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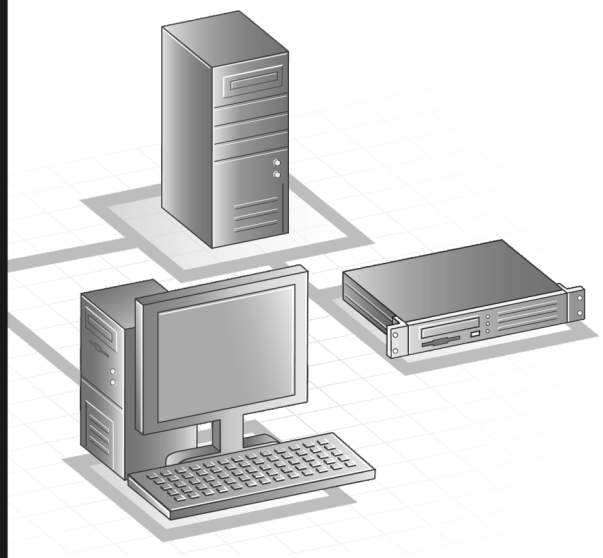
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adaptec

INSTALLATION GUIDE
ADAPTEC SCSI CARD 29320ALP

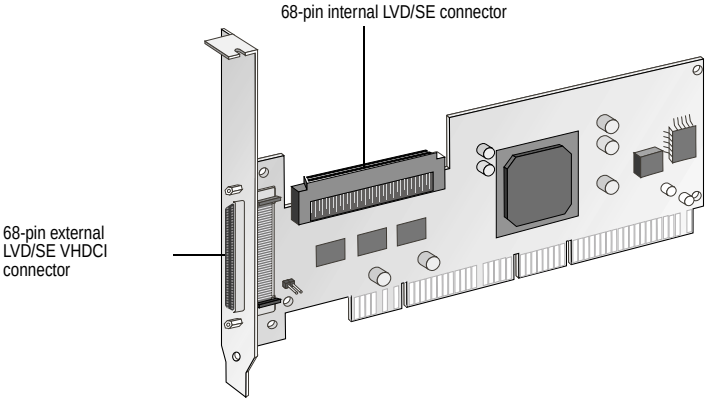


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Introduction

The Adaptec SCSI Card 29320ALP enables you to connect up to 15 SCSI devices—such as very large arrays of high-performance hard disk drives, external storage subsystems, Ultra320/160 hard disk drives, scanners, and CD-ROM drives—to any Intel-based computer with 64- or 32-bit PCI/PCI-X expansion slots.

The Adaptec SCSI Card 29320ALP is a single channel SCSI card with a maximum throughput of 320 MB/sec. You can connect Ultra320/160 and Ultra2 SCSI devices to the internal 68-pin Low Voltage Differential/Single-Ended (LVD/SE) connector and the external very high-density cable interconnect (VHDCI) connector.



Although the Adaptec SCSI Card 29320ALP is a 64-bit PCI/PCI-X 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 29320ALP
- Set up SCSI devices
- Connect SCSI devices

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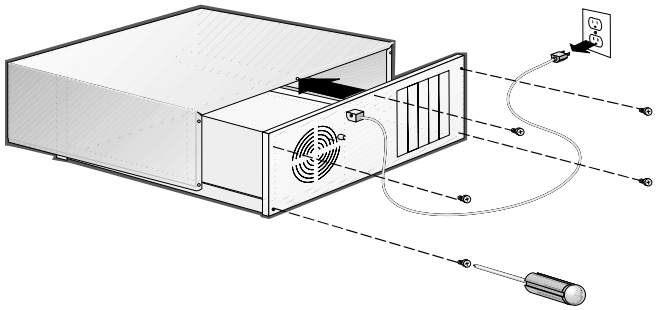
Note: If you connect Wide Ultra / Ultra SCSI devices to the same SCSI channel as Ultra320 / 160 and Ultra2 SCSI devices, the data transfer rate for the Ultra320 / 160 and Ultra2 SCSI devices will drop to Ultra SCSI performance levels. To achieve maximum data transfer rates for the newer SCSI devices, be sure to connect them on their own SCSI channel.

Installing the Adaptec SCSI Card 29320ALP

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).

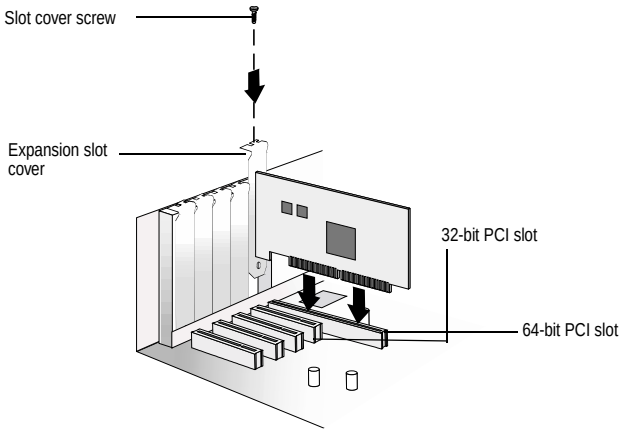
Warning: Turn OFF power to the computer and disconnect the power cord.

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



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3 Locate an unused 64-bit PCI / PCI-X 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 Adaptec SCSI Card 29320ALP supports both 5V and 3.3V 64-bit slots. (The expansion slot must be compliant with PCI Rev. 2.1 or PCI-X Rev. 1.0 and must support Bus Mastering.) Save the slot cover screw for use in Step 4.

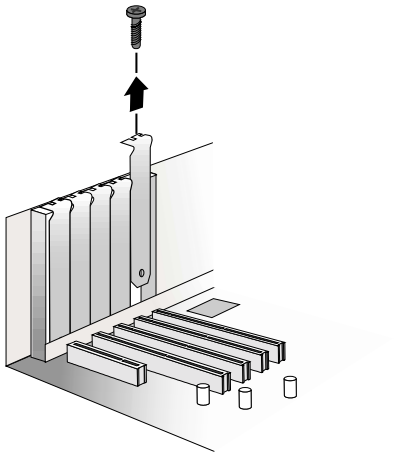


Computers may have vertical or horizontal expansion slots. Refer to your computer manual to locate the PCI / PCI-X slots. If your computer is a tower model, lay it on its side to allow for easier installation of the Adaptec SCSI Card 29320ALP.

Warning: Be careful when inserting the Adaptec SCSI Card 29320ALP in a PCI slot. Some 32-bit slots will not accommodate it, and the card may break if you force it into the slot.

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4 Insert the Adaptec SCSI Card 29320ALP in the 64-bit (or 32-bit) PCI or PCI-X 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 29320ALP:

- 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.

Following are some guidelines for setting SCSI IDs and termination on your devices.

Check the SCSI IDs

The Adaptec SCSI Card 29320ALP and each device you connect to it must have a unique SCSI ID number ranging from 0 to 15 on each channel. No two devices on the same SCSI channel can have the same SCSI ID.

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The Adaptec SCSI Card 29320ALP is preset to ID 7 for each channel and should not be changed. If you boot from a SCSI hard disk, make sure the hard disk SCSI ID 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.



Note: When connecting Ultra320/160 or Ultra2 SCSI devices, the SCSI bus must be terminated either on the end of the cable (with a permanent terminator) or with a separate terminating connector. Ultra SCSI and earlier single-ended devices can terminate the bus directly from the device. If you use an Ultra SCSI terminator on an LVD Ultra320/160 and Ultra2 SCSI bus, the SCSI devices will not operate properly. For this reason be sure that you have the necessary Ultra320/160 or Ultra2 cable and terminator before installing the Ultra320/160 SCSI devices.

Connecting SCSI Devices

You can connect a total of 15 SCSI devices to the Adaptec SCSI Card 29320ALP. Before connecting devices, be sure to review *Setting Up SCSI Devices* on page 4.

Connecting Internal Ultra320/160 and Ultra2 Devices

A special 68-pin internal LVD cable is needed to connect internal Ultra320/160 or Ultra2 SCSI devices. If your cables are not marked, you can identify most LVD cables as having twisted pairs of the flat ribbon cable between the device connectors. Some cables are laminated so that they lay flat. Internal LVD cables usually have a terminator built into the end of the cable.

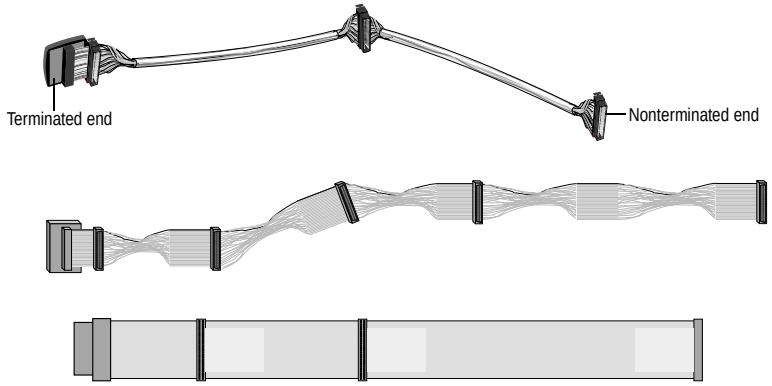
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The Adaptec SCSI Card 29320ALP has one internal LVD/SE connector to which you can connect internal SCSI devices.

Note: Adaptec recommends that you keep your Ultra320/160 and Ultra2 SCSI devices separate from your Ultra SCSI devices. If you connect a legacy SCSI hard disk drive to the Adaptec SCSI Card 29320ALP LVD/SE connectors, the Ultra320/160 and Ultra2 SCSI hard disk drives will slow to Ultra SCSI performance levels.

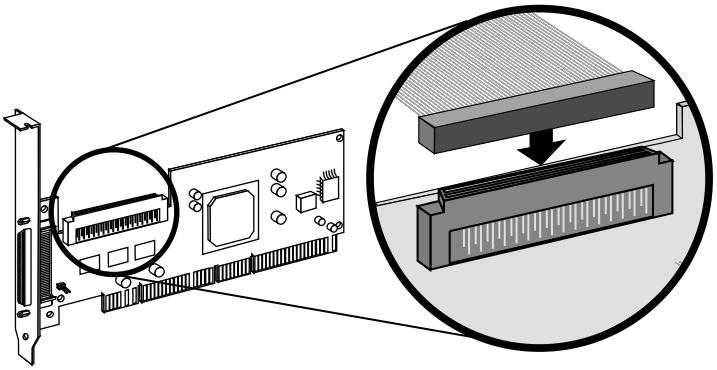
Follow these steps to connect your internal Ultra320/160 and Ultra2 devices:

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

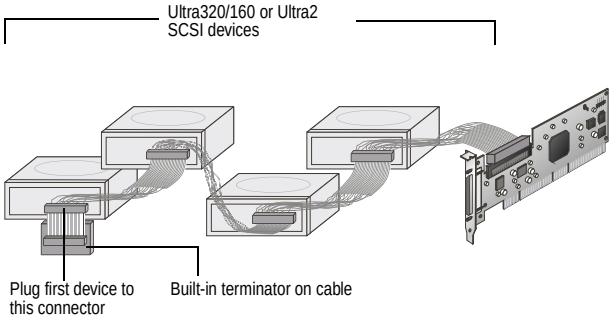


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2 Plug the nonterminated end of the cable to the internal LVD / SE connector.



3 Plug the internal Ultra320 / 160 and Ultra2 SCSI devices to the other cable connectors, starting with the connector at the terminated end of the cable.



Note: Internal Ultra320 / 160 and Ultra2 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.

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

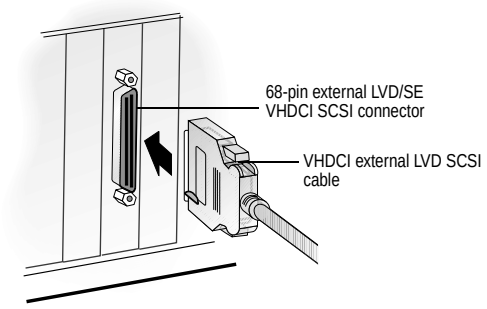
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Connecting External SCSI Devices

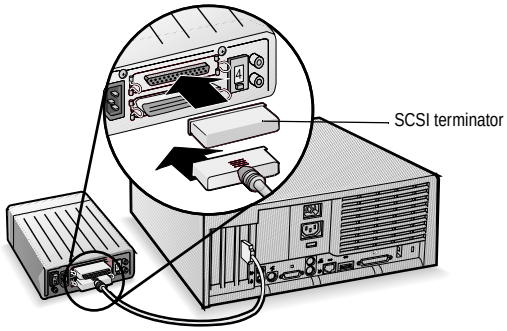
You can connect external Ultra320 / 160 and Ultra2 SCSI devices to the 68-pin external LVD / SE VHDCI SCSI connectors. Each external device will require a 68-pin VHDCI external LVD SCSI cable.

Follow these steps to connect your external SCSI devices:

1 Connect one end of an external SCSI cable to one of the external Ultra320 / 160 connectors on the Adaptec SCSI Card 29320ALP.

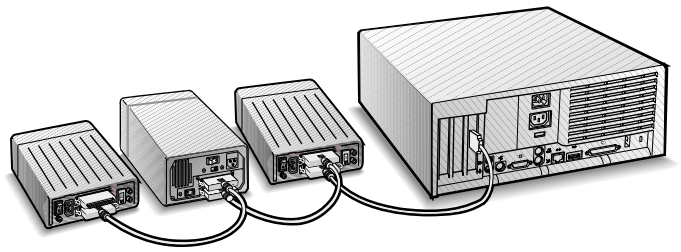


2 Connect the other end of the cable to a SCSI connector on the back of an external device. If you are installing only one external device, terminate the device and skip to Step 4.

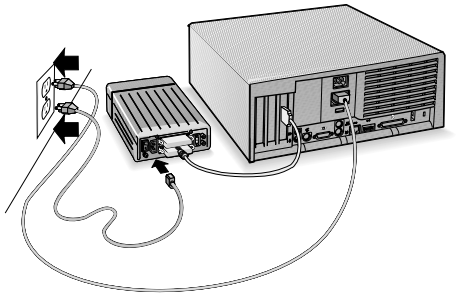


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3 Connect the other external SCSI devices by linking each device to the previous one, as shown below. Terminate only the device at the end of the chain.



4 Connect power cables to all external device(s) and to the computer.



More Information About Termination

The last SCSI device on the end of each SCSI bus cable must be terminated, and termination must be *disabled* for all other devices in the middle of the cables. Ultra320/160 and Ultra2 SCSI devices are automatically unterminated, but Ultra SCSI and Fast/Wide SCSI devices do have termination that you must check. For more information, refer to the documentation for each SCSI device.

If you are using external Ultra2 or Ultra320/160 devices, be sure to use an LVD terminator to terminate the last device in the chain. If you use a single-ended, active terminator (sometimes called an Ultra terminator) the SCSI devices will not operate properly.

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Troubleshooting

If you have any problems while installing the Adaptec SCSI Card 29320ALP, check the following items first:

- Are all SCSI devices powered on?
- Are all SCSI cables and power cables properly connected?
- Does each device on each SCSI bus have a unique SCSI ID?
- Does the total SCSI cable length exceed the maximum allowable length?
- Is the SCSI bus properly terminated?

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

Adaptec SCSI Card Driver Software

Note: To use the Adaptec SCSI Card 29320ALP, 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 29320ALP.

Preloaded Adaptec Drivers

If the Adaptec SCSI Card 29320ALP was included as part of a computer system you purchased, the system already has the appropriate Adaptec driver preinstalled by the computer manufacturer. No further action is necessary to install the driver.

Embedded Adaptec Drivers

Some operating systems have embedded driver support for the Adaptec SCSI Card 29320ALP. 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.

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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.

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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.

Adaptec, Inc.	Adaptec SCSI Card 29320ALP
FC Tested to Comply With FCC Standards	
FOR HOME OR OFFICE USE	

European Union Compliance Statement

This Information Technology Equipment has been tested and found to comply with EMC Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, in accordance with:

- EN55022 (1998) Emissions
- EN55024 (1998) Immunity:
  - EN61000-4-2 (1998) Electrostatic discharge: ±4 kV contact, ±8 kV air
  - EN61000-4-3 (1998) Radiated immunity
  - EN61000-4-4 (1995) Electrical fast transients/burst: ±1 kV AC, ±0.5 kV I/O
  - EN61000-4-5 (1995) Surges ±1 kV differential mode, ±2 kV common mode
  - EN61000-4-6 (1996) Conducted immunity: 3 V
  - EN61000-4-11 (1994) Supply dips and variation: 30% and 100%

In addition, all equipment requiring U.L. listing has been found to comply with EMC Directive 73/23/EEC as amended by 93/68/EEC in accordance with EN60950 with amendments A1, A2, A3, A4, A11.

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 (Voluntary Control Council Initiative)

This equipment complies to class B Information Technology equipment based on VCCI (Voluntary Control Council for Interface). This equipment is designed for home use but it may causes radio frequency interference problem if used too near to a television or radio. Please handle it correctly per this documentation.

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