3. Make sure the SCSI hard disk drive SCSI ID is set to ID 0. The drive SCSI ID is normally set with jumpers or switches on the drive. Each SCSI devices should be set to a unique SCSI ID.

4. Make sure the SCSI termination is set correctly. (See Section **5**, *Connecting Peripherals* for information on SCSI termination.)

5. A low-level format of the SCSI hard disk may be necessary. Be sure to backup first, then run the Format utility accessible through the EISA Configuration utility.

## Multiple Host Adapters

Make sure that each host adapter is set to a separate *BIOS address*. Or, *disable* the BIOS on all but one of the host adapters.

## **9** Adaptec Customer Support

- The Adaptec electronic Bulletin Board Service (BBS) provides information on software upgrades, new releases, technical advice, and more. The BBS can be reached 24 hours a day at 408-945-7727; 1200/2400/9600 baud, 8 data bits, 1 stop bit, no parity.

- The Adaptec Technical Support Hot Line can be reached at 800-959-SCSI (7274), or 408-945-2550; M-Th: 6:00 a.m. to 5:00 p.m., F: 6:00 a.m. to 3:00 p.m. PST.

- The Adaptec Technical Support FAX can be reached 24 hours a day at 408-945-6776.

- Adaptec software can be ordered by calling 800-442-7274; M-F: 5:00 a.m. to 6:00 p.m. PST.

- Additional documentation for Adaptec products can be requested by calling 800-934-2766; M-F: 5:00 a.m. to 6:00 p.m. PST.

## **10** 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.

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®

# AHA-2740/2742
**Single-Channel**

# AHA-2740-T/2742-T
**TwinChannel**™

### EISA-to-Fast SCSI Host Adapters

# Installation Guide



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## 1 Getting Started

This guide provides the basic steps required for installation of the AHA®-2740/2742 and the AHA-2740-T/2742-T EISA-to-Fast SCSI Host Adapters. Procedures for all adapters are the same except when regarding the on-board floppy controller on the AHA-2742/2742-T. Installation of the host adapter includes:

1. Installing the AHA (Adaptec Host Adapter) board in an EISA system.

2. Installing the SCSI cable(s) and SCSI peripheral devices.

3. Terminating the SCSI bus.

4. Adjusting the host adapter configuration settings if necessary.

5. Loading software if necessary.

## 2 Board Layout

Figure 1 shows the location of the major components on the host adapter; Table 1 provides a description of each component.
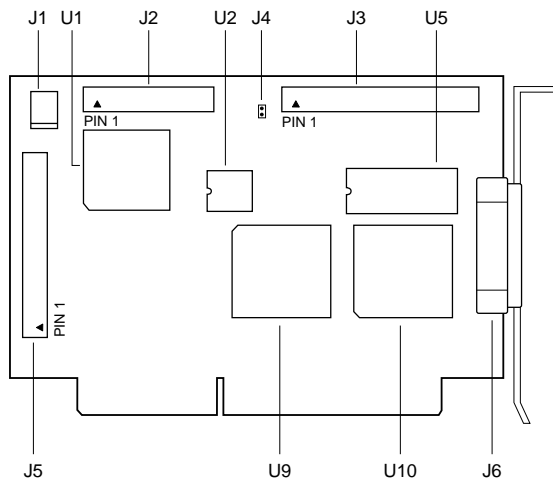


**Figure 1. Host Adapter Board Layout**

**Table 1. Host Adapter Components**

| Location | Description |
|---|---|
| J1 | External LED Connector |
| J2 | Floppy Connector (AHA-2742/2742-T only) |
| J3 | SCSI Channel A Internal Connector |
| J4 | Floppy Enable Jumper (AHA-2742/2742-T only) |
| J5 | SCSI Channel B Internal Connector (AHA-2740-T/2742-T only) |
| J6 | SCSI Channel A External Connector |
| U1 | Floppy Controller (AHA-2742/2742-T only) |
| U2 | RAM |
| U5 | Host Adapter BIOS |
| U9 | AIC-7770 Bus Master SCSI Chip |
| U10 | AIC-701 Configuration Chip |

## 3 Default Settings

Your host adapter is already configured for the majority of EISA class computers. Table 2 lists the default settings of your host adapter. Refer to Section **6**, *Configuring the Host Adapter* for information on changing any of these settings:

**Table 2. Host Adapter Default Settings**

| Description | Default Setting |
|---|---|
| Interrupt Level | IRQ 11 |
| Bus Release Time | 60 BCLKS |
| Data FIFO Threshold | 100% |
| Host Adapter BIOS Address | D8000h |
| Host Adapter SCSI ID | Device ID 7 |
| SCSI Bus Parity | Enabled |
| SCSI Selection Timeout | 256 ms |
| SCSI Bus Reset at Power-on | Enabled |
| SCSI Bus Termination | Enabled |
| Greater Than 1 GByte Support | Disabled |
| More Than Two Drive Support | Disabled |
| Removable Drive Support | Support removable drive as boot device only |

### The On-board Floppy Controller (AHA-2742/2742-T only)

● If your floppy diskette drives are already running under another controller, disable the on-board floppy controller by removing the jumper shunt on jumper J4.

● To use the on-board floppy controller, leave the jumper shunt installed on jumper J4 and then disable your existing floppy controller; refer to your computer or floppy controller user documentation.

## 4 Installing the Host Adapter

### Board Installation

> CAUTION
> Turn OFF and disconnect power to the system and external equipment. Always refer to your system's documentation for instructions on removing the system cover and adding option boards.

1. Remove the cover of your EISA personal computer to expose the EISA bus slots on the motherboard.

2. Locate an unused EISA slot in your system which supports bus master operations (refer to the host system documentation for details) and remove the corresponding slot cover.

3. Align and insert the host adapter in the EISA slot. Secure the host adapter in your system.

## 5 Connecting Peripherals

### Connecting Cables

SCSI devices are cabled together in a single continuous *daisy-chain* of devices, called the *SCSI bus*. SCSI Channel A and SCSI Channel B (AHA-2740-T/2742-T only) can each accommodate a SCSI bus with up to seven SCSI devices connected. SCSI Channel A is comprised of both an internal and external connector.

> Note
> Only *Single-Ended SCSI* devices are supported by the AHA-2740/2742/2740-T/2742-T host adapters. Consult your SCSI device user documentation.

Internal SCSI Cables
When connecting the 50-pin internal SCSI ribbon cables to both the host adapter and internal SCSI peripheral device(s), make sure that Pin 1

orientation is maintained throughout the bus. Pin 1 of the SCSI cable is designated by a colored stripe on one edge of the flat ribbon cable. Pin 1 of the host adapter or SCSI device connector is usually designated by a delta or arrow symbol (▲) on the connector.

The internal connectors for SCSI Channel A and SCSI Channel B (AHA-2740-T/2742-T only) use a 50-pin SCSI flat ribbon cable with a 50-pin header internal connector.

### External SCSI Cables

The external connector for SCSI Channel A uses a 50-pin shielded cable with a high-density external connector. External cable connectors are keyed and can only be plugged in one way; Pin 1 orientation is automatic.

### Floppy Cables (AHA-2742/2742-T only)

The floppy connector uses a 34-pin floppy ribbon cable with a 34-pin header connector. Make sure to maintain Pin 1 orientation as previously described in *Internal SCSI Cables*.

## Termination on the SCSI Bus

The first and last physical SCSI devices on the ends of the SCSI bus must have a set of resistors called *terminators* either installed or enabled. All other SCSI devices installed between the ends of the SCSI bus must have their terminators either removed or disabled.

### Terminating the Host Adapter

The factory installed bus terminators on the host adapter are *enabled* by default. Host adapter termination should be *disabled* if you attach SCSI devices to both internal and external connectors, since the host adapter would then be in the middle of the SCSI bus. Table 3 describes the three possible SCSI device and host adapter (AHA) configurations.

**Table 3. SCSI Device and AHA Configuration**

| Devices Connected To Host Adapter | AHA Termination |
| --- | --- |
| Internal devices only (AHA at end of cable) | On/Enabled |
| External devices only (AHA at end of cable) | On/Enabled |
| Internal and External devices (AHA in between) | Off/Disabled |

Enabling or disabling host adapter termination is software selectable only. To *disable* termination on the host adapter, refer to Section **6**, *Configuring the Host Adapter* for instructions.

### Terminating Other SCSI Peripheral Devices

Check the manufacturer's documentation to determine how to enable or disable SCSI bus termination on your SCSI peripheral device(s).

## SCSI ID Setting

For each device located on the SCSI bus, a unique SCSI ID (0-7) must be reserved. The default value for your host adapter is SCSI ID 7. Refer to Section **6**, *Configuring the Host Adapter* for instructions on changing the SCSI ID for the host adapter. Refer to the SCSI device documentation for information on changing the SCSI ID on other SCSI devices.

## Reassemble the System

Follow your system and SCSI device documentation to replace the system cover and connect all system and SCSI device power cables.

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## 6   Configuring the Host Adapter

A Configuration diskette containing an EISA Configuration utility is normally supplied by the EISA system vendor. Depending on the EISA Configuration utility supplied with your system, host adapter configuration will vary. The basic steps involved in running the EISA Configuration utility are explained in this section.

## Run the EISA Configuration Utility

Place the bootable Configuration diskette in an operative drive and reset the system to boot from this diskette. Run the EISA Configuration utility as instructed by the EISA system vendor.

## Copying Files

The Configuration utility typically allows you to select among a number of options, including copying new configuration files. Select this option to install the *!adp7771.cfg* and *adp7770.ovl* files from the host adapter diskette to the bootable Configuration diskette. If the Configuration utility does not

provide such an option, you can also use the DOS Copy command to copy these files to the bootable Configuration diskette.

## Select the Host Adapter

Once the files have been copied, run the option in the Configuration utility that allows you to configure the EISA slot in which the host adapter is installed. A screen listing the host adapter parameters is displayed.

> Note
> If your host adapter is an AHA-2740-T/2742-T, a set of parameters for SCSI Channel B is displayed and can be configured.

## Configure the Host Adapter Parameters

Select values for each setting as instructed on the screen's menu.

**Interrupt Level**–selects the IRQ level of the host adapter.

**Bus Release Time**–selects the EISA bus release time used when the host adapter gets preempted in bus master mode.

**Data FIFO Threshold**–selects the data FIFO threshold percentage used by the host adapter.

**Host Adapter BIOS Address**–selects the base BIOS address of the host adapter.

**Host Adapter SCSI ID**–selects the SCSI ID (0-7) for the host adapter. SCSI IDs 0 and 1 should be reserved for SCSI hard disk drives. Each installed SCSI device must have a unique SCSI ID.

**SCSI Bus Parity**–allows you to enable or disable SCSI bus parity on the host adapter.

**SCSI Selection Timeout**–selects the SCSI selection timeout used by the host adapter during the SCSI selection phase.

**SCSI Bus Reset at Power-on**–allows you to enable or disable a SCSI bus reset generated by the host adapter during its power-on initialization, and after a Hard Reset.

**SCSI Bus Termination**–allows you to enable or disable SCSI termination on the host adapter.

**BIOS and SCSI Device Configuration**–sets BIOS and SCSI device options. Refer to the following section for information on these options.

## BIOS and SCSI Device Configuration

### BIOS Configuration

This option allows you to configure the host adapter BIOS.

**Greater Than 1 GByte Drive Support**–provides a mechanism for using a hard disk with a capacity greater than 1 GByte. If this option is enabled, the following translation schemes are used:

- Hard disks ≤ 1 GByte use a translation scheme of 64 heads, 32 sectors per track

- Hard disks ≥ 1 GByte use a translation scheme of 255 heads, 63 sectors per track

**More Than Two Drives Support**–allows BIOS to support more than two SCSI hard disks (supported by DOS 5.0 and above). If this option is enabled, up to eight hard disks can be attached to INT 13h.

**Removable Drive Support**–allows you to select one of the following options for configuring removable drive support:

- Disable removable drive support

- Support removable drive as boot device only

- Support all removable drives

> **Note**
> Support for removable drives means only that the BIOS allows for use of a removable drive as if it were a fixed disk drive; it does not mean that the disk media can be removed during operation.

### SCSI Device Configuration

This option allows you to customize the configuration of the SCSI devices connected on the SCSI bus. Select values for each setting as instructed on the screen's menu.

**Error if Device Not Found**–selects whether the operator will be notified if the BIOS is unable to find the device during the boot procedure.

**BIOS Support Option**–allows devices attached to the SCSI bus to be recognized by the host adapter BIOS and installed as devices on the system without the need for device driver software.

**Send Start Command**–is used for devices that require a command to start up after power-on. Most devices do not require this.

**Initiate Synch Negotiation**–allows the host adapter to attempt to use the faster synchronous protocol for data transfers on the SCSI bus. If de-selected, the transfer will be done asynchronously, unless a SCSI device itself requests synchronous negotiation.

**Enable Disconnection**–allows the device to go off-line while performing an operation. This allows the host adapter to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected.

**Maximum Synch Transfer Rate**–allows selection of the highest data transfer speed that the host adapter will attempt with that peripheral. The host adapter supports rates up to the Fast SCSI maximum of 10 MBytes/second.

When configuration of the SCSI devices is complete, save the configuration and exit the EISA Configuration utility.

### Utilities

Two SCSI utilities are available with your host adapter:

**Format Disk**–accesses the Adaptec SCSI Low-Level Format utility. Most SCSI disk drives are pre-formatted, and do not need re-formatting.

**Host Adapter Diagnostics**–runs a diagnostic on your host adapter by doing DMA transfers between the SCSI host adapter and system memory. You should run this utility without any device drivers or TSRs loaded. This test will run indefinitely until **Esc** is pressed.

## 7 Operating Environment Software

### DOS/Windows

Under MS-DOS® 5.0 or higher, up to eight SCSI hard disk drives can be connected to the host adapter without additional software. (Older versions of DOS support up to two hard disk drives.) Additional software is required if you desire to do the following:

- 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, CD-ROM, scanners, etc.

- Treat removable media devices as removable while your computer is running

Refer to the documentation received with your I/O environment software package for instructions on loading your SCSI I/O operating environment for versions of DOS prior to MS-DOS 5.0.

### Novell NetWare®, OS/2®, and UNIX®

Adaptec is working with major operating system suppliers to provide embedded support in their operating systems. Please contact Adaptec or your operating system vendor for information on the current schedule for I/O operating environment software support.

## 8 Troubleshooting

### System 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 there is no non-SCSI disk drive:

1. Make sure your computer system's CMOS Setup is set to **No Drives Installed**, as is required for SCSI host adapters.

2. Try enabling the **BIOS Support Option** in the **BIOS and SCSI Device Configuration** option. See Section **6**, *Configuring the Host Adapter*.