AMM-1570/1572
SCSI Audio Host Adapter

User's Guide

Adaptec, Inc.
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AMM-1570/1572

SCSI Audio Host Adapter

User's Guide

adaptec

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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 changes 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 AMM-1570/1572 host adapter 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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Inside This User's Guide
This User's Guide provides complete instructions on how to install and use the Adaptec AMM-1570/1572 SCSI Audio Host Adapter.

Chapter 1 ### Introduction
provides an overview of the AMM-1570/1572. The system requirements, board layout, features, and general information on use are also included.

Chapter 2 ### Configuring the AMM-1570/1572
discusses the importance of termination and SCSI IDs on the SCSI bus. The default settings and instructions on changing termination and configuring the jumper blocks settings are also included.

Chapter 3 ### Installing the AMM-1570/1572
has the information needed to install the host adapter, and connect SCSI devices and audio equipment.

Chapter 4 ### Troubleshooting
has information to assist you in troubleshooting problems that may occur during configuration, installation, and operation.

Appendix A ### Specifications
lists technical specifications of the host adapter and its connectors, which may be of use to the advanced user or technician.

Appendix B ### I/O Operating Environment
provides information on using your host adapter with operating systems, such as DOS/Windows. A brief discussion on Adaptec EZ-SCSI and Adaptec EZ-Audio software is also included.

Appendix C   Optimizing Performance
has various tips on maximizing the performance of
your host adapter.

Appendix D   Disk Drives Over 1 GByte
describes Adaptec's extended translation feature
which allows you to bypass the DOS 1024 cylinder
limit, and supports disk drives up to 8 Gigabytes
(GBytes) in size.

Glossary
has definitions of special terms used in this manual
and in SCSI literature in general.

Index
helps you locate specific information quickly.

Conventions

The following typographic conventions are used in this manual.

bold
Used for keystrokes (… press the **Enter** key …).

Helvetica
Used for operator entry that must be typed exactly as shown (… device=c:aspi2dos.sys …) and for messages on the screen (… Enter Password …).

Helvetica Italics
Used as a place holder for text you must determine and type in (… enter *nn* for number …). Also used for program and file names that appear in body text (… the *autoexec.bat* file …).

Italics
Used for emphasis (… is *only* supported …) and for document references (… refer to Chapter 1, *Introduction*…).

Hexadecimal Numbers
Are followed by an 'h', e.g., 330h.

End Mark
The ☐ symbol marks the end of a chapter or other section.

Advisories

Advisories are quick notes that stress an important point or warn of a potential hazard to your system or your data. This manual uses three kinds of advisories:

Note: Text set off in this way presents reminders, tips, or suggestions that may make it easier for you to install, configure, and use Adaptec software products and your host adapter.

Caution: Failure to observe this kind of advisory could result in loss of data or damage to your system and installed devices.

WARNING: Failure to observe this kind of advisory could result in personal injury.

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▼ ▼ ▼ ▼ **1** # Introduction

About This Chapter

Read this chapter to find out

- An overview of the AMM-1570/1572

- The minimum system requirements needed to install the AMM-1570/1572

- The location of the major components on the AMM-1570/1572

- The features of the AMM-1570/1572

- General information on using the AMM-1570/1572

▼ ▼ ▼ ▼ **1**

Overview

This user's guide provides information on how to install and configure the Adaptec AMM-1570 and AMM-1572 SCSI Audio Host Adapters. The AMM-1572 is identical to the AMM-1570 except that it has an onboard floppy disk controller that supports up to two floppy disk drives. In this user's guide, the AMM-1570 and AMM-1572 are referred to jointly as the AMM-1570/1572.

What is the AMM-1570/1572?

The AMM-1570/1572 provides *full* SCSI host adapter functionality and superior audio performance for your SCSI and multimedia devices. This is accomplished through the integration of two discrete functional modules onto a single board: A SCSI module and an audio module.

The AMM-1570/1572 SCSI module provides a powerful multitasking interface between the ISA bus and the SCSI bus featuring 16-bit transfer capability. Up to seven individually configured SCSI devices can be connected to and supported simultaneously by the AMM-1570/1572.

The AMM-1570/1572 audio module is based on a Digital Signal Processor (DSP) that can off load many computer intensive audio and video processing tasks from the host adapter. Through the input and output jacks, a variety of audio equipment can be connected to the AMM-1570/1572. The audio module provides

- Digital audio recording and playback with compression

- Audio synthesis

- Musical Instrument Digital Interface (MIDI) recording and playback

- Joystick game port interface

System Requirements

The following minimum requirements are needed to install the AMM-1570/1572:

- An 80386SX 25 megahertz (MHz) computer or higher

- An available 16-bit expansion bus slot

- Microsoft Windows 3.1 or higher

- Four megabytes (MByte) or more of RAM

- A Video Graphics Array (VGA) monitor and VGA display card

- A hard disk with 10 MBytes or more of free space

- A 3.5-inch, high-density (1.44 MByte) floppy disk drive

Board Layout

Figure 1-1 shows the location of the major components on the host adapter.
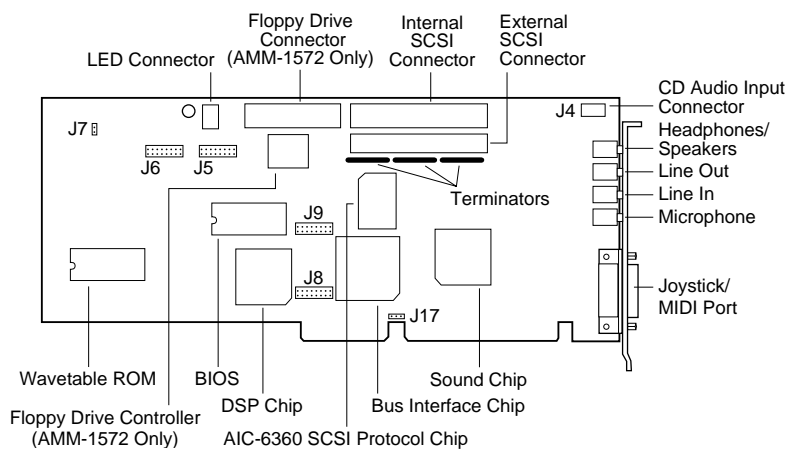
Figure 1-1. Board Layout

Features

SCSI Module

Configuration Flexibility

- One internal 50-pin SCSI connector for connecting standard 8-bit internal SCSI devices

- One external 50-pin SCSI connector for connecting standard 8-bit external SCSI devices

- Provides easy installation and use with Adaptec EZ-SCSI and Adaptec EZ-Audio software

Multiple Device and Applications Support

- Supports up to seven individually configured SCSI devices, simultaneously

- Supports any two floppy drives, including 2.88 MByte

- Supports hard disk drives, removable magneto/optical drives, CD-ROM drives, and Photo CD

- Compatible with DOS, Windows, third-party software, and SCSI-1 and SCSI-2 peripherals

- Supports the extended partitioning capabilities of DOS 5.0 and above

- Supports both fixed and removable media devices with capacities above 1 GByte

- Operating system support available for DOS and Windows

Data Transfer Rates

- Up to 10 MBytes/sec maximum SCSI transfer rate (Fast SCSI)

- Up to 5.0 MBytes/sec synchronous burst rate on the SCSI bus

- Up to 3.0 MBytes/sec data rate on the ISA bus

- Up to 2.0 MBytes/sec asynchronous SCSI data rate

Maximum Off-loading the Host CPU

- Low SCSI processing overhead

- Task scheduling and message-based communication

- 16-bit host ISA bus data transfer

- 32-bit PIO transfers with 80386 processors and above

Advanced Fast SCSI-2 Implementation

- Concurrent support of Fast SCSI, synchronous, and asynchronous devices

- Single-ended output

- Scatter/Gather

- Disconnect/Reconnect

- Fully multitasking/multithreading

- Uses the superior SCSI-2 (Alternative 2) external connector and standard internal ribbon connector

- Parity checking

Audio Module

- CD, Line, and Microphone inputs

- Line outputs

- Speaker outputs

- CD-ROM XA Audio functionality

- 16-bit quality sound

- MIDI connectivity

- Windows Sound System compatibility

- Sound Blaster compatibility

- Wavetable synthesis

- Roland MPU-401 compatible MIDI port

- Joystick interface

- 16-bit, 8-bit or compressed 4-bits per sample, IMA Adpcm, TrueSpeech Adpcm

- Sampling rates: 8, 11, 22, and 44.1 KHz (selectable)

- Stereo or mono modes (including pseudo-stereo and special effects)

- Onboard tone control

- Onboard stereo speaker amplifier

Adaptec Software

Like all Adaptec host adapter kits, the AMM-1570/1572 kit is shipped with the Adaptec EZ-SCSI *Install* program, which allows you to automatically configure your operating environment for SCSI operation. From Adaptec EZ-SCSI you can run the Adaptec EZ-Audio *Install* program to automatically configure your operating environment for the audio capabilities of the AMM-1570/1572.

Avoid Static Electricity

The host adapter is sensitive to static electricity; even a mild shock can destroy a component on the board. Keep the host adapter in its conductive wrapping until you are ready to install it in your system. Before handling the host adapter, always ground yourself by touching an unpainted surface on the system chassis of your computer.

Number and Types of SCSI Devices

Each AMM-1570/1572 allows you to connect up to a total of seven internal and/or external SCSI devices.

Types of Audio Equipment

You can connect a variety of audio equipment to the AMM-1570/1572, such as headphones, internal/external speakers, tape decks, CD players, joystick and MIDI connector, etc. Refer to *Connecting Audio Equipment* on page 3-17 for instructions on connecting your audio equipment.

Types of Cables Required

Before you actually install the host adapter, be sure you have the correct cables for your particular installation. The type of cables required depends on the type of devices you plan to connect to the SCSI bus: either external or internal. The type of connectors attached to the cables also depends on the configuration of your installation.

Type of Connector on Host Adapter	Type of SCSI Cable	Type of Connector on SCSI Cable
Internal	50-pin SCSI ribbon cable	Unshrouded 50-pin header, compatible with unshielded Alternative 2 connector.
External	50-pin shielded cable	Shielded 50-pin Alternative 2 connector.

Maximum Cable Lengths

When the SCSI bus contains a Fast SCSI host adapter, such as the AMM-1570/1572, and one or more Fast SCSI devices, the total length of all cables (internal and external) connected to the bus should not exceed 3 meters to ensure reliable operation. If no Fast SCSI devices are connected, the total length of all cables should not exceed 6 meters.

External SCSI Connector Mounting Bracket

If you are connecting external SCSI devices to the AMM-1570/1572, the external SCSI connector mounting bracket must be installed. This bracket allows you to connect external SCSI devices to the AMM-1570/1572. The mounting bracket is available from Adaptec and is normally included with all AMM-1570/1572 kits. Refer to *Installing the External SCSI Connector Mounting Bracket* on page 3-8 for detailed instructions on installing the bracket.

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▼ ▼ ▼ ▼ **2** Configuring the
AMM-1570/1572

About This Chapter

Read this chapter to find out

■ The importance of termination on the SCSI
bus and how to configure it on the
AMM-1570/1572

■ The importance of SCSI IDs on the SCSI bus
and how to configure it on the AMM-1570/
1572

■ The default settings of the AMM-1570/1572

■ How to configure the jumper block settings
on the AMM-1570/1572

▼ ▼ ▼ ▼ **2**

Preparing Your Devices for Installation

Before physically installing the AMM-1570/1572 in your system, the AMM-1570/1572 must first be configured for operation. Once it is installed in your system, it is difficult to change its configuration.

This chapter provides instructions on how to configure the AMM-1570/1572. It discusses the concepts of termination and SCSI IDs and explains the importance of properly terminating and assigning SCSI IDs to each SCSI device (including the host adapter) connected to the SCSI bus. In addition, this chapter describes in detail how to configure each of the jumper blocks on the AMM-1570/1572.

Termination on the SCSI Bus

To prevent line noise from bouncing back through the SCSI bus, the first and last physical SCSI devices on the SCSI bus must have a set of resistors called *terminators* either installed or enabled. If the terminators on the first and last SCSI device are not installed or enabled, the signal may echo when it reaches the end of the cable; that echo often seems like a real signal to the SCSI device.

Identify which two SCSI devices will form the physical endpoints of your SCSI bus. These devices at the ends of the SCSI bus must be terminated. All other SCSI devices installed between the ends of the SCSI bus must have their terminators either removed or disabled.

> **Note:** External SCSI devices are connected to an external SCSI connector mounting bracket that is attached to the AMM-1570/1572. When attached, the mounting bracket becomes a component of the board; it is not a device on the SCSI bus. See *Installing the External SCSI Connector Mounting Bracket* on page 3-8.

Internal and External Devices
When both internal and external SCSI devices are connected to the host adapter, the last external device and the last internal device cabled to the host adapter is terminated. Since the host adapter is situated in the middle of the SCSI bus, and does not form a physical endpoint, host adapter termination is disabled.
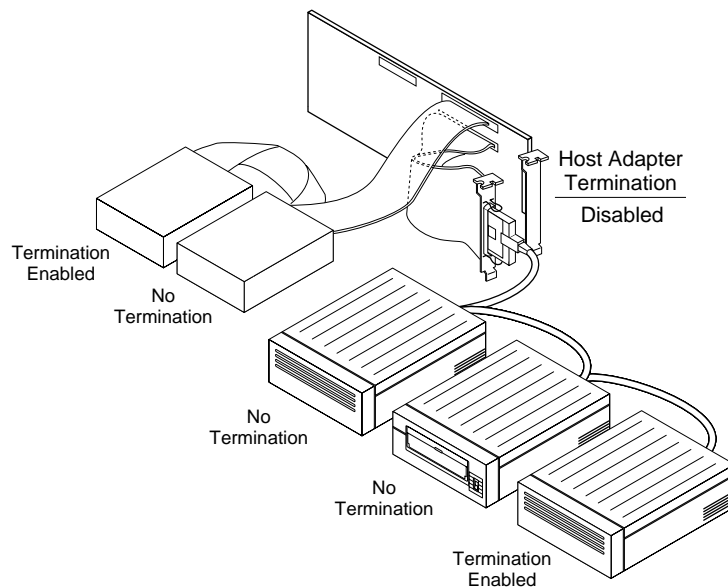
Figure 2-1. Termination With Internal and External Devices

Internal Devices Only
When only internal devices are connected to the host adapter, the last internal device cabled to the host adapter is terminated. Since the host adapter is situated at the end of the SCSI bus and forms one of the physical endpoints, host adapter termination is enabled.
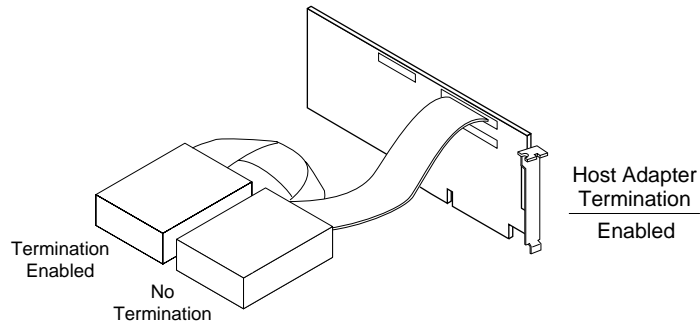
Figure 2-2. Termination With Internal Devices Only

External Devices Only

When only external devices are connected to the host adapter, the last external device cabled to the host adapter is terminated. Since the host adapter is situated at the end of the SCSI bus and forms one of the physical endpoints, host adapter termination is enabled.
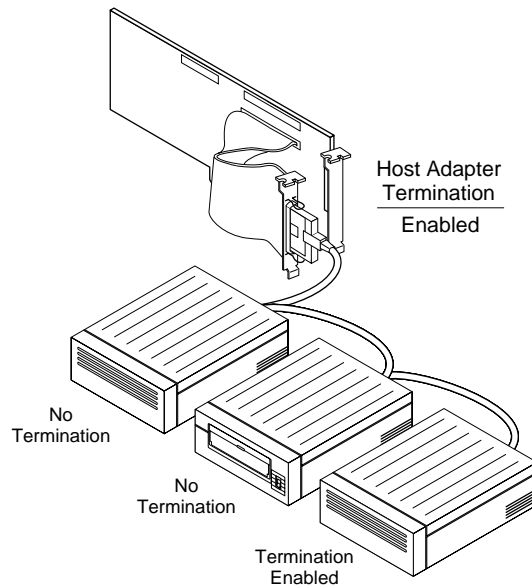
Figure 2-3. Termination With External Devices Only

2-5

Terminating SCSI Devices

Most SCSI devices use a jumper or a switch located close to their SCSI connector(s) to control termination. On some SCSI devices, you must physically remove or install terminator resistor module(s). Refer to the manufacturer's documentation to determine how to enable or disable termination on your particular SCSI device(s).

> **Note:** Since the AMM-1570/1572 always supplies termination power on the SCSI bus, termination power supplied by other SCSI devices should be disabled.

Terminating the AMM-1570/1572

Host adapter termination is determined by the types (internal and/or external) of SCSI devices connected to the AMM-1570/1572. The table below describes the possible configurations for host adapter termination.

Devices Connected To Host Adapter	Host Adapter Termination
Internal and external devices	Disabled
Internal devices only	Enabled
External devices only	Enabled

The factory installed bus terminators on the AMM-1570/1572 are located below the SCSI internal connector and are enabled (Installed) by default. To disable termination on the host adapter, remove all three terminators.
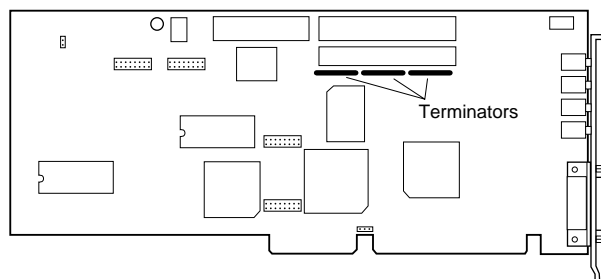
Figure 2-4. Terminators

Note: When reinstalling the terminators, make sure to maintain pin 1 orientation as shown below.
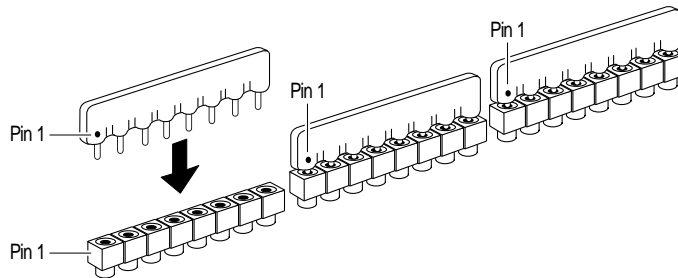
Figure 2-5. Pin 1 Orientation on the Terminators

SCSI IDs on the SCSI Bus

Each SCSI device (including the host adapter) located on the SCSI bus must be set to a unique SCSI ID. The SCSI ID serves two purposes: it uniquely defines each SCSI device's address on the bus, and it determines the device's priority on the bus during the Arbitration phase. The Arbitration phase determines which device owns the bus when two or more devices simultaneously request to use it.

When selecting the SCSI ID, consider the following:

- The default value for your host adapter is SCSI ID 7. Normally, the host adapter should always be set to SCSI ID 7, which is the ID that has the highest priority on the SCSI bus.

- Standard 8-bit SCSI devices can be assigned IDs that range from 0 to 7; SCSI ID 7 has the highest priority, and SCSI ID 0 has the lowest.

- A device's SCSI ID should be changed only if it conflicts with the SCSI ID of another device or another host adapter (assuming they are on the same SCSI bus).

- SCSI ID 0 is best reserved for the SCSI hard disk drive that will be used as your computer's boot device.

- SCSI ID 1 is best reserved for a second hard disk drive.

- SCSI IDs play no role in determining the physical order of SCSI devices cabled to the host adapter.

- If you are installing more than one SCSI host adapter, each adapter implements a different SCSI bus, so SCSI IDs can be reused.

Setting the SCSI ID on the AMM-1570/1572

Changing the SCSI ID setting on the AMM-1570/1572 is done by configuring jumper block J6 on the board. *SCSI ID* on page 2-16 lists the available settings for SCSI ID.

Setting the SCSI ID on Other SCSI Devices

The SCSI ID on most SCSI devices is typically set with jumpers or with switches on the SCSI device. Refer to the SCSI device documentation for information on changing the SCSI ID for your particular SCSI device.

Default Settings

In most cases, you will never have to change the default settings of the AMM-1570/1572; however, if you need to change any of the settings, do it before you install the AMM-1570/1572 in your system. The following table lists the AMM-1570/1572 default settings and the jumper blocks used to configure the settings. For settings and options of each jumper block, see *Configuring the AMM-1570/1572* on page 2-10.

Description	Default Setting	Jumper Block
Int 19h	Reroute Int 19h	J5
Fast SCSI Operation	Disabled	J5
Synchronous Negotiation	Disabled	J5
SCSI Disconnection	Enabled	J5
Floptical Drive Support	Disabled	J5
Extended Translation for Drives > 1GByte	Disabled	J5
Host Adapter SCSI ID	7	J6
Interrupt Channel (IRQ)	11	J6, J9[1]
SCSI Parity Checking	Enabled	J6
Floppy Disk Controller (AMM-1572 only)	Enabled	J7
I/O Port Address	340h - 35Eh	J9
BIOS Base Address	DC000h - DFFFFh	J9
Host Adapter BIOS	Enabled	J9
Sound Chip Base Address	220h	J17
Host Adapter Terminators	Installed	–

[1] Jumper blocks J6 and J9 are both used to determine the Interrupt Channel (IRQ). The appropriate pin pairs on J6 and J9 must be configured to the same IRQ.

> **Note:** *Always* refer to the documentation provided with your system for instructions on adding and configuring adapter boards.

Configuring the AMM-1570/1572

Configuring the AMM-1570/1572 involves installing or removing small plastic jumper connectors on the pins of jumper blocks located on the AMM-1570/1572.

Installing and Removing Jumper Connectors

Installing a jumper (On) means to install a small plastic jumper connector so that it covers both pins of the jumper pin pair. Removing the jumper connector or having it cover only one pin is the same as having no jumper installed (Off).

On   Off   Off
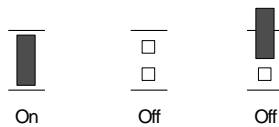
Jumper Block Locations

The AMM-1570/1572 has several configurable jumper blocks. The following figure shows the location and designation of each jumper block.
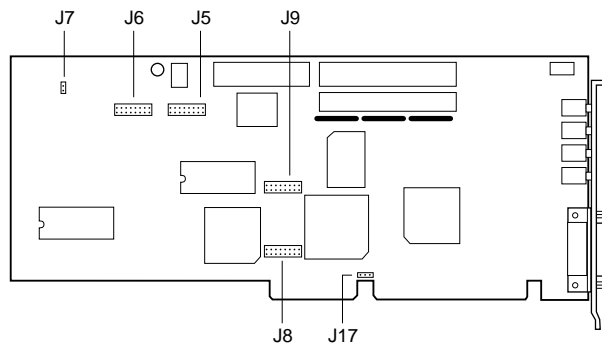
Figure 2-6. Jumper Block Locations

Jumper Block J5

Jumper block J5 configures Int 19h, Fast SCSI, Synchronous Negotiation, SCSI Disconnection, Floptical Drive Support, and Extended Translation for Drives > 1 GByte. The default configuration is
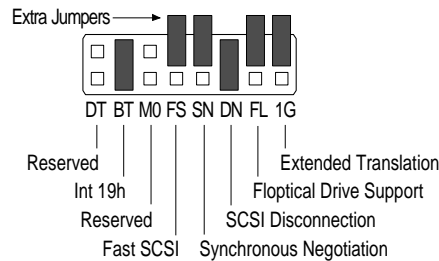
Int 19h

Pin pair BT determines whether Int 19h is rerouted. The default setting is reroute Int 19h. The available settings are
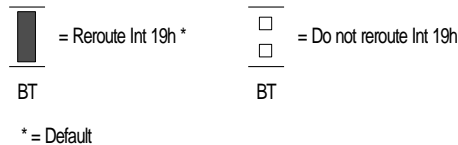
To allow for booting capability from a SCSI drive, the host adapter BIOS allows you to reroute Int 19h during system bootup. If Int 19h is not rerouted, Int 13h performs system bootup and allows bootup from a non-SCSI device (e.g., IDE drive).

Note: In the default setting the host adapter BIOS performs the booting function.

Fast SCSI Operation

Pin pair FS determines whether the host adapter initiates support for Fast SCSI Operation. The available settings are

 = Fast SCSI Operation Disabled *   = Fast SCSI Operation Enabled

FS   FS

* = Default
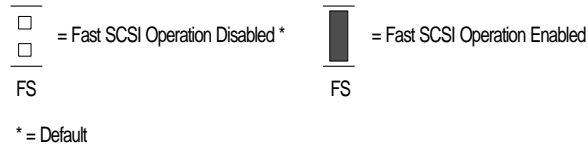
Fast SCSI devices, including the AMM-1570/1572, are capable of transferring data to and from the SCSI bus at speeds ranging from 5 to 10 MBytes/sec.

Fast SCSI Operation and Synchronous Negotiation are used in conjunction to determine request for data transfer rates:

■ If both Fast SCSI Operation and Synchronous Negotiation is enabled, the host adapter initiates a request for 10 MByte/sec data transfer.

■ If Fast SCSI Operation is enabled and Synchronous Negotiation is disabled, the Fast SCSI drive initiates a request for 10 MByte/sec data transfer.

■ If Fast SCSI Operation is disabled and Synchronous Negotiation is enabled, the host adapter initiates a request for 5 MByte/sec data transfer.

■ If both Fast SCSI Operation and Synchronous Negotiation are disabled, the Fast SCSI device initiates a request for 5 MByte/sec data transfer.

Synchronous Negotiation

Pin pair SN allows you to enable or disable whether the host adapter initiates Synchronous Negotiation with a SCSI device. The available settings are

█	= Synchronous Negotiation Enabled	□□	= Synchronous Negotiation Disabled *
SN		SN	

* = Default
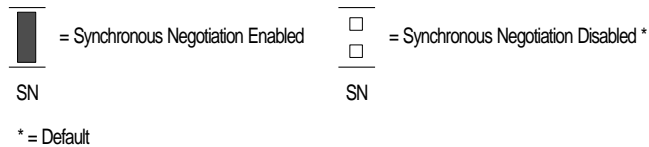
Before data is transferred across the bus, the sending (initiating) and receiving (target) devices negotiate and agree on how long each piece of data is, and how many pieces are sent at a time—that is, they agree on how fast to *talk*.

SCSI devices that support Synchronous Negotiation data transfer can maintain a much higher conversation speed than devices that do not support it.

When enabled, the host adapter initiates Synchronous Negotiation with the SCSI device. When disabled, the host adapter does not initiate Synchronous Negotiation with the SCSI device. The host adapter, however, always responds to Synchronous Negotiation initiated from the SCSI device.

If neither the host adapter nor the SCSI peripheral negotiate for synchronous data transfers, all data transfers will be asynchronous.

> **Note:** Some older SCSI-1 devices may have trouble handling Synchronous Negotiation, which may result in erratic behavior or a hang condition. For these devices, leave Synchronous Negotiation disabled.

SCSI Disconnection
Pin pair DN allows you to enable or disable SCSI Disconnection. The default setting is enabled. The available settings are

▌ = SCSI Disconnection Enabled * ☐☐ = SCSI Disconnection Disabled

DN   DN

* = Default
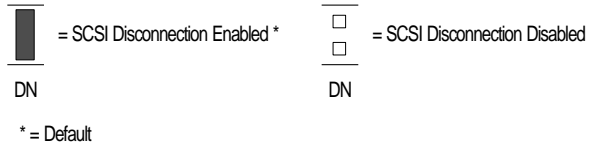
SCSI Disconnection (sometimes referred to as Disconnect/Reconnect) determines whether the host adapter allows a SCSI device to disconnect from the SCSI bus while the device completes a lengthy operation. If disconnection is allowed, the host adapter can perform other operations on the SCSI bus while the devices are temporarily disconnected.

> **Note:** A SCSI device may choose not to disconnect, even if allowed to by the host adapter (this is usually configurable on the SCSI device).

In general, disconnect should be allowed for the most efficient SCSI bus utilization and highest overall system performance. If only one SCSI device is attached to the SCSI host adapter, disconnects are not required for efficient SCSI bus utilization since only one SCSI device is using the SCSI bus. A slight performance increase may be realized if disconnect is not allowed in this case, due to the decreased SCSI overhead. In multidevice environments, disconnect should normally be allowed to take advantage of the Disconnect/Reconnect feature.

Floptical Drive Support
Pin pair FL allows you to enable or disable Floptical Drive Support. Enable this option if you are connecting a Floptical drive to the SCSI bus. The available settings are

▌ = Floptical Support Enabled   ☐☐ = Floptical Support Disabled *

FL   FL

* = Default

Extended Translation for Drive > 1GByte

This option allows you to enable or disable extended translation for a SCSI hard disk(s) with a capacity greater than 1 GByte. Appendix D, *Disk Drives Over 1 GByte* discusses the extended translation feature in detail.
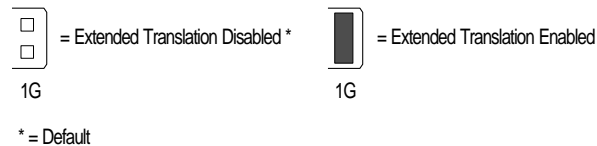
If this option is enabled, the following translation schemes are used:

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

- SCSI hard disks > 1 GByte use a translation scheme of 255 heads, 63 sectors per track.

    Caution: Back-up the data on your large capacity drive before changing the Extended Translation setting. All data may be lost!

Jumper Block J6

Jumper block J6 configures SCSI ID, Interrupt Channel (IRQ), and SCSI Parity Checking. The default configuration is
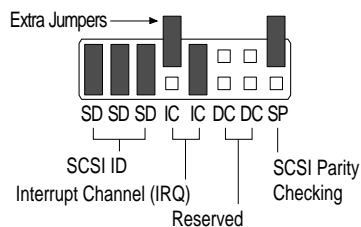
SCSI ID

Pin pairs SD, SD, and SD allow you to configure the host adapter
SCSI ID. The available settings are
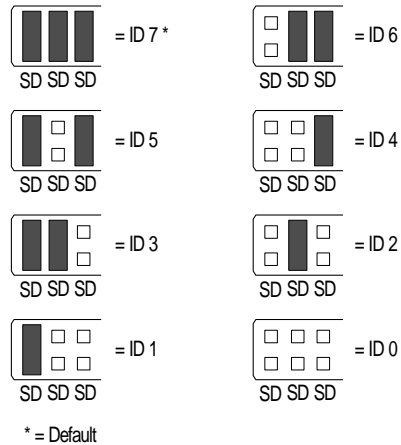
= ID 7 *	= ID 6
SD SD SD	SD SD SD
= ID 5	= ID 4
SD SD SD	SD SD SD
= ID 3	= ID 2
SD SD SD	SD SD SD
= ID 1	= ID 0
SD SD SD	SD SD SD

* = Default

Each SCSI device (including the host adapter) located on the SCSI
bus must be set to a unique SCSI ID. Refer to *SCSI IDs on the SCSI
Bus* on page 2-7 for additional information on SCSI ID.

Interrupt Channel (IRQ)

Pin pairs IC and IC allow you to configure an IRQ for the host
adapter. Each AMM-1570/1572 and expansion board installed in
your system must be assigned a unique IRQ. The IRQ channel
selected here must match the IRQ channel selected using pin pairs
I2, I1, I0, and I9 on Jumper Block J9. The available settings are

= IRQ 9	= IRQ 10
IC IC	IC IC
= IRQ 11 *	= IRQ 12
IC IC	IC IC

* = Default
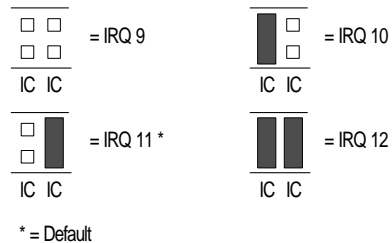
SCSI Parity Checking

Pin pair SP enables or disables SCSI Parity Checking. The available settings are


```
□        = SCSI Parity Checking Enabled *          ▮  = SCSI Parity Checking Disabled
□
SP                                                 SP
```

* = Default
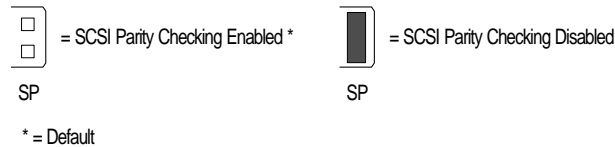
The host adapter always checks parity when reading from the SCSI bus to verify the data from your SCSI devices. If any attached SCSI device does not support SCSI parity, then SCSI Parity Checking on the host adapter should be disabled. Most devices today, however, do support SCSI parity.

Jumper Block J7 (AMM-1572 only)

Jumper block J7 enables or disables the floppy disk controller. If your floppy diskette drives are already running under another controller, disable the onboard floppy controller on the AMM-1572. To use the onboard floppy controller, leave it enabled on the AMM-1572 and then disable your existing floppy controller. The available settings are

```
▮  = Floppy                □   = Floppy
     Enabled (Default)      □      Disabled
```

Jumper Block J8

Jumper block J8 is reserved for Adaptec use.

Jumper Block J9

Jumper block J9 configures the IRQ channel and I/O Port and BIOS Base Address. The default configuration is:

```
Extra Jumper ──────►▮
              □ ▮ □ □ ▮ ▮ ▮ ▮
              □ ▮ □ □ ▮ ▮ ▮ ▮
              I2 I1 I0 I9 AL J6 J4 BE

         IRQ Channel              BIOS Enable
           I/O Port Address   BIOS Base Address
```
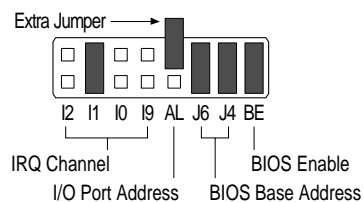
Interrupt Channel (IRQ)

Pin pairs I2, I1, I0, and I9 allow you to configure the IRQ for the host adapter. Each AMM-1570/1572 and expansion board installed in your system must be assigned a unique IRQ. The IRQ channel selected here must match the IRQ channel selected using pin pairs IC and IC on jumper block J6. The available settings are

* = Default
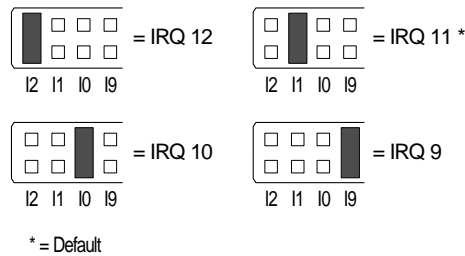
> **Note:** IRQ 9 is not recommended with Windows 3.x.

I/O Port Address

Pin pair AL configures the I/O Port Address range of the host adapter. Each AMM-1570/1572 and expansion board installed in your system must be assigned a unique I/O Port Address range. The available settings are
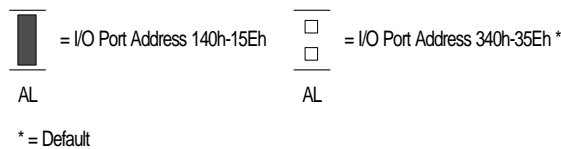
* = Default

> **Note:** The host adapter BIOS supports booting only for the default port address of 340h-35Eh.

BIOS Base Address

Pin pairs J6 and J4 configure the host adapter BIOS Base Address range. Each AMM-1570/1572 and expansion board installed in your system must be assigned a unique BIOS Base Address range. The available settings are

* = Default
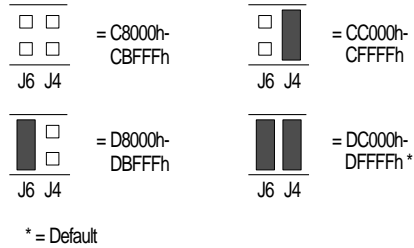
Host Adapter BIOS

Pin pair BE allows you to enable or disable the Host Adapter BIOS. The BIOS must be enabled in order to boot from a SCSI fixed disk drive attached to the host adapter, and to display BIOS messages during system bootup. The available settings are

* = Default
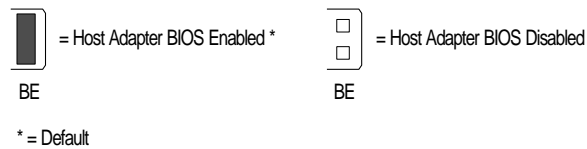
Jumper Block J17

Jumper block J17 configures the Sound Chip Base Address. The available settings are

220h (Default)   240h   Invalid
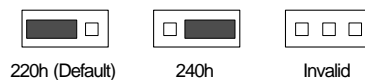
▼ ▼ ▼ ▼ **3** Installing the AMM-1570/1572

About This Chapter

Read this chapter to find out

- The instructions an experienced user can use to quickly install the AMM-1570/1572, connect SCSI devices, and connect audio equipment

- The instructions a user who is new to SCSI, or has limited experience, can use to install the host adapter, connect SCSI devices, and connect audio equipment

- An overview of the Adaptec software available to configure your operating environment for SCSI and audio operation

▼ ▼ ▼ ▼ **3**

Installation Overview

This chapter provides instructions that guide you through installing the host adapter into the computer, attaching the external SCSI connector mounting bracket for external SCSI devices, cabling devices to the SCSI bus, and connecting audio equipment.

For experienced users who are already familiar with SCSI and SCSI installation, refer to the following section, *Quick Installation*, for instructions that allow you to get your host adapter up and running quickly.

If you are new to SCSI peripherals, or if you have limited experience installing option boards in your computer, refer to the more comprehensive instructions and illustrations found in *Detailed Installation* on page 3-5.

Quick Installation

The following sections are intended to help experienced users quickly install the AMM-1570/1572 into the computer.

If you are new to computer peripheral installation or would like more information, refer to the more comprehensive instructions and illustrations found in *Detailed Installation* on page 3-5.

> **Note:** Before you physically install the board, verify that SCSI termination, SCSI ID setting, and jumper block configuration is properly configured on the AMM-1570/1572. Chapter 2, *Configuring the AMM-1570/1572*, describes termination, SCSI ID, and configuration in detail.

> **WARNING:** Before removing the chassis cover or attempting any motherboard modifications, ground yourself by touching an unpainted surface on your computer chassis, then turn OFF and disconnect power to the system and external equipment.

To install the AMM-1570/1572 in your computer:

1 Remove the chassis cover to expose the expansion slots and external access covers.

2 Install and secure the host adapter in an available expansion slot.

3 To connect internal SCSI devices, use a 50-pin SCSI ribbon cable to connect the first SCSI device to the internal connector on the host adapter. Make sure to align Pin 1 of the cable with Pin 1 of the connectors on the host adapter and internal SCSI device.

4 To connect additional internal SCSI devices, obtain a 50-pin SCSI ribbon cable with enough connectors to accommodate all of your internal SCSI devices.

5 If you are connecting external SCSI devices, install and secure the external SCSI connector mounting bracket (available from Adaptec) into an available slot cover opening next to the board.

6 Connect the ribbon cable of the external SCSI connector mounting bracket to the external SCSI connector on the host adapter.

7 To connect the first external SCSI device, use a 50-pin shielded cable to connect the device to the external SCSI connector mounting bracket.

8 To connect subsequent external SCSI devices, obtain additional 50-pin shielded cables to chain the devices together.

9 If you are using the floppy controller on the AMM-1572, use a 34-pin floppy ribbon cable and connect one end to the floppy connector on the host adapter; connect the other end to the connector on the first floppy drive (drive *A*).

10 To connect a second floppy drive, plug the middle connector of the floppy ribbon cable to the connector on the second floppy drive (drive *B*).

11 To connect audio devices, plug your devices into the appropriate jacks on the mounting bracket of the AMM-1570/1572. Any audio equipment, with the exception of the joystick and MIDI connector, connected to the AMM-1570/1572 must be equipped with a 1/8-inch plug (miniphone plug).

12   Install Adaptec software to configure your operating environment for SCSI and audio operation.

To completely install all the software necessary to operate the AMM-1570/1572, run the Adaptec EZ-SCSI program; a series of screens guide you through SCSI and audio configuration. See *Installing Adaptec Software* on page 3-19, for information on software available for the AMM-1570/1572.

Detailed Installation

This section is intended primarily for users who are new to SCSI peripherals, or have limited experience in installing an option board in their computer. Experienced users may want to refer to *Quick Installation* on page 3-3.

The comprehensive instructions in this section guide you through installing the host adapter, cabling peripherals, and connecting audio equipment.

Note: Before physically installing the board, verify that SCSI termination, SCSI ID setting, and jumper block configuration are properly configured on the AMM-1570/1572. Once the AMM-1570/1572 is installed in your computer it is very difficult to change these settings. Chapter 2, *Configuring the AMM-1570/1572*, describes termination, SCSI ID, and configuration in detail.

To assist you with installation, Figure 3-1 shows the location of all the connectors on the host adapter.
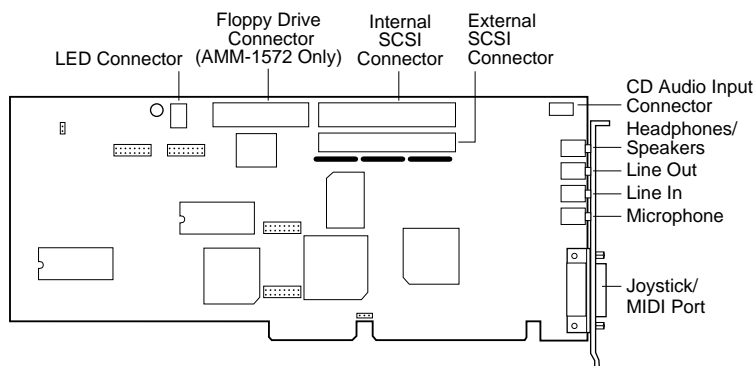
Figure 3-1. Connectors on the Host Adapter

Installing the Host Adapter

To install the host adapter in your computer, the chassis cover must be removed and the motherboard exposed. *Always* refer to your system documentation for instructions on removing the chassis cover and adding option boards, such as the AMM-1570/1572.

> **WARNING:** Ground yourself by touching an unpainted surface on your computer chassis, then turn OFF and disconnect power to the system and external equipment before removing the chassis cover or attempting any motherboard modifications.

To install the AMM-1570/1572 in your computer:

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

2 Locate an unused expansion bus slot in your system and remove the corresponding slot cover.

Unused
Expansion
Bus Slot
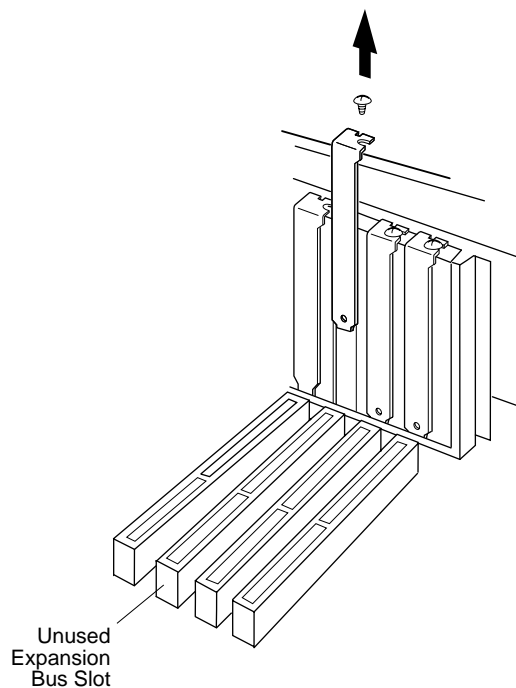
Figure 3-2. Unused Expansion Bus Slot

3 Carefully remove the AMM-1570/1572 from the antistatic bag. Place it on top of the bag if you need to set it down.

4 Align and insert the host adapter in the expansion slot.

5 Secure the host adapter in your system. Make sure the host adapter is fully seated in its slot.
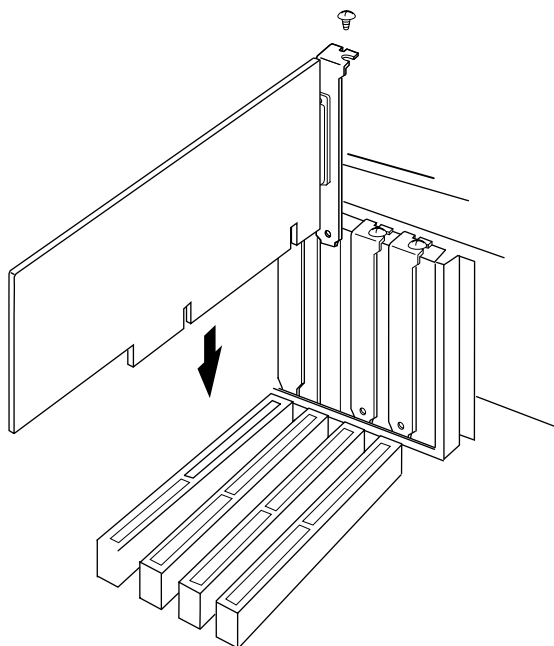
Figure 3-3. Installing the Host Adapter

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

Installing the External SCSI Connector Mounting Bracket

If you are connecting external SCSI devices to the AMM-1570/1572, you will need to install the external SCSI connector mounting bracket. The mounting bracket is available from Adaptec and is normally included with all AMM-1570/1572 kits.

To install the external SCSI connector mounting bracket:

1 Locate an unused expansion bus slot (preferably next to the AMM-1570/1572) in your system and remove the corresponding slot cover.

> **Note:** The bracket occupies the slot cover opening only and is not actually installed into the expansion slot.

2 Align and insert the bracket in the expansion slot cover opening.
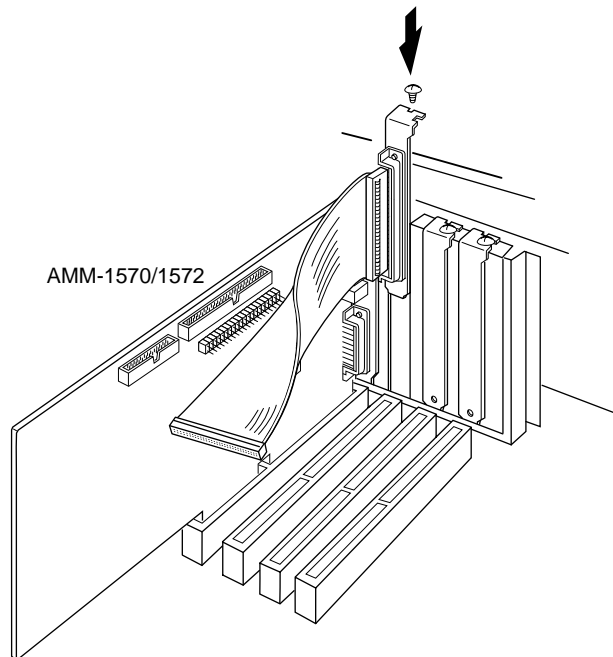
Figure 3-4. Installing the External Mounting Bracket

3   Connect the ribbon cable of the bracket to the external SCSI
connector on the AMM-1570/1572.

AMM-1570/1572

Pin 1
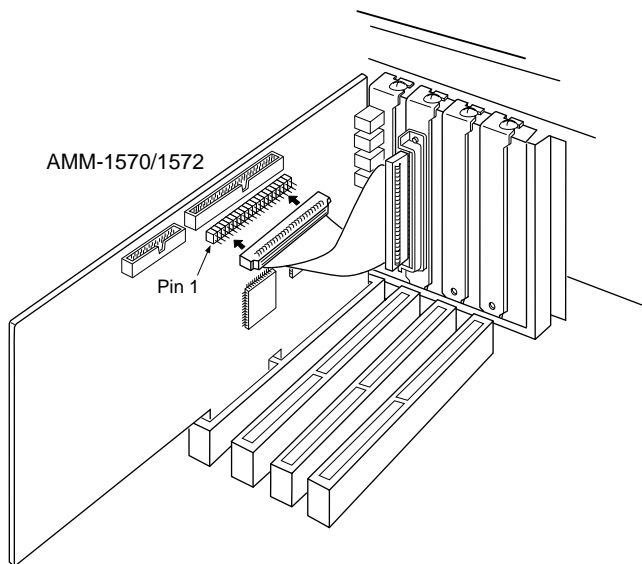
Figure 3-5. Connecting Bracket Ribbon Cable to the Host Adapter

4   Secure the bracket in your system.

Cabling the Host Adapter

The AMM-1570/1572 has two connectors for connecting SCSI
devices: one for connecting internal SCSI devices, and one for con-
necting external SCSI devices. In addition, the AMM-1572 has a con-
nector that allows you to connect up to two floppy disk drives.

>   **Note:** Only *single-ended* SCSI devices are supported by
>   the AMM-1570/1572. *Differential* SCSI devices may be
>   damaged if connected to the host adapter bus. Most
>   SCSI devices currently produced are *single-ended* SCSI
>   devices. Consult your SCSI device user documentation.

Connecting Internal SCSI Devices

Internal SCSI devices use a 50-pin flat SCSI ribbon cable with a 50-
pin header internal connector. The cable has connectors at each end
and additional connectors attached in the middle. One end of the

cable is attached to the internal 50-pin SCSI connector on the host adapter, and the internal SCSI devices are attached to the remaining connectors. Up to seven internal SCSI devices can be connected to the 50-pin internal SCSI connector.

> **Note:** Refer to the SCSI device documentation for instructions on mounting internal SCSI devices inside your computer chassis.

To connect internal SCSI devices:

1 Connect one end of the 50-pin SCSI ribbon cable to the 50-pin internal SCSI connector on the host adapter.

> **Note:** When cabling the 50-pin internal SCSI ribbon cable to both the host adapter and internal SCSI device(s), make sure that Pin 1 orientation is maintained throughout the bus. Pin 1 of the SCSI ribbon cable is designated by a colored stripe on one edge of the ribbon cable. Pin 1 of the host adapter or SCSI device connector is usually designated by an arrow or delta symbol (▲) on the connector.

Figure 3-6. 50-pin SCSI Ribbon Cable to Host Adapter

AMM-1570/1572 User's Guide
Stock Number: 510526-00, Rev. B   Page: 3-10
Print Spec Number: 492379-00
Current Date: 3/7/94   ECN Date: 3/8/94

2   Connect the other end of the 50-pin SCSI ribbon cable to the
SCSI connector on the internal SCSI device.
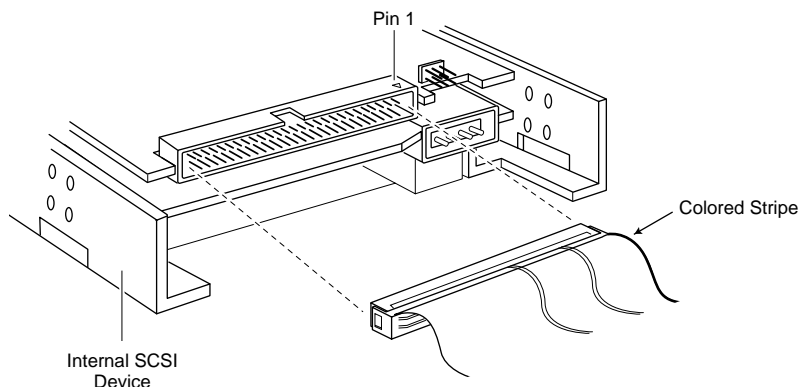
Figure 3-7. 50-pin SCSI Ribbon Cable to Internal SCSI Device

3   To connect a second internal SCSI device, plug the middle
connector of the SCSI ribbon cable to the SCSI connector on the
second internal SCSI device.
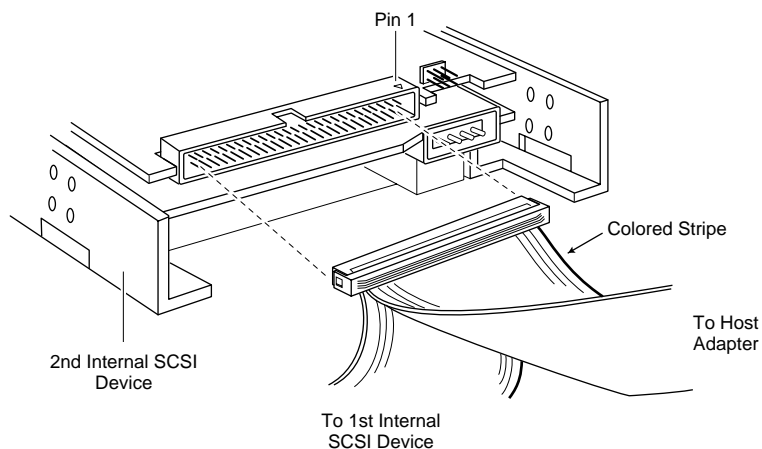
Figure 3-8. Connecting a Second Internal SCSI Device

4   To connect three or more internal SCSI devices to a SCSI bus,
obtain a 50-pin SCSI ribbon cable with enough connectors to
accommodate all of your internal SCSI devices.

Connecting External SCSI Devices

To install external SCSI devices, make sure the external SCSI connector mounting bracket is installed as explained on page 3-8.

External devices are usually daisy-chained to the host adapter. This means that a simple two-ended cable runs from the host adapter to the connector on the first external device. A second connector on the back of the external device allows another cable to connect it with the second device in the chain. Up to seven external SCSI devices can be connected to the external connector.

External SCSI devices use a 50-pin shielded cable with an external connector. External cable connectors are keyed and can only be plugged-in one way; Pin 1 orientation is automatic.

To connect external SCSI devices:

1   Connect one end of the external SCSI cable to the external SCSI connector mounting bracket.

External SCSI Connector

50-pin External SCSI Cable
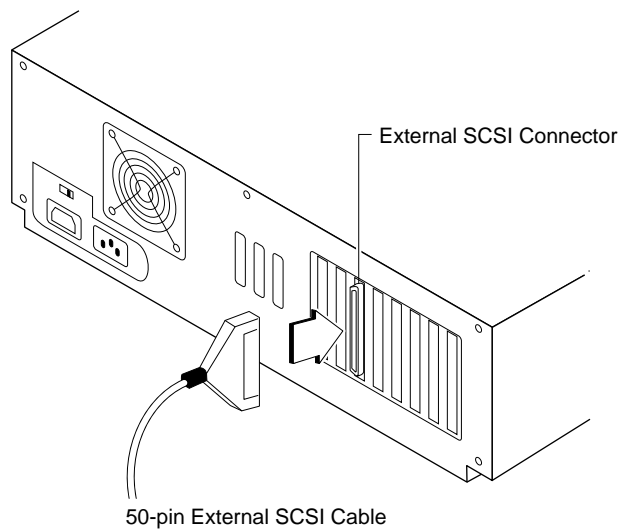
Figure 3-9. External Cable to Host Adapter

2   Connect the other end of the external cable to either one of the
SCSI connectors on the external SCSI device.
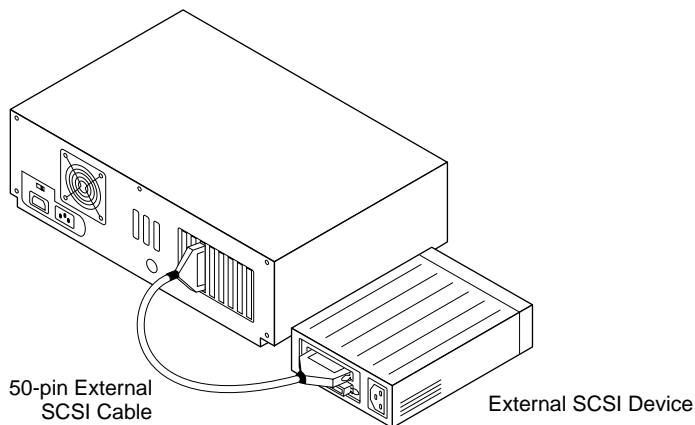
Figure 3-10. External Cable to External SCSI Device

3   To connect subsequent external SCSI devices, obtain additional
external cables and chain each device to the previous device
until all external SCSI devices have been connected.
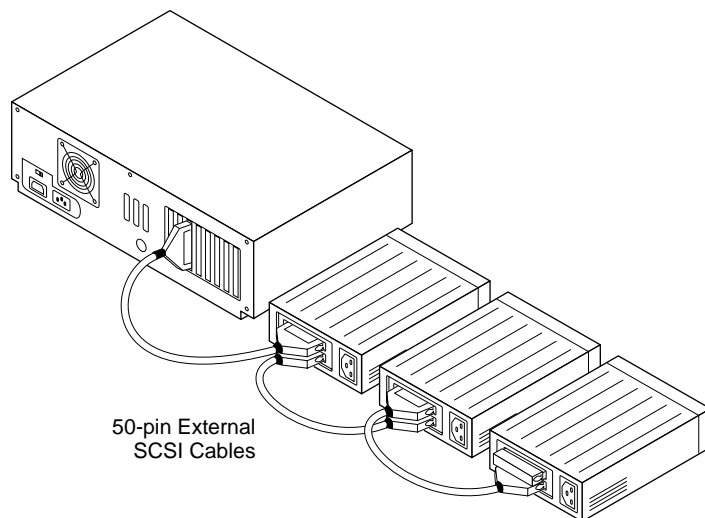
Figure 3-11. Connecting Multiple External SCSI Devices

Connecting Floppy Drives (AMM-1572 only)

Floppy disk drives are connected to the host adapter by a 34-pin floppy ribbon cable with a 34-pin header connector. Up to two floppy disk drives can be connected to the host adapter.

> **Note:** The AMM-1572 supports only floppy primary address 3F0h - 3F7h. The IRQ channel is hard-wired for channel 6 and the DMA channel is hard-wired for channel 2.

To connect floppy disk drives:

1 Connect one end of the 34-pin floppy ribbon cable to the floppy connector on the host adapter.

> **Note:** When cabling the 34-pin floppy ribbon cable to both the host adapter and floppy disk drive(s), make sure that Pin 1 orientation is maintained. Pin 1 of the floppy ribbon cable is designated by a colored stripe on one edge of the ribbon cable. Pin 1 of the host adapter or floppy drive connector is usually designated by an arrow or delta symbol (▲) on the connector.
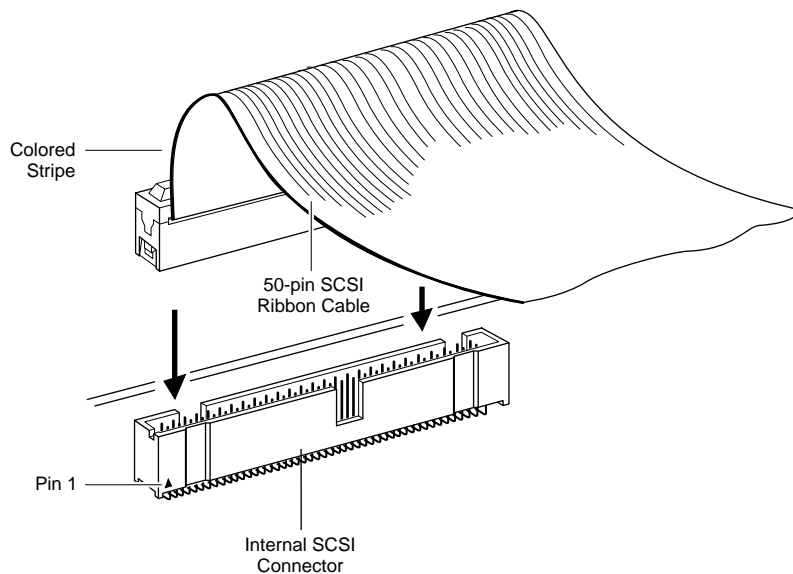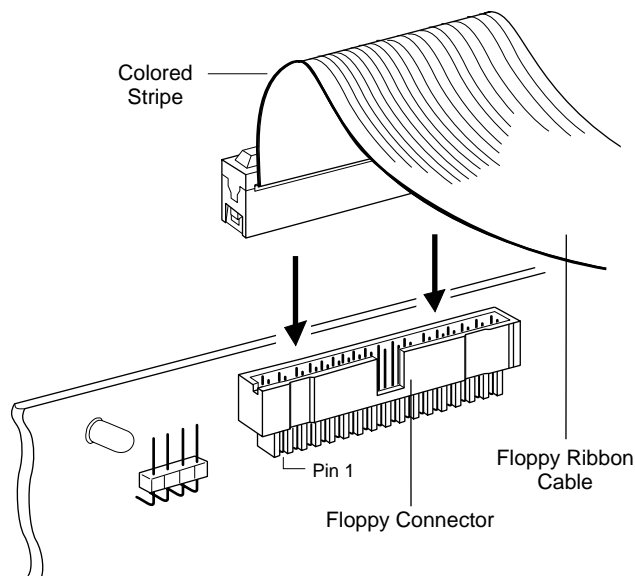

Figure 3-12. 34-pin Floppy Cable to Host Adapter

2 Connect the other end of the 34-pin floppy ribbon cable to the
connector on the first floppy drive (drive *A*).
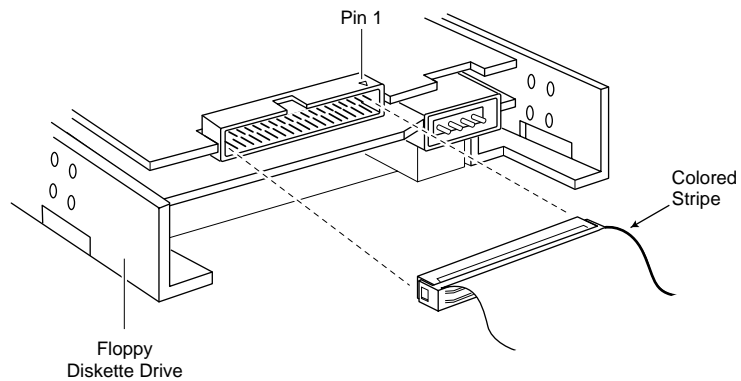
Figure 3-13. 34-pin Floppy Cable to First Floppy Drive

3 To connect a second floppy drive, plug the middle connector of
the floppy ribbon cable to the connector on the second floppy
drive (drive *B*).
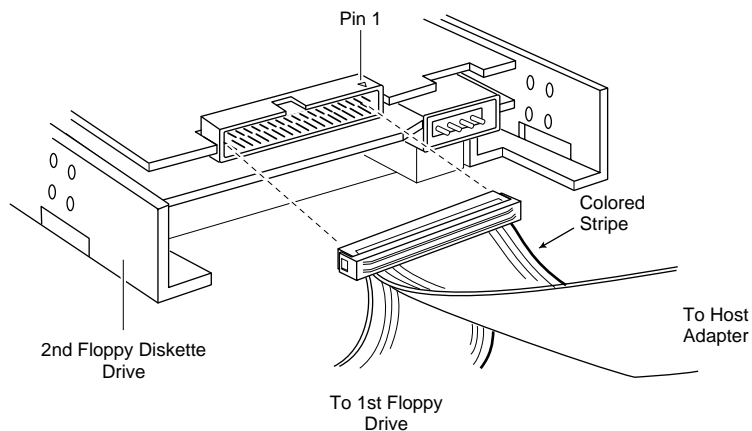
Figure 3-14. Connecting a Second Floppy Drive

Connecting the SCSI Bus Activity LED

Most computers have a disk drive activity light, usually an LED (Light Emitting Diode) on the front panel. If you connect your system's LED cable to the host adapter, the LED will light to indicate SCSI bus activity.

Note: If you connect your computer's LED to the host adapter, the LED no longer indicates non-SCSI disk activity. So you may not want to use this feature if you are running non-SCSI disk drives.

To connect the SCSI bus LED connector:

1   Refer to your system's documentation to locate and unplug the LED cable from the connector on the system board.

2   Connect the LED cable to the SCSI activity LED connector (J1) on the host adapter.

LED Cable

Pin 1
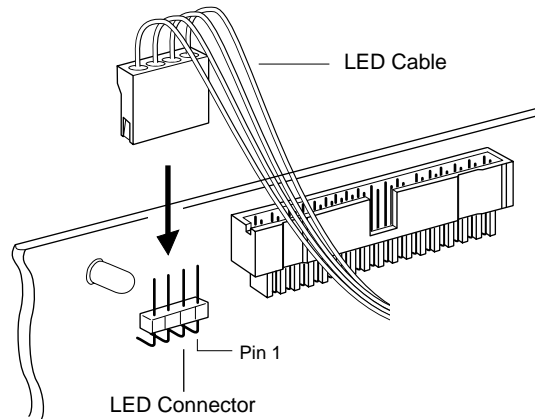
LED Connector

Figure 3-15. SCSI LED Connector

Note: On systems with a two position LED cable, connect the LED cable to pins 1 (+) and 2 (-) of the LED connector.

Connecting Audio Equipment

You can connect a variety of audio equipment to the AMM-1570/
1572, such as headphones, powered or nonpowered external speak-
ers, tape decks, CD players, joystick and MIDI connector, etc.

With the exception of the joystick and MIDI connector, any audio
equipment connected to the AMM-1570/1572 must be equipped
with a 1/8-inch plug (miniphone) to plug into the audio jacks on the
AMM-1570/1572. The following figure shows some of the audio
equipment you can use and where to plug the equipment into the
jacks on the mounting bracket of the AMM-1570/1572.
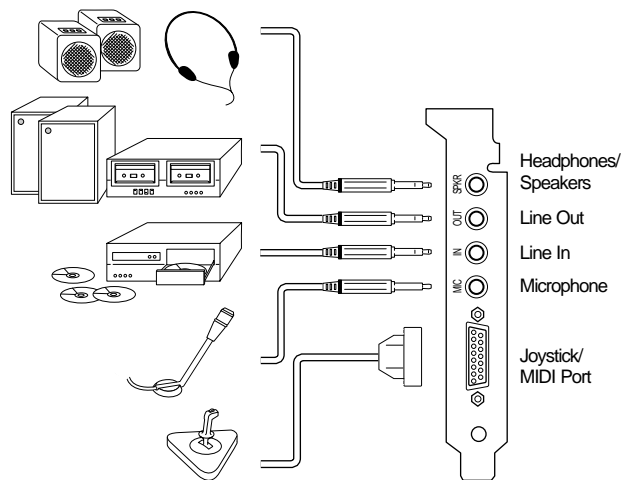
Figure 3-16. Connecting Audio Equipment to the Host Adapter

Speaker (SPKR) Jack
The SPKR jack allows you to connect headphones or external speak-
ers (powered or nonpowered speakers).

Line-out (OUT) Jack
The OUT jack allows you to connect audio equipment for audio out-
put from the AMM-1570/1572. Typical equipment includes stereo
receivers, amplifiers, amplified speaker systems, and tape decks.
Use an RCA-to-stereo miniphone cable to plug your equipment into
the OUT jack.

3-17

Line-in (IN) Jack
The IN jack allows you to connect audio equipment for audio input to the AMM-1570/1572. Typical equipment includes stereo receivers, amplifiers, tape decks, and CD players. Use an RCA-to-stereo miniphone cable to plug your equipment to the IN jack.

> **Note:** Audio input from a CD-ROM drive to the AMM-1570/1572 is accomplished by connecting a separate audio cable (provided by the CD-ROM drive manufacturer) from the Line-level Output (Audio Out) connector on the drive to the CD Audio Input connector (J4) on the AMM-1570/1572.
>
> Since the Line-level Output is a nonstandard connector and can vary depending on the CD-ROM manufacturer, the type of audio cable used can also vary. Refer to the CD-ROM drive documentation for information on connecting your drive to the CD-Audio Input on sound cards such as the AMM-1570/1572. To have a customized cable made, pinouts for connector J4 on the AMM-1570/1572 are described in Appendix A, *Specifications.*

Microphone (MIC) Jack
The MIC jack allows you to connect any standard microphone with a miniphone plug.

Joystick/MIDI Port
The Joystick/MIDI port on the AMM-1570/1572 is identical to that on a standard PC game control adapter or game port. Any standard PC joystick (i.e., an analog joystick with a 15-pin D-subconnector) can be connected to the Joystick/MIDI port.

The Joystick/MIDI port also provides access to the Musical Instrument Digital Interface (MIDI). MIDI is a serial bus, digital interface that allows you to connect electronic musical devices, such as keyboards and synthesizers to your computer.

In order to use the AMM-1570/1572 for MIDI recording, you must first obtain a MIDI adapter and MIDI software. The MIDI adapter plugs into the Joystick/MIDI port. Typically the MIDI adapter also includes a separate joystick port that allows you to have both MIDI and joystick capabilities at the same time. For more information on

MIDI recording, refer to the documentation that accompanies your MIDI adapter and software.

Installing Adaptec Software

Two Adaptec software packages are available to configure your operating environment for SCSI and audio operation: Adaptec EZ-SCSI and Adaptec EZ-Audio. Both packages are available from Adaptec and are normally included with all AMM-1570/1572 kits.

Adaptec EZ-SCSI

If you are running MS-DOS or MS-DOS with Windows, Adaptec EZ-SCSI makes driver installation a simple task. Adaptec EZ-SCSI is a menu-driven software package that automatically configures your operating environment for SCSI operation. Refer to the *EZ-SCSI User's Guide* for complete information.

To run EZ-SCSI, simply insert the EZ-SCSI installation diskette into the floppy drive and type Install at the appropriate DOS prompt. Towards the end of EZ-SCSI installation, you are asked if you would like EZ-SCSI to install Adaptec EZ-Audio. To install Adaptec EZ-Audio, you will need the Adaptec EZ-Audio installation diskette.

Adaptec EZ-Audio

Adaptec EZ-Audio is a menu-driven software package that upgrades your system to have audio capabilities; it automatically installs the audio software and configures your operating environment.

To run EZ-Audio, select **Yes** at the end of EZ-SCSI installation when prompted, or insert the EZ-Audio installation diskette into the floppy drive and type Install at the appropriate DOS prompt. Refer to the *EZ-Audio User's Guide* for detailed instructions.

> **Note:** For first time installation, we recommend that you run Adaptec EZ-Audio from the Adaptec EZ-SCSI program. Adaptec EZ-SCSI allows you to completely install all the software necessary to operate the AMM-1570/1572.

Before Restarting Your System

Before restarting your system and configuring your host adapter, make sure the following is completed:

- The SCSI bus is properly terminated.

- Each SCSI device on the SCSI bus is set to a unique SCSI ID (0-7).

- The host adapter is firmly seated and secured in the expansion bus slot.

- Internal SCSI devices are connected to the host adapter with a 50-pin SCSI ribbon cable and that proper Pin 1 orientation is maintained.

- External SCSI devices are cabled to the host adapter with 50-pin shielded cables.

- If using the onboard floppy controller on the AMM-1572, the floppy diskette drive is connected to the host adapter with the 34-pin floppy ribbon cable and that proper Pin 1 orientation is maintained.

- All system and power cables are properly connected.

Reassemble the System

Refer to your system and SCSI device documentation to replace the system cover and connect all system and SCSI device power cables. Your computer and host adapter are now ready to use.

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▼▼▼▼ **4** Troubleshooting

About This Chapter

Read this chapter to find out

- How to use the troubleshooting checklist to solve some of the more common problems you may encounter

- How to fix specific operating problems

- The ASPI manager error messages and the conditions in which they occur

▼ ▼ ▼ ▼ 4

SCSI Troubleshooting Checklist

The AMM-1570/1572 host adapters have been tested for compatibility with popular SCSI devices. Most problems that might occur during installation can be traced to errors in preparing devices on the SCSI bus.

The following suggestions should help you to solve any problems that you may encounter. If you need additional help in getting the host adapter running properly, information on contacting Adaptec Technical Support is included on page ii.

If a problem occurs during installation, check these items first:

- Be sure all cables are properly connected. Check both power and SCSI interface cables. See *Detailed Installation* on page 3-5.

  Connect internal peripherals to your computer's power supply; plug external peripheral power cables into a grounded line power outlet. Follow the instructions in the hardware documentation.

- Be sure the host adapter is firmly seated and secured in the expansion slot it is installed in.

- Check SCSI bus termination. The devices at the ends of the bus must be terminated. See *Termination on the SCSI Bus* on page 2-3.

- Be sure the SCSI devices and host adapter are each set to a unique SCSI ID (0-7). See *SCSI IDs on the SCSI Bus* on page 2-7.

- If you have installed more than one SCSI host adapter make sure that only one host adapter BIOS is enabled at a time.

If your problem is still not resolved, continue with the next section.

Operating Problems

The system will not boot from the standard floppy drive or hard drive after initial hardware installation.

- The LED on the host adapter should light up briefly when you power up the system. If the host adapter detects an internal failure, a message is displayed on the screen. Return the board to the place where you bought it for repair or replacement.

- If both the host adapter and SCSI drive LEDs always remain on, the pin 1 orientation of the SCSI cable is probably reversed between the host adapter and the drive. Make sure that pin 1 orientation is maintained throughout the bus as explained in *Connecting Internal SCSI Devices* on page 3-9.

- If the host adapter BIOS message is not displayed on the screen, the system does not recognize the BIOS.

  - Check for BIOS and I/O port address conflicts between the host adapter and other option boards.

  - Try a different BIOS address. Refer to *Jumper Block J9* on page 2-17.

  - Make sure the host adapter BIOS is enabled. The jumper on pin pair BE of jumper block J9 must be installed (factory default).

- If you see the message Host Adapter Not Found At Port 340h, check the I/O port address jumper setting. Refer to *Jumper Block J9* on page 2-17.

- Make sure that the floppy disk drive is cabled correctly.

- Make sure only one floppy controller is enabled in the system.

The system does not boot from the SCSI hard disk drive, and the Adaptec logo does not appear on the screen during system bootup.
This problem indicates that the host adapter BIOS is not running.

- Make sure the BIOS is enabled and that a jumper connector is installed on pin pair BE of jumper block J9.

- Make sure that the host adapter is firmly seated in the expansion bus slot.

- Make sure that there is no SCSI ID addressing conflict.

■ If your system has only SCSI disk drives, make sure your computer's CMOS *setup* is set to No Drives Installed, as is required for SCSI host adapters.

■ If necessary, back up all data on the desired boot hard disk and perform a high-level or low-level format.

■ If your system is running under DOS, be sure that the intended boot disk has an active DOS partition and a DOS format.

■ If your system is attempting to boot from the SCSI hard drive, make sure the SCSI ID of the hard drive you want to boot from is set to 0.

■ Make sure that SCSI parity is consistently enabled or disabled on all devices on the SCSI bus.

■ Make sure that SCSI termination is properly set on the host adapter and SCSI devices. (See *Termination on the SCSI Bus* on page 2-3.)

The *aspi2dos.sys* ASPI manager is installed; however, the system will not boot from the SCSI hard disk drive, and the *aspi2dos* logo does not appear on the screen.

■ Make sure *aspi2dos.sys* is located in the root directory of the boot drive.

■ Make sure the *config.sys* file contains the following entry:

    device=c:\...\aspi2dos.sys /d

The system is having difficulties using a SCSI drive as drive *D* and a standard hard disk as drive *C*.

■ Make sure hard disk 1 (*D*) is set to Not Installed or No Drive Installed with your CMOS *setup* program.

■ Make sure the SCSI drive used as drive *D* is set to SCSI ID 0. Check your drive manual for information on setting the SCSI ID for that device.

■ Make sure SCSI parity is consistently enabled or disabled on all devices on the SCSI bus.

■ Make sure SCSI termination is properly set on the host adapter and SCSI devices.

■ If your system is running under DOS, make sure the disk has a DOS partition.

4-5

The system is having difficulties using a SCSI drive as drive *D* and another SCSI drive as drive *C.*

- Make sure that both standard hard disks are set to Not Installed or No Drive Installed with your CMOS *setup* program.

- Make sure the SCSI drive used as drive *D* is set to SCSI ID 1. Check your drive manual for information on setting the SCSI ID for that device.

- Make sure SCSI parity is consistently enabled or disabled on all devices on the SCSI bus.

- Make sure SCSI termination is properly set on the host adapter and SCSI devices.

- If your system is running under DOS, make sure that the disk has a DOS partition.

The system works erratically; it hangs, or the host adapter cannot locate the drives.

- Make sure SCSI parity is consistently enabled or disabled on all devices on the SCSI bus.

- Make sure SCSI termination is set correctly on the host adapter and the peripherals.

- Check cable length and integrity. Total cable length should be no longer than 6 meters for the entire SCSI bus. If Fast SCSI Operation is enabled, total cable length should be no longer than 3 meters for the entire SCSI bus.

Playing audio CDs from your CD-ROM drive works fine in DOS, but when trying to play audio CDs while in Windows, you get a message similar to *NO CD ROM FOUND....*

- The [MCI] CD Audio driver is needed in order to play audio CDs while in Windows. Use the Drivers option in Control Panel to install the [MCI] CD Audio driver.

While playing audio CDs from your CD-ROM drive, you can not hear any sound while plugged into the SPKR jack on the AMM-1570/1572, but if you plug into the audio/headphone jack on the CD-ROM drive it works fine.

- A separate audio cable provided by the CD-ROM manufacturer must be connected from the Line-level Output (Audio Out) connector on the CD-ROM drive to the CD Audio Input connector (J4) on the AMM-1570∕1572. Refer to *Line-in (IN) Jack* on page 3-18.

ASPI Manager Error Messages

This section list error messages and the conditions which they may be displayed.

aspi2dos.sys Error Messages

Failed to initialize HA

Check the host adapter and reinstall if necessary. Check jumpers and cables.

aspi2dos.sys Installation Failed

Check the contents of your *config.sys* file. Remove all unnecessary device drivers (including all memory managers) until *aspi2dos.sys* installs successfully; then reload the other drivers one at a time to find the driver that is causing the problem. Try installing *aspi2dos.sys* on the first line of your *config.sys.* file.

Illegal or no Hex Digit Found on command line option
Illegal Digit Found on command line /x option

Check the syntax of the statements in your *config.sys* file. There may be an invalid digit on the command line.

aspidisk.sys Error Messages

aspidisk.sys is NOT installed

Check the contents of your *config.sys* file. Remove all unnecessary device drivers until *aspidisk.sys* installs successfully; then reload the drivers one at a time to find the driver that is causing the problem.

Be sure that the disk device you want to control with *aspidisk.sys* is not under the control of the host adapter BIOS. (If enabled, the host adapter BIOS controls the SCSI drives installed at SCSI IDs 0 and 1, and *aspidisk.sys* is not required.)

4-7

Unable to open ASPI manager!
No ASPI manager is loaded. Be sure that *aspi2dos.sys* is listed before *aspidisk.sys* in the *config.sys* file. Be sure that the ASPI drivers are in the root directory of the boot drive. You can also put the drivers in a subdirectory, as long as you specify a correct path in the *config.sys* file. For example, if you put the drivers in a subdirectory called *c:\drivers*, then you need the following line in your *config.sys* file:

    device=c:\drivers\aspi2dos.sys

Invalid DOS version. DOS must be version 3.21 and above.
aspidisk.sys requires MS®-DOS or PC-DOS 3.21 or higher. It does not load if it detects an earlier version of DOS.

Other Error Messages

Host adapter at port address *xxx* failed diagnostics.
xxx = the port address. This message indicates that there is no host adapter at that port address, that there is an address conflict, or that the host adapter is defective. Reinstall the host adapter. Check cables and jumpers. Check for I/O address conflicts. Confirm that the contents of the motherboard CMOS are set correctly with the *Setup* program.

Failed scanning for SCSI devices.
The driver failed when scanning the SCSI bus for SCSI devices. Be sure that the SCSI drive's jumpers for SCSI ID and LUN are set correctly. Be sure that all SCSI devices are powered up. Check SCSI bus termination, SCSI parity, and cabling.

Get device type failed
Check with your drive manufacturer to ensure that you have the latest firmware for your SCSI drive.

Get number of heads failed
Read SCSI drive capacity failed
If the driver is unable to determine capacity for drives 0 through 7, contact the drive manufacturer. Low-level formatting may be needed.

Failed to read master boot record
Failed to read boot record
This indicates problems reading records off the disk. Check SCSI cabling.

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▼▼▼▼ **A** Specifications

About This Appendix

Read this appendix to find out

- Technical specifications of the AMM-1570⁄1572, SCSI interface, and floppy disk interface

- Pin assignments for the internal and external SCSI connectors

- Pin assignments for the Audio Input Connector (J4)

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Technical Information

The basic technical specifications of the host adapter are described below. If you need more detailed information, contact Adaptec's Literature Department at the phone number listed in *Literature Hotline* on page iii.

Product Specifications

Physical Dimensions

Length:	10.87 inches (27.6 cm)
Width:	1.0 inches (2.54 cm)
Height:	4.5 inches (11.43 cm)

Power Requirements

Voltage:	+5.0 +/- 0.5 V
Current:	2.0 A maximum

Environmental Requirements

Temperature

Operating:	0^oC (32^oF) to 55^oC (131^oF)
Storage:	0^oC (32^oF) to 55^oC (131^oF)

SCSI Interface

Electrical Interface

These are the specifications listed in ANSI X3.131-1986 for single-ended operation.

Output Signals
All signals use open-collector or three-state drivers. Each signal driven by a SCSI device has the following output characteristics when measured at the SCSI device's connector:

Signal	Definition	Characteristics
V_{OL}	Low-level output voltage	0.0 to 0.5 volts DC at 48 mA sinking (signal assertion)
V_{OH}	High-level output voltage	2.5 to 5.25 volts DC (signal negation)

Input Signals
SCSI inputs meet the following electrical characteristics on each signal, including both receivers and passive drivers:

Signal	Definition	Characteristics
V_{IL}	Low-level input voltage	0.0 to 0.8 volts DC (signal true)
V_{IH}	High-level input voltage	2.0 to 5.25 volts DC (signal false)
I_{IL}	Low-level input current	-0.4 to 0.0 mA at V_1=0.5 volts DC
I_{IH}	High-level input current	0.0 to 0.1 mA at V_1=2.7 volts DC

Minimum input hysteresis = 0.2 volts DC.
Maximum input capacitance = 25 pF (measured at the device connector closest to the stub, if any, within the device).

50-pin Internal SCSI Connector
The 50-pin internal SCSI connector must be an unshrouded 50-pin header, compatible with unshielded Alternative 2 connector. The following table lists the pin assignments for the internal connector.

Signal Name	Pin	Pin	Signal Name
Ground	1	2	-DB(0)
Ground	3	4	-DB(1)
Ground	5	6	-DB(2)
Ground	7	8	-DB(3)
Ground	9	10	-DB(4)
Ground	11	12	-DB(5)
Ground	13	14	-DB(6)
Ground	15	16	-DB(7)
Ground	17	18	-DB(P)
Ground	19	20	Ground
Ground	21	22	Ground
Ground	23	24	Ground
Open	25	26	Term Power (Fused)
Ground	27	28	Ground
Ground	29	30	Ground
Ground	31	32	-ATN
Ground	33	34	Ground
Ground	35	36	-BSY
Ground	37	38	-ACK
Ground	39	40	-RST
Ground	41	42	-MSG
Ground	43	44	-SEL
Ground	45	46	-C/D
Ground	47	48	-REQ
Ground	49	50	-I/O

50-pin External SCSI Connector

The 50-pin external SCSI connector must be a shielded 50-pin high density (Alternative 2) connector. The following table lists the pin assignments for the external connector.

Signal Name	Pin	Pin	Signal Name
Ground	1	26	-DB(0)
Ground	2	27	-DB(1)
Ground	3	28	-DB(2)
Ground	4	29	-DB(3)
Ground	5	30	-DB(4)
Ground	6	31	-DB(5)
Ground	7	32	-DB(6)
Ground	8	33	-DB(7)
Ground	9	34	-DB(P)
Ground	10	35	Ground
Ground	11	36	Ground
Ground	12	37	Reserved
Open	13	38	Term Power (Fused)
Ground	14	39	Reserved
Ground	15	40	Ground
Ground	16	41	-ATN
Ground	17	42	Ground
Ground	18	43	-BSY
Ground	19	44	-ACK
Ground	20	45	-RST
Ground	21	46	-MSG
Ground	22	47	-SEL
Ground	23	48	-C/D
Ground	24	49	-REQ
Ground	25	50	-I/O

Floppy Disk Interface

Standard Electronic and Physical Interface

Driver Output Signals:	
V_{OL}	0 volts minimum, 0.5 volts maximum
V_{OH}	Open collector, 5.25 volts maximum
I_{OL}	60 mA
I_{OH}	0.1 mA
Receiver Input Signals:	
V_{T-}	1.0 volts maximum
V_{T+}	1.4 volts minimum

Tied to +5 volt supply through 150 ohm resistors. Schmitt Trigger with 0.8-volt hysteresis.

Connector
The floppy disk interface connector should be an unshrouded 34-pin header.

Audio Input Connector (J4) Pinouts

The pinouts for J4 are as follows:

Pin	Signal Name
1	Ground
2	Right
3	Ground
4	Left

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▼▼▼▼ B I/O Operating Environment

About This Appendix

Read this appendix to find out

- If embedded support for your host adapter is available with your operating system

- Whether you need additional software for your host adapter in the DOS/Windows environment

- Information on Adaptec's EZ-SCSI I/O Operating Environment Software

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Host Adapter Support

You may not need to install additional environment software in order to use your host adapter. 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.

> **Note:** Until embedded support is provided for your particular operating system, host adapter drivers for the AMM-1570/1572 may be available from Adaptec. To order Adaptec software, call the number for ordering Adaptec software listed in *Ordering Software and Cables* on page iii.

DOS/Windows

Under MS-DOS 5.0 or higher, up to seven SCSI hard disk drives can be connected to the AMM-1570/1572 without additional software. Older versions of DOS support up to two hard disk drives. Additional software (e.g., Adaptec EZ-SCSI) is required if you want to

- Support more than two fixed disk drives under versions of DOS prior to MS-DOS 5.0

- Support more than eight fixed disk drives (seven per host adapter) under MS-DOS 5.0 or higher

- Remove or switch removable media (for example, Bernoulli® cartridges) while your computer is running

- Support CD-ROM drives

- Support devices other than disk drives–for example: SCSI tape drives, scanners, plotters, or WORM drives

Adaptec EZ-SCSI

If you are running MS-DOS or MS-DOS with Windows, Adaptec EZ-SCSI I/O Operating Environment Software makes driver installation easier than ever before. Adaptec EZ-SCSI is a menu-driven software package that configures your operating environment automatically for SCSI operation.

Adaptec EZ-SCSI has a number of utility programs including *afdisk* and *scsifmt*, which are used to partition and format SCSI disk devices. Adaptec EZ-SCSI also includes an ASPI device driver called *aspicd* that supports most models of CD-ROM drives, including single-session and multi-session Photo CD; and an *aspidisk* device driver, which supports up to 24 fixed disk devices.

To install support for SCSI devices other than fixed disk devices and CD-ROM drives, check the hardware documentation for those devices. If the device requires ASPI support, you first need to run Adaptec EZ-SCSI to install an ASPI manager, and then install any other software provided with the device. If the device is designed to interface directly with the host adapter, no ASPI manager is required. Refer to the *Adaptec EZ-SCSI User's Guide* for instructions on installing and running Adaptec EZ-SCSI.

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▼▼▼▼ C Optimizing Performance

About This Appendix

Read this appendix to find out

■ How to optimize your system's performance after installing the host adapter

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Performance Tips

The AMM-1570/1572 is designed to maximize the performance of your SCSI devices and computer. The following tips will help you take full advantage of the host adapter's advanced design features.

Enabling Synchronous Negotiation

Synchronous Negotiation is disabled by default on the AMM-1570/ 1572. You should normally enable this option on the host adapter because most SCSI devices support it and it allows data to be transferred faster on the bus. Because a few SCSI devices (e.g., certain CD-ROM drives) do not support Synchronous Negotiation and may malfunction if they receive a request for it, you may want to keep Synchronous Negotiation disabled.

> **Note:** Even when Synchronous Negotiation is disabled on the host adapter, the host adapter switches to Synchronous Mode if it receives a request from the SCSI device.

Disabling the Host Adapter BIOS

Disabling the host adapter BIOS saves you 16 KBytes of memory address space and can also shorten bootup time.

You should disable the host adapter BIOS if the peripherals on the SCSI bus (for example, CD-ROM drives) are all controlled by software device drivers and do not require BIOS control. When the host adapter BIOS is disabled, you can no longer boot from the SCSI hard disk.

Enabling SCSI Parity Checking

SCSI Parity Checking is a procedure used by the host adapter to verify the accuracy of data transfer on the SCSI bus. Data verification is a desirable option, so SCSI Parity Checking is normally enabled by default. To use this option most effectively, be sure that it is enabled on each SCSI device, as well as on the host adapter. To enable/disable

SCSI Parity Checking on the host adapter, See *SCSI Parity Checking* on page 2-17. Consult your hardware documentation for instructions on enabling SCSI Parity Checking on peripherals.

> **Note:** The only time you should disable SCSI Parity Checking on the host adapter is when your system includes a SCSI device that does not support this option. Again, consult the hardware documentation for the device.

Setting Enable Disconnection

In the DOS environment you can increase performance slightly if you disable SCSI Disconnection when there is only a host adapter and a single disk device on the SCSI bus. You should enable this option, however, if you have more devices on the SCSI bus.

Fast SCSI Operation

If you have SCSI-2 devices, and would like to transfer data at 10 MBytes/sec, Fast SCSI Operation must be enabled. When Fast SCSI Operation is enabled, the total length of all cables (internal and external) connected to the bus should not exceed 3 meters to ensure reliable operation.

DOS/Windows Performance

Adaptec's EZ-SCSI I/O Operating Environment Software is designed not only to simplify installation of device drivers under DOS, but also includes ASPI management software to provide enhanced Windows support. The drivers that are installed will give DOS users the best performance possible under not only DOS, but Windows.

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▼▼▼▼ D Disk Drives Over 1 GByte

About This Appendix

Read this appendix to find out

- An overview of extended translation and the DOS 1 GByte limit

- When to use the extended translation feature

- Questions and answers about extended translation

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Extended Translation (Using MS-DOS 5.0)

Adaptec host adapters have always supported the full range of disk drive sizes under all major operating systems. As disk drives have recently grown beyond 1 GByte in formatted capacity, they have run up against the DOS 1024 cylinder limit.

To continue its support for all SCSI disk drive capacities under DOS, Adaptec has introduced an extended translation scheme for the AMM-1570/1572. This feature supports disk drives up to 8 GBytes in size under DOS. To enable this feature, refer to *Extended Translation for Drive > 1GByte* on page 2-15.

The DOS 1 GByte Limit

All current versions of DOS are limited to 1024 cylinders per drive. The standard translation scheme for SCSI host adapters, using 64 heads and 32 sectors, provides a maximum accessible capacity of 1 GByte.

To eliminate the 1 GByte limit, Adaptec's extended translation feature uses 255 heads and 63 sectors, extending the disk drive capacity limit under DOS to 8 GBytes; the maximum partition size is 2 GByte.

> **Caution:** If you have already partitioned a large disk drive with one translation method, conversion to another method will erase your data. Be sure to back up your disk drive prior to any change in the translation method used.

When to Use Extended Translation

With MS-DOS 5.0 and Above

NetWare® 386 and the newer versions of UNIX® do not share the 1024 cylinder limit of DOS and do not require extended translation to support large disk drives.

Drives With Mixed Partitions

Do not use extended translation on drives formatted with two or more partitions for different operating systems. Use standard translation. The sum of the DOS partitions will be less than 1 GByte. Partitions for UNIX and NetWare can be larger than 1 GByte when using standard translation.

> **Note:** UNIX is understood to be AT&T®/USL all versions, SCO® 3.2.4 (or later) and ISC 3.0 (or later).

Using Fdisk

To install a new disk, or to repartition an existing disk, use the *fdisk* DOS utility as you normally would. The cylinder size increases to 8 MBytes when you enable extended translation. The size of the partition you request must therefore be a multiple of 8 MBytes. If you request a partition size that is not a multiple of 8 MBytes, *fdisk* will round up to the nearest whole multiple of 8 MBytes.

## Questions and Answers About Extended Translation

What happens if I enable extended translation with SCSI drives that are less than 1 GByte in capacity?
Drives handled by the BIOS use extended translation provided they are over 1 GByte in formatted capacity. Drives with less than 1 GByte of formatted capacity use standard translation regardless of whether extended translation is enabled.

What if I have more than two fixed disk drives on the host adapter?
You can use up to seven fixed disk drives under the BIOS provided you are running MS-DOS 5.0 and above.

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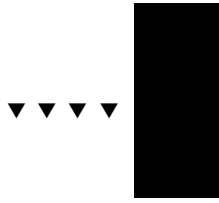
▾ ▾ ▾ ▾ ■ Glossary

About This Glossary

Read this glossary to find out

- Definitions of technical terms used in this User's Guide

- Definitions of terms commonly used in other documents and publications which discuss the SCSI-to-microcomputer peripheral connection

Glossary-1

Adaptec EZ-Audio
A user-friendly software program that automatically upgrades your system to have audio capabilities. Adaptec EZ-Audio copies the required software programs to the PC's fixed disk and edits the *autoexec.bat* file.

Adaptec EZ-SCSI
A user-friendly software program that automatically installs software drivers for SCSI devices, such as fixed disks and CD-ROM drives on a PC. Adaptec EZ-SCSI copies the required software programs to the PC's fixed disk and edits the configuration files so the host adapter can access the devices.

Advanced SCSI Programming Interface
See ASPI

AIC-6360
Adaptec's single-chip Fast SCSI host adapter.

AMM-1570/1572
The Adaptec SCSI Audio Host Adapters.

ASPI
Advanced SCSI Programming Interface. A standard SCSI software interface that acts as a liaison between host adapters and SCSI device drivers. ASPI enables host adapters and device drivers to share a single SCSI hardware interface.

ASPI Manager
A software module that provides an interface between ASPI modules, a host adapter board, and the SCSI devices connected to the adapter. A single ASPI manager can handle multiple I/O requests from multiple ASPI modules. ASPI managers are written for a specific operating system—such as DOS, OS/2® or NetWare—and a specific family of host adapter boards.

Asynchronous Data Transfer
A data transfer method that involves interlocking a signal to the initiator and a signal to the SCSI target in such a way that each step of the data transfer must occur before the next step can begin. Asynchronous data transfer is usually slow. The rate is not affected by external timing constraints, such as cable length and circuit response time.

AT Bus
See ISA

BIOS
Basic Input/Output System. Software coded into computer chips for various purposes. The BIOS on the motherboard of a PC is the special program used to boot and control the computer. There are other kinds of BIOS, such as Host Adapter BIOS.

Bus
A pathway for data in a computer system. All PCs have an expansion bus, which is designed to host add-on (expansion) devices, such as modems, adapter boards, and video adapters. Expansion devices use the bus to send data to and receive data from the PC's CPU or memory. ISA, EISA, Micro Channel®, and VL-Bus™ are the major bus standards used in PCs.

Bus Device Reset
A SCSI message that clears all pending activity in the SCSI peripheral device target to which it is addressed.

Bus Mastering
A high performance method of data transfer in which the host adapter's onboard processor handles the transfer of data directly to and from a computer's memory without intervention from the computer's microprocessor. This is the fastest method of data transfer available for multitasking operating systems.

Byte
An 8-bit unit of data. A byte is normally the smallest addressable unit of memory and the smallest unit of transfer on the SCSI bus.

Device Driver
A software program that enables a PC to communicate with peripheral devices, such as fixed disk drives and CD-ROM drives. Each kind of device requires a different driver. Device driver programs are stored on a PC's fixed disk and are loaded into memory at boot time.

Differential
A term referring to the electrical characteristics of the signals used on the SCSI bus interface. Differential signals occupy two conductors with a positive (+) and negative (-) polarity component of the signal. This minimizes the effect of common mode signal noise and allows the SCSI bus to operate reliably over greater distances at a higher speed.

Direct Memory Access
A mechanism that allows hardware control of the transfer of streams of data to or from the main memory of a computing system. The mechanism may require setup by the host software. After initialization, it automatically sequences the required data transfer and provides the necessary address information.

Disconnect/Reconnect
Disconnect is the function that occurs when a target releases control of the SCSI bus, allowing the bus to go to the Bus Free phase. Reconnect is the function that occurs when a target selects an initiator to continue an operation after a disconnect.

DMA
See Direct Memory Access

EEPROM
Electrically-Erasable Program-mable Read Only Memory. An integrated circuit used to store the host adapter configuration. The data stored in the EEPROM can be updated while it is installed on the host adapter.

EISA
Extended Industry Standard Architecture. A kind of computer bus. EISA, an extension of the 16-bit ISA bus standard, allows expansion devices like network cards, video adapters, and modems to transfer data across the PC bus 32 bits at a time. This standard was introduced in 1988.

EPROM
Erasable Programmable Read Only Memory. An integrated circuit used to store the host adapter BIOS and firmware.

EZ-Audio
See Adaptec EZ-Audio

EZ-SCSI
See Adaptec EZ-SCSI

FIFO
First In/First Out. A queuing order in which items are removed from the queue for execution in the same order in which they are placed in the queue. An integrated circuit that buffers data in such a manner that each byte placed in the

buffer is removed from the buffer in the same order.

Firmware
The software that controls and manages the host adapter. It is *firm* as opposed to *soft* because it is designed into the host adapter and cannot be modified by the user.

GByte
Gigabyte. A measure of computer storage. One GByte equals approximately one billion bytes. (A byte is the amount of storage needed to hold one character.)

Host
A microcomputer system in which a host adapter is installed. The host uses software to request the services of the host adapter in transferring information to and from peripheral devices attached to the SCSI host adapter.

Host Adapter
A printed circuit board or integrated circuit that installs in a standard microcomputer system and provides a SCSI bus connection so that SCSI devices can be connected to the microcomputer.

IBM PC-AT Compatible
Any computer system that emulates exactly the IBM® PC-AT® and that uses an ISA backplane bus.

Industry Standard Architecture
See ISA

Initiator
A SCSI device that requests an operation to be performed by another SCSI device (the target). The initiator provides all the command information and parameters required to perform the operation, but the details of the operation are actually sequenced by the target. The host adapter is sometimes called the initiator.

I/O Operating Environment Software
Additional software that may be required in certain operating system environments in order to use some kinds of SCSI devices with the AMM-1570/1572. For example, additional software is needed in order to install CD-ROM drives on the SCSI bus in the DOS/Windows environment.

ISA
Industry Standard Architecture expansion bus. A type of computer bus used in most PCs. ISA enables expansion devices like network cards, video adapters, and modems to send data to and receive data from the PC's CPU and memory 16 bits at a time. Expansion devices are plugged into sockets in the PC's motherboard. ISA is sometimes called the AT bus, because it was originally introduced with the IBM PC-AT in 1983.

KByte
Kilobyte. A measure of computer storage. One KByte equals 1024 bytes. (A byte is the amount of storage needed to hold one character.)

Line-in
A port on audio hardware to which a recording source, such as CD player output or cassette deck output, can be attached.

Line-out
A port on audio hardware to which audio components can be attached. Typically, you connect the line-out signal to an amplifier.

Logical Unit
A physical or virtual device addressed through a target. Each target can have up to eight Logical Units.

Logical Unit Number
An encoded 3-bit identifier for a logical unit.

LU
See Logical Unit

LUN
See Logical Unit Number

Manager
See ASPI Manager

MByte
Megabyte. A measure of computer storage. One MByte equals 1,048,576 bytes. (A byte is the amount of storage needed to hold one character.)

Micro Channel
A 32-bit computer bus standard introduced by IBM with the PS/2 series of PCs. Micro Channel is

an extension of the 16-bit ISA standard, allowing expansion devices to move data 32 bits at a time on the PC bus (also called Micro Channel architecture).

MIDI
Musical Instrument Digital Interface. A standard communications protocol for the connection of a computer to a musical synthesizer.

Multitasking Operation
The execution of commands in such a way that more than one command is in progress at the same time. Multitasking allows a computer system to take advantage of overlapping activities by using resources that are temporarily not required for other operations. More than one program or more than one portion of a program may be operating in parallel.

Multithreaded I/O
A method by which data is accessed simultaneously from multiple SCSI devices to increase a system's data transfer rate. For example, if the system needs data from two disk devices it requests data from the first device, which temporarily disconnects from the SCSI bus while it is seeking the data. During this delay the system requests data from the second device, and while that device disconnects from the bus to seek the data, the first device starts

sending the requested data over the bus, etc. The AMM-1570/ 1572 and all other Adaptec host adapters fully support multithreaded I/O.

PC-AT
A family of small computers sold by IBM, also called the Personal Computer/AT family of computers. The name is trademarked by IBM.

PIO
See Programmed Input/Output

Programmed Input/Output
A method of data transfer in which the host microprocessor transfers data to and from memory via the computer's I/O ports. PIO enables very fast data transfer rates, especially in single-tasking operating systems like DOS. The AMM-1570/1572 uses this method of data transfer.

RAM
Random Access Memory. Memory of which any byte can be accessed directly in a single memory cycle. Information can be read from and written to the memory.

ROM
Read-Only Memory. Memory in which any byte can be read but not written.

Scatter/Gather

A device driver feature that allows the host adapter to modify the transfer data pointer so that a single host adapter transfer can transfer to many segments of memory in a single transfer, minimizing interrupts and overhead.

SCB

SCSI Control Block. The mechanism used in Emulation Mode to transfer control information to and from the board.

SCSI

Small Computer Systems Interface. A bus interface standard that defines physical and electrical characteristics for hardware devices. SCSI provides a standard interface that enables many different kinds of devices, such as disk drives, magneto optical disks, CD-ROM drives, and tape drives to interface with the host computer.

SCSI Bus

One or more SCSI peripheral devices and a host adapter, connected by cables in a daisy-chain configuration. The bus may include both internal and external SCSI devices. In systems that have more than one host adapter, each adapter has its own separate SCSI bus.

SCSI Device

A device such as a host adapter board, fixed disk drive, or CD-ROM drive that conforms to the SCSI interface standard and is attached to a SCSI bus cable. The device may be an initiator, a target, or capable of both types of operation.

SCSI ID

An identifier assigned to SCSI devices that enables them to communicate with a computer when they are attached to a host adapter via the SCSI bus. Each SCSI host adapter board has 8 available SCSI IDs with the numbers 0 through 7. Usually the host adapter itself is assigned SCSI ID 7, and fixed disk devices are assigned to SCSI IDs 0 and 1.

Single-ended

A term referring to the electrical characteristics of the signals used on the SCSI bus interface. Single-ended signals occupy a single conductor and are references to a common ground carried on the cable between the SCSI components attached. Most SCSI devices use *single-ended* grounding.

Some SCSI devices use a *differential* grounding scheme. These devices are not supported by the AMM-1570/1572. Differential devices may be damaged if you connect them and the AMM-1570/1572 to the same SCSI bus.

Single-threaded Operation
Operation of the computer system such that only one program can be operating or active at a time. The system must wait until all resources are available before starting an operation, and it cannot start another operation until the first one is completed.

Small Computer Systems Interface
See SCSI

Synchronous Data Transfer
A method of data transfer in which data on the SCSI bus is clocked with fixed-length, fixed-frequency strobe pulses. The acknowledgments may be delayed several clock periods from the data requests. Synchronous data transfer can be used only for data transmission on the SCSI bus. It cannot be used for Command, Message, and Status transmission.

Synchronous Data Transfer Negotiation
The message exchange between the initiator and the target that allows the negotiation of the data transfer frequency and delay between requests and acknowledgments required for synchronous data transfer. Once negotiated, synchronous data transfer parameters remain unchanged until certain reinitialization activities occur.

Tagged Queuing
A SCSI-2 feature that allows the SCSI device to queue return data commands in a different order

than requested by the SCSI host adapter, thereby increasing performance.

Target (or Target Device)
A SCSI device that performs an operation requested by an initiator. The target may be a peripheral device, such as a disk drive performing a service for an initiator. The target may also be a host adapter performing a processor-type device service for an initiator.

Termination
A physical requirement of the SCSI bus. The devices at the physical ends of the SCSI bus must have terminating resistors either installed or enabled; devices in the middle of the bus must have terminating resistors either removed or disabled.

VL-Bus
The VESA local-bus developed by the Video Electronics Standard Association to provide a high-speed local-bus for high-performance peripherals within a computer system.

Word
A 2-byte (16-bit) unit of data.

Zero Latency Reads
A method of minimizing mechanical limitations of fixed disks by requesting data in an unordered sequence. The data is reordered by the host adapter.

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