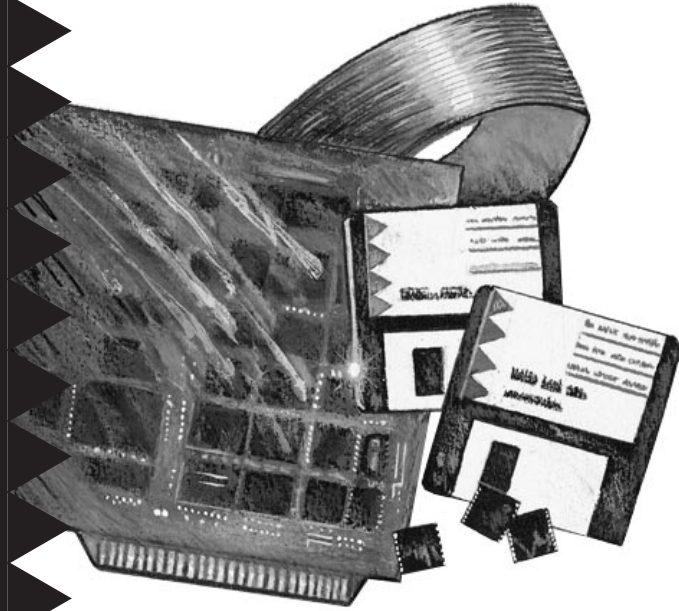


Installation Guide



AHA-2840A/2842A High Performance Bus Master

VL-to-Fast SCSI Host Adapter
with SCSISelect™



AHA-2840A/2842A Installation Guide
Part Number: 510590-00, Rev B
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1 Getting Started

This guide tells you how to install and configure the AHA™-2840A/2842A SCSI host adapters. With the exception of the AHA-2842A floppy drive controller, the installation procedure is the same for both host adapter models. (See *Controlling Floppy Drives* on page 3.)

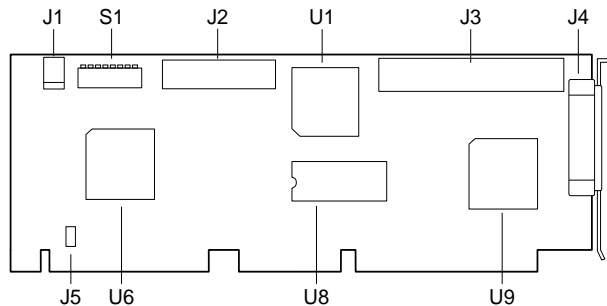
Here is an overview of host adapter installation:

- 1 Insert the host adapter in a VL-Bus™ slot in your computer.
- 2 Connect SCSI cables and SCSI peripherals.
- 3 Terminate the SCSI bus.
- 4 Adjust host adapter configuration, if necessary, by setting switches and running the SCSISelect™ utility.
- 5 Load software, if necessary.

The following sections explain each installation step.

2 Board Layout

This figure identifies the major AHA-2840A/2842A components. The following table describes each component.



Location	Description	Location	Description
J1	External LED Connector	S1	Switch Block
J2	Floppy Drive Connector*	U1	Floppy Drive Controller*
J3	Internal SCSI Connector	U6	VL-Bus to Adapter Interface
J4	External SCSI Connector	U8	Host Adapter BIOS ROM
J5	Write-back Enable Jumper	U9	AIC-7770 Bus Master Chip

*AHA-2842A only

3 Default Settings

AHA-2840A/2842A host adapters operate correctly with their factory default settings in the majority of PC systems featuring VL-Bus slots. The default settings are:

Parameter	Default Setting
Interrupt Level	IRQ 11
Data FIFO Threshold	100%
Port Address	1C00h
Host Adapter BIOS	Enabled at address D8000h
Host Adapter SCSI ID	7
SCSI Bus Parity	Enabled
SCSI Bus Reset at Host Adapter Initialization	Enabled
SCSI Bus Termination	Enabled
Floppy Drive Controller	Enabled (AHA-2842A only)
Greater than 1 GByte Support	Disabled
BIOS Support for More than 2 Drives	Disabled
Removable Drive Support	Support removable drive as boot device only

See Section , *Configuring the Host Adapter* to learn how to change these settings.

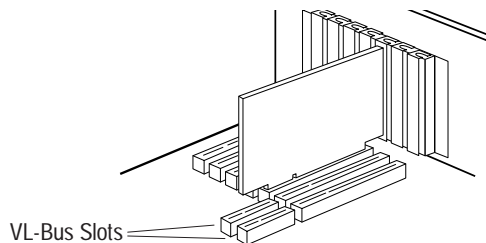
4 Installing the Host Adapter

Inserting the Board



WARNING: Turn OFF and disconnect the power to your computer and attached devices before you remove the chassis cover. See your computer's documentation for instructions on how to do this.

- 1 Remove the chassis cover to expose the expansion slots and external access covers.
- 2 Locate an unused VESA[®] local bus (VL-Bus) expansion slot, as shown in the diagram below.



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- 3 Remove the corresponding expansion board access cover on the computer chassis.
- 4 Align the bus connector on the bottom of the host adapter with the VL-Bus slot and carefully press it down into the slot. Secure the host adapter bracket to the computer chassis with the screw from the removed expansion slot cover.



Note: *Do not* replace the chassis cover or reconnect the power yet!

Setting Switches

If you need to change switch block settings, do it now before you replace the chassis cover and run `SCSISelect`. (See Section , *Switch Block Settings*.) In most cases, you will *never* have to change the default switch settings. The following are some situations in which you should change the settings:

Controlling Floppy Drives

If your floppy drives are connected to another floppy controller (e.g., the one on the motherboard), set `sw5` to **On** to *disable* the AHA-2842A floppy controller.

If you want to use the floppy controller on the AHA-2842A you must *disable* other floppy controllers in the computer; refer to the documentation for your computer or floppy controller.

Using Multiple Host Adapters

The AHA-2840A/2842A port address must be different from the port addresses of other expansion boards and host adapters. If another board is using the default AHA-2840A/2842A port address of 1C00h, change `sw1-sw4` to a different port address (see Section , *Switch Block Settings*).

Each installed host adapter must also have a different BIOS address, which is set by `sw6` and `sw7`. Or, you can *disable* the AHA-2840A/2842A BIOS by setting `sw8` to **On**. (See the next section.)

Disabling the BIOS

CD-ROM drives, tape drives, and other nondisk devices do not use the host adapter BIOS. Therefore,

if no SCSI hard disk drives are connected to the host adapter, you can reduce bootup time if you *disable* the host adapter BIOS.

Matching I/O Address and Slot Number

In EISA/VL-Bus systems, we recommend that the host adapter I/O address match the number of the VL-Bus slot in which the host adapter is installed. (See your PC documentation to determine the slot numbers.) If the host adapter is installed in slot #1 leave the I/O address at the default (1C00h); if it is in slot #2, change the I/O address to 2C00h; if it is in slot #3, change the address to 3C00h, etc.

Jumper Block

Leave the jumper on jumper block J5 installed unless you are experiencing problems with write-back signals. (See Section 8, *Troubleshooting Checklist*.)

5 Connecting Peripherals

Setting SCSI IDs

You must assign a *different* SCSI ID to each device on the AHA-2840A/2842A SCSI bus. See your SCSI peripheral documentation for directions on how to determine the ID and change it.

- The default SCSI ID for AHA-2840A/2842A host adapters is SCSI ID 7. You can change the ID with the *SCSISelect* utility, if necessary. (See Section , *Configuring the Host Adapter*.)
- We recommend that you assign SCSI IDs 0 and 1 to the first two SCSI hard disk drives in your PC.

Connecting Cables

SCSI devices are cabled together in a single, connected series called the *SCSI bus*. The SCSI bus cables must run sequentially from one device to the next, with no branches.

The host adapter is at the end of the SCSI bus if either the internal or external SCSI connector is unused. The host adapter is in the middle of the bus if internal and external SCSI devices are installed.



Caution: AHA-2840A/2842A host adapters support only *single-ended SCSI* devices. *Differential SCSI* devices may be damaged if connected to the host adapter. The peripheral documentation will tell you whether the device is single-ended or differential.

- 1 Lay out the cables and find the *pin-1* element of each cable and peripheral connector.
On *internal* cables, pin 1 is usually marked with a contrasting color on one edge of the ribbon cable, and a small triangle marks pin 1 on the SCSI connector. *External* cable connectors can only be plugged-in one way, so pin-1 orientation is automatic.
- 2 Attach the SCSI cable(s) to the host adapter and the peripheral(s), using the internal and/or external connector(s).
- 3 Be sure to maintain correct pin-1 orientation throughout the bus. The AHA-2840A/2842A uses a 50-pin high-density external connector, and a 50-pin flat ribbon-type internal connector.
- 4 If you are installing an AHA-2842A and you are using the onboard floppy controller, connect the 34-pin ribbon cable to the onboard floppy connector. Be sure to maintain pin-1 orientation, as described earlier.

Terminating the SCSI Bus Cable

The last physical SCSI device on either end of the SCSI bus must have a set of resistors called *terminators*. Terminators must be removed from, or disabled on, all other devices on the SCSI bus.

The AHA-2840A/2842A and most SCSI peripherals have built-in terminators that can be enabled or disabled. Terminate *only* the devices at each end of the SCSI bus.

Terminating the Host Adapter

Termination is enabled by default on AHA-2840A/2842A host adapters. You must disable host adapter

termination if you attach SCSI devices to *both* the internal and external SCSI connectors, since the host adapter is then in the middle of the SCSI bus.

The table below lists the three possible SCSI device/host adapter configurations.

Devices Connected to Host Adapter	Host Adapter Termination
Internal devices only (host adapter at end of bus)	Enabled
External devices only (host adapter at end of bus)	Enabled
Internal and external devices (host adapter in the middle)	Disabled

Host adapter termination for the AHA-2840A/2842A is controlled by the *SCSISelect* program, not by switches. If you need to disable host adapter termination, first complete the physical installation, then run *SCSISelect* and follow the directions in Section , *Configuring the Host Adapter*.

Terminating Other SCSI Peripherals

- 1 Check the manufacturer's documentation to determine how to enable or disable SCSI bus termination on your SCSI peripheral device(s).
- 2 Install/enable terminators on SCSI devices at the *ends* of the SCSI bus (cable).
- 3 Remove/disable terminators on all other devices on the SCSI bus.
- 4 Be sure the SCSI cables are connected securely. They may have been loosened if you changed jumpers or switch settings on the peripherals.

Reassembling and Starting the System

- 1 Replace the computer chassis cover, following the instructions in your computer's documentation.
- 2 Be sure all power switches are OFF, then reconnect power cables to your computer.
- 3 Turn ON the power for the computer and the peripheral(s).

At bootup the host adapter BIOS sign-on message appears on the screen (unless the BIOS is disabled). The message includes a list of installed SCSI devices and a BIOS status message.

In most cases your computer, host adapter, and SCSI peripherals are now ready to use.

6 Configuring the Host Adapter

Your host adapter includes the built-in, menu-driven *SCSISelect* configuration utility. *SCSISelect* lets you change host adapter settings such as interrupt channel and host adapter termination without opening your computer or setting switches. *SCSISelect* also includes a low-level formatting utility.

Running *SCSISelect*

There are two ways to invoke *SCSISelect*:

- Press **Ctrl-A** when prompted at boot time.
- At the DOS prompt type debug and press **Enter**. Then at the *Debug* prompt (a hyphen), type
g=xxx:6
where xxx = first 4 digits of host adapter BIOS address in hex. (D8000h is the default address.)

Use the arrow (↑↓) and **Enter** keys to make selections in *SCSISelect*. Press **Esc** at any time to return to the previous menu. You can press **F6** to restore the *original* default settings. To abandon changes you made in the Configure/View Host Adapter Settings menu, press **Esc** and select **No** when asked if you want to save the changes.

Main Menu Options

Configure/View Host Adapter Settings

The Configuration screen displays the basic software configurable options: IRQ, Host Adapter SCSI ID, Parity Checking, and Host Adapter Termination. Highlight an option and press **Enter** to see a list of possible values. Some options include information to help you determine which value to select.

If you select **SCSI Device Configuration** you can view another menu and change these options for each device on the SCSI bus: Initiate Synchronous Negotiation, Maximum Synchronous Transfer Rate, Enable Disconnect, Send Start Unit Command, and Include in BIOS Scan.

If you select **Advanced Configuration Options** you can view a menu of these advanced options: Data FIFO Threshold, Host Adapter BIOS Enable or Disable, Support Removable Disks under the BIOS as Fixed Disks, Extended BIOS Translation, SCSI Bus Reset at Host Adapter Initialization, and BIOS Support for More than 2 Drives.

SCSI Disk Utilities

When you select **SCSI Disk Utilities** from the Main Menu, the SCSI devices installed at SCSI IDs 0 through 7 are displayed (including nondisk devices). When you select one of the installed devices, the Utilities menu appears.

Format Disk accesses the Adaptec SCSI low-level format utility. Most SCSI devices are preformatted and do not need to be formatted again.

Verify Disk Media scans the selected device's media for defects. If bad blocks are encountered, a prompt will ask if you want the blocks reassigned; if you select **Yes**, those blocks will no longer be used.

View Configuration Tips

This option gives you access to useful information about host adapter termination, DOS memory configuration, and other topics.

7 I/O Operating Environment Software

DOS/Windows

Under MS[®]-DOS 5.0 or higher, you can connect up to seven SCSI hard disk drives to the AHA-2840A/2842A without additional software. (To do this you must enable BIOS Support for More than Two Drives, which is disabled by default.) Older versions of DOS support up to two hard disk drives.

You can make the host adapter treat removable media drives as hard disk drives. To do this, run *SCSISelect*, choose **Advanced Configuration Options**, and set the Support Removable Disks Under BIOS as Fixed Disks option to **All Disks**. If you use this setting, you may *not* remove the media while your computer system power is on.

You need additional software, such as Adaptec's EZ-SCSI, if you want to

- Remove and insert magneto-optical and other removable media while your computer is running
- Support more than two hard disk drives under versions of DOS prior to MS-DOS 5.0
- Use devices other than hard disk drives, such as SCSI tape drives, CD-ROM drives, scanners, etc.

Other Operating Environments

The AHA-2840A/2842A host adapters support DOS, Novell® NetWare®, OS/2®, Windows NT, SCO® UNIX® and Novell UnixWare operating systems. Contact Adaptec or your operating system vendor for information on the current schedule for I/O operating environment software support.

8 Troubleshooting Checklist

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

- Are all SCSI peripheral devices powered?
- Are all SCSI bus cables and power cables properly connected?
- Do the host adapter and all devices on the SCSI bus have unique SCSI IDs?
- Are all devices on the SCSI bus terminated properly? (See Section , *Connecting Peripherals*.)
- If your system has multiple host adapters, did you assign each host adapter a unique BIOS address or disable the BIOS on all but one host adapter?
- If your system has no write-back feature and the host adapter does not respond, did you try removing the jumper on jumper block J5?
- If your system has write-back, and the system behaves erratically or does not work, did you make sure the jumper on jumper block J5 is installed?

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, check the following:

- 1 Make sure your computer's CMOS Setup is set to No Drives Installed, as required for SCSI host adapters.
- 2 Make sure the boot hard disk SCSI ID is 0. 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 *SCSISelect* Format Disk option. See the MS-DOS documentation for instructions on partitioning the disk after formatting.

Conflicts With Other Option Cards or Devices

Your host adapter and other devices may not share system resources such as IRQ channels, port addresses, and BIOS addresses. If you experience conflicts, change IRQ channels with the *SCSISelect* utility or set the host adapter switches to a different port address and/or BIOS address.

9 Switch Block Settings

The AHA-2840A/2842A switch block is located in the upper left-hand corner of the board. This table shows all the possible settings of the eight switches. Default settings are marked with an asterisk (*).

sw1	sw2	sw3	sw4	I/O Address	sw5	Floppy Controller	
Off	Off	Off	Off	1C00h*	Off	Enabled*	
On	Off	Off	Off	2C00h	On	Disabled	
Off	On	Off	Off	3C00h	sw6	sw7	BIOS Address
On	On	Off	Off	4C00h	Off	Off	D8000h*
Off	Off	On	Off	5C00h	On	Off	C8000h
On	Off	On	Off	6C00h	Off	On	D0000h
Off	On	On	Off	7C00h	On	On	E0000h
On	On	On	Off	8C00h	sw8	Host Adapter BIOS	
Off	Off	Off	On	9C00h	Off	Enabled*	
On	Off	Off	On	AC00h	On	Disabled	
Off	On	Off	On	BC00h	Off = Open		
On	On	Off	On	CC00h			
Off	Off	On	On	DC00h			
On	Off	On	On	EC00h			
Off	On	On	On	FC00h			
On	On	On	On	Reserved			

Adaptec Technical Support and Services

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; available 23 hours a day, 7 days a week. The fax system is out of service 1 hour each day.

Technical and Product Support

- For technical support and information about many of Adaptec's electronic support services, call 800-959-SCSI (7274) or 408-945-2550, 24 hours a day, 7 days a week.
- To use the Adaptec Interactive Support System, call 800-959-SCSI (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-SCSI (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-SCSI (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-SCSI (7274) or 408-957-SCSI (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.

Adaptec, Inc.
691 South Milpitas Blvd.
Milpitas, CA 95035

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