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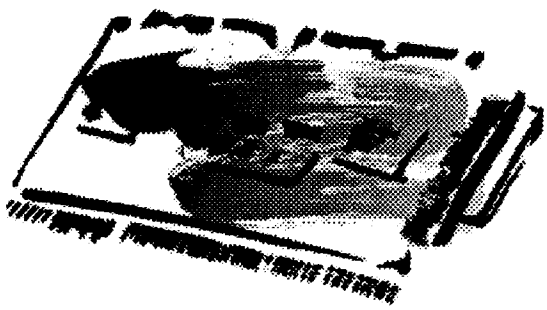
AHA-2840VL/2842VL

High Performance Bus Master VL-to-Fast SCSI Host Adapter with SCSI*Select*™

Installation Guide



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1 Getting Started

This guide tells you how to install and configure the AHA™-2840VL/2842VL SCSI host adapters. With the exception of the AHA-2842VL floppy drive controller, the installation procedure is the same for both host adapter models. (See *Controlling Floppy Drives* in Section 4.)

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.

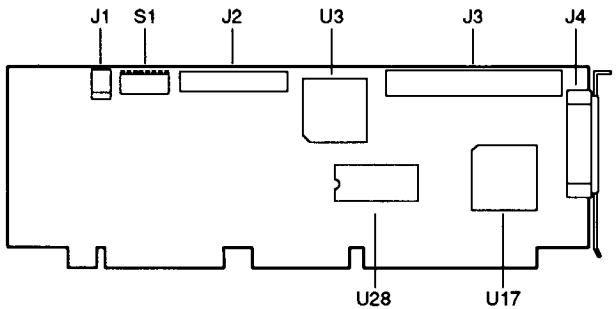
4 Adjust host adapter configuration, if necessary, by setting switches and running the SCSI*Select*™ utility.

5 Load software, if necessary.

The following sections explain each installation step.

2 Board Layout

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



Location	Description	Location	Description
J1	External LED Connector	S1	Switch Block
J2	Floppy Drive Connector*	U3	Floppy Drive Controller*
J3	Internal SCSI Connector	U17	AIC-7770 Bus Master Chip
J4	External SCSI Connector	U28	Host Adapter BIOS ROM

*AHA-2842VL only

3 Default Settings

AHA-2840VL/2842VL 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-2842VL 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 6, *Configuring the Host Adapter* to learn how to change these settings.

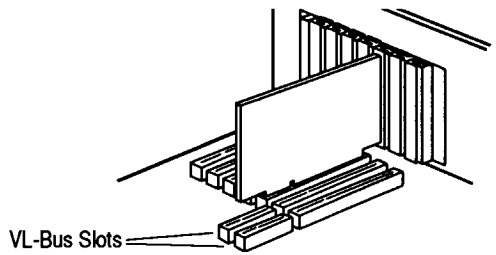
4 Installing the Host Adapter

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:



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 SCSI*Select*. (See Section 9, *Switch Block Settings*.) In most cases, you will *never* have to change the default switch settings. Here 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-2842VL floppy controller.

If you want to use the floppy controller on the AHA-2842VL 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-2840VL/2842VL port address must be different from the port addresses of other expansion boards and host adapters. If another board is using the default AHA-2840VL/2842VL port address of 1C00h, change **sw1**-**sw4** to a different port address (see Section 9, *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-2840VL/2842VL BIOS by setting **sw8** to **On**. (See the next section.)

Disabling the BIOS

CD-ROM drives, tape drives, and other non-disk devices do not use the host adapter BIOS. Therefore, if no SCSI hard disk drives are connected to the host

adapter, you can reduce boot-up 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 in slot #2, change the I/O address to 2C00h; if in slot #3, change the address to 3C00h, etc.

Jumper Block

Do not install a jumper on jumper block J5 unless your computer supports the write-back feature. See your system documentation.

5 Connecting Peripherals

Setting SCSI IDs

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

- The default SCSI ID for AHA-2840VL/2842VL host adapters is SCSI ID 7. You can change the ID with the SCSI*Select* utility, if necessary. (See Section 6, *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 the 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-2840VL/2842VL 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-2840VL/2842VL uses a 50-pin high-density external connector, and a 50-pin flat ribbon-type internal connector.

4. If you are installing an AHA-2842VL 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-2840VL/2842VL 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-2840VL/2842VL 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.

This table 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-2840VL/2842VL is controlled by the SCSI*Select* program, not by switches. If you need to disable host adapter termination, first complete the physical installation, then run SCSI*Select* and follow the directions in Section 6, *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 SCSI*Select* configuration utility. SCSI*Select* lets you change host adapter settings such as interrupt channel and host adapter termination without opening your computer or setting switches. SCSI*Select* also includes disk formatting utilities.

Running SCSI*Select*

There are two ways to invoke SCSI*Select*:

- 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=*xxxx*:6
  where *xxxx* = 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 SCSI*Select*. 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 non-disk 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-2840VL/2842VL 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 SCSI*Select*, 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 if you want to:

- Remove and insert CD-ROMs 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

Contact Adaptec or your operating system vendor for information on the availability of AHA-2840VL/2842VL drivers for other operating environments.

8 Troubleshooting Checklist

If you have a problem during installation, check these 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 5, *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 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:

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 SCSI*Select* **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 occupy overlapping memory and port addresses. If you experience conflicts, change IRQ channels with the SCSI*Select* utility or set the host adapter switches to a different port address and/or BIOS address.

9 Switch Block Settings

The AHA-2840VL/2842VL 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
Off	Off	Off	Off	1C00h*
On	Off	Off	Off	2C00h
Off	On	Off	Off	3C00h
On	On	Off	Off	4C00h
Off	Off	On	Off	5C00h
On	Off	On	Off	6C00h
Off	On	On	Off	7C00h
On	On	On	Off	8C00h
Off	Off	Off	On	9C00h
On	Off	Off	On	AC00h
Off	On	Off	On	BC00h
On	On	Off	On	CC00h
Off	Off	On	On	DC00h
On	Off	On	On	EC00h
Off	On	On	On	Reserved
On	On	On	On	Reserved

sw5	Floppy Controller
Off	Enabled*
On	Disabled

sw6	sw7	BIOS Address
Off	Off	D8000h*
On	Off	C8000h
Off	On	D0000h
On	On	E0000h

sw8	Host Adapter BIOS
Off	Enabled*
On	Disabled

Off = Open

Adaptec Customer Support

- For information on upgrades, utility programs, and technical advice, call Adaptec's Electronic Bulletin Board Service at 408-945-7727. 1200, 2400 or 9600 baud, using 8 data bits, 1 stop bit, no parity.
- For the latest on-line information about Adaptec products and services, call the Interactive Fax Service at 408-957-7150.
- For technical assistance, call Adaptec's Technical Support Hot Line at 800-959-SCSI (7274), or 408- 945-2550. M-Th: 6:00AM-5:00PM, F: 6:00AM-3:00PM, Pacific time.
- To order Adaptec software, call 800-442-SCSI (7274) or 818-365-6264. M-F: 5:00AM-6:00PM, Pacific time.
- To request literature on Adaptec products, call 800-934-2766. M-F: 5:00AM-6:00PM, Pacific time.

FCC Compliance Statement

NOTE: 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 residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

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
- Move the equipment away from the receiver
- Plug the equipment into an outlet on a circuit different from that to which the receiver is powered
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions

CAUTION: Only equipment certified to comply with Class B (computer input/output devices, terminals, printers, etc.) should be attached to this equipment, and must have shielded interface cables.

Finally, any change or modifications to the equipment by the user not expressly approved by the grantee or manufacturer could void the user's authority to operate such equipment.

Each AHA-2840VL/2842VL is equipped with an FCC compliance label which shows only the FCC Identification number. The full text of the associated label follows:

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.

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