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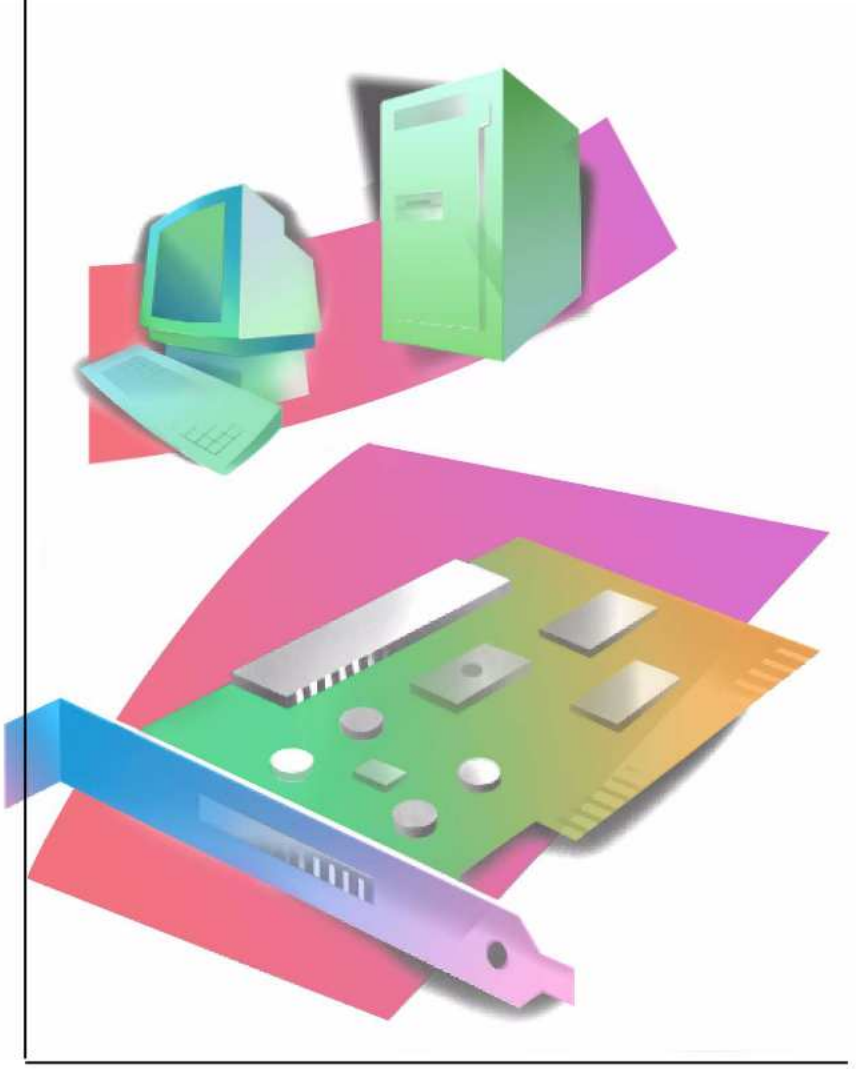
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adaptec

USER'S GUIDE



ADAPTEC SCSI CARD 2906

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Technical Support Identification (TSID) Number

- Before contacting Technical Support, you'll need your TSID. The TSID helps us provide more efficient service by accurately identifying your product and support status. The 12-digit TSID can be found on the white barcode-type label included inside the box with your product.
- Affix your TSID label here:



Support Options

- Search the Adaptec Support Knowledgebase (ASK) at http://ask.adaptec.com for articles, troubleshooting tips, and frequently asked questions for your product.
- For support via Email, submit your question to Adaptec's Technical Support Specialists at http://ask.adaptec.com.

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- Visit our Web site at http://www.adaptec.com.
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  - For **Hardware** products call +1 408-934-7274,
    Monday to Friday, 3:00 A.M. to 5:00 P.M., Pacific Time.
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  - **English:** +32 2 352 3470
  - **French:** +32 2 352 3460

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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.

Adaptec, Inc. SCSI Card 2906

FC Tested to Comply With FCC Standards

FOR HOME OR OFFICE USE

CE

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, as amended by 92/31/EEC and 93/68/EEC

EN50081-1 (1992)
EN55022 (1994) Class B
EN50082-1 (1992)
EN61000-4-2 (1998)
EN61000-4-3 (1998)
EN61000-4-4 (1995)
EN61000-4-5 (1995) Surges
EN61000-4-6 (1996) Conducted immunity
EN61000-4-11 (1994) Supply dips of variation

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.

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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 matérial brouilleur du Canada.

Japanese Compliance (Voluntary Control Council Initiative)

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This *User's Guide* describes how to install the Adaptec® SCSI Card 2906 and associated drivers in Windows® and Macintosh® computers. It also describes how to install and connect your internal and external SCSI devices.

Kit Contents

Your SCSI Card 2906 kit includes:

- SCSI Card 2906
- Standard 50-pin internal SCSI cable
- SCSI Card 2906 CD, containing drivers, online documentation, and other useful tools and information
- Adaptec SCSI*Select* disk
- *Adaptec SCSI Card 2906 Installation Guide*

If you plan to connect more than two internal SCSI devices, or one or more external SCSI devices, to your computer, you will need additional cables not included in this package.

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Installing the SCSI Card 2906

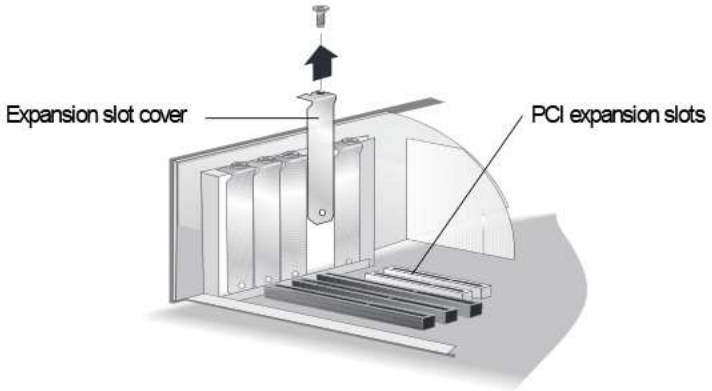
Note: If you are installing the SCSI Card 2906 into a Macintosh computer, you must install the driver first. See *Installing Drivers – Macintosh* on page 19.

Take these precautions before you begin installing your SCSI Card 2906:

- Turn off the computer and disconnect the power cord.
- Ground yourself by touching the chassis.
- *Always* handle the SCSI card by its edges or metal bracket. Do not touch the gold connector or any of the components on the card.

To install the SCSI Card 2906

1. After turning off the computer and disconnecting the power cord, open the computer cabinet. Refer to the computer's documentation for instructions.
2. Find an unused PCI expansion slot (typically white or ivory) in the computer. Unscrew the expansion slot cover screw and remove the slot cover to provide an opening, as shown. Save the slot cover screw for use in Step 5.

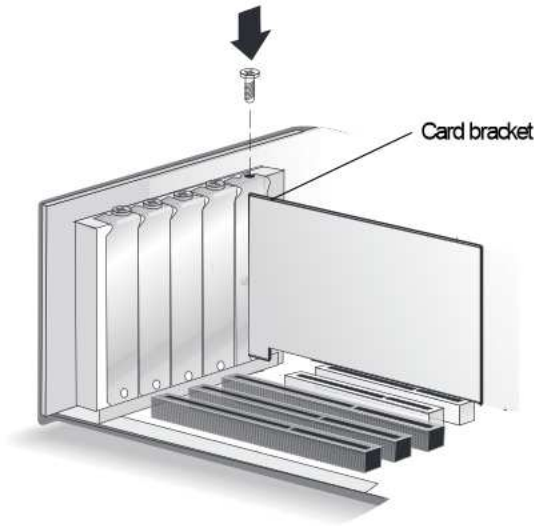


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3 Remove the SCSI Card 2906 card from its antistatic packaging. Remember to handle the card by its edges.

4 Place the SCSI Card 2906 in the slot and press it down firmly until the connector fingers are fully seated.

5 Secure the card bracket with the screw you removed in Step 3.



Installing SCSI Devices

You can connect a total of seven SCSI devices to the SCSI Card 2906. If you are connecting more than two internal SCSI devices, you will need an internal SCSI cable with enough connectors for all devices.

The SCSI card, and each SCSI device (whether internal or external), must have a unique SCSI ID. See *Understanding SCSI* on page 28 and refer to each device's documentation for more information.

Note: The card's SCSI ID is preset to 7 and should not be changed.

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Installing Internal SCSI Devices

You must prepare each internal SCSI device for installation. See *Preparing SCSI Devices for Installation* on page 30 for detailed instructions.

If you are installing only external devices, skip to *Connecting External SCSI Devices* on page 7.

Note: If you are installing the SCSI Card 2906 into a Macintosh computer, you must install the driver before you install any SCSI devices. See *Installing Drivers – Macintosh* on page 19.

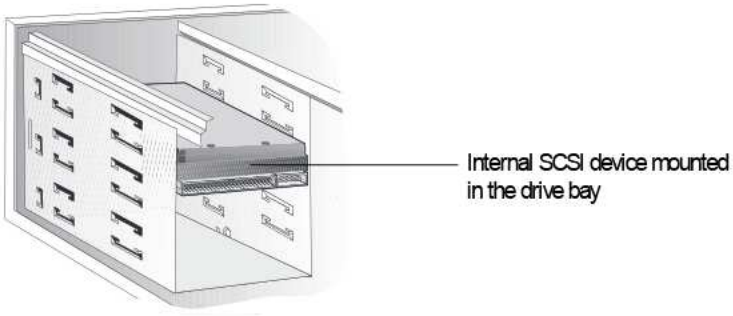
To install internal SCSI devices:

1 Take all precautions listed on page 2.

2 Ensure that each internal SCSI device has a unique SCSI ID. Refer to the SCSI device's documentation for instructions on setting the SCSI ID. See *SCSI IDs* on page 28 for more information.

3 Mount each SCSI device in an available drive bay inside your computer, as shown in the next figure. Refer to the documentation for your computer and SCSI devices for installation instructions.

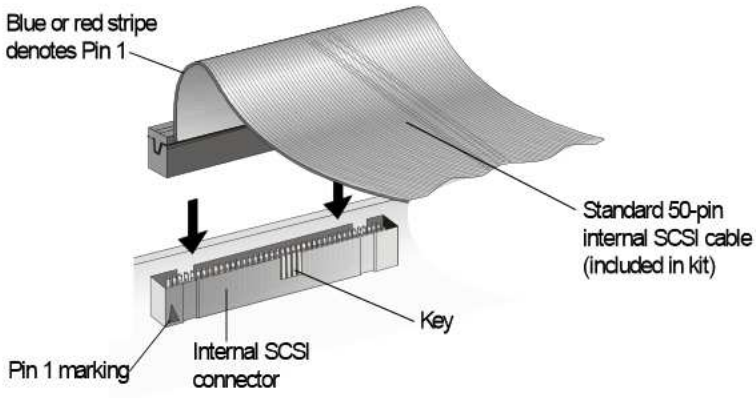
Note: If space is limited inside your computer, you may have difficulty connecting SCSI and power supply cables to your SCSI devices once they're installed. Consider completing these connections (Step 4 on page 5) before installing the devices.



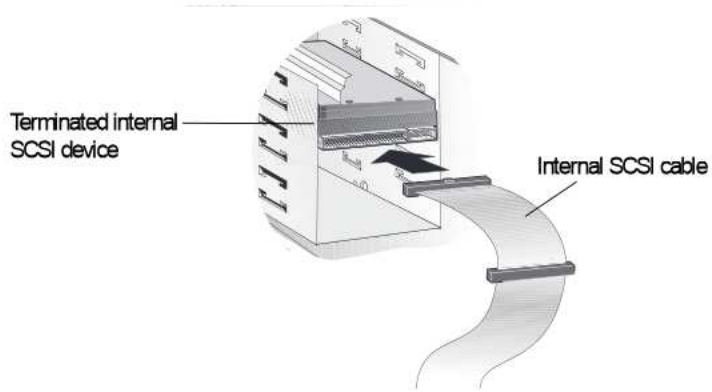
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4 Connect one end of the 50-pin internal SCSI cable to the SCSI connector on the card, as shown in the next figure. Ensure that it fits snugly.

Make sure Pin 1 on the cable aligns with Pin 1 on the internal SCSI device connector. Pin 1 is usually designated by a "1" or small triangle.



5 Connect the other end of the cable to the internal SCSI device, as shown in the next figure.



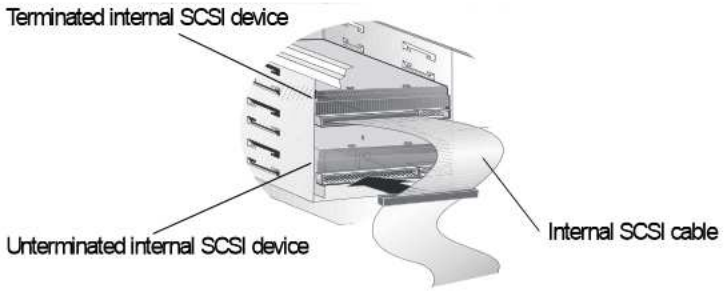
6 If you are installing one internal SCSI device only, you must terminate this device, then skip to Step 9 on page 6.

Termination is usually controlled by installing or removing a SCSI terminator. On some SCSI devices, you use a switch or button on the back of the SCSI device. Refer to your SCSI device's documentation for termination instructions. See *Terminating the SCSI Bus* on page 29 for more information.

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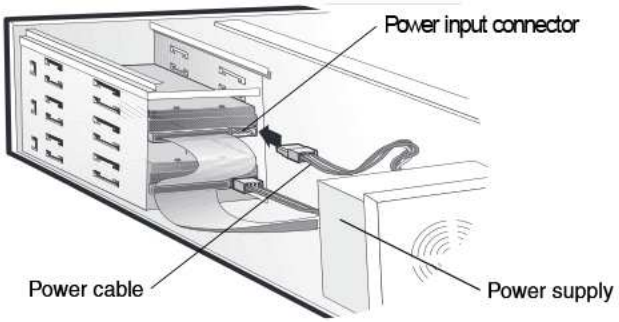
If you are installing more than one internal SCSI device, continue with the next step.

7 Connect all other internal SCSI devices, as shown.



8 Terminate the device that is connected to the end of the cable. Refer to the SCSI device's documentation for instructions.

9 Connect a power cable from your computer's power supply to the power input connector on the SCSI device, as shown. Repeat this step for each SCSI device.



If you are also installing external SCSI devices, skip to the next section (*Connecting External SCSI Devices*).

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If you are installing internal SCSI devices only:

1 Replace the computer cabinet and reconnect the power cord to the computer, then turn on the computer.

2 Install the software driver for your operating system. See *Installing Drivers – Windows* on page 10 for detailed instructions. (If your computer is running Macintosh, you should already have installed the driver. See *Installing Drivers – Macintosh* on page 19.)

3 Install any software included with your SCSI device.

Connecting External SCSI Devices

You must prepare each external SCSI device for connection. See *Preparing SCSI Devices for Installation* on page 30 for instructions.

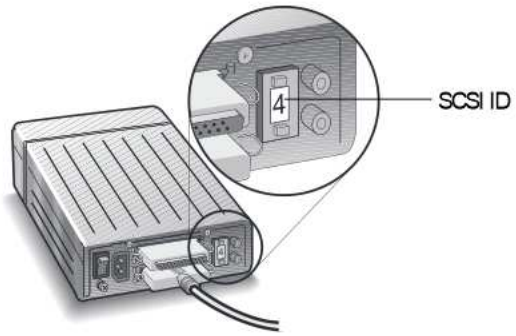
For each external SCSI device you install, you need a high-quality external SCSI cable. External SCSI cables are not included in the SCSI Card 2906 kit.

Note: If you are installing the SCSI Card 2906 into a Macintosh computer, you must install the driver before you install any SCSI devices. See *Installing Drivers – Macintosh* on page 19.

To connect external SCSI devices:

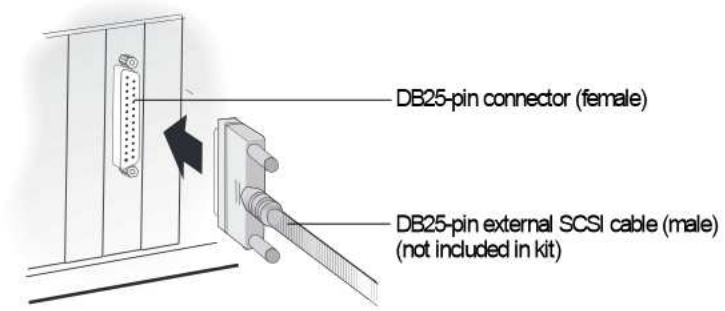
1 Take all precautions listed on page 2.

2 Ensure that each external SCSI device has a unique SCSI ID. For most external SCSI devices, the SCSI ID is set with a switch on the back of the device, as shown. See *SCSI IDs* on page 28 for more information.

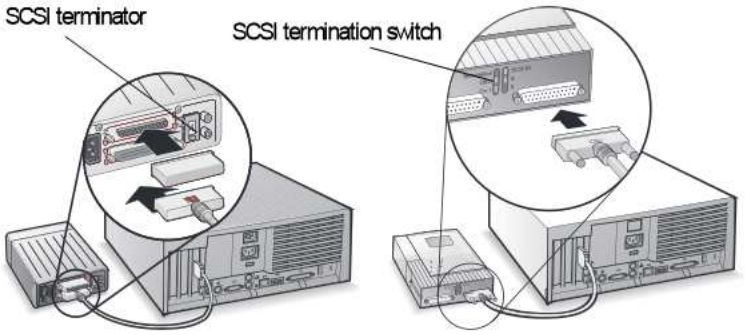


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3 Connect one end of an external SCSI cable to the SCSI Card 2906 external SCSI connector as shown. Secure the cable by tightening the thumb screws on the cable connector.



4 Connect the other end of the cable to a SCSI connector on the back of the SCSI device, as shown.



5 If you are installing only one external SCSI device, terminate the device.

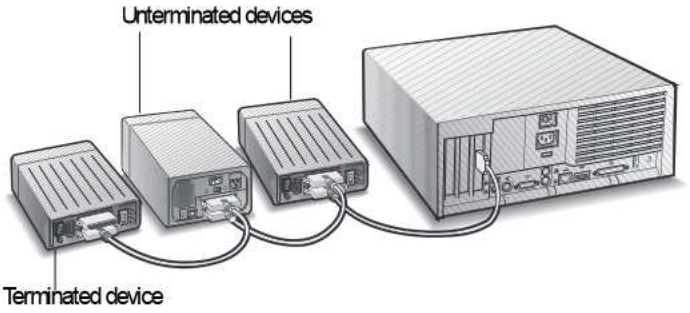
Termination is usually controlled by installing or removing a SCSI terminator. On some SCSI devices, you use a switch or button on the back of the SCSI device. Refer to your SCSI device's documentation for termination instructions. See *Terminating the SCSI Bus* on page 29 for more information.

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6 If you are connecting external SCSI devices to a computer running Macintosh OS 9, use the SCSI Card Control Panel to set the maximum synchronous transfer rate to 5 MB/sec.

Note: The DB-25 connector is not rated for speeds higher than 5 MB/sec.

7 Connect other external SCSI devices by cabling each device to the previous one, as shown. Only terminate the SCSI device at the end of the chain.



8 Replace the computer cabinet, and reconnect the power cord to the computer. Connect all power cables to the external SCSI devices.

9 Turn on all external SCSI devices and allow them to power up. Then turn on the computer.

10 Install the software driver for your operating system. See *Installing Drivers – Windows* on page 10 for detailed instructions. (If your computer is running Macintosh, you should already have installed the driver. See *Installing Drivers – Macintosh* on page 19.)

11 Install any software included with your SCSI device.

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Installing Drivers – Windows

Note: Install the SCSI Card 2906 and any SCSI devices before installing the driver. See *Installing the SCSI Card 2906* on page 2.

Install the SCSI Card 2906 driver by following the instructions for the version of Windows running on your computer:

- For Windows 2000 and Windows Me, see the next section.
- For Windows 95/98, see page 11.
- For Windows NT 4.0, see page 16.

Windows 2000/Windows Me

In Windows 2000 and Windows Me, driver installation is fully automatic, including the identification of compatible drivers.

The current versions of both OSs have embedded driver support for a SCSI card as part of the installation software. When the SCSI Card 2906 is installed and you have rebooted your computer, the Add New Hardware Wizard setup window appears to walk you through the final steps:

1 In the window that appears, select the top radio button to launch an automatic search for the most suitable driver, and click **Next**.

  Your OS locates the appropriate driver for the newly-detected SCSI card and automatically processes the installation.

  The SCSI Card 2906 is detected as AIC-7850 PCI SCSI Controller. This is the integrated circuit chip on your SCSI card.

2 Click **Finish** to complete the installation.

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Windows 95/98

Once your SCSI Card 2906 is installed and you have restarted your computer, the Add New Hardware Wizard setup window appears to walk you through the rest of the installation process:

1 When the Add New Hardware Wizard appears, click **Next**.



2 Select the top radio button, and click **Next**.



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3 Select the CD-ROM option, and click **Next**.

Note: Be sure that the Microsoft Windows 9x CD-ROM is in your CD-ROM drive.



4 Select the top radio button, then click **Next**.



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5 Your system locates the device and prompts you to continue with the installation. Click **Next**.



The Insert Disk window appears.



6 Insert your Windows 95 or 98 CD-ROM, then click **OK**.

Note: If you do not have your Windows 95 or 98 CD-ROM, skip to *Completing Installation Without a Windows 95/98 CD-ROM* on page 15.

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The Copying Files window appears.



7 Ensure that the system has detected your Windows CD-ROM, then Click **OK**.

The SCSI Card 2906 is detected as AIC-7850 PCI SCSI Controller. This is the integrated circuit chip on your SCSI card.

8 Click **Finish** to complete the installation.



Note: If the driver is not listed or is not loading properly, see the troubleshooting suggestions on page 22.

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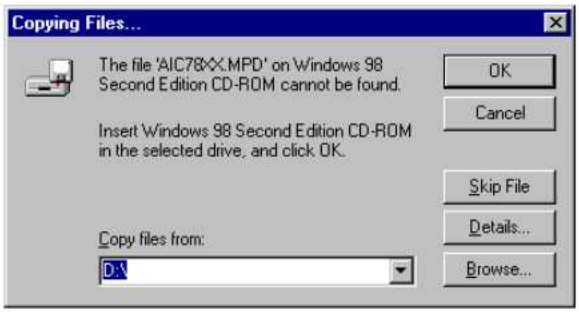
Completing Installation Without a Windows 95/98 CD-ROM

If you do not have your Windows 95/98 CD-ROM, use the SCSI Card 2906 CD to complete the driver installation.

Continuing from Step 5 on page 13:

6 Insert your SCSI Card 2906 CD into your CD-ROM drive, then click **OK**.

The Copying Files window appears.



7 Use the Browse button to find your CD-ROM drive, then click **OK**..

Your system copies the appropriate files from the SCSI Card 2906 CD.

8 When the Version Conflict window appears, click **Yes**.



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9 Click **Finish** to complete the installation.



Note: If the driver is not listed or is not loading properly, see the troubleshooting suggestions on page 22.

Windows NT 4.0

The current version of Windows NT 4.0 has embedded driver support for the SCSI Card 2906 as part of the installation software. Before you install the Windows NT driver from the embedded list, download either the latest Microsoft service pack or the Adaptec driver file 7800wnt.exe from the Adaptec support Web site at www.adaptec.com.

For additional instructions on installing embedded driver support, refer to the OS documentation.

Once your SCSI Card 2906 is installed and you have restarted your computer, follow these steps:

1 Click **Start**, point to **Settings**, then double-click **Control Panel**.

2 Double-click **SCSI Adapters**.

The SCSI Adapters window opens.

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Note: Although the title of the Control Panel window is SCSI Adapters, the window also displays IDE buses. If a line mentions IDE, ATA, ATAPI, UDMA, or Ultra DMA, the bus referred to is not a SCSI bus.
Ignore the presence of these other buses as you configure the Adaptec controller.

3 Go to the **Drivers** tab. Click **Add**.

The Install Driver window opens.

4 From the Manufacturers list, select **Adaptec**. From the SCSI Adapter list, select the driver you wish to install.

If the SCSI Card 2906 does not appear in the list, select **Adaptec AHA-294X/AHA-394X or AIC-78XX PCI SCSI Controller**. The SCSI Card 2906 belongs to this family with its AIC-7850 SCSI integrated circuit chip.

5 Click **OK** to complete the installation.

Verifying Driver Installation

To verify that the driver for the SCSI Card 2906 is installed properly, follow the instructions for the version of Windows running on your computer:

- For Windows 2000, see the next section.
- For Windows 95, 98, or Me, see page 18.
- For Windows NT 4.0, see page 19.

Verifying Driver Installation – Windows 2000

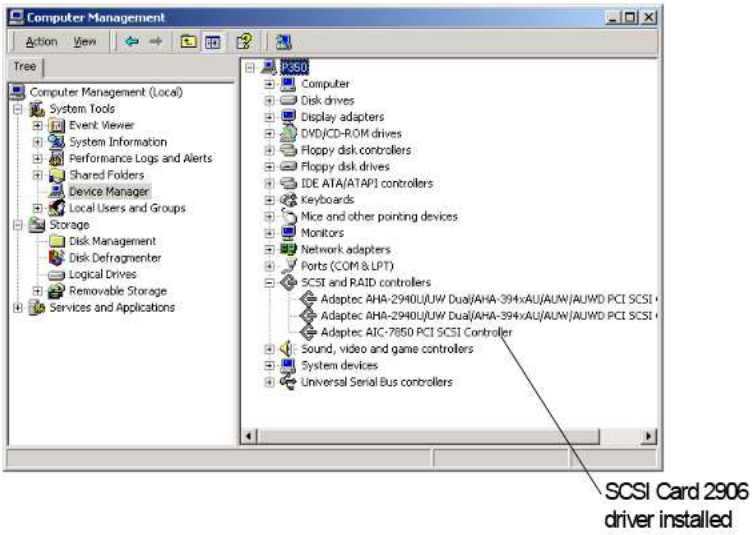
1 Right click on the **My Computer** icon on your desktop.

2 Select **Manage**.

3 Click on **Device Manager**.

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4 Double-click **SCSI and RAID Controllers**. Check that the SCSI Card 2906 is listed, as shown.



Verifying Driver Installation – Windows 95, 98, Me

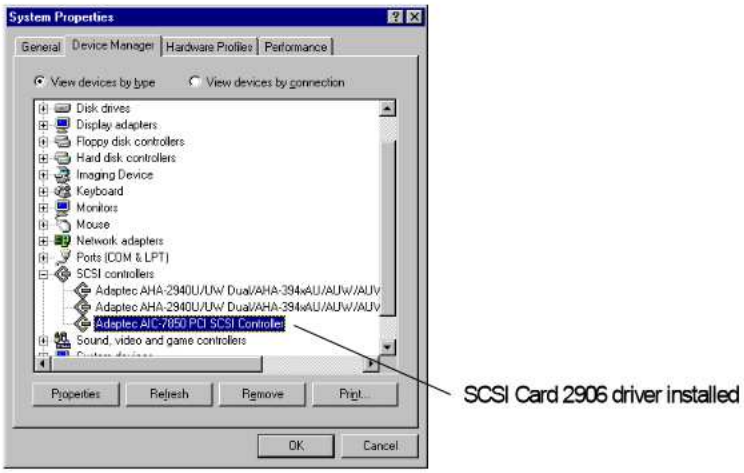
1 Click **Start**, point to **Settings**, then click **Control Panel**.

2 Double-click **System**.

3 Go to the **Device Manager** tab.

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4 Double-click **SCSI Controllers**. Check that the SCSI Card 2906 is listed, as shown.



Verifying Driver Installation – Windows NT 4.0

1 Click **Start**, point to **Settings**, then select **Control Panel**.

2 Double-click **SCSI Adapters**.

3 Go to the **Devices** tab. If the SCSI Card 2906 is listed, the driver is loaded. (Expanding the plus sign next to the adapter displays a list of the devices connected to the SCSI card.)

Installing Drivers – Macintosh

If you are running Macintosh on your computer, you must install the SCSI Card 2906 driver before you install the SCSI card or any SCSI devices.

Install the SCSI Card 2906 driver by following the instructions outlined for the Mac OS running on your computer:

- For Mac OS 9.x, see the next section.
- For Mac OS X, see page 20.

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Macintosh OS 9.x

1 Open the Mac OS 9.x folder on your SCSI Card 2906 CD and double-click on the installer icon shown at right.



2 Follow the instructions displayed on the screen. Files will be installed as follows:

- Adaptec SCSI Card 2906 driver will be installed in the System Folder/Extension folder of your system disk.
- SCSIProbe will be installed in the System Folder/Control Panels folder of your system disk.

See the table on *Information for Macintosh Users* on page 38 for details on Mac OS 9 utilities and drivers.

3 Restart the computer to complete the installation. The SCSIProbe control panel makes drives available on your desktop after system startup.

4 Ensure that the Mount Drives at Startup option on the SCSIProbe control panel is checked. If it is not checked, your drives will not show up on the desktop when you start your system.

Macintosh OS X

The driver is not embedded in early releases of Mac OS X (for example, OS X 10.0 through 10.0.4). To install or update the driver, follow the steps in this section.

Note: Some utilities may not be compatible with Mac OS X. Check the Adaptec Web site at www.adaptec.com for the latest information.

Warning: *Do not* run the installer if you have changed the permissions for any of the directories on this path: /System/Library/Extensions; the driver might overwrite these directories. Also, *do not* run the installer if you have set up any of these directories to be symbolic links (similar to aliases in OS 9); the system may not function properly.

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To install the Mac OS X driver:

1 Log in as Administrator.

Note: You must be logged on as an administrator to install the driver for the SCSI Card 2906. The installer will prompt you for an administrator name and password.

2 Open the Mac OS X folder on your SCSI Card 2906 CD and double-click the installer icon shown at right.



3 Follow the instructions displayed on the screen.

The Adaptec SCSI Card 2906 driver will be installed into the System/Library/Extensions folder of your system disk. The installed driver is Adaptec290X-2906.kext.

Troubleshooting

Most problems with the SCSI Card 2906 result from errors in preparing and connecting devices on the SCSI bus. If you have problems, check these items first:

- Are all SCSI devices turned on?
- Are all SCSI bus cables and power cables properly connected?
- Is the SCSI Card 2906 firmly seated and secured in the PCI expansion slot? (Turn off the power to the computer before checking the card.)
- Is pin 1 orientation maintained throughout the SCSI bus?
- Does each device on the SCSI bus have a unique SCSI ID?
- Are all SCSI devices terminated properly?
- Your computer allows you to set up configuration options when the computer first boots up (through CMOS setup). Ensure that the following options are set up as specified:
  - If there is an Interrupt Type or Interrupt Line option in the Setup program, select **Int-A** or **Interrupt Type = A**. (You

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may also be required to change a motherboard jumper setting.)

- If there is a Triggering Interrupt option, select **Level**.
- If there is an option to enable or disable bus mastering for the PCI slots, select **Enabled**.
- If your computer has a combination of ISA or EISA boards and PCI boards, you may need to mark the IRQs used by ISA/EISA boards as **Used** so the system BIOS will not try to assign these IRQs to other PCI boards. Never use an IRQ below IRQ9 for a SCSI card.
- If you have not already done so, Adaptec recommends that you upgrade your motherboard BIOS by downloading the latest version from the manufacturer's Web site.

If you still experience problems, try installing the SCSI Card 2906 in another PCI slot, starting with the first PCI slot.

If, after aworking through this checklist, you are still unable to resolve a problem, check the Questions and Answers in the next section or refer to the Adaptec Web Site at www.adaptec.com for additional troubleshooting information.

Troubleshooting Questions and Answers

When I start Windows 95/98, the system locks up when the Windows logo displays. How can I get the system to start so that I can verify that the SCSI card is functioning normally?

1. Start or restart your computer. View the messages that appear.
2. When the message Starting Windows 95/98 appears, press and release F8 while the text is on your screen.
3. From the menu that displays, select **Safe Mode**. (It may take extra time for Windows 95/98 to load.)
4. Verify that the SCSI Card 2906 software driver is loading properly (see the information in the next question).

How can I tell if the SCSI Card 2906 software driver is loading properly?

If you are running Windows on your computer, follow the instructions for your operating system as provided in *Verifying Driver Installation* on page 17.

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Why does an X inside a red circle appear by the SCSI Card 2906 software driver in Device Manager?

The SCSI Card 2906 software driver is disabled and isn't loading. To enable the driver:

1 Double-click the SCSI card software driver in Device Manager.

2 Click the General tab and check **Original Configuration** (current).

Note: In most cases, this is the result of an IRQ conflict. Refer to the information on page 24.

In Windows 95/98, why is there a yellow "!" beside my driver(s) in Device Manager?

The yellow "!" may appear for many reasons. Use the table to troubleshoot this problem. The easiest problem to solve is listed first.

Reason	See Page
Faulty cables, termination, or device	23
Master Boot Record was modified	23
Conflicting or unavailable resources	24

In Windows 95/98, how do I check for faulty cables, termination, or damaged device?

1 Turn off your computer and disconnect the cables from the SCSI card.

2 Turn on your computer, restart Windows, and verify that the yellow "!" disappeared from Device Manager.

If the yellow "!" disappeared, the cabling, termination, or device is faulty, or there may be an IRQ conflict in your system.

In Windows 95/98 where do I check to see if the Master Boot Record was modified?

1 Click **Start**, point to **Settings**, and then click **Control Panel**.

2 Double-click **System**.

3 In the System Properties window, click on the **Performance** tab.

One of the following messages may appear:

a The Master Boot Record has been modified.

b Your system is configured for optimal performance.

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c <Drive letter> using MS-DOS compatibility mode file system.

If message (a) appears, click the Details button in the Performance tab for more information. If needed, contact the computer manufacturer for additional help.

If message (b) appears, you must update or install the driver. For information on downloadable drivers, refer to the Adaptec Web Site at http://www.adaptec.com/support/index.html. Go to the Drivers section for more information on how to download the correct driver.

If message (c) appears, remove the DOS driver from config.sys and autoexec.bat.

1 Click **Start**, and then click **Run**.

2 In the Run window, type `sysedit`, and then click **OK**.

3 Go to the Autoexec.bat window. If there are lines containing files with *.exe, *.com, or *.bat extensions, type `rem xx` at the beginning of those lines.

4 Go to the Config.sys window. If there are lines that start with Device or Device High, type `rem xx` at the beginning of those lines.

5 Save the changes and reboot your computer.

In Windows 95/98, where do I check for conflicting or unavailable resources?

1 Click **Start**, point to **Settings**, and then click **Control Panel.**

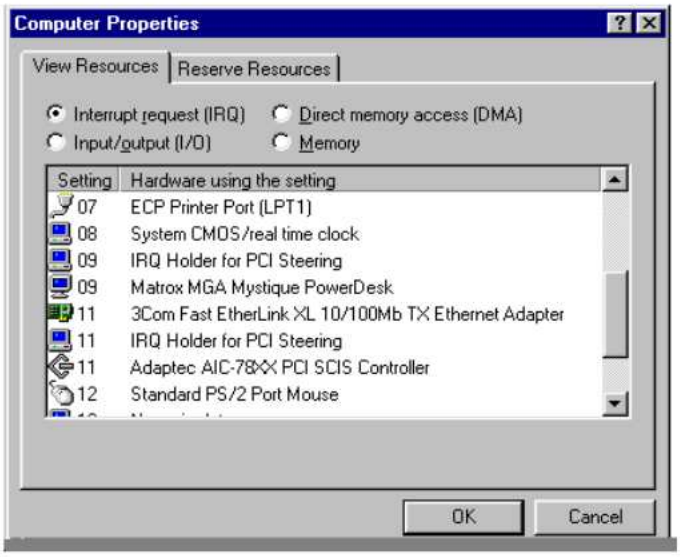
2 Double-click **System**.

3 In the System Properties window, open **Device Manager**.

4 In Device Manager, double-click **Computer**.

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5 In the Computer Properties window, click **Interrupt request (IRQ)**, as shown.



The Settings column lists the IRQs in use. IRQ settings range between 0 and 15. If an IRQ setting is not listed under Settings, this means it is available. In the example screen, setting 10 is not listed and therefore is an available IRQ.

Note: Do not use an IRQ below IRQ 9 for a SCSI Card 2906. Do not allow the SCSI Card 2906 and another card to share the same IRQ.

In Windows NT 4.0, where can I check which resources are available on my computer?

Note: You must log in as an administrator to complete the following steps.

1 Click **Start**, point to Programs, point to **Administrative Tools**, select **Windows NT Diagnostics** and then click **Resources Tab**.

2 Select the resource from the Used Resources list, for example IRQ, DMA, etc.

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3 In the SCSI Adapters window, click **Properties** to find which resources are in use.

What if there is no SCSI Controller icon under Device Manager, or the software driver for the SCSI Card 2906 does not appear under Device Manager?

Generally, when the SCSI Card 2906 software driver is not listed in the Device Manager, the system BIOS is not giving the SCSI Card 2906 any resources. Check for available resources (see the previous question). If resources are available, install the SCSI Card 2906 in another PCI slot.



Note: The SCSI Card 2906 software driver may also be listed as PCI SCSI Bus Controller under the Other Devices icon in Device Manager. If it is listed there, reinstall the driver. (See the troubleshooting section on page 26 for instructions.)

If the SCSI Controllers icon or the software driver do not appear:

1 Double-click **Add New Hardware** in the Control Panel.

2 Select **Yes** on the second screen of the Add New Hardware Wizard to have Windows search for the SCSI Card 2906.

3 Follow the onscreen instructions.

If Windows 95/98 does not detect the SCSI card, run the Add New Hardware wizard again:

1 In the Control Panel, double-click **Add New Hardware**.

2 In the second screen of the wizard, click **No.**

3 Select **SCSI controllers**.

4 Select the model of your Adaptec SCSI Card.

If SCSI Card 2906 is not on the list, you may be able to install a SCSI card driver from the Windows 95/98 CD-ROM (or from the Adaptec EZ-SCSI Setup Diskette):

1 Place the Windows 95/98 CD-ROM in your CD-ROM drive (or insert the Adaptec EZ-SCSI Setup Diskette in the floppy disk drive) and run the Add New Hardware wizard.

2 Select **No** on the second screen of the wizard.

3 Select **SCSI controllers**.

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4 Click **Have Disk**, then click **Browse**.

5 Look in the \drivers/storage directory of the CD-ROM and select the model of your SCSI card, or go to a:\win95\98 on the Adaptec EZ-SCSI Setup Diskette.

How can I check the status of a resource (for example, IRQ, Memory, I/O)?

1 Click **Start**, point to **Settings**, then click **Control Panel**.

2 Double-click the System icon.

3 Click the Device Manager tab.

4 Click **Computer**, and then click **Properties**.

5 Open the View Resources tab and click the option button for the type of resource you want to check.

The setting and the hardware using the setting displays.

- If a specific resource is not listed, the resource is not used by a device.
- If a resource is listed more than once, the resource is used by more than one device.
- If a resource is used by an unknown device, the resource is used but the device using the resource cannot be detected.

How do I use the Hardware Conflict Troubleshooter in Windows 95/98?

1 Click **Start**, then click **Help**.

2 From the Contents tab, double-click **Troubleshooting**.

3 Double-click **If you have a hardware conflict**.

4 Follow the step-by-step instructions in the Windows Help window.

Common Error Messages

"Device connected, but not ready"

The SCSI card received no answer when it requested data from an installed SCSI device.

- Make sure the drive is set to spin up when the power is switched on. (See the documentation for the device.) If you still

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have problems, you may have a bad drive. If you can still access your computer, follow these steps:

a Click **Start**, point to **Programs>Accessories>System Tools**, and then click **ScanDisk**.

b Click **Start** and then wait a few moments for results.

"Time-out failure during..."

An unexpected time-out occurred.

- Verify that the SCSI bus is properly terminated.
- Verify that all cables are properly connected.
- Disconnect the SCSI cables from the SCSI card and then start the computer. If the computer successfully restarts, one of the SCSI devices, cable, or terminator may be defective.

Understanding SCSI

SCSI (pronounced "scuzzy") stands for Small Computer System Interface. SCSI is an industry standard computer interface for connecting SCSI devices (such as a hard disk drive, CD-ROM drive, or scanner) to a common SCSI bus.

A SCSI bus is an electrical pathway that consists of a SCSI card (such as the SCSI Card 2906) installed in a computer and one or more SCSI devices. SCSI cables are used to connect the devices to the SCSI card.

For the SCSI bus to function properly, each SCSI device must have a unique SCSI ID and must be correctly terminated. For more information, see the next section (*SCSI IDs*) and *Terminating the SCSI Bus* on page 29.

SCSI IDs

SCSI IDs identify each device on the SCSI bus and determine priority when two or more devices are trying to use the SCSI bus at the same time. The SCSI card is also identified by a SCSI ID. For the SCSI Card 2906, SCSI IDs are numbers between 0 and 7.

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Adaptec presets the SCSI Card 2906 to SCSI ID 7. You should not change this setting. SCSI ID 7 has the highest priority on the SCSI bus; the remaining SCSI IDs descend in priority from 6 to 0.

Use SCSI ID 0 for the first SCSI hard disk drive. Most internal SCSI hard disk drives come from the factory set to SCSI ID 0.

See *SCAM Protocol* on page 29 for more information on assigning ID numbers.

Here is some general information about SCSI IDs:

- For internal SCSI devices, you generally set the SCSI ID by configuring a jumper on the SCSI device.
- For external SCSI devices, you generally set the SCSI ID with a switch on the back of the device.
- For specific instructions on setting the SCSI ID, refer to the SCSI device's documentation.
- In Windows 95/98, you can use the Device Manager to view the SCSI ID assigned to the SCSI card and each SCSI device.

SCAM Protocol

The SCSI Card 2906 supports the SCSI Configured AutoMatically (SCAM) protocol. This protocol assigns SCSI IDs dynamically and resolves SCSI ID conflicts automatically when you start the computer. If your computer includes SCSI disk drives or other SCSI devices that support SCAM, you do not need to assign SCSI IDs manually to these devices.

To determine if your SCSI device supports the SCAM protocol, check the SCSI device's documentation.

To enable SCAM support, see *Using SCSISelect* on page 33.

Terminating the SCSI Bus

To ensure reliable communication on the SCSI bus, both ends must be terminated. Termination prevents the signal from bouncing off the end of the cable and interfering with itself.

If the SCSI Card 2906 is connected at one end of the SCSI bus, you must terminate the device at the other end.

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If the SCSI Card 2906 is connected in the middle of the SCSI bus, it will not terminate itself and you must terminate the SCSI devices connected to both ends of the SCSI bus.

The method for terminating a SCSI device varies. Refer to the SCSI device's documentation for instructions on how to enable or disable termination.

Here is some general information about termination:

- Usually, you control termination on internal SCSI devices by manually setting a jumper or a switch on the device, or by physically removing or installing a terminator module on the device. The internal SCSI device at the end of the cable must be terminated.
- Usually, you control termination on external SCSI devices by installing or removing a SCSI terminator. On some external devices, termination is controlled by setting a switch on the back of the device. The external SCSI device at the end of the cable must be terminated.
- By default, termination on the SCSI Card 2906 is set to *Automatic*. Adaptec recommends that you keep this setting. To manually set termination on the SCSI Card 2906, see *Using SCSISelect* on page 33.
- Most SCSI devices come from the factory with termination enabled. Some SCSI devices include a terminator block or pass-through terminator. See your SCSI device's documentation for information on enabling and disabling termination.

Preparing SCSI Devices for Installation

- Check the SCSI IDs. Ensure that the SCSI Card 2906 and each SCSI device you want to connect to it has a unique SCSI ID. See *SCSI IDs* on page 28 for more information.
- Use only high-quality SCSI-2 cables to ensure reliable data transfer. See *Obtaining SCSI Cables* on page 32 for more information.
- Terminate the ends of the SCSI bus. The SCSI device at the end of each cable, or the end of the cable itself, must have a terminator installed or enabled. Terminators must be disabled

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or removed from SCSI devices that will be connected between the ends of the SCSI cable. See *Terminating the SCSI Bus* on page 29 for more information.

- You may need to install the manufacturer's proprietary device drivers if you use SCSI devices other than hard disk and CD-ROM drives. (Refer to your device's documentation.)

Using SCSI Devices

Hard Disk Drives

- You cannot boot your computer from a drive connected to the SCSI Card 2906. To boot your system, a bootable hard disk drive must already be installed on a different SCSI card or IDE card.
- Every SCSI hard disk drive connected to you SCSI card must be physically low-level formatted, partitioned, and logically formatted before it can be used to store data. Refer to your computer and OS documentation for instructions.



Caution: A low-level format destroys all data on the drive. Be sure to back up your data before performing a low-level format.

Installing Multiple SCSI Cards

- You can install multiple SCSI cards in your computer. You are limited only by the available system resources (for example, IRQ settings, I/O port addresses, and so on).
- Each SCSI card you install forms a separate SCSI bus with a different set of SCSI devices. Each SCSI ID can be used once on each SCSI card. (For example, each SCSI card can have a device with SCSI ID 2 but SCSI ID 2 appears only once on each card.)

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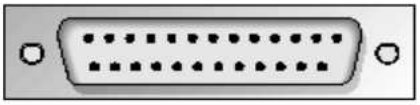
Obtaining SCSI Cables

High-quality cables are required in high-performance SCSI systems to ensure data integrity. Adaptec provides the highest quality SCSI cables designed specifically for use with Adaptec SCSI cards. For purchasing information, visit the Adaptec Web site at www.adaptec.com.

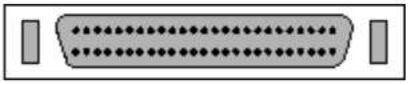
External Cables

Description	Retail Cable Number
DB25-pin to DB25-pin Cable (3 ft)	100
DB25-pin to High-density 50-pin Cable (3 ft)	200

This is a DB25-pin connector:



This is a High-density 50-pin connector:



Internal Cable

Description	Retail Cable Number
5 position (4 devices and SCSI card) standard 50-pin connectors (1.5 m)	1100

This is a Standard 50-pin internal connector:



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Maximum Cable Lengths

The total length of cabling (internal and external) on the SCSI bus may not exceed the maximum lengths listed in the table.

Maximum Cable Length	Data Transfer Rate	Maximum Devices Supported[1]
3 m (9.8 ft)	Fast SCSI (10 MBytes/sec)	8
6 m (19.7 ft)	5 MByte/sec (asynchronous or synchronous)	8

[1] Includes the SCSI card.

Using SCSI*Select*

If you are running Windows on your computer, you can use Adaptec SCSI*Select* software to change SCSI settings without opening the computer or handling the card and you can low-level format or verify the disk media of your SCSI hard disk drives. The table lists the available and default settings for each SCSI*Select* option.



Note: The default settings are appropriate for most systems. Run SCSI*Select* if you need to change or view current settings, or if you would like to run the SCSI disk utilities. See the descriptions of each option in *SCSI Bus Interface Definitions* on page 35.

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SCSISelect Settings

SCSI*Select* Option	**Available Settings**	**Default Setting**
Host Adapter SCSI ID	0-7	7
SCSI Parity Checking	Enabled Disabled	Enabled
Host Adapter SCSI Termination	Automatic Enabled Disabled	Automatic
Initiate Sync Negotiation	Yes No	Yes (Enabled)
Maximum Sync Transfer Rate	10.0 8.0 6.7 5.0	10.0
Enable Disconnection	Yes No	Yes (Enabled)
Plug-and-Play SCAM Support	Enabled Disabled	Disabled

Starting SCSI*Select*

To start SCSI*Select*:

1. Turn on or restart your computer. Allow it to boot to a DOS prompt.
2. At the DOS prompt, insert the SCSI*Select* diskette and change to the a:\ prompt.
3. At the a:\ prompt, type `2906cfg.exe`.
4. From the menu that appears, use the ↑ and ↓ keys to move the cursor to the option you want to select, then press **Enter**.



Note: If you have difficulty viewing the display, press **F5** to toggle between color and monochrome modes. (This feature may not work on all monitors.)

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Using SCSI*Select* Settings

To select an option, use the ↑ and ↓ keys to move the cursor to the option, then press **Enter**.

In some cases, selecting an option displays another menu. You can return to the previous menu at any time by pressing **Esc**.

To restore the original SCSI*Select* default values, press **F6** from the main SCSI*Select* screen.

SCSI Bus Interface Definitions

- **Host Adapter SCSI ID**—Sets the SCSI ID for the SCSI card. The SCSI Card 2906 is set at ID 7, which gives it the highest priority on the SCSI bus. You should not change this setting.
- **SCSI Parity Checking**—When set to **Enabled**, verifies the accuracy of data transfer on the SCSI bus. Leave this setting enabled unless any SCSI device connected to the SCSI card does not support SCSI parity. If one SCSI device does not support SCSI parity, set parity on the 2906 to **Disabled**.
- **Host Adapter SCSI Termination**—Determines the termination setting for the SCSI card. The default setting is *Automatic*, which determines termination as follows:
  - If a cable is only connected to the SCSI card's internal or external SCSI connector, the terminators are enabled if the 2906 termination is set for automatic. (The SCSI card is at the *end* of the SCSI bus.)
  - If a cable is connected to the SCSI card's internal and external SCSI connector, the terminators are disabled. (The SCSI card lies *between* the ends of the SCSI bus.) You can also disable the terminators by setting Host Adapter Termination to **Disable**.

  You should leave this setting at its default (*Automatic*).



Note: The option is for terminating the SCSI card, not for terminating devices. Be sure that both ends of the SCSI bus are terminated. Refer to the *Adaptec SCSI Card 2906 Installation Guide* for details.

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SCSI Device Configuration Options

Note: To configure settings for a SCSI device, you must know its SCSI ID (see *Using SCSI Disk Utilities* on page 36).

- **Initiate Sync Negotiation**—When set to **Enabled**, initiates synchronous data transfer negotiation (Sync Negotiation) between the device and SCSI card. Leave this setting enabled unless any attached SCSI device connected to the SCSI card does not support synchronous negotiation.
- **Maximum Sync Transfer Rate**—Determines the maximum synchronous data transfer rate the SCSI card supports. The default value is *10.0 MB/sec*.
- **Enable Disconnection**—When set to **Yes**, allows the SCSI device to disconnect from the SCSI bus. Leave the setting at **Yes** if two or more SCSI devices are connected to the SCSI card. If only one SCSI device is connected, slightly better performance will be achieved if you change the setting to **No**.

Advanced Configuration Options

Note: Do not change Advanced Configuration Options unless absolutely necessary.

- **Plug-and-Play SCAM Support**—When set to **Enabled**, the SCSI card automatically assigns SCSI IDs to SCSI devices that support the SCAM protocol. The default is *Disabled*, but you can set it to **Enabled** even if you have a non-SCAM device.

Using SCSI Disk Utilities

To access the SCSI disk utilities:

1 From the menu that appears after starting SCSI*Select*, select **SCSI Disk Utilities**.

SCSI*Select* scans the SCSI bus to determine the devices installed and displays a list of all SCSI IDs and the devices assigned to each ID.

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2 Use the ↑ and ↓ keys to move the cursor to a specific ID and device, then press **Enter**.

3 A small menu appears, displaying two options:

- **Verify Disk Media**—Allows you to scan the media of a hard disk drive for defects. If the utility finds bad blocks on the media, it prompts you to reassign them; if you select yes, those blocks are longer used. You can press **Esc** at any time to abort the utility.
- **Format Disk**—Allows you to perform a low-level format on a hard disk drive. (Most SCSI disk drives are preformatted at the factory and do not need to be formatted again.) Each hard disk drive must be low-level formatted before you can use your operating system's partitioning and file preparation utilities, such as MS-DOS Fdisk and Format.

Caution: A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You *cannot* abort a low-level format once it is started. Therefore, do not turn power off to abort this operation.

Exiting SCSI*Select*

To exit SCSI*Select*:

1 Press **Esc** until a message prompts you to exit.

If you changed settings, you are prompted to save the changes before you exit.

2 Select **Yes** to exit, then press any key to reboot the computer. Any changes you made in SCSI*Select* take effect after the computer boots.

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Information for Macintosh Users

Macintosh OS 9.x Utilities and Drivers

These utilities and drivers will be installed on your system disk as part of the Macintosh OS 9.x installation:

SCSIProbe	Used to verify SCSI IDs, identify drivers, mount drives after startup, and auto-mount drives during startup.
PowerDomain Control Utility	Used to control various features on the Adaptec SCSI Card 2906. External documentation for this utility will be installed on your system by the installer and is also available on the Adaptec Web site.
Adaptec SCSI Card 2906 Driver	Must reside in the Extensions folder; otherwise, the Adaptec SCSI Card 2906 will not be recognized by your system.

Uninstalling Macintosh OS Driver

To remove the Adaptec SCSI driver:

1 Go to the folder for your Mac OS on the SCSI Card 2906 CD and locate the Uninstall.command file.

2 Double-click the file to remove the driver.

Note: You must be logged on as an administrator to uninstall the driver for the SCSI Card 2906. The script will prompt you for an administrator password.

Verifying the Uninstall

Go to the /System/Library/Extensions directory and verify that Adaptec290X-2930.kext is no longer in that directory.

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