by the computer manufacturer. No further action is necessary to install the driver.

Embedded Adaptec Drivers

The Windows® 95/98, Windows NT®, NetWare, Linux, and UnixWare operating systems may have embedded driver support for the Adaptec SCSI Card 29160N. To load the embedded driver, simply install the Adaptec SCSI Card 29160N and SCSI devices, turn on the devices and then the computer. The operating system recognizes the Adaptec SCSI Card 29160N installed in the computer and then loads the appropriate driver. Follow any instructions displayed on your screen.

| NOTE | **To ensure that you have the most current version of the driver available, contact your computer manufacturer.** |

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.

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Adaptec, Inc.     SCSI Card 29160N


FC     Tested to Comply
       With FCC Standards



FOR HOME OR OFFICE USE
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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)

CE

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.
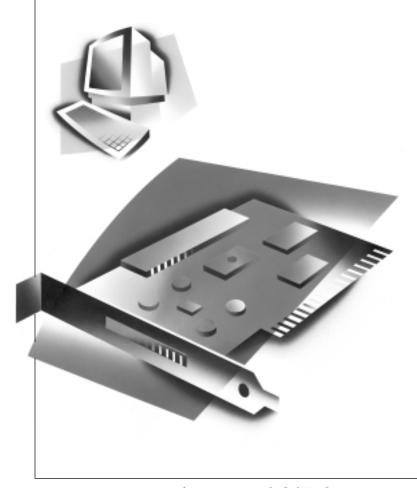
adaptec®

We move the information that
moves your world.™

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INSTALLATION GUIDE

ADAPTEC SCSI CARD 29160N
ULTRA160 SCSI CONTROLLER