Installation Guide

AHA-2944UW
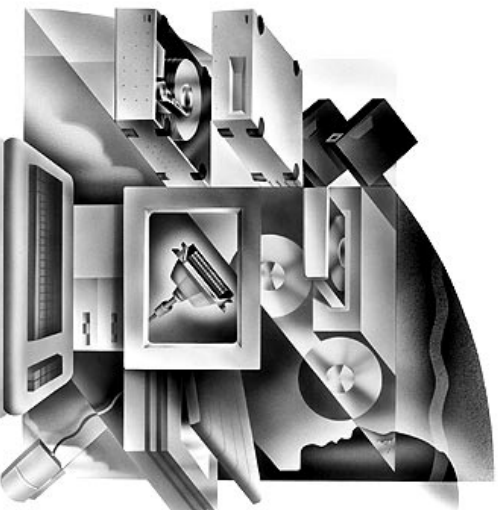
PCI-to-Ultra Wide Differential SCSI Host
Adapter with SCSISelect

⨐ adaptec®

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Introduction

The Adaptec AHA®-2944UW PCI-to-Ultra Wide Differential SCSI Host Adapter provides a powerful multitasking interface between your computer's PCI bus and differential SCSI devices (disk drives, CD-ROM drives, scanners, tape backups, removable media drives, etc.). The following figure shows the major components on the AHA-2944UW.

Jumpers J2 and J4

68-pin 16-bit Internal SCSI Connector

50-pin 8-bit Internal SCSI Connector

LED Connector

Host Adapter LED

68-pin 16-bit External SCSI Connector

AIC-78xx SCSI Protocol Chip
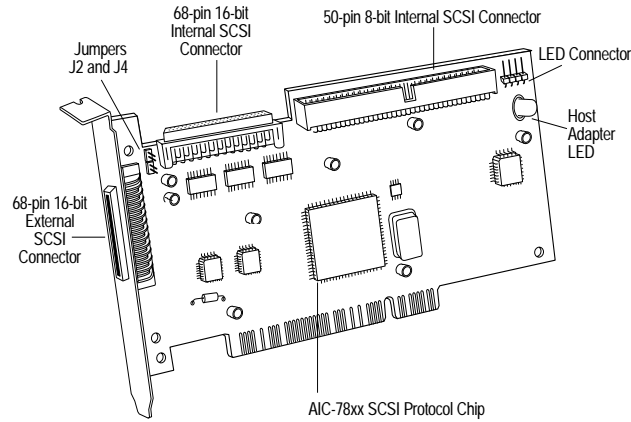
Contents

Installing the Host Adapter and SCSI Devices

Installing the AHA-2944UW

Follow these instructions to install the AHA-2944UW:

1 Turn OFF power to the computer and peripheral devices, and disconnect the power cords.

2 Remove the cover from the computer case.

3 Locate an unused 32-bit PCI expansion slot that supports bus master data transfers, then unscrew and remove the metal bracket that covers the card-slot opening. (Save the screw to use when securing the host adapter in your computer.)

PCI slots are shorter than ISA or EISA slots and are typically white. Usually there are three PCI slots. (One of these may be a shared slot into which you can insert either an ISA/EISA board or a PCI board.)

4 Insert the AHA-2944UW in the PCI slot. Press it down firmly so that the contacts are securely seated in the slot.

5 When the AHA-2944UW is firmly seated in the slot, secure the metal bracket of the host adapter with the screw you removed in step 3.

Do not replace the computer cover or reconnect your computer and peripherals to their power sources yet!

Assigning SCSI ID Numbers

The AHA-2944UW and each device connected to it must have a unique SCSI ID number ranging from 0 to 15.

We recommend that you leave the AHA-2944UW host adapter set to its default setting of SCSI ID 7. If you need to change the AHA-2944UW SCSI ID, see *Running SCSISelect* on page 8. If you need to change the SCSI ID on a hard disk drive or another SCSI device, refer to the device's documentation.

Note: If you plan to boot your computer from a SCSI device attached to the AHA-2944UW host adapter, and the device is not assigned the lowest installed SCSI ID, set the Boot Target ID setting in the SCSI*Select* utility to correspond to the SCSI ID of the device you are booting from (see *Using SCSISelect* on page 5).

Setting SCSI Termination

SCSI termination is controlled by a set of electrical resistors called *terminators*. Terminators must be installed (or enabled) at the two extreme ends of the SCSI bus. All devices between the ends must have their terminators removed (or disabled).

Terminating the AHA-2944UW

Termination on the AHA-2944UW itself is controlled by software commands via the SCSI*Select* utility. The default setting is *Automatic*, which works like this:

■ If the AHA-2944UW detects that a cable is attached to one SCSI connector, it enables its terminators (the AHA-2944UW is at the end of the SCSI bus).

■ If the AHA-2944UW detects that cables are attached to two connectors (either the two internal connectors or one internal and one external connector) it disables its terminators (the AHA-2944UW is in the middle of the SCSI bus).

We recommend that you leave the AHA-2944UW set to its default setting of *Automatic*. If you need to manually set AHA-2944UW termination run the SCSI*Select* Utility, as described on page 8, and select a setting as indicated in this table.

Devices Connected to AHA-2944UW	AHA-2944UW Termination	
	Low	High
68-pin internal connector only	ON	ON
68-pin external connector only	ON	ON
68-pin internal and 68-pin external connectors	OFF	OFF
50-pin internal connector only	ON	ON
50-pin and 68-pin internal connectors	OFF	ON
50-pin internal and 68-pin external connectors	OFF	ON

Note: You cannot attach cables and SCSI devices to all three AHA-2944UW connectors.

Terminating SCSI Devices

Read the device's documentation to determine how to enable or disable termination on your SCSI device(s). On most internal SCSI devices the termination setting is con-

5 Connect a DC power cable (from your computer's power supply) to the power connector on the SCSI device.

Connecting External SCSI Devices

If you are connecting external SCSI devices to your host adapter, you must obtain an external SCSI cable for each external device you install.

1 Prepare each SCSI device for installation; configure the SCSI ID and attach a terminating plug into the last external device. For instructions, see the device's documentation as well as *Installing the Host Adapter and SCSI Devices* on page 2.

2 Plug the connector at one end of the external SCSI cable into the host adapter's external SCSI connector.

3 Plug the connector at the other end of the cable into one of the SCSI connectors on the external SCSI device.

4 To connect other external SCSI devices, daisy-chain each device to the previous device until all external SCSI devices have been connected.

Using the LED Connector

(*Optional*) Most computers have an LED disk activity light on the front panel. If you disconnect the cable from the LED connector on the motherboard and connect it to the LED connector on the host adapter, the LED on the front panel of the computer will light whenever there is activity on the SCSI bus.

Reassembling the Computer

Be sure all power switches are OFF, then replace the computer chassis cover and reconnect the power cables to your computer and SCSI devices.

Configuring the Computer

PCI Configuration

If your computer does not recognize the host adapter after you install it (e.g, you receive an error message, or you cannot access any of the attached SCSI devices), run the computer's setup program and check the PCI configuration parameters. Usually you start the setup program by pressing a specified key combination when your computer boots (refer to your computer's documentation.) Here are some things you may need to do in the setup program.

> **Note:** Some configuration options apply to a specific PCI bus slot; therefore, if you change these options be sure you are applying them to the slot in which the host adapter is installed. Read your computer documentation if you are not sure which slot corresponds to each number.

- If there is an Interrupt Type or Interrupt Line option in the setup program, be sure to select **Int-A** or **Interrupt Type** = **A**. Depending on your system design, you may also need to change a motherboard jumper setting.

- If there is a Triggering Interrupt option, be sure to select **Level**.

- If there is an option to enable or disable bus mastering for the PCI slots, be sure to select **Enabled**.

- If there is an option to enable or disable individual PCI slots, be sure the slot in which you install the host adapter is 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.

- In some systems the BIOS reserves a set of available IRQs for PCI boards, and you have to assign these IRQs manually.

Using SCSISelect

The AHA-2944UW includes the onboard, menu-driven SCSI*Select* configuration utility, which allows you to change host adapter settings without opening the computer or handling the board. SCSI*Select* also contains SCSI disk utilities that let you low-level format or verify the disk media of your SCSI hard disk drives.

SCSISelect Default Settings

The default AHA-2944UW settings shown in the following table are appropriate for most SCSI devices. Run SCSI*Select* only if you need to change a default setting, format a disk, or verify a disk. (See the instructions on page 8.) Otherwise, continue with *Installing Device Drivers* on page 9.

Basic Host Adapter	Default
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	Automatic
Boot Device Configuration	**Default**
Boot Target ID	0
Boot LUN Number[1]	0
SCSI Device Configuration (0-15)	**Default**
Initiate Sync Negotiation	Yes (Enabled)
Maximum Sync Transfer Rate[3]	20 MBytes/sec
Enable Disconnection	Yes (Enabled)
Initiate Wide Negotiation	Yes(Enabled)
Send Start Unit SCSI Command[2]	No(Disabled)
Include in BIOS Scan[2]	Yes (Enabled)
Advanced Host Adapter Configuration	**Default**
Reset SCSI Bus at IC Initialization	Enabled
Host Adapter BIOS	Enabled
Support Removable Disks Under BIOS as Fixed Disks[2]	Boot only
Extended BIOS Translation for DOS Drives > 1 GByte[2]	Enabled
Display <Ctrl-A> Message During BIOS Initialization[2]	Enabled
Multiple LUN Support[2]	Disabled
BIOS Support for Bootable CD-ROM[2]	Enabled
BIOS Support for Int 13 Extensions[2]	Enabled
Support for UltraSCSI Speed[3]	Disabled

[1] Setting is valid only if Multiple LUN Support is enabled
[2] Settings are valid only if host adapter BIOS is enabled.
[3] If support for UltraSCSI is enabled, the maximum transfer rate is 40 MBytes/Sec.

Basic Host Adapter Settings

The basic host adapter settings are the SCSI*Select* settings most likely to require any modification.

■ **Host Adapter SCSI ID**— This option sets the host adapter's SCSI ID. The default setting is SCSI ID *7*, which give the host adapter the highest priority on the SCSI bus (see *Assigning SCSI ID Numbers* on page 2). We recommend that you leave the host adapter set to SCSI ID 7.

■ **SCSI Parity Checking**—This option determines whether the host adapter verifies the accuracy of data transfer on the SCSI bus. The default setting is *Enabled*. You should disable SCSI Parity Checking if any SCSI device connected to the AHA-2944UW does not support SCSI parity; otherwise, leave it enabled. Most SCSI devices do support SCSI parity. If you are not sure whether a device supports SCSI parity, consult the documentation for the device.

■ **Host Adapter SCSI Termination**—This option sets termination on the host adapter. The default setting for the AHA-2944UW is *Automatic*. We recommend that you leave the AHA-2944UW set to its default setting of Automatic. If you want to manually set the termination setting, see *Setting SCSI Termination* on page 2 for appropriate settings.

Boot Device Settings

The boot device settings allow you to specify the device you wish to boot your computer from.

■ **Boot Target ID**—This option specifies the SCSI ID of the device you wish to boot from. The default setting is SCSI ID *0*. The SCSI ID selected here must correspond to the ID configured on the boot device (see *Assigning SCSI ID Numbers* on page 2).

■ **Boot LUN Number**—If your boot device has multiple LUNs (Logical Unit Numbers) and Multiple LUN Support is enabled (see *If the Send Start Unit Command is set to yes for many devices, the boot time will vary depending how long it takes each drive to start.* on page 6), this option allows you to specify which LUN to boot from on your boot device. The default settings is LUN *0*.

SCSI Device Settings

The SCSI device settings allow you to configure certain parameters for each device on the SCSI bus. To configure a specific device, you must know the SCSI ID assigned to that device. If you are not sure of the SCSI ID, see *Using the SCSI Disk Utilities* on page 8.

- **Initiate Sync Negotiation**—This option determines whether the host adapter initiates synchronous data transfer negotiation (Sync Negotiation) with connected devices. The default setting is *Yes*.

  Synchronous negotiation is a SCSI feature that allows the host adapter and its connected SCSI devices to transfer data in synchronous mode. Synchronous data transfer is faster than asynchronous data transfer.

  The host adapter always responds to Sync Negotiation if a SCSI device initiates it. If neither the host adapter nor the SCSI device initiate Sync Negotiation, data is transferred asynchronously.

  Normally, you should leave the Initiate Sync Negotiation setting enabled, because most SCSI devices support synchronous negotiation and because it allows for faster data transfer.

  Note: Some older SCSI-1 devices do not support Sync Negotiation. This may cause your computer to operate erratically or hang if Initiate Sync Negotiation is set to yes. Set Initiate Sync Negotiation to **No** for these devices.

- **Maximum Sync Transfer Rate**—This option sets the maximum synchronous data transfer rate that the host adapter supports. The default setting is *20.0 MBytes/sec*.

  The host adapter supports rates up to the *Ultra*SCSI maximum of 20.0 MBytes/sec (the AHA-2944UW provides an effective maximum synchronous transfer rate of 40.0 MBytes/sec for *Ultra*Wide devices). If your device is an *Ultra*SCSI device, you can use the maximum value of 20.0 MBytes/sec. If your device is not an *Ultra*SCSI device select a transfer rate of 10.0 MBytes/sec.

  If the host adapter is set *not* to negotiate for synchronous data transfer (that is, Initiate Sync Negotiation is set to No), then the maximum synchronous transfer rate is the maximum rate that the host adapter accepts from the device during negotiation. (This is standard SCSI protocol.)

- **Enable Disconnection**—This option determines whether the host adapter allows the SCSI device to disconnect from the SCSI bus (sometimes called Disconnect/Reconnect). Enabling disconnection allows the host adapter to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected. The default setting is *Yes*.

- **Initiate Wide Negotiation**— This option determines whether the host adapter attempts 16-bit data transfer (Wide negotiation) instead of 8-bit data transfer. The default setting is *Yes*.

  Note: Some 8-bit SCSI devices have trouble handling Wide negotiation, which may result in erratic behavior or a hang condition. For these devices, set Initiate Wide Negotiation to **No**.

  When set to Yes, the host adapter attempts 16-bit transfer. When set to No, 8-bit data transfer is used unless the SCSI device itself requests Wide negotiation. The effective transfer rate is doubled when 16-bit data transfer is used because the data path for Wide SCSI is twice the size of *normal* 8-bit SCSI. For example, a transfer rate of 10 MBytes/sec becomes 20 MBytes/sec, and a transfer rate of 20 MBytes/sec (*Ultra*SCSI) becomes 40 MBytes/sec.

- **Send Start Unit Command**—This option determines whether the Start Unit Command is sent to the SCSI device at bootup (most devices do not require this). The default setting is *No*.

  Setting this option to yes reduces the load on your computer's power supply by allowing the host adapter to start SCSI devices one-at-a-time when you boot your computer. When set to no, the devices are allowed to start at the same time. Most devices require you to set a jumper before they can respond to this command.

  Note: If the Send Start Unit Command is set to yes for many devices, the boot time will vary depending how long it takes each drive to start.

- **Include in BIOS Scan**—This option determines whether Int 13h devices (hard disk drives) attached to the SCSI bus are recognized by the host adapter BIOS and are installed as devices on the system without the need for device driver software.

Advanced Host Adapter Settings

The advanced host adapter settings should not be changed unless absolutely necessary.

- **Reset SCSI Bus at IC Initialization**—This option allows you to enable or disable SCSI bus resets generated by the host adapter during power-on initialization and after a hard reset. The default setting is *Enabled.*

- **Host Adapter BIOS**—This option enables or disables the host adapter BIOS. The default setting is *Enabled.*

> **Note:** Several SCSI*Select* options are not valid unless the host adapter BIOS is enabled. See the table on page 5.

If you are booting from a SCSI disk drive connected to the host adapter, the BIOS must be enabled. You should disable the host adapter BIOS if the peripherals on the SCSI bus (for example, CD-ROM drives) are all controlled by device drivers and do not need the BIOS.

- **Support Removable Disks Under BIOS as Fixed Disks**—This option controls which removable-media drives are supported by the host adapter BIOS. The default setting is *Boot Only.* The following choices are available:

  - **Boot Only**—Only the removable-media drive designated as the boot device is treated as a hard disk drive.

  - **All Disks**—All removable-media drives supported by the BIOS are treated as hard disk drives.

  - **Disabled**— No removable-media drives are treated as hard disk drives. In this situation, software drivers are needed because the drives are not controlled by the BIOS.

> **Caution:** If a removable-media SCSI device is controlled by the host adapter BIOS, *do not* remove the media while the drive is on or you may lose data! If you want to be able to remove media while the drive is on, install your removable-media device driver and set this option to **Disabled**.

- **Extended BIOS Translation for DOS Drives > 1 GByte**—This option determines whether extended translation is available for SCSI hard disks with capacities greater than 1 GByte. The default setting is *Enabled.*

> **Caution:** If you decide to change the translation scheme, back up your disk drives first! All data is erased when you change from one translation scheme to another.

The standard translation scheme for SCSI host adapters provides a maximum accessible capacity of 1 GByte. To support disk drives larger than 1 GByte, the AHA-2944UW includes an extended translation scheme. This scheme supports disk drives as large as 8 GBytes under MS-DOS with a maximum partition size of 2 GBytes.

Extended BIOS Translation is used only with MS-DOS 5.0 or above. You do not need to enable this option if you are using another operating system such as NetWare, OS/2, Windows NT™, or UNIX.

When you partition a disk larger than 1 GByte, use the MS-DOS *fdisk* utility as you normally would. Because the cylinder size increases to 8 MBytes under extended translation, the partition size you choose must be a multiple of 8 MBytes. If you request a size that is not a multiple of 8 MBytes, *fdisk* rounds up to the nearest whole multiple of 8 MBytes.

- **Display <Ctrl-A> Message During BIOS Initialization**—This option determines whether the message Press <Ctrl> <A> for SCSISelect (TM) Utility! appears on your screen during system bootup. The default setting is *Enabled.* If this setting is disabled, you can still invoke the SCSI*Select* utility by pressing

AHA-2944UW Installation Guide   Page 7 of 12
Part Number: 511248-00, Rev. A
Print Spec Number: 495686-00
Current Date: 11/13/96
Last Modified: November 13, 1996 12:57 pm
File Location: d:\mario\2944uw.ig\2944uwig.frm
ECN Date: 11/19/96

<Ctrl><A> after the host adapter BIOS banner appears.

- **Multiple LUN Support**—This option determines whether booting from a SCSI device that has multiple LUNs is supported. The default setting is *Disabled*. Enable this option if your boot device has multiple LUNs.

- **BIOS Support for Bootable CD-ROM**—This option determines whether the host adapter BIOS provides support for booting from a CD-ROM drive. The default setting is *Enabled*.

- **BIOS Support for Int 13 Extensions**—This option determines whether the host adapter BIOS supports disks with more than 1024 cylinders. The default setting is *Enabled*.

- **Support for UltraSCSI Speed**—This option determines whether the host adapter supports the fast transfer rates of UltraSCSI devices. The default setting is *Disabled*.

Running SCSISelect

To start the SCSI*Select* utility, press **Ctrl-A** when the following prompt appears at boot time:

    Press <Ctrl><A> for SCSISelect (TM) Utility!

When the Options menu appears, select **Configure/View Host Adapter Settings** or **SCSI Disk Utilities.**

SCSI*Select* uses menus to list options you can select. 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**. To toggle the display between color and monochrome modes, press **F5** (this feature does not work on some monitors).

To exit SCSI*Select*, press **Esc** until a message prompts you to exit. If you changed any options, you are prompted to save the changes before you exit. At the prompt, 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.

Using the SCSI Disk Utilities

To access the SCSI disk utilities, select the **SCSI Disk Utilities** option from the Options menu that appears when you start SCSI*Select*. SCSI*Select* immediately scans the SCSI bus and displays a list of all SCSI IDs and the devices assigned to each ID.

When you select a specific ID and device, a small menu appears, displaying the options Format Disk and Verify Disk Media.

- **Format Disk**—This utility allows you to perform a low-level format on a hard disk drive. Most SCSI disk devices are preformatted at the factory and do not need to be formatted again. The Adaptec Format Disk utility is compatible with nearly all SCSI disk drives.

- **Verify Disk Media**—This utility 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 no longer used. You can press **Esc** at any time to abort the utility.

Advanced Setups and Configurations

Configuring Multiple Host Adapters

Multiple AHA-2944UW host adapters can be installed in your computer; you are limited only by the number of available PCI bus slots (installation and setup is the same as a single AHA-2944UW). Each host adapter you install forms a separate SCSI bus with a different set of SCSI devices.

In computers with multiple host adapters, consider the following:

- If you are booting from the AHA-2944UW, you may need to install the boot host adapter in the lowest numbered PCI bus slot. (Most PCI systems do not have this requirement.) Refer to your system documentation to determine the PCI bus slot number.

- If you have two AHA-2944UW host adapters and each has a boot device connected, the computer boots from the host adapter in the lowest numbered PCI bus slot. If you want to select a specific host adapter to boot from, enable the BIOS only on that host adapter.

AHA-2944UW Installation Guide   Page 8 of 12
Part Number: 511248-00, Rev. A
Print Spec Number: 495686-00
Current Date: 11/13/96
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File Location: d:\mario\2944uw.ig\2944uwig.frm
ECN Date: 11/19/96

- If you are booting from the AHA-2944UW and you also have an ISA/EISA-based host adapter installed, you must disable the BIOS on the ISA/EISA-based host adapter.

- If you are booting from an ISA/EISA-based host adapter and you also have an AHA-2944UW installed with a boot device connected, the ISA/EISA-based host adapter will boot before the AHA-2944UW.

- When running the SCSI*Select* utility, if the utility finds multiple AHA-2944UW host adapters in your computer, it displays the PCI bus number and PCI device number of each host adapter. To determine which of the host adapters SCSI*Select* is configuring, view the red LEDs on the host adapters as you move the highlight bar to different host adapters with the ↑ and ↓ keys. (The computer cover must be removed to view the LEDs.)

Installing Device Drivers

Some operating systems have an embedded driver for the AHA-2940UW. These drivers work fine with your AHA-2944UW; however, the most recent version of the driver should be installed in order for your AHA-2944UW to perform at its optimum level.

If you purchased your AHA-2944UW in a kit, the kit includes the latest Adaptec EZ-SCSI® and Adaptec 7800 Family Manager Set software.

- **Adaptec EZ-SCSI**—allows you to install software drivers for DOS/Windows® and several additional utilities. Refer to the *EZ-SCSI Quick Reference*.

- **Adaptec 7800 Family Manager Set**—allows you to install software drivers for NetWare, OS/2, Windows® 95, Windows NT, and UNIX. Refer to the *7800 Family Manager Set User's Guide*.

You can order EZ-SCSI or the 7800 Family Manager Set by calling the number listed on page 11.

Need Assistance?

Troubleshooting Tips

If you have a problem during installation, check these items first:

- Have you installed the host adapter in a PCI Rev 2.0 compliant computer?

- Are all SCSI devices powered?

- Are all SCSI bus cables and power cables properly connected? Is pin 1 oriented correctly?

- Does the host adapter and all devices on the SCSI bus have unique SCSI IDs?

- Is pin-1 orientation maintained throughout the SCSI bus? (See *Connecting Internal SCSI Devices* on page 3.)

- Are all devices on the SCSI bus terminated properly?

- Does your system CMOS setup require you to enable PCI bus parameters? If so, see your computer's documentation. Check that IRQ channel assignment, board, and BIOS settings have been made.

- Did you install your host adapter in a bus master PCI slot? Refer to your computer's documentation or try another slot.

- Is parity checking consistently enabled or disabled on all devices on the SCSI bus?

Computer Will Not Boot from a SCSI Disk Drive

If both SCSI and non-SCSI disk drives are installed, then the non-SCSI disk drive is always the boot device. If the system has only SCSI disk drives, do the following:

1 Make sure the drive type in your computer's CMOS setup is set to **No Drives Installed**.

2 Make sure the boot hard disk SCSI ID corresponds to the Boot Target ID setting in SCSI*Select*. The SCSI ID is normally set with jumpers or switches on the drive.

3 If this does not solve the problem, *back up all data* on the SCSI hard disk and perform a low-level format with the SCSI*Select* Format Disk option. See the MS-DOS documentation for instructions on partitioning the disk after formatting.

9

Other Problems and Solutions

■ If you changed any values on a host adapter, in a setup program, or on a SCSI device, did you turn the power OFF and ON to ensure that the new values are loaded?

■ If you tried to use the format/verify utility on a disk device and got an Unexpected SCSI Command Failure pop-up box with error information, the utility probably encountered a problem with the disk device or the media and therefore cannot run.

  You can probably determine from the Sense Key information (e.g., 06h - Unit Attention) both the cause of the problem and its solution. Here are some of the more common Sense Key values and their meanings:

  – 02h - Not ready—The media is not ready to format. Be sure that media is inserted in the drive and that the media is spun up.

  – 03h - Medium error—The disk media may be defective. If it is a removable-media drive, try using a different disk media. If it is a hard disk drive, the disk may be physically damaged. Verify and format the media with SCSI*Select*.

  – 04h - Hardware error—The disk drive may be defective. Consult the hardware documentation and contact the manufacturer.

  – 06h - Unit attention—The removable media may be write-protected. Disable write protection and run the utility again.

BIOS Startup Messages

If the host adapter BIOS is enabled, but it fails to initialize, the system displays a specific error message followed by a BIOS Installation Failure message. Here are some of these error messages and their meaning:

Device connected, but not ready.
The host adapter received no answer when it requested data from an installed SCSI device. Try setting the Send Start Unit Command to **Yes** for the host adapter.

If the message still appears, follow the drive manufacturer's instructions to make sure the drive is set to spin up when the power is switched ON.

Start unit request failed.
The BIOS was unable to send a Start Unit Command to the device. Run the SCSI*Select* utility and disable Send Start Unit Command for the device.

Time-out failure during …
An unexpected time-out occurred. Check SCSI bus termination. Try disconnecting the SCSI peripheral cables from the host adapter and then starting the computer. If the computer successfully restarts, check SCSI bus termination and cable connections. One of the devices on the SCSI bus may be defective.

Contacting Adaptec

If you have questions about installing or using your Adaptec product, check this installation guide first—you will find answers to most of your questions here. If you need further assistance, please contact us. We offer the following support and information services:

Electronic Support

Technical information, including product literature, answers to commonly asked questions, information on software upgrades and other topics is available electronically through the following:

- Adaptec World Wide Web (WWW) site at http://www.adaptec.com.

- File Transfer Protocol (FTP) server at ftp.adaptec.com.

- CompuServe Adaptec Forum at GO ADAPTEC.

- Adaptec USA Bulletin Board Service (BBS) at 408-945-7727; supports up to 28,800 bps (bits per second), 8 data bits, 1 stop bit, no parity. No product literature is available on the Adaptec BBS.

- Interactive Fax System at 408-957-7150.

Technical and Product Support

- For technical support and information about many of Adaptec's electronic support services, call 800-959-7274 or 408-945-2550, 24 hours a day, 7 days a week.

- To use the Adaptec Interactive Support System, call 800-959-7274 or 408-945-2550, 24 hours a day, 7 days a week. The system prompts you with questions regarding your problem and then provides step-by-step troubleshooting instructions.

- To speak with a product support representative, call 408-934-7274, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time. After hours, on weekends, and on holidays, product support is also available for a fee at 800-416-8066.

Sales and Ordering Information

- For sales information, call 800-959-7274 or 408-945-2550, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time.

- To order Adaptec software and SCSI cables, call 800-442-7274 or 408-957-7274, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time.

- To request additional documentation for Adaptec products, call 800-934-2766 or 510-732-3829, M–F, 6:00 A.M. to 5:00 P.M., Pacific Time.

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.

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.